

International Biofuels Symposium

The EU Experience

Case Study: Biodiesel in Germany



September 2007

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Key EU Statistics

- **At the European level, biodiesel makes up 80% of the EU biofuels production.**
- **EU fuel markets are experiencing increasing diesel deficits and gasoline surpluses. For instance, in 2005, the EU imported 25 mmT of diesel from Russia and at the same time exported 19 mmT of gasoline to the US.**
- **In 2006 and 2007, the trend is amplified by the dieselization of EU vehicles.**
- **With its strong diesel demand, the EU has established itself as “biodiesel land”.**
- **The EU is the worldwide leader in biodiesel, both in terms of capacities and production.**

Source: European Biodiesel Board, PwC Research

Key EU Statistics

- **In 2006, the EU accounted for 77% of the biodiesel produced worldwide.**
- **In 2006, the EU had 185 fully operational biodiesel plants, with 58 plants under construction.**
- **The EU Biodiesel Production capacity is estimated to have exceeded 10 million tpa for 2007.**
- **Germany, Italy, and France are at the top of the league table.**
- **Germany with 4.3 million tpa capacity for 2007 accounts for 43% of the pan-EU biodiesel production capacity.**

Source: European Biodiesel Board, PwC Research

- **During the 1990s, the production and use of biofuels started in several European countries and expanded significantly.**
- **At the same time, policy at a European level was initiated, mainly from the viewpoint of security of energy supply.**
- **EU policy focused on the possibilities for tax exemption, but the Commission failed to get its proposals approved by the Member States.**
- **The 1997 White Paper ‘Energy for the future: Renewable sources of energy’ mentioned a possible 18 Mtoe liquid biofuels in 2010.**
- **The 2000 Green Paper ‘Towards a European strategy for the security of energy supply’ was the start for a more comprehensive policy, which proposed an ambitious target of 20% alternative fuels (biofuels, natural gas, hydrogen) in 2020.**
- **Only the biofuel targets for 2005 (2%) and 2010 (5.75%) made it into an EU Directive in 2003.**

EU Biofuels Directive

- **The EU Member States are required to guarantee that a minimum share of biofuels is sold on their national markets for transportation fuels.**
- **Each Member State must set national indicative targets for the share of biofuels.**
- **The Member States are free to choose a strategy to achieve these targets.**
- **However, there is no obligation for using biofuels and Member States may deviate from the reference values in the Directive when justified.**
- **In addition, Member States must also report to the European Commission on the measures taken to promote the use of biofuels.**
- **The European Commission would use the progress reports to revise the Biofuels Directive if required.**
- **In February 2006, the European Commission released a communication comprising an EU strategy for biofuels.**

Germany: Key Statistics

- **Germany is at present the largest biodiesel market with an estimated 2007 production capacity of 4.3 million tpa, a jump of 63% from 2006.**
- **A world leader in manufacturing as well as the development of production plant technology.**
- **For 2006, the acreage for renewable products amounted to 1.3 million hectares, which translates into 13% of the entire acreage.**
- **Estimates indicates that biofuels saved Germany from emitting almost 13 million tonnes of carbon dioxide in 2006.**
- **The sector growth has led to the creation of jobs. According to Ifo (Institute for Economic Research at the University of Munich) 19,000 jobs are created for producing 1mmt of biodiesel.**

Germany: Key Success Factors

- **Political Commitment**
- **Fiscal Regime**
- **Active Organizations and Industry Groups**



Political Commitment

- **The coalition of Social Democrats and Greens, which was in power in Germany from 1998 to 2005, showed clear intentions to develop the biofuel market.**
- **Promotion of biofuels was perceived as vital for energy security, reduction of ghg emissions and for support to the agriculture and economically weaker section of society, particularly East Germany.**
- **The new government formed in 2005 of Social Democrats and Christian Democrats stated in their coalition agreement that markets for biofuels will be further developed in order to reach a 5.75% market share for biofuels for transport in Germany in 2010, also in line with the EU Directive.**

Fiscal Benefits

- **Until Jan 2007, biodiesel was tax exempt.**
- **Before 2004, the German law defined clearly that mineral-oil taxation applied only to mineral-oil based fuels such as petrol and diesel. Thus, biofuels enjoyed full tax exemption right from the start.**
- **In addition, in 1999 the red-green coalition government introduced an additional eco-tax for fossil fuels.**
- **In Jan 2004 the government changed the Mineral Oil Duty Act to exempt biofuels blended with fossil fuels from duty.**

Fiscal Benefits

- Since 1st Jan 2007, the biofuel quota act has been brought into force. The government has introduced a system of replacing tax privileges by an obligation to blend biofuels to correct for overcompensation.
- The quota has to be fulfilled, otherwise the German petroleum companies have to pay a penalty. Biofuels which are necessary to fulfill the quota are taxable.

Biodiesel/Bioethanol Quota Obligation

Year	Total quota	Diesel quota	Petrol quota
2007	-	4.40 %	1.20 %
2008	-		2.00 %
2009	6.25 %	Minimum quota	2.80 %
2010	6.75 %	applies also to	3.60 %
2011	7.00 %	subsequent	
2012	7.25 %	years.	Minimum quota
2013	7.50 %		applies also to
2014	7.75 %		subsequent
2015	8.00 %		years.

Source: Union for the Promotion of Oil- and Protein Plants (UFOP)

Fiscal Benefits

- **Taxation of Biofuels:**

Taxation of Biofuels

Year	tax rates biodiesel	tax rates vegetable oil
2007	9 Cents/litre	0 Cents/litre
2008	15 Cents/litre	10 Cents/litre
2009	21 Cents/litre	18 Cents/litre
2010	27 Cents/litre	26 Cents/litre
2011	33 Cents/litre	33 Cents/litre
from 2012	45 Cents/litre	45 Cents/litre

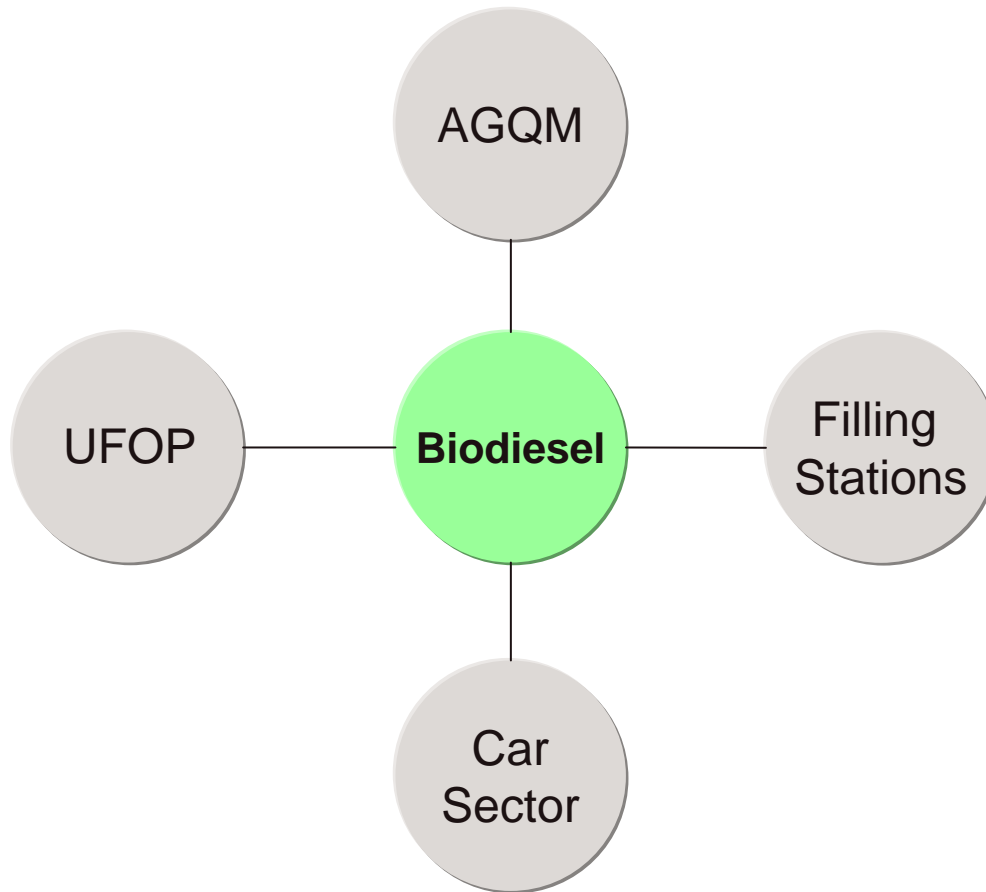
Source: Union for the Promotion of Oil- and Protein Plants (UFOP)

- **No taxation until 2015 for:**
 - **Synthetic biofuels (biomass to liquid – btl)**
 - **Bioethanol based on hemicellulose**
 - **E85 (blend of 85 % bioethanol, 15 % gasoline)**
- **Biodiesel for agricultural use is tax – free**

Other Incentives and Support Programmes

- A pan-EU incentive grants 45 € per hectare for the cultivation of energy crops on not set-aside land.
- There are a number of support programmes for the promotion of biofuels for transportation. Federal Ministry for Consumer Protection, Food and Agriculture has backed initiatives such as:
 - The “Market Launch Programme for Biogenous Lubricants and Transportation Fuels”. The programme supports, among other things, the construction or conversion of private filling stations for biodiesel and PPO through a grant of 40 % of the costs.
 - The “100 Tractors Programme” to demonstrate the environmental soundness and technological feasibility of diesel engines converted to PPO (rapeseed oil) operation.

Active Organizations and Industry Groups



Active Organizations and Industry Groups

- In 1990 the UFOP, a union for support of oilseed- and protein plants, was founded as an alliance between farmers and oilseed breeders. The UFOP has been instrumental in the development of the biofuels sector by participating in the 'rapeseed revolution'.
- The independent filling stations started marketing biodiesel once free tanks were available due to the ban on marketing of leaded petrol in 1996.
- Volkswagen and other car manufacturers adapted the car engines to run on pure biodiesel and provided warranties to the end-users of blended fuel.
- In 1999, the AGQM was founded as a quality management organisation for the Biodiesel industry. The foundation was initiated by a conversation between VW and UFOP about the inadequate quality situation.

	Bio-diesel (FAME)		Rapeseed oil
Manufacture	Interestification of vegetable oils with methanol in the presence of a catalyst to form fatty-acid methylester.		Production with the help of cold-pressing or extraction mills, crude-oil refining.
Basic raw materials	Rapeseed, soya, other vegetable oils, biogenetically recyclable oils (from restaurants and households), animal fat in limited quantities.		Rapeseed.
Application	Pure fuel.	Admixture, max. 5% by volume.	Pure fuel.
Vehicle requirements	Serial vehicles with factory approval for bio-diesel.	Serial vehicles.	Vehicle retrofitting required.
Standard	DIN EN 14214	DIN EN 590	E DIN V 51605

Source: Bio-Diesel Quality Management Work Group

Germany: Key Success Factors

- **Biodiesel has become one of the most intensively controlled fuels.**
- **Throughout Germany the Biodiesel Quality Management Association e.V. (AGQM) uses a five-step control system, which checks biodiesel quality from manufacturer to pump.**
- **Of 1,700 biodiesel filling stations, more than 1,300 have joined the inspection system that guarantees the quality and traceability of the product. These filling stations are thus reliable partners for car drivers.**
- **The AGQM quality standards for biodiesel are higher than those defined by EN 14214.**
- **In particular, it must be emphasized that biodiesel production according to AGQM standard only permits rapeseed oil as raw material.**

Germany: Conclusion

- **Thus, political commitment, fiscal support and strong lobbying/involvement of different industry groups ensured that real conditions were created on the ground for the biodiesel sector to develop.**
- **The tax exemption for biofuels can be identified as the most significant governmental incentive.**
- **The development of biodiesel in Germany can be regarded as a major success story.**
- **However, there are some who claim that way too much money has been spent in comparison with the environmental benefits earned through the usage of biofuels.**
- **In defense, it can be argued that the biofuels programme has led to the creation of jobs, resulting in saving of allowances and paved the way for the 2nd generation of biofuels.**

- **Germany is well placed to comply with the EU target for 2010.**
- **However there is fear of overcapacity and plants being underutilized due to the following:**
 - **Higher rapeseed oil prices**
 - **Recent taxation on biodiesel**
 - **“B99” US export subsidy that permits US producers to access the EU market at a competitive advantage of roughly 200 euros/m³ compared to the EU producers.**
- **The usage of palm and soy oils as raw material for the production of biodiesel has encountered public resistance. There is concern that tax privileges and political incentives in Germany may result in the promotion of the soya bean and palm oil cultivation in other parts of the world, resulting in forest clearings for the creation of plantations.**

Germany: Outlook

- **German car industry is expected to push the change in the European standard – EN 590 – for diesel fuel by increasing the proportion of biodiesel from 5% to 10%.**
- **Promising technical concepts are currently being pursued in the areas of cellulosic ethanol and synthetic fuels from biomass (Biomass to Liquid, BtL).**





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