

# Biodiesel 2010/2011

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



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# Biodiesel 2010/2011

The overall positive economic development in Germany continues. The strong increase in exports during the report period, coupled with an increased and continually greater domestic demand represent the driving forces behind this development. In particular, facilities construction, the automotive industry as well as the chemical and electronics industries profit from these. The supply to cover this demand from the BRIC nations, and within this context, particularly from China, more than compensated for the drop in demand in North America. The increasing lack of specialists, particularly engineers, has now developed into an economic brake. This development is overshadowed by the EU financial crisis whose end cannot yet be foreseen. Therefore, the federal government is not at this point willing to stabilize domestic demand through tax incentive measures.

The political energy debate focuses on the nuclear phase-out pushed through by the German Federal Government and the creation of the necessary legal foundations. The legal framework conditions for the new direction in energy provision were established prior to the summer recess. The energy economy associations were forced to submit their positions with regard to the extensive draft legislation. Nonetheless, with regard to the new version of the EEG (Renewable Energies Act), the Deutscher Bauernverband (German Farmers Association) was able to assert the majority of its demands and modification suggestions concerning the compensation structure, facility sizes and the required biomass to be employed. What fell by the wayside are combined heat and power plants powered by vegetable oil and, primarily, palm oil. Domestically, these plants represented the initiator for the German Federal Parliament's demand to the Federal Government for creating stricter and as timely as possible requirements for proof of sustainability criteria. For the claim of the feed-in tariff according to EEG, in the case of employment of vegetable oil in combined heat and power plants, the German Federal Parliament has determined stricter guidelines for existing plants in order to exclude these from the older facilities regulation in accordance with the Renewable Energies Guideline – EER – (2009/28/EG). This implies that, for the employed vegetable

oil, not merely a recognized raw materials source sustainability certification will be required, but, in addition, greenhouse gas savings of at least 35 percent must be shown, in accordance with the EU guideline. In the end, this legal regulation was approved by the German Federal Parliament in 2010. The fact that this update of the EEG no longer promotes new facilities is not discernable by the UFOP since the same sustainability requirements, irrespective of the raw material, apply to energy utilization, regardless of whether this is for biofuel or power generation. Beyond this, in the future energy mix, vegetable oil combined heat and power plants will be making a significant contribution to the stabilization of the regional, load-dependent networks as atomic power facilities are gradually removed from it in the coming years.

The positive domestic economic development can also be seen from the increase in diesel fuel consumption, when compared to the previous year. The transport requirement has increased significantly during the reporting period so that, by the end of 2010, diesel sales had increased from 30.9 during 2009, to 32.1 million tons. Compared with this is the continued drop in gasoline fuel sales. Based on the forecasts of the oil industry, this negative trend will continue in the coming years (refer to Table 1). In addition, the scrap bonus accelerated the trend to the "dieselification" of the existing vehicle inventory. At the same time, low-fuel consumption vehicles were shown to be preferred for new vehicle purchases. According to the experts, the technical motor optimum for fuel savings for gasoline engines – for example, by "down-sizing" – has not yet been reached. The structural imbalance and the associated production overhang in favor of gasoline fuels produced in German and European refineries will therefore continue to intensify. This surplus must be exported. Within the European Union, diesel fuel sales during 2010 increased by approximately 4 million tons to 206 million tons, compared to the previous year. Since, in order to meet national quota obligations, biodiesel in the EU is marketed almost exclusively as an additive component to diesel fuel, these additional sales of diesel fuel produced a stabilizing effect.

**Table 2: Biodiesel Production and Trade Balance in the EU**

EU	Stocks (starting)	Production	Imports	Consumption	Exports	Stocks (ending)
2005	100,000	2,845,000	0	2,747,000	50,000	148,000
2006	148,000	4,435,000	91,000	3,958,000	15,000	701,000
2007	701,000	6,196,000	820,000	7,069,000	25,000	596,000
2008	596,000	7,326,000	2,533,406	8,939,000	59,000	1,457,406
2009	1,457,406	8,704,000	1,947,172	10,150,000	66,000	1,892,578
2010	1,892,578	8,962,000	2,083,000	11,432,000	103,000	1,402,578
2011*	1,402,578	8,791,000	1,750,000	10,835,000	100,000	1,008,578

\*Estimate

Source: F.O.Licht

## The Biodiesel Sector – A Critical Appraisal

Nonetheless, it must be noted that, even during the reporting period, the overall economic situation in Germany and the European biodiesel industry remains very tense. With a total capacity of around 21 million tons and an actual production of only approx. 9 million tons during 2010, the surplus is not merely enormous, but, in fact, represents a ballast to the European biodiesel industry. For 2011, a reduction in European production to 8.8 million tons is estimated (refer to Table 2). This development trend which can, at best, be described as stagnant makes it clear that the consolidation trend will continue in the European biodiesel industry. Thus, for example, Biopetrol Industries, which has since been absorbed by GLENCORE, has shut down its 150,000 ton capacity Schwarzhöhe facility. Facilities which had already ceased production approximately two years ago include, among others DBE Biowerke GmbH, ECODASA GmbH, Emerald Biodiesel Ebeleben GmbH, Emerald Biodiesel Neubrandenburg GmbH. Practically none of these have had any hope of resuming operations. While, on the one hand, importation pressure has lessened and, according to the industry information service, F.O. Licht, during 2008, approx. 2.5 million tons of biodiesel were imported to the EU; this figure will drop to a mere 1.8 million tons in 2011. On the other hand, the rising raw material

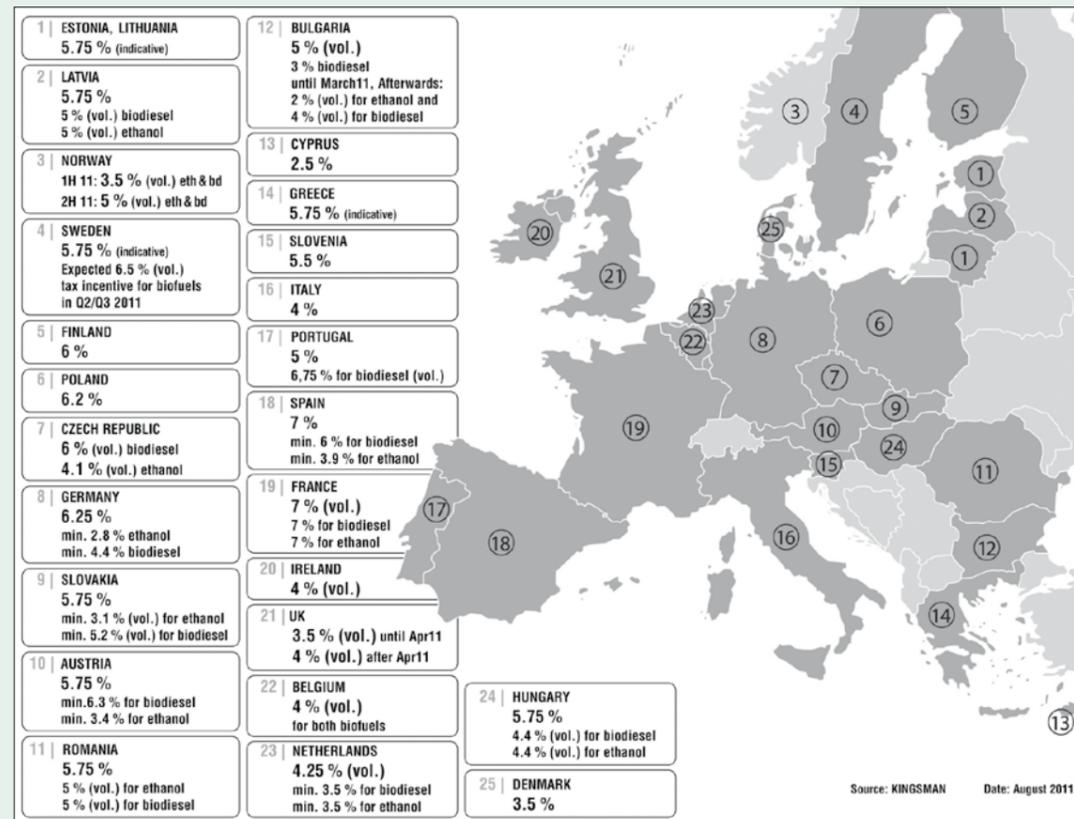
prices have resulted in a drop in profit margins. No reversal in this trend can be discerned. At the same time, using hydrotreated vegetable oil (HVO), the Finnish oil company, NesteOil, is also entering the European market with its total capacity of around 2 million tons – and this also as a raw materials consumer. Beyond this the biodiesel industry in the member states is applying pressure so that the so-called "dual credits" permitted in accordance with the EER to be implemented for biofuels generated from waste or residual materials. The reverse of dual credits on quota obligations means halved biodiesel and vegetable oil requirements for production. Against this background, it would seem to be a logical and consistent step if the biodiesel industry would engage just as strongly for the introduction of B7 in their home nations. As of 2009, the European Standard for Diesel fuel – EN 590 – allows the addition of 7 percent by volume of biodiesel without the need to maintain any secondary source for older vehicles, as was the case with E10. However, as a glance at the national quota obligations indicates (refer to Graph 1, page 4), this potential is only exploited in a very small number of the member nations such as Germany and France. Measured against European diesel fuel consumption, an EU-wide introduction of B7 would result in a real leap in biodiesel sales by up to 14 million tons.

**Table 1: Oil Consumption Forecast in Germany through 2025 (millions of tons)**

Mineraloil products	2009	2010	2011	2012	2013	2014	2015	2020	2025	Changes in various years							
										2010/09	2011/10	2012/10	2013/10	2014/10	2015/10	2020/10	2025/10
+ Gasoline	20.2	19.6	19.2	18.8	18.3	17.8	17.3	14.8	12.4	-3.2	-2.3	-4.3	-6.7	-9.1	-11.9	-24.7	-36.90
- Passenger vehicles	19.7	19.3	18.7	18.3	17.9	17.4	16.8	14.3	11.7	-2.2	-2.9	-5.1	-7.4	-9.8	-12.8	-25.5	-39.10
+ Diesel fuel	31.3	32.5	33	33.3	33.5	33.7	33.9	33	31.7	4	1.5	2.4	3.1	3.7	4.2	1.6	-2.50
- Passenger vehicles	12.1	12.2	12.5	12.6	12.6	12.7	12.6	11.7	10.8	1.2	2.4	3.6	3.7	3.9	3.1	-4.2	-11.80
- Trucks	18.3	19	19.2	19.4	19.6	19.7	20	20	19.7	4	0.9	1.6	2.7	3.6	4.9	5.3	3.50
+ Light heating oil	20.5	21	19.7	19.2	18.6	18.2	17.8	15.4	13.6	2.2	-6.2	-8.7	-11.2	-13.2	-15.3	-26.6	-35.40
+ Heavy/held heating oil	5.4	5.3	5.1	5	4.9	4.8	4.7	4.4	4.2	-2.3	-3	-6.4	-7.9	-9.3	-11.1	-17.2	-21.70
<b>= Subtotal</b>	<b>77.40</b>	<b>78.40</b>	<b>77.00</b>	<b>76.30</b>	<b>75.30</b>	<b>74.50</b>	<b>73.70</b>	<b>67.60</b>	<b>61.90</b>	<b>1.30</b>	<b>-1.80</b>	<b>-2.70</b>	<b>-4.00</b>	<b>-5.00</b>	<b>-6.00</b>	<b>-13.80</b>	<b>-21.00</b>
- Recycling	5.5	6.4	6.0	6.0	6.0	6.0	6.0	6.0	6.0	16.2	-5.9	-5.8	-7.0	-6.9	-6.9	-6.8	-7.0
<b>= Domestic sales</b>	<b>71.90</b>	<b>72.00</b>	<b>71.00</b>	<b>70.30</b>	<b>69.30</b>	<b>68.50</b>	<b>67.70</b>	<b>61.60</b>	<b>55.90</b>	<b>0.10</b>	<b>-1.40</b>	<b>-2.40</b>	<b>-2.40</b>	<b>-4.90</b>	<b>-6.00</b>	<b>-14.40</b>	<b>-22.40</b>

Source: MWV

Graph 1: European Additive Quotas for Biofuel, 2011



When the EER came into effect in June, 2009, this resulted in a reregulation of the legal foundations for the employment of biopower and bioheating fuels in the EU member nations. These regulations also apply to third-party countries who export to the EU. The legal or regulatory policy prerequisites, requirements, specifications and sanctions which must now be made in the member and third-party states as a result of this regulation create significant administrative and costly challenges for the entire international industry chain, starting with the production of biomass, across agricultural trading and processing, right up to biofuel. The necessary documentation and the associated risks to charges have increased significantly. But, it is obvious that this “frog” needed to be swallowed in 2009 since, otherwise, the European Parliament would not have voted to continue the promotional policies related to quota obligations and tax incentives for the traffic sector to meet specific climate protection objectives. Against this background, in the opinion of the UFOP, it is incomprehensible that in nations such as, in particular, Argentina, but other South American countries as well, significant investments in the

expansion of biodiesel capacities have been and continue to be made with a view to the European market. Argentina, Indonesia and Malaysia have since introduced quota targets for the domestic addition of biodiesel to diesel fuel, not, however for any reason related to climate protection, but rather as sales loopholes since export expectations have not been met. Against this background, the creation of new biodiesel capacities will lead to an increased competitive pressure in the international marketplace, resulting in an under-utilization of Argentinean production facilities. This situation has already arisen in Indonesia and Malaysia. These countries will see themselves exposed to even greater pressure to increase the national quota specifications still further.

However, any further increase in the biodiesel share in diesel fuel is limited by technical engine demands and approval limitations set by the vehicle manufacturers. It is doubtful that oil seed producers such as Argentina will benefit from a quota increase, as biodiesel export and therefore competitive ability in the European markets is based on an

degressive export taxation policy. This means that soybeans intended for export are taxed at a higher rate than soybean biodiesel. Simultaneously, this creates the incentive in agricultural nations such as Argentina to establish the entire processing chain. Policies in agrarian nations such as Argentina and the US are traditionally oriented towards exportation. While, on the one hand, biodiesel has long been marketed as a “commodity” in the same way as bioethanol, export practices are far from being “image and acceptance promoting” in the recipient EU member nations, thanks to differential export taxes or in the form of a competition distorting tax incentive payment (keyword: B99 – \$1.00 per gallon from the US). The politicians in the member nations are quite correct in asking the point of promoting national measures to not only protect the climate, but how these will foster the domestic industrial chain. It therefore continues to be vital that the basic concept of regional production, processing and utilization of biodiesel and biofuel be generally presented to politicians, even though this “regional backdrop” has altered over the past 20 years from the domestic to the European level as an inland market. For this reason, the UFOP has promoted numerous studies related to the macroeconomic effects of biodiesel production in Germany. Against this background, the UFOP greeted the EU Commission’s decision of May, 2011, to backdate to August, 2010, the anti-dumping duties leveled on US biodiesel to also include fuels to which less than 20 percent biodiesel has been added. This effectively closed this “loophole”. In addition, the anti-dumping duties were further expanded to include “evasion nations” such as Canada. This decision contributed significantly to a reduction in biodiesel imports by approx. 800,000 tons in the year 2011, compared with 2008 (refer to Table 2, page 3), despite both the importation pressure on biodiesel and the worldwide increase in biodiesel production capacities. The

UFOP notes that, apparently the economic actors in the export nations are unaware that biofuels are highly sensitive basic topics in the European Union, both in a political as well as in the public forum. It is therefore completely understandable that politicians are reluctant to introduce politically promoting measures at the national level, even though the European Union upholds the underlying goals of supply and climate protection which propose that by 2020, at least 10 percent of the energy requirements in the transport sector must be produced from renewable sources. The EU Commission therefore demanded that member nations present national action plans to achieve this objective (refer to Table 3). The surface area requirements for biofuel materials to replace diesel fuel are enormous when the individual national requirements in 2020 are looked at. With the EER taking effect, the domestic raw material source for biodiesel production currently assumes a rather secondary role with regard to strategic reasoning and alignment with respect to the overall EU biofuel policies. Countries such as Spain, Italy as well as Great Britain rely on raw material imports or carry out a more-or-less liberal import or biofuel policy. In France, the biofuel requirements to meet the quota obligations are awarded in a cyclic fashion, with domestic biofuel producers being awarded the contracts with priority. A similar ruling is currently being demanded by the APPA, the Spanish Biofuel Association. The Spanish biodiesel production capacity is 4.1 million tons, of which only 10 percent is exploited, as a result of cheap imports from Argentina and Indonesia.

During the report period and in conjunction with the raw material and areas required in order to meet the EU objectives, both environmental and church organizations fought a very effective public debate over “fuel tank or plate” as well as biofuel policies as an agent driving up food prices

Table 3: National Action Plans - Biodiesel Employment in the EU Transport Sector (millions of tons)

Year	2005	2010	2015	2020
Germany	1,873	3,255	2,42	5,184
Spain	0,17	1,716	2,53	3,616
France	0,382	2,526	2,77	3,325
Great Britain	0,06	1,004	2,136	2,872
Italy	0,209	1,012	1,603	2,193
The Netherlands	0	0,162	0,407	0,643
Czech Republic	0,003	0,225	0,405	0,577
Portugal	0	0,327	0,472	0,525
Finland	0	0,174	0,349	0,501
Austria	0,04	0,322	0,360	0,478
<b>Total</b>	<b>2,737</b>	<b>10,723</b>	<b>13,452</b>	<b>19,914</b>
<b>EU 27 total</b>	<b>2,753</b>	<b>11,225</b>	<b>14,613</b>	<b>21,83</b>

Source: Dutch Energy Research Center. ECN

and destroying natural spaces (among other the deforestation of rainforests) – key phrase: “changes in indirect land use”. Their arguments are based on studies prepared by the OECD, UNEP and related international organizations and scientific institutions.

Price and substitutability are the primary factors in the internationally-directed plans of companies with regard to the provision of the raw materials and biodiesel markets. However, their operative business is currently being significantly limited

or made more difficult because, along with Germany, additional member nations began actively implementing the EER through national guidelines in 2011. These included the creation of voluntary certification systems. Sustainability certification for the biomass raw materials and biofuels or the documented evidence of the source are prerequisites to claim the associated EU member nation incentives, be these tax credits or the addition to the obligatory quotas. One significant aspect for the future of the biodiesel industry – which includes raw material production – lies in the fact that the implementation

of the EER permits the step-by-step increase in the reduction of greenhouse gases to be met on the basis of individual raw material employed to manufacture the specific biofuel. The entire sector, including agriculture, must focus more intensely on this goal in order to be able to comply with the greenhouse gas reduction objective of 50 percent as of 2017 (60 percent for new facilities as of 2018). At the stage of biomass production – European rapeseed cultivation is particularly affected - it will become apparent whether or not the member nations will be able to cooperate with the agricultural associations to develop cultivation strategies which, in the end, will also find acceptance among the rapeseed farmers (refer to the 2009/2010 UFOP annual, page 34 onwards). The further push towards reducing greenhouse gas emissions will quite possibly result in additional documentation responsibilities at the producer level, too. To avoid this, the UFOP has taken the initiative with regard to the German Federal Agricultural Ministry (Bundeslandwirtschaftsministerium (BMELV)) and has submitted corresponding project recommendations for discussion.

In 2010, the German Federal Government complied with its obligations in accordance with Article 19 (2) of the EER, to pass the so-called “NUTS2” areas to the EU Commission. These, for example on the level of government districts or states, are regions which have been set aside (refer to Table 4), and in which tests have been carried out to determine whether the agricultural stage of biomass production for the purpose of generating biofuel can fall below the typical greenhouse gas limit values where wheat, corn, sugar beets and rapeseed are cultivated. Based on the calculations carried out by the ifeu Institute in Heidelberg, the German Federal Environment Ministry reached the conclusion that in every NUTS2 region, the typical greenhouse gas emissions (GHG) from the cultivation of the cited plants lay below the “disaggregated standard values for the cultivation” cited in Appendix V, Part D of the EER. This means that – even after 2013 - the associated agricultural operations must simply provide the standard value in their grower declarations for the cited cultivation plants, in order to provide evidence of GHG compliance, even when the older facilities ruling no longer applies. However, this determination is based on a qualification that the GHG standard values may, at any time, be altered by the EU Commission. The EER intends that this be examined in a timely manner – particularly with respect to biodiesel. Similar requirements to reduce greenhouse gases must also be complied with – or proof of compliance must also be provided – by third country agricultural producers. Against this background it can be assumed that internationally active oil companies such as Neste Oil (HVO) or Shell (bioethanol), will also become active in raw material production. Within the context of a joint venture with Brazil’s largest bioethanol producer, COSAN, Shell is pushing for the introduction and implementation of sustainability and certification requirements within the sugar beet industry and during bioethanol production. Working together with COSAN, the corporation plans to

invest US\$12 billion in this joint project over the next several years. It can therefore not be ruled out that, in the future and as a result of this sustainability requirements made by the EU, biofuel manufacturers in both Brazil and in other nations, will themselves enter into the area of biomass production and play a stronger role.

The strategic direction of the oil industry in the area of biofuels is apparently oriented to the potential of biomass production and to the potential greenhouse gas reducing effect of the raw materials or the biomass produced from them. In the area of the so-called “second generation” of biofuels, these corporations do not merely focus on diesel, but are also concerned with biofuels intended to replace gasoline. The comparatively rapid exit of Shell from the CHOREN Industries GmbH and its subsequent bankruptcy make it clear that a technology-oriented commitment is measured against the economic perspective. The fact that even synthetic biofuels such as BTL at best play a role in the overall fuel supply picture in the form of an additive makes it clear that these biofuels can only generate tiny profit margins. In view of the increasing volatility of prices for biomass, investments in other alternative technologies must be well thought out. Against this background, the German Farmers’ Association selected the bankruptcy proceedings against CHOREN Industries GmbH as an occasion to point out that, dependent on the political framework terms for incentives, bioenergy projects can never be viewed as “self starters”, but instead any investment decisions must be preceded by intense risk analyses and assessments.

#### Biodiesel Market Situation – 2010 Sales Unchanged from the Previous Year

Based on the final statistics released by the German Agency for Economics and Export Monitoring (Bundesamt für Wirtschaft und Ausfuhrkontrolle (BAFA)) a total of approximately 2.6 million tons of biodiesel and 61,000 tons of vegetable oil fuel were sold and marketed during 2010. Approximately 2.3 million tons of biodiesel were added to a total diesel consumption of 32.1 million tons (2009: 30.9 million tons), which represents a diesel fuel market share of 7.1 percent. Sales of pure vegetable oil fuel fell from 100,000 tons in 2009 to a mere 61,000 tons in 2010. The overall share of biodiesel and vegetable oil fuel in the total diesel fuel market was still 8.1 percent (2009: 8.4 percent). The UFOP took these statistical findings as an excuse to point out that, even with this fuel volume, approximately 2.65 million passenger vehicles were able to run without any fossil fuel during 2010.

For 2011, biodiesel faces an unanticipated drop in sales. With approximately 214,000 tons and an additive ratio of 7.2 percent in diesel fuel, biodiesel sales reached its highest annual level as an additive component in May, 2011. During the first 5 months of 2011, 877,000 tons of biodiesel were sold as an additive (previous year: 926,000 tons). Based on

**Table 4: Overview of the NUTS2 Regions**

No.	NUTS2 Region	Wheat	Corn	Sugar beets	Rapeseed
		g CO <sub>2</sub> -eq./ MJ EtOH	g CO <sub>2</sub> -eq./ MJ EtOH	g CO <sub>2</sub> -eq./ MJ EtOH	g CO <sub>2</sub> -eq./ MJ RME
1	Schleswig-Holstein	21.3	14.1	11.7	23.7
2	Hamburg	21.3	14.1	11.6	23.6
3	Braunschweig	21.4	14.2	11.6	24.4
4	Hanover	21.3	14.1	11.5	24.2
5	Lüneburg	21.6	14.2	11.6	24.6
6	Weser-Ems	21.6	14.2	11.6	24.3
7	Bremen	21.4	14.2	11.7	24.8
8	Düsseldorf	21.4	13.9	11.5	24.0
9	Cologne	21.2	14.0	11.4	23.8
10	Münster	21.6	14.0	11.8	24.1
11	Detmold	21.4	14.2	11.5	23.9
12	Arnsberg	21.4	14.1	11.5	24.1
13	Darmstadt	21.4	14.1	11.5	23.7
14	Gießen	21.5	14.3	11.5	23.9
15	Kassel	21.4	14.5	11.6	24.0
16	Koblenz	21.6	14.1	11.7	23.8
17	Trier	21.8	14.1	11.6	23.9
18	Rheinhessen-Pfalz	21.8	14.1	11.4	24.1
19	Stuttgart	21.4	14.0	11.4	23.4
20	Karlsruhe	21.6	14.0	11.6	23.5
21	Freiburg	21.5	14.0	11.5	23.4
22	Tübingen	21.5	14.0	11.5	23.4
23	Upper Bavaria	21.3	14.0	11.2	23.5
24	Lower Bavaria	21.3	13.9	11.1	23.4
25	Upper Palatinate	21.4	14.1	11.1	23.6
26	Upper Franconia	21.7	14.3	11.7	23.8
27	Middle Franconia	21.5	14.2	11.4	23.6
28	Lower Franconia	21.5	14.2	11.4	23.7
29	Swabia	21.2	14.0	11.2	23.4
30	Saarland	21.9	14.4	11.5	24.2
31	Berlin	22.0	14.4	11.7	24.4
32	Mecklenburg-Western Pomerania	21.8	14.3	11.8	24.0
33	Chemnitz	21.4	14.1	11.4	23.8
34	Dresden	21.6	14.2	11.5	24.3
35	Leipzig	21.5	14.1	11.4	24.2
36	Saxony-Anhalt	21.5	14.1	11.6	24.3
37	Thuringia	21.6	14.1	11.6	24.0
38	Brandenburg-Northeast	22.0	14.4	11.7	24.2
39	Brandenburg-Southwest	22.3	14.5	11.8	24.9
<b>Disaggregated standard eec value</b>		<b>23.0</b>	<b>20.0</b>	<b>12.0</b>	<b>29.0</b>

energy, the share of biodiesel added to diesel fuel is 6.7 percent. In this regard, the oil industry is fully exploiting the additive option, since the European standard for diesel fuels – EN 590 – permits the addition of up to 7 volume percent of biodiesel. This sales volume, calculated for 2011, results only in biodiesel sales of 2.1 million tons, or around 200,000 tons less than for the comparable previous year. Clean fuel sales for the first 5 months of 2011 dropped to only 25,000 tons (previous year: 110,000 tons). Assuming that this trend continues unabated for the remainder of the year, biodiesel sales would drop by around 400,000 tons, compared to 2010. This significant decrease in B100 demand when compared with 2010 can only be compensated by improved tax incentives and higher exports in order to achieve an average 50 percent capacity utilization during 2011.

The possible effects on biodiesel sales by the new version of the 36th German Federal Emissions Law (Bundesimmissionsschutzverordnung (BImSchV)) have not yet been taken into account for this extrapolation. With the modification of the 36th BImSchV backdated to 01/01/2011, Germany, together with France as well as The Netherlands is forcing the EER (Article 19(2)) to look switch from the option of a double assessment of biofuels to a quota obligation for biofuels ge-

nerated from waste or recycled materials. To date, biodiesel created from residual cooking oil has been exported. The double assessment option allows both an associated value addition potential to be realized since a lower volume of biofuel can be employed to meet the quota obligation and, possibly, the associated penalty payments (a maximum of 620 EUR/cubic meter) can be avoided or reduced. In the opinion of the UFOP, this competitive advantage continues to remain in effect after 2015 if a conversion from the quota obligation to the climate protection quota takes place (refer to page 35 of the UFOP's 2009/2010 annual report), since, the raw material production stage is omitted in the GHG balance for biofuels from waste or recycled materials. In contrast to the French rulings, the double assessment ruling makes no distinction based on volume. In France, the double assessment option was legally limited to a maximum of 350,000 tons, which, in turn represents a sales volume of around 750,000 tons of rapeseed oil methyl ester (RME). According to the French biodiesel association, this amount was used up very quickly. The experiences gained in France confirm that, depending on the limited amounts of waste currently available, "waste" from other EU member and non-member nations is being imported. The EU Commission has reserved the right to legally define the term "waste" within the context of the EER – to date, however, no such definition

has been made. Due to this legal loophole (no positive list), domestic implementation intends that only biodiesel produced from waste which complies with the regulations governing the recycling circuit code be added to the quota obligation double assessment. The regulation was, however, put in place without awaiting the response from the EU Commission. The UFOP fears that, as a result of this guideline implementation, the demand for RME will decrease since not only waster oil methyl esters from domestic and European sources, but from correspondingly declared raw materials and biodiesel imports from third country nations will force their way into German and European markets.

A positive development is that the German Federal Finance ministry has taken the UFOP recommendation into account, making the iodine number parameter – in accordance with DIN EN 14214 – evidence of conformity, as a prerequisite for inclusion in the list of quality criteria to be examined in order to meet the quota obligation or to be granted tax incentives (refer to Table 5). The iodine number is a measure of the number of double methyl ester bonds.

It should be noted here, that while the German Federal Government had stated that it would create the necessary legal basis in order to process vegetable oil in mineral oil refineries during the report period. The requirements are regulated in the 37th German Federal Emissions Code ( Bundesimmissionsschutzverordnung) and anticipate a limited co-processing of 3 percent vegetable oil. However, there is no expectation that this ruling will be implemented during 2011.

**Tax Incentives – German Federal Government with no Initiative**

Once again, the UFOP reminded the German Federal Government of its announcement made in the coalition agreement to revive the clean fuel market. Once again, the German Federal Government failed to act during the report period, although it is anticipated that the overcompensation examination will again result in under compensation with regard to the tax incentives for 2011. For 2010, the UFOP presented its calculations and determined an under compensation of minus 22 cents per liter of biodiesel (refer to Table 6, page 11). Once again, during 2011, the German Federal Government merely intends to meet its reporting obligation to the EU Commission. At Bavarian initiative, the German Bundesrat during its final session (printed matter 590/10) in October, 2010, demanded that the German Federal Government establish the taxes on clean fuels in such a way as to create a consumer purchase incentive, in order to meet the 10 percent goal in 2020. Beyond this, the Federal German Government was further induced to fully exploit the EU legal options for a differentiation in the tax incentives for vegetable oil fuels based on facility sizes (centralized/decentralized).

**Table 5: Initial ordinance for the alteration of the ordinance to carry out the implementation of the biofuel quota (36. BImSchV)**

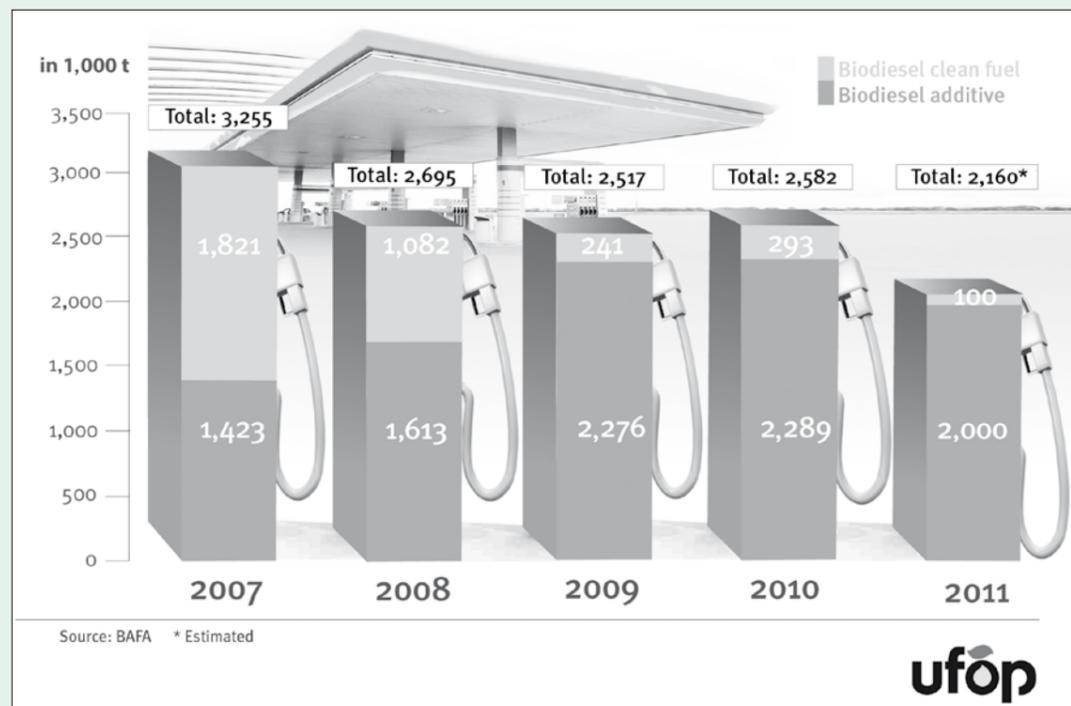
Evidence of compliance with the standard	
At the request of the appropriate office, the obligated individual is required to examine samples for the following parameters for the individual energy product in accordance with § 37b of the German Federal Emission Code, in conjunction with the regulations governing the suitability and the distinction of the qualities for fuels and gasolines:	
Energy products	Standard parameter
Fatty acid methylester	Density at 15 degrees C Sulfur content Water content Monoglyceride content Diglyceride content Triglyceride content Free Glycerine Alkali content Alkaline earth content Phosphorus content CFPP Iodine count
Vegetable oil	Density at 15 degrees C Sulfur content Water content Acid count Phosphorus content Total magnesium/calcium content Iodine count

Source BGBE 2011/Part no. 29

In the opinion of the UFOP, clean fuel marketing represents an entry point to participate in quota trading via subsequent taxation, even for smaller biofuel producers. In this way, there would be no tax losses, and both traders as well as the transport industry would profit, thanks to reduced fuel costs.

The UFOP assumes that, in 2011, the total quota of 6.25 percent will once again not be able to be met. While the quota year, 2010, still had 360,000 tons of clean fuel available from the previous year to help balance out the quota trade, 2011 offers only a reduced potential in this regard (refer to Table 6). It cannot as yet be determined whether domestically E10 will undergo a sales development similar to that of France, where it only holds a market share of 13 percent for gasoline fuel.

**Graph 2: Domestic Biodiesel Consumption, 2007–2011**



Therefore, the UFOP stands by its recommendation that a tax-free volume amount of 400,000 tons be permitted, in order to offer biodiesel in the form of B100 or, with tax incentives, in the form of B30 to the transport industry. The UFOP would also note that a certain amount of customer pressure is required so that vehicle manufacturers will continue to support approval for biodiesel in the future. Therefore, the UFOP was extraordinarily pleased with the approval for B100 released by SCANIA for EURO-V vehicles.

**The situation at the EU level**

Essentially, two factors are currently responsible for future sales developments:

1. The determination for domestic additive rates for biofuels. Not all member nations differentiate between sub-quotas for biodiesel and bio-ethanol and a total quota.
2. The European standards for diesel fuel – EN 590 (B7) – and for gasoline – EN 228 (E10) – define maximum additive rates for biodiesel and bio-ethanol as a prerequisite for the issuance of manufacturer approvals.

Graph 1 “European Additive Quotas for Biofuel, 2011” (refer to page 4) illustrates the domestic additive rates within the EU. Not all member nations – e.g., Germany and France – adhere to the additive rates defined in the European standard for diesel fuel and gasoline. The domestic additive rates apparently reflect the political significance which biofuels have in the member nations’ policies for renewable energies. The member nations differ not only with regard to the size of the additive rates, but also with regard to the penalties which must be paid in case the quotas are not met. While in Spain, a penalty of approx. 350 EURO per cubic meter is due should the quota obligation not be met, in Germany, 620 EURO per cubic meter must be paid to the German Federal Finance Ministry. Naturally, the size of the penalty payments correlates with the interests of the companies of the oil industry who, as quota obligants, see the obligation as a means of complying with biofuel addition. The level of the penalty simultaneously forms a scale for the maximum price for biodiesel and, therefore, also for rapeseed as a raw material. It is obvious that, above a certain price level for biodiesel, the quota volume can instead be purchased by a subsequent tax on B100 or by the payment of a penalty. It follows then that, dependent on the development of mineral oil prices, a raw materials price level can be determined, above which the production of biodiesel would no longer be economical due to a lack of demand. Simultaneously, this represents the threshold price, above which rapeseed would be better marketed for consumption. Thus, the “tank or plate” discussion takes place against a background of price competition, where every instance of food employment would determine the final use!

However, this is just one explanation why, for example in Spain a mere 10 percent of the biodiesel production capacities (approx. 4.1 million tons) are utilized. The southern European member nations rely on imports from the EU and third nations, principally because domestic vegetable oil availability is limited. The current Greenpeace study on raw material composition in biodiesel fuel as an additive in Europe reflects this situation (refer to Graph 3, page 12). Thus, based on the examination, the percentage of palm and soybean oil in biodiesel increases in Europe from north to south. However, particularly Portugal and Spain see themselves confronted by imported soybean methyl esters from Argentina as well as palm oil methyl esters out of Indonesia, because these nations do not tender volume quotas, as is the case in Italy. While the “export promotion” in the EU for B99 and B20 from the US is practically negated by the introduction of restrictive duties, measures must still be taken to cancel the export promotion for Argentinean biodiesel. Indonesia practices a similar form of “sales promotion”, whereby palm oil exports are charged an export tax, while biodiesel export is correspondingly favored. This dilemma is practically insoluble for the southern European biodiesel producers as the biodiesel manufacturers are practically dependent on sustainably certified soybean or palm oil, should the EER be implemented. In this case, the exporting nations will supply biodiesel in the EU which has also been sustainably certified. It follows that, while the framework conditions will change, the present competitive situation will not. In this regard, the demand made by the APPA that the Spanish government also tender the quota volumes as is the case with the French procedure, is understandable. Against this background, there is growing interest on the part of European biodiesel producers to manufacture biodiesel from used vegetable oil as an alternative raw material source.

In accordance with the EU decision on climate protection, as of 2020 the share of energy generated from renewable sources must be at least 10 percent (energetically) in the transport sector. The EU Commission had requested the member nations to submit domestic action plans by mid-2010, in order to ensure that these objectives can be achieved. Table 3 (refer to page 5) illustrates the biodiesel share required for the diesel share in the transport sector. The question of a sustainable raw material supply arises, and this not merely because of the ambitious timeline set for the achievement of these objectives. Based on its action plan, Germany has set itself the objective of increasing the biofuel share in the transport sector to 6.14 million tons as of 2020. This share includes all biofuels (biodiesel, bio-ethanol and biogas). Within the context of an association hearing in the German Federal Environmental Ministry, the UFOP questioned the biomass provision basis on which this objective is to be met. Measured against the domestic objectives, the international raw material or biofuel trade must make an extensive

**Table 6: Report on Tax Incentives for Biodiesel as a Clean Fuel; Over/Under Compensation Development for Non-integrated facilities**

Price per liter, in EURO	2007	2007	2008	2008	2009	2009	2010	2010
	Jan-June	July-Dec	Jan-June	July-Dec	Jan-June	July-Dec	Jan-June	July-Oct
Rapeseed oil, free ex mill*	0.54	0.71	0.87	0.74	0.54	0.55	0.61	0.71
Refining	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Esterification, minus Glycerin credit	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09
Shipping	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Added technical expenditures	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
Additional consumption	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Sales incentive	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Energy tax	0.09	0.09	0.15	0.15	0.18	0.18	0.18	0.18
Total, biodiesel (w./o. VAT)	0.97	1.14	1.36	1.23	1.06	1.07	1.13	1.23
Diesel (incl. energy tax, w./o. VAT)	0.94	1.02	1.14	1.09	0.88	0.92	0.99	1.01
<b>Overcompensation (+)</b>								
<b>Under compensation (-)</b>	<b>-0.03</b>	<b>-0.12</b>	<b>-0.22</b>	<b>-0.14</b>	<b>-0.18</b>	<b>-0.15</b>	<b>-0.14</b>	<b>-0.22</b>

\*) Soybean oil share: 25%  
Sources: AMI MarktSpezial, Ölsaaten + Biokraftstoffe, UFOP Market Information, Ölsaaten und Biokraftstoffe, VDB Member Questionnaire  
© UFOP 11/2010

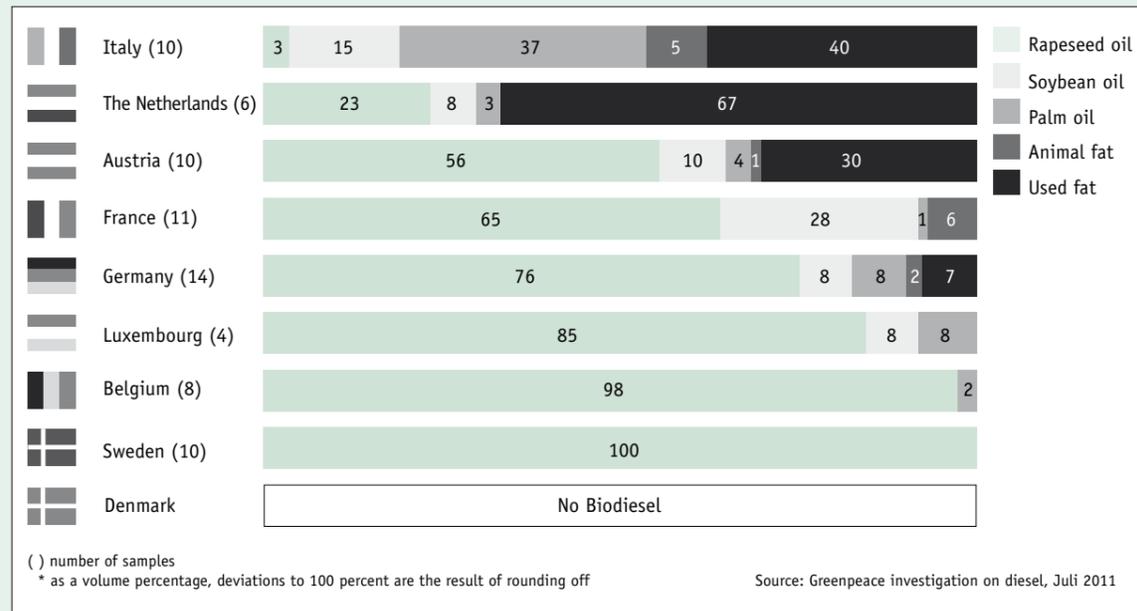
commitment in order to meet the intended objective. The high potential value addition resulting from the high energy density of the vegetable oil or the resulting fuels produced from it, make these goods so attractive for international trade. The substitutability in international trade is limited in particular due to the fact that the raw materials or vegetable oils exhibit significant differences with respect to their fatty acid contents. A high level of saturated fatty acids has a negative influence on biodiesel flow properties at low temperatures. This can result in clogged filters. This quality requirement is reflected in the domestic appendices to the European biodiesel standard, EN 14214, under the heading “Cloud Filter Plugging Point (CFPP)”. The CFPP value depends on the individual raw material involved: palm oil methyl esters, + 5°C; soybean methyl esters, max. -5°C; rapeseed oil methyl esters, max. -12°C.

The maintenance of the biodiesel strategy at both the domestic and European levels is therefore existential for the future development of rapeseed cultivation in Germany and Europe. This is because, by employing rapeseed oil as the raw material, the winter filtration requirements of the diesel fuel can be met. The employment of RME in the winter (CFPP value: -20°C) and in the transition periods in spring and fall is also supported by the fact that the so-called flow improvers as additives offer the greatest effect thanks to the fatty acid structure of rapeseed methyl esters. Flow improvers employed with palm oil methyl esters exhibit practically no effect on a reduction in the CFPP value.

In order to ensure and expand European rapeseed cultivation, the UFOP supports the objective of further increasing the share of biodiesel added to diesel fuel. With the EER,

the mandate was simultaneously created to establish a B10 standard. However, the results of the discussions held by the appropriate committees of the European Standardization Committee (CEN) will presumably indicate that the motor vehicle industry is not willing to approve B10. This approval would result in the provision of a security brand for older vehicles, much as was the case for the approval for E10. A similar situation as with the introduction of E10 in which the vehicle owners face uncertainty arose with the introduction of the particle filter in 2004 and the associated different design concepts presented by the European motor vehicle manufacturers with regard to cleaning the particle filter by the injection of fuel into the engine followed by combustion in the exhaust system. Since, when compared with diesel, biodiesel exhibits a poorer boiling behavior (evaporation characteristic of the fuel subsequent to injection into the engine), it is feared that a portion of the biodiesel volume will separate from the diesel fuel and be mixed with the motor oil, thus significantly shortening the oil change intervals. The motor vehicle industry does not feel that these additional maintenance expenses can be passed on to the owners. In view of the extensive conversions which must take place in the distribution chain as a result of the market introduction of E10, practically no additional filler pillars are available at public filling stations. Against this background, the UFOP is concentrating its political and research efforts on the question of increasing the share of biodiesel in diesel fuel (B30) for trucks. The background is the development utilizing the direct fuel trade with the fleet operator (operator filling stations). At fleet filling stations, biodiesel and diesel fuels can be mixed with no tax detriment since the fuel is intended solely for use by commercial vehicles and not intended for third-party consumption. In

**Graph 3: Comparison of European averages for Biodiesel shares\***



addition, fleet vehicles undergo correspondingly frequent maintenance. As a result of the standardization activities of the CEN, a corresponding recommendation is already available. However, this also necessitates action since, as of January, 2014, the EURO VI exhaust gas level takes effect for trucks. The demand to reduce emissions, particularly of particles and NOx, will then be significantly stricter (refer to Graph 4). The resulting interaction between the engine, the fuel and the exhaust treatment system will become significantly more expensive. The sensor support and engine load dependent optimization strategies will require extensive research expenditures in order to increase the biodiesel share of diesel fuels for this sector. Basically, however, this is not a new problem, since the time points for a step-by-step implementation of stricter emission threshold values have been legally defined for a number of years and can therefore be planned for. Unfortunately, the agreement reached in 2007 between the motor vehicle industry and oil industry economic associations, the biofuel economy, agriculture and the German Federal Environmental and German Federal Economic Ministries relating to a "Biofuels Roadmap" failed to include the required advanced accompanying studies on the employment of biodiesel as an additive to truck diesel fuel. The German Federal Government's strategic focus when it comes to the replacement of diesel fuels by biodiesel fuels is

not comprehensible. Even though ambitious objectives with regard to greenhouse gas reduction were defined for the traffic sector, these will nonetheless knowingly be able to be attained by 2020 nearly exclusively using first generation biofuels. After the bankruptcy of CHOREN, the alternative of BtL fuel has served its purpose as a "placeholder" in the strategic biofuel discussions. In May, 2011 the German Federal Traffic Ministry (BMVBS) announced an initiative to develop a fuel strategy and, within the context of the initial large-scale presentation, presented the concept and its planned schedule. The latter anticipates that, by the end of 2011, resource working groups led by economists and scientists will employ, among other things, workshops to carry out discussions. The objective is the development of procedural scenarios and position papers. By 2012, the basic outlines of the strategy should be established and the results are to be presented as part of a conference. The task and objectives of the UFOP must be to bring to bear its expertise in the associated working groups.

Apparently, eco-political pressure to permit adequate consideration of biodiesel employment is missing from the field of commercial vehicles. In contrast to the car sector, the truck sector has, to date, been spared a CO<sub>2</sub> reduction obligation (g CO<sub>2</sub> /km). On the other hand, it must be recognized that

**Graph 4: Development of the Legal Exhaust Gas Limit Values for Nitrous Oxide (NOx) and Particulate**

Exhaust gas stage	Euro IV		Euro IV		EEV		Euro VI	
	Date (Production)		Date (Production)		Date (Production)		Date (Production)	
Date (Production)	10/01/2006		10/01/2009		2000 (optional)		10/01/2014	
Test cycle	ESC	ETC	ESC	ETC	ESC	ETC	WHSC	WHTC
NOx g/kWh	3.5		2.0		2.0		0.40	0.46
Particle mass g/kWh	0.02	0.03	0.02	0.03	0.02		0.010	0.010
Particle count g/kWh	-		-		-		8.0*10 <sup>11</sup>	6.0*10 <sup>11</sup>

Source: EG guidelines 1999/96/EG, 2005/55/EG, EU-RL 595/2009

ESC: European Stationary Cycle  
 ETC: European Transient Cycle  
 WHSC: Worldwide Harmonized Stationary Cycle  
 WHTC: Worldwide Harmonized Transient Cycle



the expensive exhaust gas treatments linked to EURO-VI engines result in excessive added expenditures which cannot be compensated for by the existing toll structure. It is therefore not without reason that the leading truck manufacturers are demanding a separate incentive regulation for toll fees in order to introduce EURO-VI engines.

In the view of the UFOP, a corresponding tax incentive for B30 in the sense of climate protection could promote biodiesel employment, and fleet operators could simultaneously save fuel costs. For traders, the option arises of subsequently taxing the tax-incentive biodiesel volumes in order to generate tradable quota volumes. According to tax law, this B30 marketing option is restricted to the transport sector as the production of biofuel mixtures does not result in subsequent taxation provided that the mixed fuel is employed exclusively for commercial vehicles. From the viewpoint of the UFOP, this marketing idea would also be possible and, in addition, required for HVO so that the quota obligation can be met more flexibly in the future.

Against the background of the sales developments for gasoline and diesel fuels anticipated by the oil associations (refer to Table 1, page 2), the climate protection objective in the transport sector can only be achieved if the share of bio-ethanol, biodiesel and HVO is increased. Therefore, the specialist associations have presented politicians with their demands in the form of a fuel memorandum (refer to the 2009/2010 UFOP report, page 27) for the continuation of the biofuel and greenhouse gas emissions quotas. However, as the market introduction of E10 has shown, this policy will not be accepted without consumer acceptance. Thus, the strategic introduction of biofuels must be accompanied by timely consumer information. From the viewpoint of the UFOP, the market introduction of B30 as an alternative fuel in the truck sector represents the preferable strategy, as diesel demand

continues to grow. Therefore, the UFOP has repeatedly noted that, within the context of the "biofuels roadmap" from 2007, a basic agreement regarding additional market introductions coupled with the creation of the required engine technology demands to utilize these biofuels must exist. At the initiative of the BMELV, this agreement was basically confirmed in 2010, within the context of an association hearing.

Simultaneously and within the context of its options, the UFOP is attempting to promote or initiate research projects which take into account the fully justified concerns on the part of the motor vehicle industry for a high-quality fuel. Thus, the UFOP is sponsoring, among other things, a project intended to shorten the chain length of plant oil methyl esters through so-called "metathesis". The objective is to adjust the boiling behavior of methyl esters to that of diesel fuels. As previously stated, the UFOP continues to participate in several research projects to examine the employment of HVO by fleets and test site examinations. The strategic medium and long-term goals are the maintenance of the fuel market's sales window for rapeseed oil, particularly in view of the fact that, to date, no agreed upon research and development strategy for biodiesel exists within Europe. Quite the contrary, the UFOP is under the impression that Germany is the only country in which research projects have been initiated and financed to this extent. In the end, the maximum additive level for biodiesel is determined by engine technology demands coupled with increasing demands for biodiesel quality itself. Not only the biodiesel industry in the European Union, but also investors in other nations such as Argentina and Brazil should prepare for this. In view of the existing worldwide overcapacity in biodiesel production, additional investments in facility expansion make little sense. This development is reflected in current investments. While wind power is booming in the area of renewable energy, the investment volume for biofuels is significantly regressive (refer to Table 7).

**Table 7: Development of Worldwide Investments in Renewable Energy Sources (in Billions of US\$) Financial New Investments without Smaller Projects (e.g., PV Coverage Investments)**

Year	2004	2005	2006	2007	2008	2009	2010
Wind	11.3	21.9	29.7	51.1	62.7	72.7	94.7
Solar	0.5	3.2	10.4	21.8	33.3	25.3	26.1
Biofuels	1.6	6.0	20.4	20.0	18.7	6.9	5.5
Biomass and waste-to-energy	3.7	6.7	10.0	11.4	10.1	11.5	11.0
Small water power plants	1.1	4.4	4.2	5.0	5.8	4.1	3.2
Geothermal energy	1.0	0.4	1.3	1.9	1.6	1.4	2.0
Tidal energy	0.0	0.0	0.5	0.4	0.1	0.2	0.1
<b>Total</b>	<b>19.2</b>	<b>42.6</b>	<b>76.5</b>	<b>111.6</b>	<b>132.3</b>	<b>122.1</b>	<b>142.6</b>

Source: Bloomberg New Energy Finance, UNEP

#### Raw Material Sales Prospects for HVO?

The UFOP board of directors has repeatedly dealt intensely with the previously described situation analysis and – with the goal of expanding the sales spectrum for German and European rapeseed – has held discussions with the Finnish Neste Oil mineral oil corporation. The company has developed a patented method for producing HVO and has invested in the establishment of associated production capacities. Neste Oil is pushing into the German and European market with HVO, with production capacities at the facilities in Porvoo (380,000 tons) and Rotterdam (800,000 tons) as well as at the Singapore facility with another 800,000 tons. In 2011, Neste Oil and UFOP jointly supported the Bioconcept Car by FOUR MOTORS racecar project, which employs HVO based on rapeseed oil as an additional vehicle fuel alternative. Beyond this, the UFOP also participates in the "Renewable Diesel" joint project from Coburg University and the Braunschweig Technical Institute. Within the context of an intended project, car fleets in Munich and Coburg are being powered by HVO. The UFOP supports this intention with the objective of using the raw material, rapeseed, to demonstrate the documentation chain in accordance with the demands of the biofuel sustainability requirements for every production and processing stage. In contrast to biodiesel, a higher share of HVO (30 percent) can be added to diesel fuel with no modification of the fuel specification. Another sales opportunity is currently developing in the aviation sector. Airlines such as Lufthansa and KLM are currently already running tests of vegetable oil based bio-kerosene as an alternate fuel. The reason for this initiative is the inclusion of European aviation in the European emission trade. Like all other traffic carriers, the aviation industry finds itself challenged to produce a measurable decrease in greenhouse gas. Interested parties from the aviation industry, from scientific institutes and from the biofuel industry therefore founded the "Aviation Initiative for Renewable Energy in Germany" (AIREG) in June, 2011.

#### Sustainability Certification – Implementation Status in Germany

After REDcert GmbH was founded in the spring of 2010, its subsequent activities of the participating associations focused on ensuring that the impending rapeseed harvest be registered as being sustainably certified as far as possible. At the agriculture and agricultural products trading stages, the UFOP, DBV, DRV and BVA implemented numerous information events directed at the rapeseed producers and the trading companies. The focus was on the dissemination of information regarding the necessity of submitting a self-declaration, together with the registration and certification of the compilation trade in a timely manner by a certified certification office. Not only was the REDcert GmbH able to

develop and have the certification system recognized by the BLE in the shortest possible amount of time, but it was also able to qualify the employees of the certification offices for this task which were also approved by the BLE. In January and March of 2011, the UFOP and AGQM offered supplemental seminars with specialist support from the BLE and the associated Southwest German Federal Finance Direction to the affected corporate groups. The results were readily apparent. Approximately 95 percent of the 2010 rapeseed harvest was able to be registered as having been sustainably certified and thus be offered as the foundation supply to domestic oil mills and biodiesel manufacturers. The driving force was the implementation of the biofuel sustainability ordinance on 01/01/2011. Graph 5, "Biodiesel Certification and Documentation" illustrates the certification chain, starting with the rapeseed producers submitting their self-declaration, going through the subsequent trading and rapeseed processing phases, and ending with the production of biodiesel. With the submission of a raw material based self-declaration, the raw material or product identity is ensured through every stage. This documentation requirement across every step was, in the end, also detectable in the market, since oil mills as well as biodiesel producers demanded only certified rapeseed for biodiesel production. The agenda of the competent BLE specialist advisory committee, "Renewable Biomass", was able to clarify questions related to the additional administrative implementation. For logistic and other practical reasons, it was apparent that no unity in compilation and processing could exist with regard to every certified raw material. German oil mills process around 8 million tons of rapeseed, of which the majority is sent to food-related applications or is processed for non-food purposes. The administration regulation for biofuel sustainability grants a 3-month period to provide a mass physical balance between certified and non-certified goods during every stage. This means that, by the end of the balance period, the company must ensure that the volume indicated as having been certified (rapeseed, rapeseed oil, RME) does not exceed the entered volume. The short mass balance time and the equally short time window prior to the implementation of the regulation required additional transition rules so that, despite the best efforts on the part of the sector chain, the certification could be implemented and the administrative prerequisites could be established. It was not possible to certify every so-called "certifiable" facility – particularly with respect to the submission stage – while maintaining the desired schedule. It was also possible to foresee that not all biofuel amounts which had already gone into storage (B7) were able to be certified on 01/01/2011 in order to be recognized as meeting the quota obligation. The affected economic associations successfully challenged the German Federal Government to extend the

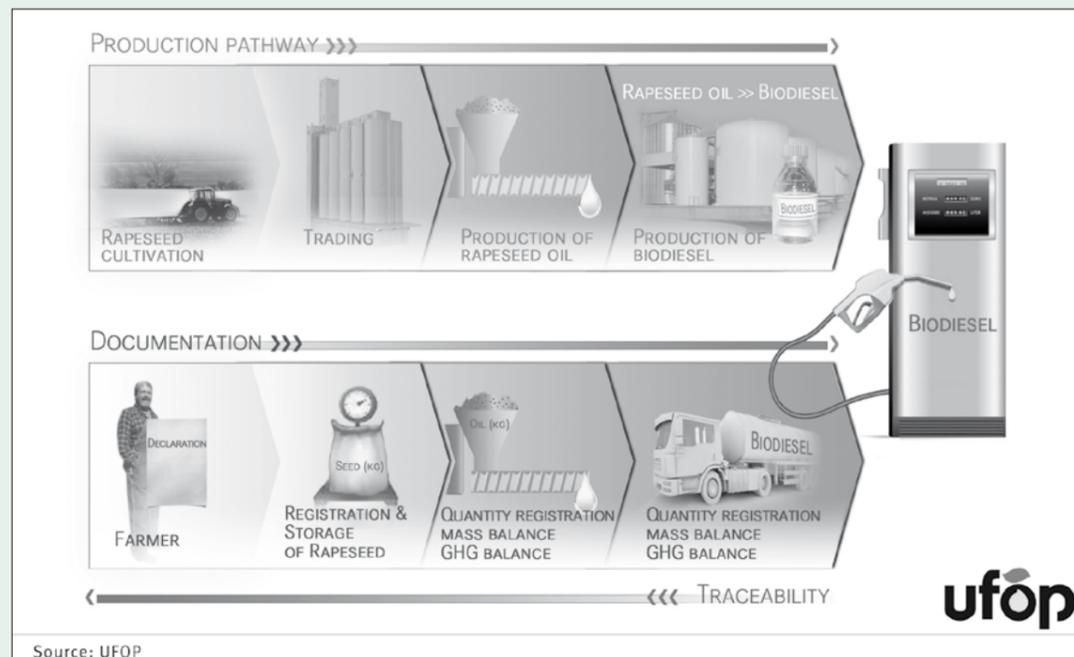
mass balance period to 06/30/2011, so that – also in the sense of a harmonious raw material and biofuel transition – certification or evidence of sustainability could be subsequently submitted during 2011. With the approval of the transition ruling, the German Federal Government recognized the intense efforts on the part of the associations and firms to establish a broad-based, voluntary certification system in as timely a manner as possible. The experiences gained during this time made it clear that, beyond this, an equally efficiently operating certification system was required for the administrative processing and implementation of the certification and documentation demands. REDcert and ISCC have also provided the firms with essential support through their offered services (newsletters, training, and database maintenance, for example, for the utilization of Nabisy). This implies a deeper understanding of the administrative needs of the associated authorities and offices. It is the opinion of the UFOP that within the context of the recognition of certification systems not only conformity with the legal EU requirements must be examined, but, beyond this, the question of whether the system applicants are capable of operating the system against the background of the legal and the associated administrative technology requirements must be asked. The supplemental information network established by the ISCC and REDcert forms the basis for a timely and efficient implementation of the administrative-legal re-

gulations. The success rate of REDcert during the reporting period is quite apparent: nearly 1,000 firms, representing approximately 2,000 facilities were registered. Around 900 certificates were issued by the certification offices. With around 800 certifications, the focus of certification through REDcert lies with the stage of harvest registration. In this regard, the question arises as to whether the preliminary approval by the BLE of the “Roundtable Sustainable Biofuels (RSB)” certification system for Germany, in March, 2011, will still be able to attract any clientele.

**... and at the EU Level**

Within the report period, Germany is the only EU member nation which was able to implement and receive notification of this on schedule from the EU Commission (EU guideline 2009/28/EG). However, the delayed implementation in the other EU member states results in domestic rapeseed trade intended for German biofuel facilities being made more difficult. As a result of the conditions set forth by the biofuel sustainability regulation for volume compilation and balance, the goods flows of the individual raw material type need to be separately compiled and documented, within the context of maintaining the raw material or product identity. Due to the fact that the deadline for the national implementation of the EU guideline had already been missed by a great amount, the EU Commission warned the tardy member nations. The

**Graph 5: Biodiesel Certification and Documentation**



Source: UFOP

**Table 8: Voluntary Certification Systems Approved by the EU**

Name	Raw materials	Geographic location
Abengoa „RED Bioenergy Sustainability Assurance“ (RBSA)	All raw materials	All areas
Biomasse Biokraftstoffe (2BaSvs)	All raw materials	All areas
Bonsucro	Sugar cane	All areas
Greenenergy Brazilian Bioethanol verification program	Sugar cane	Brazilien
International Sustainability & Carbon Certification (ISCC)	All raw materials	All areas
Roundtable of Sustainable Biofuels EU RED	All raw materials	All areas
Roundtable Responsible Soy (RTRS)	Soybeans	Non-EU

\* Guideline values are as yet unavailable from the EU Commission

Source: Kommission

Source: F.O. Licht

UFOP assumes that appropriate sanctions will follow no later than the outset of 2012. Against this background, the UFOP welcomes the news that, aside from ISCC, the French certification system 2BSvs (Biomass Biofuels Sustainability Voluntary Scheme) has also been approved by the EU Commission. It can only be hoped that, in France, the necessary legal administrative conditions can be created to permit this certification system to be implemented. Table 8 provides an overview of the certification systems approved by the EU Commission. Based on the “origin” of the certification systems it can be seen that the nations engaged in international raw materials as well as biofuel trade have seen the necessity of developing and gaining approval for certification systems in order to ensure access to the markets in the European Union.

However, from the point of view of the UFOP, solving the approval for these certification systems does not solve the problem of as timely and broadly-based as possible a certification for biomass fibers and processing stages within the EU. In view of the below average harvest in Germany during 2011 – equal to 3.7 million tons (previous year: 5.7 million tons) – corresponding raw material imports are required from nations such as Poland, Great Britain and France in order to secure the necessary raw material supplies for German oil mills and biodiesel producers. The UFOP therefore expects that additional certification systems (unknown at the time of publication) will be examined and approved by the EU Commission as soon as possible.

For the current fiscal year 2011/12, the UFOP anticipates an intense discussion with regard to a renewed authorization or approval of a 12-month certification period since, due to the experience already available in Germany regarding time restraints, the other member nations will also require 12 months for the volume balances and in order to prepare the administrative technical measures for the implementation of certification systems. If once again, a 12-month balance period is to be retained for Germany, this is vital for domestic

trading that is as unhindered as possible. The UFOP views an urgent need for action to ensure that member nations are included from the very outset in the documentation and evidence requirements so that these can be standardized in order to ensure that the EER can be uniformly implemented on the national level. At the initiative of the authorities in the member nations, the so-called “Renewable Fuels Regulators Club (REFUREC)” has been established.

Wherever possible, this working group includes the competent member nation offices (for Germany, the BLE). It remains to be hoped that the authorities are attempting to push the exchange of information forward since it would be unreasonable to expect the member nation biofuel industries to each establish their own documentation system. Measured against the administrative expenditures incurred in Germany for the introduction of Nabisy to generate the evidence of sustainability the question of whether Germany should serve as an example or whether bypass facts and administrative simplifications must already be discussed at this point. The UFOP and the DBV take the position that, for sustainable biomass production, documentation based on the cross-compliance requirements should be adequate to provide evidence of sustainability.

**Indirect Land Use Changes (iLUC) and Cultivation Prospects for Rapeseed**

Within the context of the so-called “trilogue”, which defines the voting procedure between the Commission, the Council of Ministers and the European Parliament, a compromise was reached at the beginning of 2009 regarding the question of taking the land use changes into account, which go hand-in-hand with the increasing demand of raw materials for biofuel. The core question was whether biofuel policy of the EU would require additional agricultural areas to be made available by claiming natural preserve areas (e.g., rainforest deforestation = direct land use change), or whether employing existing agricultural areas for biofuel raw material production within the EU would lead to the increase in food production at the expense of natural

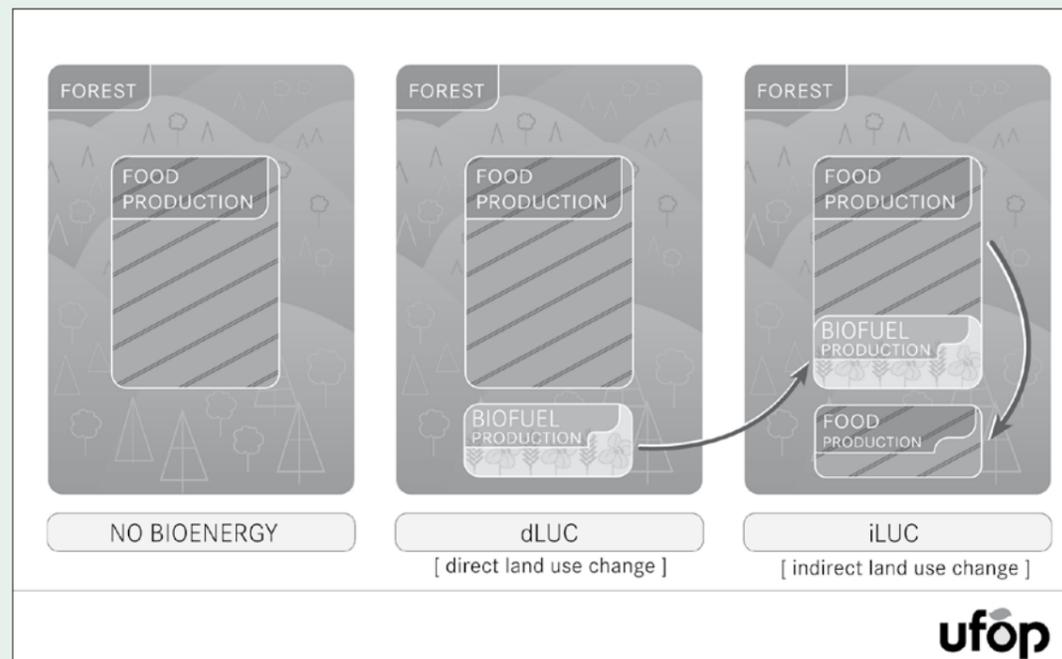
preserve areas in other locations (indirect land use change) (refer to Graph 6). Not only does such a modification lead to the loss of areas worthy of protection, but also to carbon dioxide losses (topsoil depletion) in the form of CO<sub>2</sub>. The original draft guideline of the EU Commission therefore looked at a lump-sum addition to the standard values for GHG emissions amounting to 27 g CO<sub>2</sub>/MJ for all biofuels. An implementation would have resulted in the end of domestic rapeseed cultivation for biodiesel production. The compromise reached at that time was documented in Article 19 (6), wherein the EU Commission was obligated to present a report on the examination of the effects of indirect land use changes on greenhouse gas emissions to the European Parliament and the Council by 12/31/2010. At the same time, this report should also contain options which would permit these effects to be reduced. Together with this ruling, the EU Commission was also required to employ the latest available scientific experiences and a concrete methodology to calculate the changes in carbon dioxide resulting from indirect land use changes or to provide suggested modifications to the guideline. However, in the sense of a time-limit on the protection for existing facilities, the guideline also envisions that any recommendation for its modification would offer an adequate degree of investment assurance, as was the case prior to this new

greenhouse gas calculation method being employed. For biofuel facilities in operation prior to 2014, an assets protection valid through 12/31/2017 applies, provided that the GHG savings are at least 45 percent as opposed to the generally applicable 35.

Thus, for existing facilities, there is a dual investment protection with regard to greenhouse gas requirements in accordance with the guideline:

1. The existing facilities ruling for facilities which were already operational by 01/23/2008 – these facilities are not required to provide evidence of at least a 35 percent reduction in greenhouse gas by 03/31/2013.
2. The assets protection ruling for facilities which became operational by the end of 2013 – where the GHG emissions arising from indirect land use changes are taken into account, these facilities must provide evidence of an increased GHG reduction amounting to 45 percent. Thus, these investment protection rulings include raw material cultivation. The intended deadlines therefore provide a GHG reduction timeframe that covers every stage, beginning with rapeseed cultivation and proceeding through to biodiesel production.

Graph 6: Indirect Land Use Change (iLUC)



The required additional areas have also produced a critical public discussion between politicians, the Commission and agricultural and biofuel associations on the one hand and the nature conservation organizations on the other. The nature conservation organizations fear that areas with a high biodiversity (rainforests, grasslands in South America, etc.) will, in the end, become the victims for reaching biofuel goals in the European Union. In contrast to this is the opinion among the biofuel associations that as yet untapped areas still exist within Europe (Eastern Europe) and that these offer potential and as yet not mobilized yields.

Within the "INDIRECT LAND USE CHANGE IMPACTS OF BIO-FUELS" consultation process of the EU Commission, the German biofuel economy associations (UFOP, DBV, VDB and BDBe) explained their recommendations and positions. The EU guideline foresees the following options for an additional compensation of the raw material or cultivation requirements:

1. A dual-credit for biofuels produced from waste and recycled materials;
2. A dual-credit for biofuels produced from raw materials cultivated on so-called "degraded" fields. However, to date, the EU Commission has failed to define what it means by "degraded fields".

Against this background, the general directorates for trade and the environment, agriculture and climate ordered the preparation of four studies on the measurement of greenhouse gas effects by indirect land use changes. By the end of December, 2010, the EU-Commission presented its report on indirect land use changes in conjunction with biofuels and liquid biofuels.

In it, the Commission first clearly states that the "estimated" land use changes can never be identified, because these represent a "phenomenon" that can neither be directly observed nor can it be measured. Thus, the basis for measuring greenhouse gas emissions resulting from iLUC are merely models which support the studies ordered by the general directorates. COPA/COGECA has intensely engaged itself with this topic and taken a position within the context of the consultation procedure. From the point of view of the UFOP, a basic underlying question is whether the model assumptions can form the foundation for the definition of greenhouse gas values at the expense of raw material production in the EU, despite the fact that farmers are in compliance with the requirements of cross compliance and, beyond this, take nature and cultivation requirements into account. Additionally, the EU Commission must prove that the iLUC factors based on these models are also "legally binding". The UFOP and the German Federal Association of

Bio-ethanol Economics (BDBe) also commissioned their own report on the subject of "An Analysis of iLUC and Bio-fuels – Regional Quantification of Land Use Changes that are Hazardous to the Environment, and Options to Combat Them". Based on the finding that the iLUC question has apparently entered the political discussion, this study pursued the approach of calculating iLUC on the basis of the "initiator principle". Specifically, the study employs existing statistical data to evaluate the degree to which greenhouse gas emissions affect, for example, rainforest clearing in the associated nation if these raw materials are then employed to produce biofuels for the EU market. It follows then that, for this nation and for this raw material, a corresponding GHG minus value must result. With this strategic approach, the COPA/COGECA also substantiated its demand to Agricultural Commissioner Ciolos for a coherent agriculture, energy, environmental and trade policy, and demanded that this problem be resolved through bilateral negotiations. From the point of view of the European agricultural associations, the relief effect provided by biofuel produced from raw materials grown strictly within the EU is insufficiently considered. What is, in particular, meant by this is the production of protein feeds during the manufacture of bio-ethanol and during oilseed processing, both of which result in a significant reduction in imported soybeans and, therefore, a significant decrease in area requirements.

For additional studies and the continued assessment of iLUC, the EU Commission will utilize the study and the model employed by the International Research Institute for Food Policy (IFPRI, Washington). This model assumes the following in order to achieve the EU objective of 10 percent renewable energies in the traffic sector:

- 5.6 percent first generation and 1.5 percent second generation biofuel;
- 8.6 percent second generation biofuel.

The division of the effects on indirect land use changes between bio-ethanol and biodiesel is the decisive factor when assigning the greenhouse gas values to the biofuels. In accordance with a respective 45/55 percent or 25/75 percent share of bio-ethanol or biodiesel, the IFPRI study cites an average emission due to the associated land use change of respectively 18 or 45 g CO<sub>2</sub>/MJ for biodiesel. This means that the greenhouse gas reduction requirement for biodiesel produced from rapeseed can no longer be met. At the time of publication, no binding decision as to whether the EU Commission would utilize the IFPRI study as a recommendation to change the standard greenhouse gas values, or whether a recommendation regarding an alteration of the standard GHG values (iLUC factor) would be presented.

**European Standard for Sustainable Biomass**

After the implementation of the EER in June, 2009, the Dutch Standards Institute (NEN) successfully called for the development of a European sustainable biomass standard before the European Standards Institute (CEN). This initiative was also put forward by every standards institute which is a member of the CEN and, subsequently, national committees were created. The German standardization office, DIN, then called into being the “Sustainability Criteria for Biomass” working committee, comprising representatives from the biofuel industry, from institutes (ifeu, Öko-Institut), nature conservancy representatives and authorities (UBA). Prior to this, a query from the EU Commission to the CEN occurred in May, 2009, to prepare information related to the three fields of sustainability requirements for biofuels and bio heating materials:

1. Implementation of a mass balance method;
2. Definition of criteria for high biodiversity and high carbon dioxide zones;
3. Preparation of a standard for independent audits.

As a result, four draft standards (draft standard for terminology definition) were developed, which are currently part of the agreement process between the standards institutes within the CEN. However, the EU Commission repeatedly found that the requirement cannot be equated with a mandate, and further made it clear that these draft standards may be employed by the economic sector in order to implement sustainability criteria without ruling out other options of implementing sustainability criteria. To this extent, the Commission welcomes any initiatives to implement sustainability criteria. In the meantime, initiatives to develop a so-called ISO – that is, a worldwide standard – have been developed. This initiative is still in its initial phase. Initial working group discussions confirm that, due to the widely differing positions held by representatives from the US, South America and Europe, a pro-

tracted voting agreement process can be anticipated. However, in the opinion of the UFOP, it must be asked whether an ISO standard or CEN standards will still make sense in the future, since the EU Commission has since issued certification systems that apply internationally, and which must take the associated examination criteria in the checklists for the local audit into account in any case.

**Revised Version of the Energy Tax Guideline**

In April 2011, the EU Commission published the recommendation for a revised version of the energy tax guideline, 2003/96/EG, to “Restructure the Communal Framework Regulations for Taxing Energy Products and Electric Power”. The currently applicable energy tax guideline and the national implementation in the energy tax code foresees a tax based on employed volume (per liter). The intention of the revised version of the energy tax guideline instead intends to alter the measuring basis for the tax so that, on the one hand, a minimum CO<sub>2</sub> tax rate of EURO 20 /ton is introduced, while the size of the tax is based on the energy content of the energy product (fuel). As a result, the introduction of a combined CO<sub>2</sub> and energy tax would result in minimum tax rates of approx. 36 cents/liter on gasoline and 40 cents/liter on diesel. These cited minimum tax rates would not affect Germany because domestic taxes are in any case already higher. However, due to the higher energy content of diesel fuel compared to gasoline, the size of the tax would be reversed. Therefore, diesel fuel would be taxed at a higher rate than is currently the case for gasoline (64 cents/liter, diesel: 47 cents/liter). Additionally, diesel exhibits higher CO<sub>2</sub> emissions than gasoline. Provided that production remains sustainable, the draft energy tax guideline anticipates that the CO<sub>2</sub> tax would be eliminated for biofuels (0 tax rate). However, since at a rate of EURO 20/ton of CO<sub>2</sub> – or around 5.24 cents/liter – the current tax is comparatively low, this tax relief is insufficient to provide biofuels with a competitive advantage compared with fossil fuels. Table 9 illustrates the minimum tax rates for fuels, agricultural diesel and heating oil.

According to the EU Commission, the revised form is to take effect in 2013. During 2013, the 10-year deadline to offer tax incentives on biofuels based on the existing energy tax guideline expires. Due to the fact that this guideline requires the unanimous support of the council of ministers, it is not anticipated that the guideline will come into force at the planned time. Beyond this, force is being applied by the automotive industry to prevent any modification of the existing tax regu-

lation. The German Federal Government has also indicated that it has reservations. The EU Commission will therefore need to create transition solutions where the member nations intend to implement follow-up regulations for tax incentives for biofuels beyond 2013. The draft for the revised version of the energy tax guideline again foresees a 10-year deadline for national member nations to provide tax relief for biofuels.

**Table 9: EU Commission Recommendation for a New Minimum Energy Tax**

General fuels	Energy tax (minimum rate)	CO <sub>2</sub> -emissions tax	Total (Minimum tax rate)
Diesel	34.44 cents/liter	5.24 cents/liter	39.68 cents/liter
Gasoline	31.12 cents/liter	4.64 cents/liter	35.76 cents/liter
Agricultural diesel	0.54 cents/liter	5.24 cents/liter	5.78 cents/liter
Heating oil	0.54 cents/liter	5.24 cents/liter	5.78 cents/liter

Assumption:  
 - Diesel: Thermal value, 35.87 MJ/liter; CO<sub>2</sub> emission: 2.62 kg/liter  
 - Gasoline: Thermal value, 32.48 MJ/liter; CO<sub>2</sub> emission: 2.32 kg/liter  
 Source: DBV Calculation based on information received from the EU Commission



**Public Relations**

**RapsPower at the Racetrack and in the Media**

Biofuels represent a not insignificant part of daily discussions. Their contribution to protecting the environment, their sustainable production and their technical suitability are frequently subject to critical reflections in the media. Positive arguments and clarification on the part of the biofuel economy typically have a much more difficult time of finding their way into reports. It is for precisely this reason that the UFOP has, for many years, committed its efforts to one of the most important association PR projects: the employment of rapeseed biofuels in motor racing. For many years, the UFOP has focused on cooperation with a racing project sponsored by the former DTM driver, Thomas von Löwis of Menar, and the well-known musician and racing driver, Smudo. During 2010, Smudo's car still employed B30 fuel. In 2011, there occurred a change to a new biofuel mix, made 100% from rapeseed. This was a mixture of conventional rapeseed biodiesel (RME) and the new biofuel, "HVO". This so-called "Hydrotreated Vegetable Oil", produced by the Finnish oil concern Neste Oil under the designation NExBTL, is produced using hydrogen. Combustion of HVO generates less soot and other environmentally and health hazardous materials. While this project was previously often referred to as "flower power biodiesel", it has more recently become known as "RapsPower". This also makes it clear that rapeseed is not merely a raw material for traditional biodiesel production, but is also capable of covering a wide spectrum of alternative fuels.



Smudo (Bioconcept Scirocco 2011)

The enormous communicative power of the project became apparent in the summer of 2010 with the participation in "Sebastian Vettel's Home-Run" with formula 1 star Sebastian Vettel. During this run in Vettel's hometown of Heppenheim, Smudo drove his own racing car, alongside DTM champion Mattias Ekström and Sebastian Vettel in his Red Bull racer. After winning the formula 1 world championship, Sebastian Vettel repeated the drive in front of the Brandenburg gate in November, 2011. A video covering this spectacular event and produced by the UFOP, presents the employment of rapeseed fuel. The video is available on the UFOP homepage.



Smudo at the Brandenburg Gate, Berlin 2010

The year's current highlight was participation in the traditional ADAC 24-hour race held from 25 to 26 June, 2011, at the Nürburgring. Particularly the premiere of the new biofuel mix and the associated press relations resulted in an extraordinary degree of resonance in the press. Extensive articles in the FAZ, ZEIT and BILD am Sonntag prove that the racing project is achieving its desired results by spreading positive information about biofuel among the public.

**BBE/UFOP Specialists Conference, "Fuels of the Future"**

For the past seven years, the international biofuel sector has gathered in Berlin for the international BBE/UFOP specialists' conference, "Fuels of the Future". Now in its eighth year, the 2011 edition of this conference was moved to January and integrated as part of the Berlin International Green Week. More than 450 domestic and international participants met in Berlin's ICC on 24 and 25 January, 2011, to discuss their practical experiences in the implementation of sustainability criteria for biofuels; the resulting challenges to the sector, as well as the consequences for market development for the various biofuels. Thanks to the time spatial relationship with the Berlin International Green Week, the traditional evening event, for the first time, was held as part of the trade show. The fitting setting for the event was the "nature. tec" hall for renewable raw materials.



BBE/UFOP Specialists Conference, "Fuels for the Future", Berlin

**Berlin International Green Week, 2011**

In 2011, the International Green Week was once again the core event in the UFOP's line of shows. Topics related to biofuels were exhibited by the UFOP between 21 and 30 January, 2011 at two stands as part of the "nature.tec" exhibit concerning renewable raw materials. On the one hand, the UFOP once again set up a joint biofuel stand with the Federal Association of German Bio-ethanol Economy (BDBE), the Association of German Biofuel Industries (VDB), the Federal Association of Decentralized Oil Mills (BDOel) and the Association of Oilseed Processing Industries in Germany (OVID). On the other, the "Regenerative Diesel" stand presented the UFOP's commitment within the context of the research project under the same name. Aside from the UFOP, automotive manufacturers such as Volkswagen and Audi, mineral oil corporations such as Neste Oil and OMV, scientists from the University of Coburg and the Johann Heinrich von Thünen Institute, in Braunschweig, as well as the leading promoter, the Bavarian Environmental Ministry, participated. The primary objective of the UFOP's trade show presence to provide information and to promote a dialogue with politicians and the media was again able to be successfully achieved in 2011. Numerous representatives and committee members from state as well as the federal parliaments collected information about vegetable oil, biodiesel, bio-ethanol and new approaches to rapeseed oil utilization in the form of hydrotreated rapeseed oil (HVO).



Biofuel Trade Show Stand, IGW 2011



Regenerative Diesel Stand, IGW 2011

**"Regenerative Diesel" Press Deadlines**

For the start of the "Regenerative Diesel" fleet test using rapeseed oil-based HVO fuel, as well as to provide interim results, the project participants held two press conferences in November, 2010, and April, 2011, in Coburg. State Secretary Melanie Huml, from the Bavarian State Ministry for the Environment and Health participated in both events. Her Ministry had provided EURO 120,000 to fund the project and uses four test vehicles from AUDI AG. Rainer Bomba, Federal State Secretary from the German Federal Ministry for Traffic, Construction and City Development (BMVBS), was also able to attend the second event. Within the context of these events, the UFOP asked the Federal government to promote the introduction of B30 for commercial vehicles and to include the biogenetic portion in tax incentives.

Among the participants of the extensive fleet test – which was also presented in conjunction with the Berlin International Green Week – were the Technology Transfer Center of the University of Coburg (TAC) and the University of Coburg itself – which employed a total of seven vehicles, including four from Volkswagen AG. Volkswagen AG – which makes vehicles in a variety of emission classes available – is carrying out the emission examinations. The Johann Heinrich von Thünen Institute in Braunschweig is examining health-related emission components. AUDI AG is performing the emissions inspections for the Munich fleet. The Finnish company of Neste Oil Corp produces and supplies the new, rapeseed oil-based HVO fuel. The OMV mineral oil corporation is making "Regenerative Diesel" available at one service station in Coburg and one in Munich. The UFOP is included in the project as a consulting partner.



Press Conference in Coburg



**25 November, 2010**

**Smudo Rocks Berlin with Vettel and Biodiesel in the Tank**  
Formula 1 champion Sebastian Vettel promised to rock the Capital during his visit. This summer, in front of more than 100,000 fans at his "Home Game" in Heppenheim, the 23-year-old champion already demonstrated how he intends to do this. At his side at the time: Smudo, front man for the Fantastic Four. In Berlin as well, Smudo will run the course next to Vettel's 750 HP racer.

**18 November, 2010**

**Test of New, Low Emission Biofuel Starts**

Large fleet test by the University of Coburg and the Bavarian Environment Ministry using regenerative diesel. Today, the University of Coburg and the Bavarian Environment Ministry are presenting a large-scale fleet test in Coburg, employing the new "regenerative diesel" biofuel. This new biofuel comprises hydrotreated rapeseed oil, that is, oil which has been treated with hydrogen, to which respectively two or seven percent biodiesel is then added.

**16 November, 2010**

**High Level of Under Compensation for Biodiesel as a Clean Fuel**

The UFOP demands that the coalition statements be kept. Within the context of EuroTier 2010, the director of the UFOP, Dr. Klaus Kliem, demanded that the German Federal Government finally keeps its assurance from the coalition agreement that clean fuel be revived.

Bericht zur Steuerbegünstigung für Biodiesel als Reinkraftstoff									
Entwicklung der Über-/Unterkompensation für nicht integrierte Anlagen									
Preise in EUR je Liter	2007		2008		2009		2010		2010 Jul-Okt
	Jan-Jun	Jul-Dez	Jan-Jun	Jul-Dez	Jan-Jun	Jul-Dez	Jan-Jun	Jul-Dez	
Rapsöl frei Ölmühle*	0,54	0,71	0,87	0,74	0,54	0,55	0,61	0,71	
Raffination	0,04	0,04	0,04	0,04	0,04	0,04	0,04	0,04	
Veresterung abzüglich Glyceringehalts	0,09	0,09	0,09	0,09	0,09	0,09	0,09	0,09	
Logistik	0,08	0,08	0,08	0,08	0,08	0,08	0,08	0,08	
Technischer Mehraufwand	0,03	0,03	0,03	0,03	0,03	0,03	0,03	0,03	
Mehrverbrauch	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	
Kaufanreiz	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	
Energiesteuer	0,09	0,09	0,15	0,15	0,18	0,18	0,18	0,18	
Summe Biodiesel (ohne Ust)	0,97	1,14	1,36	1,23	1,06	1,07	1,13	1,23	
Diesel (inkl. Energiesteuer, ohne Ust)	0,94	1,02	1,14	1,09	0,88	0,92	0,99	1,01	
Überkompensation (+)									
Unterkompensation (-)	-0,03	-0,12	-0,22	-0,14	-0,18	-0,15	-0,14	-0,22	

\* Anteil Sojahl 25 %  
Quellen: AMI-Marktspezial Ölsaaten+Biokraftstoffe  
UFOP-Marktforschung Ölsaaten und Biokraftstoffe  
VDB-Mitgliederumfrage  
© UFOP 11/2010

**16 November, 2010**

**Sustainability has a Price – UFOP Demands Price Increase**

During the presentation of the anticipated cultivation area for the rapeseed harvest in 2011, the chairman of the Union to Promote Oil and Protein Plants, e.V. (Union zur Förderung von Öl- und Proteinpflanzen e.V. (UFOP)), Dr. Klaus Kliem, demanded a market price differentiation for rapeseed with a sustainability certificate.

**5 November, 2010**

**COPA/COGECA Fears Marketing Problems for Oilseed– Submit Evidence of Sustainability Now**

The transformation of the international renewable energy guideline (2009/28/EG) into domestic law presents the agricul-

tural sector within the European Union with significant problems. Apparently, only Germany and Austria will be able to implement the guideline by the required date of 12/05/2010.

**14 October, 2010**

**8th International Professional Congress on Biofuels in Berlin**

The transformation of the EU Commission's renewable energy guideline into domestic law presents the German and European biofuel sector with enormous challenges; the pressure to act is enormous. This is because, the prerequisite is the domestic implementation of the EU guideline by the end of 2010 in order to continue to add biofuel to the quota obligation or to maintain the tax incentives.

**8 October, 2010**

**Information Exchange between UFOP and Neste Oil**

On 1 October, representatives from the Union to Promote Oil and Protein Plants, e.V. (Union zur Förderung von Öl- und Proteinpflanzen e. V. (UFOP)) headed by Dr. Klaus Kliem, as well as from Neste Oil AG, led by Jarmo Honkamaa, Deputy CEO and responsible board member for the field of renewable fuels, met in Porvoo, Finland. The discussions focused on an explanation of the patented Neste Oil process to produce hydrotreated vegetable oil (HVO).

**30 September, 2010**

**Scientific Symposium, Automotive Technology 2010 – Doctor Candidates Present their Theses**

With the objective of providing leading doctoral candidates with a platform for presenting their scientific works, the Johann Heinrich von Thünen Institute, the University of Magdeburg, research focus - automotive, together with the Technology Transfer Center Automotive of the University of Coburg held the 2nd Automotive Technology Scientific Symposium, 2010.

**16 September, 2010**

**AGQM and FAM Joint Round-Robin Test 2010 on Biodiesel and Rapeseed Oil Fuel Concluded**

Round-robin tests for the fuel and lubricant area to examine the testing procedures and the correct operation of professionally operating laboratories have a long and successful history in the professional committee for mineral oil and fuel standardization (FAM) of the DIN. With the increased employment of biofuels and bio-related blend components, an increasing necessity to perform round-robin tests for these product classes has also developed.

**3 August, 2010**

**US Study on Greenhouse Gas Balance of Soybean Biodiesel Causes Disagreement**

The German Biomass Research Center (DBFZ) has evaluated a current US study on the greenhouse gas balance (GHG balance) of soybean biodiesel. The study, published by the United Soybean Board, comes to the conclusion that biodiesel produced from soybeans in the United States is capable of reducing greenhouse gases by 52 percent when standard values are employed.

**Expert Committee for Biofuels and Renewable Raw Materials**

During the report period, the meeting of the UFOP professional commission, "Biofuels and Renewable Raw Materials" was held in Berlin on 06/21/2011. In conjunction with this meeting, the professional committee first addressed the current situation with regard to the implementation of the renewable energy guideline and the biofuel sustainability regulations at both the EU and the domestic level. The UFOP business office provided information regarding the successful, cross-association initiative for the implementation of the voluntary REDcert certification system as well as about the modifications to the 36th German Federal Emissions Protection regulation, which was backdated to 01/01/2011 and permitted dual accounting of biofuels produced from waste or residual materials. In conjunction with the submission to the EU Commission of the so-called NUTS2 regions – which were not presented on time by all member nations – the consequences for transnational rapeseed trade were clarified, using Poland as an example. In the same way, the professional committee members were also informed of the status of the discussions related to the topic of indirect land use changes (iLUC), and the consequences or need for action from the point of view of the UFOP.

Particular attention was paid to the introduction of the projections related to meeting the quota obligation for 2011. Taking the market share of up to 30 percent for E10 into account, the UFOP assumes that the quota obligation will not be able to be met by addition based on the fuel standards (B7, E5, E10). Against this background, the business office again renewed the UFOP demand that by means of a tax-free biofuel volume of 400,000 tons the trade for clean fuel with the objective of subsequent taxation for the quota trade must be revitalized in order to be able to meet the 2011 quota obligation, as was the case in 2010.

Dr. Hendrik Stein of the ASG Analytik GmbH, presented the results of the UFOP planned project to analyze phosphorus and metal contents as well as the sulfur content based on the evaluation of the total analyses in the AGQM database. This study allowed it to be shown that the actual earth alkali and alkaline contents as well as of phosphorus lie well below the standard for biodiesel set forth in the requirement (5 mg or 4 mg/kg). The analysis performed by DEUTZ in conjunction with this study to evaluate the origin of the various constituent shares of the metal contents and of phosphorus confirms that they primarily arise from the motor oil. The study refutes the frequently stated opinion with regard to the service life of exhaust post-treatment systems where biodiesel is employed as an alternative fuel. However, this determination is restricted to the AGQM member companies. From the results, the UFOP deduces that associated approvals can be permitted.

Finally, Markus Winkler of DEUTZ AG reported on the status of the planned project to field-test B100 for 1,000 operating hours on three tractors. Within the context of this planned project, the content of alkali and earth alkali metals will also be examined and, at the conclusion of the test, the effectiveness of the exhaust gas after-treatment and the SCR systems will be adduced. The objective is to obtain approval for TCD 6.1 and TCD 7.8 L6 series engines. Based on the presented results, the company assumes that the engine's approval for clean fuel operation with biodiesel will be announced to the press at the time of the Agritechnica.



Christoph Pabst from the Braunschweig Technical Institute presented the status of the planned project concerning the interaction between fuel mixtures with a high biogenetic content with engines with an SCR exhaust gas after-treatment system, which had been financed in the form of a scholarship by UFOP. Three fuels were employed for the measurements: one reference fuel (diesel) as well as a B20 blend and B100. Emissions were examined using the two European test cycles for commercial vehicles (ESC and ETC) as well as using the World Harmonized Stationary Cycle (WHSC) test. Initially, only the limited exhaust constituents were examined followed by the unlimited components. The tests were carried out using a modern EURO-IV truck engine. The presented results were based on the ETC test runs. With regard to the particle mass, the examinations confirmed the well known results that the RME particle mass in exhaust gas is lower than that for diesel fuel. However, the urea injection volume setting optimized for diesel fuel leads to an increase in nitrous oxide emissions in the SCR, which,

in turn meant that the catalyst conversion rate was lower. In addition, within the context of the planned project it was able to be shown that the temperature of the catalyst plays a decisive part in exhaust gas post-treatment. Thus the nitrous oxide conversion rates drop significantly when a change is made from an ESC to a WHSC test. The cause is a low catalyst temperature due to the individual engine load. Thus, precise catalyst temperature maintenance is decisive for comparable measurement results. Thus, a load profile is being developed to carry out the planned project. This will allow the engine and the catalyst to warm up to the same temperature prior to the start of the test. Beyond this, additional adjustments to the urea injection volume must be made so that, in diesel operation, an excessive release of ammonia into the ambient atmosphere can be avoided.

With the objective of improving the combustion behavior of biodiesel, Kowena Montenegro from the Karlsruhe Institute of Technology presented the final results of the UFOP sponsored planned project. The objective is to shorten the biodiesel catalytic chain (metatheses) in order to achieve a similar boiling and therefore combustion behavior similar to that for diesel fuel. The core of the presentation rested on challenges to optimize the metatheses process in order to reduce the required catalyst volume necessary for this process. A variety of additive processes were presented and compared with conventional microwave heating. Due to the large amount of H<sub>2</sub>O<sub>2</sub> required, the removal of the catalyst presents a problem. The subsequent indication of the costs required for the individual metatheses approaches (cross or auto-metatheses) made it apparent that this development is still in its initial phase. With this project, the UFOP intends to initiate further research in this area. Subsequently, Christoph Pabst, from the Technical Institute presented the initial results on the mixing behavior of metathesized fuels and RME biodiesel fuel (aged), butanol and ethanol as well as the mixing behavior with motor oil. Initial emission examinations using a single-cylinder engine show that the examined exhaust gas parameters (CO, NO<sub>x</sub> and particles) move in the opposite direction when compared with the specific mixture of RME, B20 and diesel fuel. The additional concrete exhaust gas examinations should employ two metatheses products, one for a car and one for a truck engine.

Other minor biodiesel components which affect its quality could be associated materials naturally formed by oil plants. These include so-called phytosterols which have been suspected of negatively influencing biodiesel filtration ability, even when it is employed as an additive to diesel fuel. Dr. Karen Witt from the Biodiesel Quality Management Working Association (Arbeitsgemeinschaft Qualitätsmanagement Biodiesel e. V. (AGQM)) presented the results from numerous AGQM projects carried out on this problem:

1. Identification of processing stages to reduce sterylglucosides during oilseed preparation (refer to the 2009/2010 UFOP annual report, page 61);
2. Detection of sterylglucosides in plant oil and in biodiesel, together with the influence on its filtration ability at the biofuel producer level. A correlation between sterylglucoside content and filtration ability could not be established.
3. Due to the fact that numerous reports on filtration problems were reported regarding service stations for B5 and B7, the AGQM and the oil industry carried out a joint project with the objective of examining the sterylglucoside content from biodiesel production, across shipping, up to mixing in the oil refinery and right through to the B7 final product. Through this "lifespan project" it was able to be shown that the biodiesel quality remains unchanged during shipping and storage, and that the filtration ability and the particle size distribution are essentially determined by the fossil components.

These project results indicate that the proportion of sterylglucosides during the diesel process can be reduced, but that a complete removal is not possible. With the objective of employing an additional technical process step to further improve biodiesel quality, the UFOP sponsored a project at the Fraunhofer Institute for Boundary Layers and Bioprocess Technology. Dr. Carmen Gruber-Traub presented the final report on the development of specific absorbers for the removal of sterylglucosides from biodiesel. Within the context of this planned project, the Institute was able to create nanoscopic-sized polymer particles with selective bonding sites which match the molecular structure of sterylglucosides. Using the "Nanocytes"® process patented by the Fraunhofer Institute, suitable monomers were mixed with so-called "wetting agents". The bonds to be removed were selectively and specifically absorbed by the particles and were therefore able to be extracted from the biodiesel. This planned project was able to prove that this extraction principle is effective. The UFOP anticipates that the biodiesel industry will continue to pursue this technology approach.

#### Planned UFOP Projects

##### Continuous-Service Life Examinations and Field Tests using Emission Stage IIIB DEUTZ Agripower Engines with SCR Systems for Biodiesel Approval

**Project oversight:** DEUTZ AG, Entwicklungswerk Porz, Bereich Technologie-Entwicklung, Ottostr. 1, 51145 Köln

**Duration:** May, 2010, through September, 2011

With regard to the employment of biodiesel as a clean fuel as well as – at higher concentrations (>7 percent) – an additive component, critical voices that increasingly advocate the denial of approvals or to reject the increase in additive shares in

biodiesel (B10, B30, etc.) are coming from the vehicle industry with regard to the indication of contamination with so-called "soot formers" (dissolved metals such as K, Na, Mg and Ca found in biodiesel). This discussion is currently even being used by politicians as an argument for asking questions regarding the option of permitting still higher additive levels for biodiesel (for example, B30). To this extent, there is an urgent need for action in order to provide a factual assessment of the employment of biodiesel as a clean fuel and, finally, also for use as an additive component in today's engines operated with an SCR exhaust gas after-treatment system.

The project objective targets the use as a clean fuel and, it follows, also covers the question of employing biodiesel as an additive component. Simultaneously, the question of the significance of the phosphorus content in biodiesel with regard to the service life of the SCR system is addressed. After

all, the motor vehicle industry also views phosphorus as an element which must be assessed very critically with regard to the future approval (see above). Within the context of this planned project, biodiesel is used in the currently most up-to-date off-road engines (not roadworthy). By no later than 2011, these engines will, among other functions, be employed in agricultural equipment in order to comply with the legal exhaust standard. Approval for B100 should be made in November, 2011, in conjunction with the "Agritechnika" trade show. Thus, time pressure for this project's implementation is correspondingly high. DEUTZ AG is among the world's largest manufacturers of diesel engines. It should be noted that DEUTZ AG also manufactures engines for commercial vehicles (among others, for Volvo truck division). To this extent, this planned project also includes an important signal effect for the employment of biodiesel by shipping companies.



### Scholarship for Systematic Examinations of the Interaction between Fuels with a high Biogenetic Content, Using Engines Equipped with SCR as an Example

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

**Duration:** January, 2010, through December, 2011

Since 2005, the Euro IV exhaust standard has been in force all over Europe. Compliance with this standard is achieved at MAN by the PM-Kat and, at Mercedes-Benz, by the SCR technology (Selective Catalytic Reduction). To date, Mercedes-Benz has approved its systems for biodiesel. How ongoing developments are to continue depends, in the end, on the ongoing development of biofuel additive components. Is there an intention to continue to offer fuels with a high biogenetic content on the market, suitable fuel mixtures will need to be developed. In order to continue to offer fuels with a high biogenetic content, suitable fuel mixtures will have to be developed. It is unclear whether the SCR systems are always in harmony with biofuels and their mixtures.

The erection of the test stand was concluded. The examinations were carried out on a modern, EURO-IV commercial vehicle engine. Among the other results, the following were determined on the basis of ETC test runs:

- Compared with diesel fuel, the RME particle mass in exhaust gas is lower.
- The ammonia injection in the SCR has been optimized for diesel fuel and results in an increase in nitrous oxide emissions which, in turn, reduce the conversion process rate in the catalyst.
- The catalyst's temperature influences the conversion rate during exhaust post-treatment: thus, the nitrous oxide conversion rates drop significantly during the changeover from the ESC to the WHSC test.

The reason is the test-related engine load and the resulting difference in catalyst temperature. In order to ensure the comparability of the results, a load profile is therefore developed with which the engine and the catalyst can be warmed up. Due to the fact that the injection volume is optimized for urea on B7, and to avoid the dispersion of ammonia gases into the surrounding environment, the injection rate must also be adjusted for urea if fuels with higher biodiesel shares are employed.

### Fleet test of Hydrotreated Vegetable Oil and Biodiesel Additives as well as an Examination of the Exhaust Quality

**Project oversight:** vTI Braunschweig/Hochschule Coburg/Steinbeis-Transferzentrum Biokraftstoffe

**Duration:** April, 2010, through March, 2011

As a substitute for diesel fuel, the motor vehicle industry basically prefers the use of hydrotreated vegetable oil (HVO) over biodiesel. HVO's fuel chemical properties allow any desired ratios to be added to conventional diesel fuel. Not least against the background that, in Germany, vegetable oil is employed in the co-refining when producing HVO, it must be the objective of the UFOP to create a sales window for the raw material rapeseed oil itself in as timely a manner as possible. Due to the basically long-range strategic importance of employing vegetable oils as a raw material in the production of HVO, this option must be examined particularly closely with respect to the rapeseed sales market.

The scientific objective of the planned project is to prove the suitability of hydrotreated vegetable oil (HVO) in fleet operations using standard vehicles and, at the same time, to carry out emissions and effect examinations on various emission classes of cars. Aside from limited hazardous emissions, the individual emissions examinations also include non-limited components, fine dust emissions and mutagenity. No such extensive emissions tests are known for a fleet test employing HVO and biodiesel additives.

Beyond this, experiences are also to be gained regarding whether and to what extent mixtures of hydrotreated vegetable oil and biodiesel are able to influence an extension of the oil change interval and therefore make a contribution to sustainable mobility which is gentler on resources.

One important element of this joint venture (among others with VW, OMV, Neste Oil) is the associated public relations work. Here, in particular, the UFOP has contributed to the introduction of the domestic raw material, rapeseed. The results will be presented within the context of a project conference.

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Valid as of: August, 2011

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Table 6: 2011 German Biodiesel Production Capacities

**Table 1: Domestic Biofuel Consumption, 2007–2010, in Thousands of Tons**

	2007	2008	2009	2010
Biodiesel additive	1,423.3	1,612.8	2,276.3	2,288.8
Biodiesel clean fuel	1,821.3	1,082.5	240.6	293.1
<b>Biodiesel total</b>	<b>3,244.6</b>	<b>2,695.3</b>	<b>2,516.9</b>	<b>2,581.8</b>
Vegetable oil	755.8	401.4	99.9	60.9
<b>Biodiesel &amp; vegetable oil total</b>	<b>4,000.5</b>	<b>3,096.7</b>	<b>2,616.9</b>	<b>2,642.7</b>
Diesel fuel	29,058.8	29,905.6	30,936.2	32,017.8
Additives, in %	4.9 %	5.4 %	7.4 %	7.1 %
<b>Diesel &amp; biodiesel &amp; vegetable oil total</b>	<b>31,635.9</b>	<b>31,389.4</b>	<b>31,276.8</b>	<b>32,371.8</b>
Percentage of biodiesel & vegetable oil	12.6 %	9.9 %	8.4 %	8.2 %
ETBE bioethanol	366.2	366.9	202.3	137.1
Bioethanol additive	88.6	250.9	692.7	948.2
E 85 bioethanol	6.1	8.5	9.0	13.0
<b>Bioethanol total</b>	<b>460.0</b>	<b>625.0</b>	<b>902.5</b>	<b>1,096.0</b>
Gasoline	21,292.0	20,561.4	20,232.8	19,630.8
Gasoline + bioethanol fuels	21,243.0	20,568.5	20,240.2	19,641.5
Percentage of bioethanol	2.2 %	3.0 %	4.5 %	5.6 %

Source: German Federal Office of Economics and Export Controls, AMI

**Table 3: Biodiesel Exports, 2008–2010, in Tons**

	Biodiesel imports			Biodiesel exports		
	2008	2009	2010	2008	2009	2010
January	9,458	12,612	71,518	18,372	25,155	55,542
February	35,123	19,303	71,612	54,525	50,060	94,681
March	29,340	10,598	83,973	33,589	42,983	73,086
April	52,399	52,399	52,399	41,708	30,021	82,418
May	72,735	90,666	151,504	53,982	30,357	131,831
June	73,299	84,338	155,925	17,076	32,380	113,430
July	113,357	87,188	136,502	117,266	51,940	83,393
August	122,054	124,193	136,521	94,854	72,752	144,709
September	68,727	92,788	126,193	71,094	103,007	67,095
October	41,454	68,306	87,446	137,768	83,787	102,245
November	25,766	56,136	103,549	57,571	83,500	75,982
December	30,342	111,039	74,335	77,464	69,523	137,640
<b>Total</b>	<b>674,054</b>	<b>809,565</b>	<b>1,251,477</b>	<b>775,268</b>	<b>675,465</b>	<b>1,162,052</b>

Source: German Federal Office of Statistics, AMI

**Table 2: Monthly Domestic Biofuel Consumption, 2008–2010, in Thousands of Tons**

	Biodiesel additive			Biodiesel clean fuel			Biodiesel total			Vegetable oil			Bioethanol		
	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010	2008	2009	2010
January	135.05	125.55	175.66	64.93	14.12	18.79	199.98	139.67	194.46	25.84	8.62	4.12	40.41	66.45	62.01
February	117.40	176.07	149.07	37.15	27.22	10.98	154.55	203.29	160.05	24.16	4.68	2.76	38.06	59.62	56.53
March	122.26	181.10	190.61	73.75	37.29	19.04	196.01	218.39	209.66	20.52	5.81	7.97	52.92	78.66	70.99
April	135.35	195.36	207.83	84.91	28.10	22.96	220.26	223.46	230.79	28.38	8.40	6.40	51.10	86.73	71.05
May	130.45	194.28	202.72	114.10	16.10	38.84	244.56	210.38	241.56	32.44	6.19	5.68	53.72	79.74	81.10
June	137.81	192.06	193.79	139.25	14.05	39.44	277.05	206.11	233.22	38.30	8.37	5.83	45.20	77.70	78.82
July	143.87	203.74	203.06	120.95	20.01	27.75	264.82	223.75	230.81	33.31	8.93	6.37	50.30	89.40	116.87
August	133.63	209.86	195.78	111.74	21.23	40.02	245.37	231.09	235.80	49.66	8.83	6.33	49.55	77.09	102.05
September	139.32	204.82	192.70	111.42	31.47	36.13	250.74	236.29	228.82	44.09	11.99	3.97	46.24	75.62	90.38
October	149.92	194.01	203.47	114.81	21.71	22.90	264.73	215.72	226.37	41.49	11.11	4.99	63.28	68.81	97.43
November	130.71	211.37	200.85	59.31	21.43	10.70	190.02	232.80	211.55	28.02	8.54	3.98	61.84	66.20	93.40
December	137.06	184.35	173.24	50.14	12.49	5.50	187.20	196.84	178.74	35.17	7.70	2.32	72.38	71.42	97.92
<b>Average</b>	<b>134.40</b>	<b>189.38</b>	<b>190.73</b>	<b>90.21</b>	<b>22.10</b>	<b>24.42</b>	<b>224.61</b>	<b>211.48</b>	<b>215.15</b>	<b>33.45</b>	<b>8.26</b>	<b>5.06</b>	<b>52.08</b>	<b>74.79</b>	<b>84.88</b>

Source: German Federal Office of Economics and Export Controls, AMI

Table 4: EU Biodiesel Production Capacities, 2005–2010, in Thousands of Tons

	2005	2006	2007	2008	2009	2010
Germany	1,903	2,681	4,361	5,302	5,200	4,933
France	532	775	780	1,980	2,505	2,505
Italy*	827	857	1,366	1,566	1,910	2,375
The Netherlands	-	-	115	571	1,036	1,328
Belgium	55	85	335	665	705	670
Luxembourg	-	-	-	-	-	-
United Kingdom	129	445	657	726	609	609
Ireland*	-	-	6	80	80	-
Denmark	81	81	90	140	140	-
Greece	35	75	440	565	715	662
Spain	100	224	508	1,267	3,656	7,100
Portugal	-	146	246	406	468	-
Austria	125	134	326	485	707	560
Finland*	-	-	-	170	340	340
Sweden	12	52	212	212	212	277
Estonia	10	20	35	135	135	135
Latvia	5	8	20	130	136	147
Lithuania	10	10	42	147	147	156
Malta	2	3	8	8	8	5
Poland	100	150	250	450	580	710
Slovakia	89	89	99	206	247	156
Slovenia	17	17	17	67	100	105
Czech Republic	188	203	203	203	325	427
Hungary	-	12	21	186	186	158
Cyprus	2	2	6	6	20	20
Bulgaria	-	-	65	215	435	425
Rumania	-	-	81	111	307	307
<b>EU-27</b>	<b>4,228</b>	<b>6,069</b>	<b>10,289</b>	<b>16,000</b>	<b>20,909</b>	<b>21,904</b>

Comment: Calculated on the basis of 330 working days/year/facility; \* = since 2007, incl. production capacities for hydrotreated vegetable oil (HVO)  
Source: European Biodiesel Board, national statistics, AMI

Table 5: EU Biodiesel Production, 2005–2010, in Thousands of Tons

	2005	2006	2007	2008	2009	2010
Germany	1,669	2,662	2,890	2,819	2,539	-
France	492	743	872	1,815	1,959	-
Spain	73	99	168	207	859	-
Italy	396	447	363	595	737	-
Belgium	1	25	166	277	416	-
Poland	100	116	80	275	332	-
The Netherlands	-	18	85	101	323	-
Austria	85	123	267	213	310	-
Portugal	1	91	175	268	250	-
Denmark/Sweden	72	93	148	231	233	-
Finland*	-	-	39	85	220	-
Czech Republic	133	107	61	104	164	-
Great Britain	51	192	150	192	137	-
Hungary	-	-	7	105	133	-
Slovakia	78	82	46	146	101	-
Lithuania	7	7	9	30	98	-
Greece	3	42	100	107	77	-
Latvia	5	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	30	30	34	84	0	-
<b>EU-27</b>	<b>3,184</b>	<b>4,890</b>	<b>5,713</b>	<b>7,755</b>	<b>9,046</b>	<b>-</b>

Comment: \* = since 2007, incl. production capacities for hydrotreated vegetable oil (HVO); Source: European Biodiesel Board, national statistics, AMI

**Table 6: 2011 German Biodiesel Production Capacities**

Operator/plant	Location	Capacity (t/yr.)	
ADM Hamburg AG -Werk Hamburg-	Hamburg	not reported	⊙
ADM Hamburg AG -Werk Leer-	Leer	not reported	⊙
ADM Mainz GmbH	Mainz	not reported	⊙
Bioeton Kyritz GmbH	Kyritz	80,000	⊙
BIO-Diesel Wittenberge GmbH	Wittenberge	120,000	⊙
Bio-Ölwerk Magdeburg GmbH	Magdeburg	255,000	⊙
BIOPETROL ROSTOCK GmbH	Rostock	200,000	⊙
Biowerk Oberlausitz GmbH	Sohland	50,000	⊙
Biowerk Sohland GmbH	Sohland	50,000	⊙
BKK Biodiesel GmbH	Rudolstadt	4,000	
BKN Biokraftstoff Nord AG (vormals 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	
german biofuels gmbh	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 (ehem. 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	

Note: ⊙ = AGQM member; Source: UFOP, FNR, VBD, AGQM / some names abbreviated

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

valid as of 10/11/2011

