

Food, Feed and Fuels

A Deeper Look

In 2009 the European Union set a target for 10% renewable transport fuels and a 6% reduction of (lifecycle) greenhouse gas emissions for all transport fuels by 2020, as part of the EU energy and climate objectives. The contribution of biofuels towards attaining these objectives is significant.

The Commission proposal on indirect land use change (iLUC), released in October 2012, makes a U-turn to the policy agreed in 2009 and envisages substantial changes. These adjustments are aimed at addressing allegations of agricultural land displacement and of food availability.

Biofuels include bioethanol, made from cereals or sugar beets, and biodiesel, produced from vegetable oils. Biodiesel is the most common renewable fuel in Europe and it is produced mainly from domestically cultivated and processed oilseeds.

With this paper, the federation representing the European Vegetable Oil and Porteinmeal Industry in Europe (FEDIOL) aims to contribute to a better understanding of the co-existence of food and non-food markets, which are closely interlinked. This requires a deeper look into the facts and data on vegetable oils production.

Oilseed processing supplies food and non-food markets

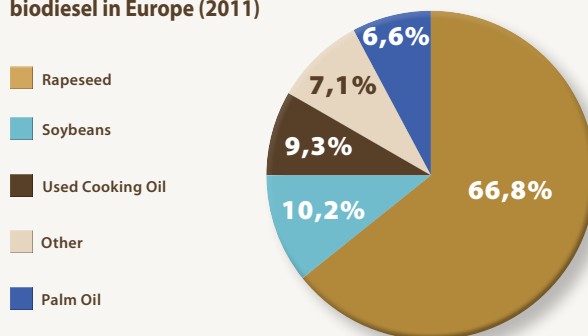
Oilseed processing produces vegetable oils and proteinmeals in a single process. While vegetable oils are important basic products for food, biofuel and non-food technical outlets (such as cosmetics, detergents, paints, plastics, candles, pharmaceuticals industries), proteinmeals supply the compound feed and live-stock industry.

Almost 85% of the 50 million tonnes of oilseeds and vegetable oils processed in 2011 is supplied to non-biofuel outlets.

The great majority of EU biodiesel is produced from EU-grown rapeseed

Today, more than 66% of biodiesel produced in the EU is produced from rapeseed.

Figure II – Raw materials used for the production of biodiesel in Europe (2011)



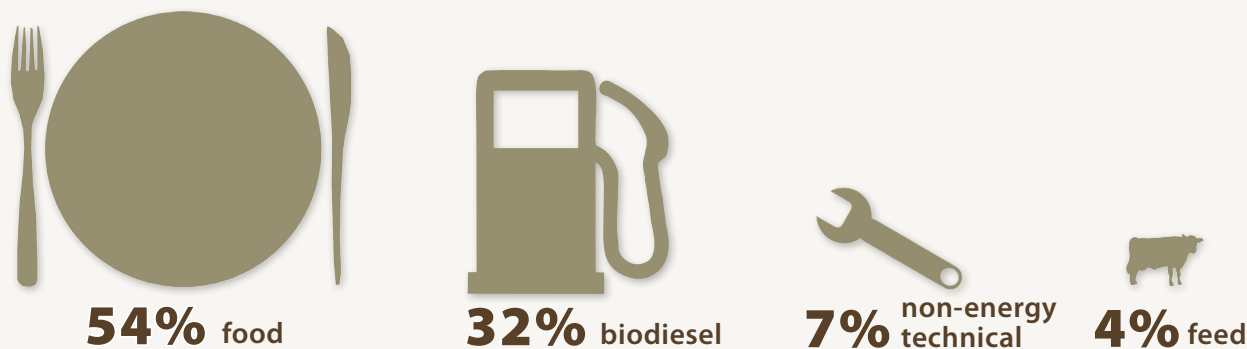
Source: FEDIOL calculations based on Oil World data¹

Increased rapeseed cultivation in the EU brings agronomic benefits

Rapeseed used for the production of biodiesel is cultivated within the EU as a break-crop. This means rapeseed is grown after a sequence of cereal cultivation and plays a vital role in diversifying production, preventing plant diseases, managing weed and pest levels, restoring essential soil nutrient and nitrogen balance, and improving soil structure. Rapeseed in a crop-rotation can increase the yields of the subsequent cereal crop harvest by up to 11%².

Rapeseed cultivation thus reduces the need for fertilizers and pesticides on the farm in the following crop, supporting biodiversity and reducing fertilizer and pesticide related CO2 emissions.

Figure I – Split use of vegetable oil consumption in the EU (2011)



Source: FEDIOL estimates based on FEDIOL data

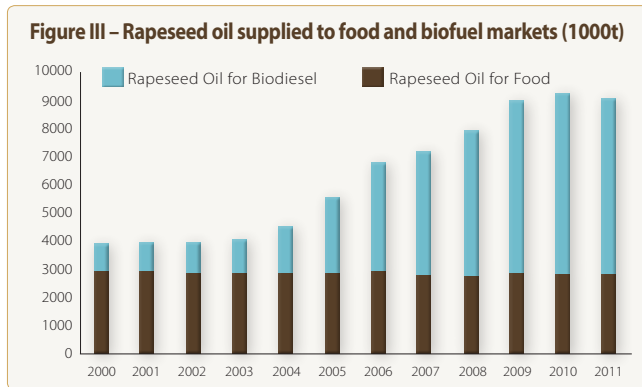
¹ Oil World Annual 2011, Global Analysis of all major oilseeds, oils and oil meals supply, demand and price outlook; Oil World International

² *Yield, yield formation and yield stability of wheat, barley and rapeseed in different crop rotations; O. Christen, University of Halle-Wittenberg, 2011, p. 36, table 4.

Current biofuel mandates can be met without impact on food availability

The EU consumption of rapeseed oil for food has remained stable at around 2.8 million tonnes for over 10 years.

The increased production of biofuels from rapeseed oil had no impact on the availability of rapeseed oil for food and the EU vegetable oil sector continuously supplies the food market. As can be seen from the graph below, the production of rapeseed oil increased to supply the biodiesel market, while maintaining the supply to food outlets.



Source: FEDIOL calculations based on Oil World³ and FEDIOL data

Biodiesel production increases the availability of vegetable protein in the EU and supplies the food chain

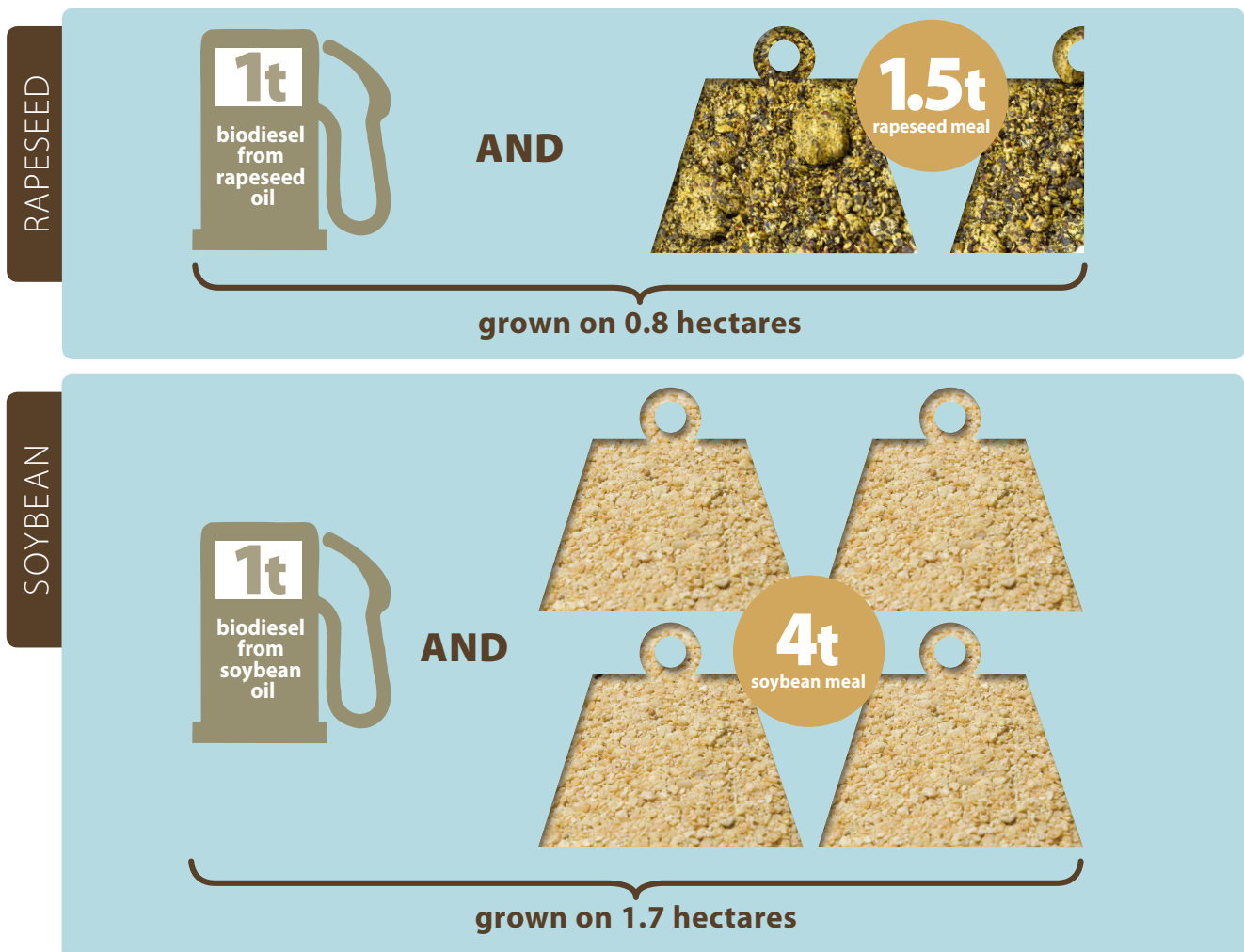
In Europe, biodiesel is mainly a follow on product of oilseed processing, which produces vegetable oils and proteinmeals. Hence, biodiesel produced from vegetable oils triggers the production of considerable volumes of feed materials for use as animal feed.

Processing rapeseed and soybeans produces approximately 60% and 80% of protein-rich meals and at the same time 40% and 20% of vegetable oils respectively.

Europe has a structural protein deficiency and is dependent on imports of protein crops and meals from third countries. In its most recent report, the European Parliament estimated that the deficiency still amounts to 20 million tonnes⁴ and called upon necessary measures to be taken to increase protein production in Europe. EU biofuels production fulfills that call by increasing the availability of vegetable protein needed for European livestock.

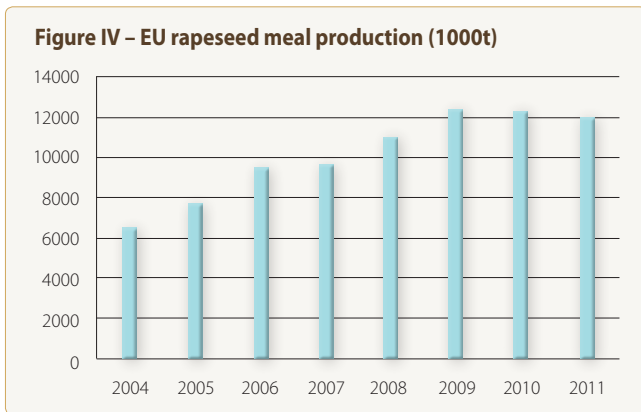
With the uptake of biofuels in Europe, rapeseed proteinmeal production nearly doubled to roughly 13 million tonnes, compared to 2004 (Figure IV).

Illustration 1 - Biodiesel and animal feed co-production



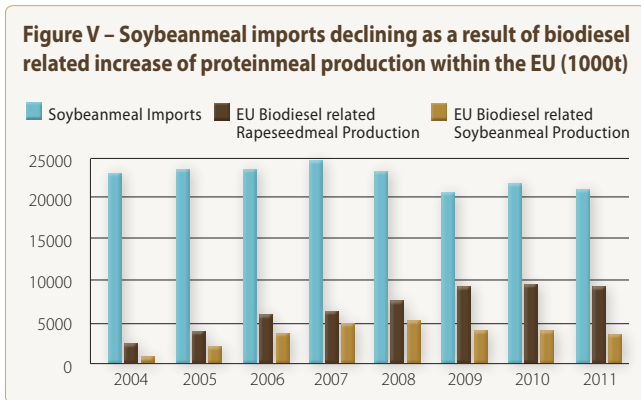
³ Oil World Annual 2012-2000. Global Analysis of all major oilseeds, oils and oil meals supply, demand and price outlook; Oil World International

⁴ EP Report on "The EU Protein Deficit: What Solution for a Long-Standing Problem", Committee on Agriculture and Rural Development, 4 February 2011: <http://www.europa.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+REPORT+A7-2011-0026+0+DOC+PDF+V0/EN>



Source: FEDIOL calculations based on Oil World⁹ and FEDIOL data

The production of 9.3 million tonnes of rapeseed meal and 3.6 million tonnes of soybean meal is directly related to EU biodiesel production. This amounts to approximately 13 million tonnes of protein meals and represents over half of the total EU proteinmeal production. In the absence of a biofuels outlet for vegetable oil, this meal would not be produced in Europe and would have to be replaced by protein imports, such as soybean meal.



Source: FEDIOL calculations based on Oil World⁹ and FEDIOL data

EU agriculture responded and has still the potential to adjust to increased demand from biofuels sector

Today, 4% of the EU arable land is used to produce rapeseed for biofuels⁷, which also produces approximately 10 million tonnes of protein-rich feed materials supplied to livestock industries for food production. According to World Bank, global biofuels production in the world occupies approximately 2% of agricultural land⁸.

Despite the increased demand for agricultural raw materials from biofuels in the recent years, there are over 1.7 million hectares of uncultivated arable land available within the EU. Thus, Europe has the potential and is capable of supplying agricultural raw materials for various markets, without jeopardising the availability of food.

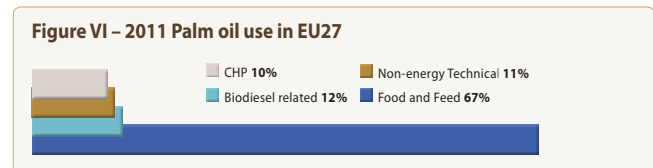
According to the The Food and Agriculture Organization of the United Nations (FAO), "most of the additional EU crop output will be achieved by increased crop yields, and the remainder from continuing to use

arable land that would otherwise have been released from use"⁹. Indeed, experience has shown that strong market demand acts as an incentive for research and for the development of better performing plant varieties. Since the EU biofuels mandates were set in place, investments into agriculture and into rural infrastructure that were lagging behind in the years before have increased considerably. As a result, rapeseed agricultural productivity has increased by over 7%¹⁰, in just 10 years. In some EU Member States, yield improvements are even higher. For instance, rapeseed yield increase in the UK is measured at over 40%¹¹. This year-on-year improvement in yields resulted in a substantial increase in production equivalent to over 2 million hectares.

With necessary tools and mechanisms to support agricultural research and encourage yield improvements, the EU biofuels mandate could be met through increased productivity rather than requiring additional land. Such mitigation measures are key to reducing EU protein deficiency, while contributing to greening the EU transport system.

Palm oil import increase is not driven by biofuels

The EU imports of palm oil have increased in the past 10 years, due to demand from the food industry and also because of preference for palm oil's functional and textural properties. National programmes supporting combined heating and power (CHP) installations also contributed to the increase of imports. As the graph below illustrates, almost 90% of EU's palm oil imports go to non-biodiesel outlets.



Source: FEDIOL estimates based on FEDIOL data

Impact of biofuels on commodity prices is limited

Stronger global food demand from emerging countries is contributing to the long-term price increase in agricultural raw materials, including oils/fats. Farmers are responsive to market signals: higher prices serve as an incentive for higher production.

The most significant causes for price volatility of agricultural commodities are identified as higher transportation costs (freight rates), increased farm input costs (fertilizers, etc.), taxes, increased price of energy, agricultural export restrictions in some countries, poor crops, tight supply and demand ratios, and the high volatility of exchange rates¹².

Agricultural commodities generally make up a small proportion of the overall production costs of processed foods¹³. Other factors that influence the price of food are packaging, storage, transportation, taxes and marketing.

⁹ Oil World Annual 2012-2004, Global Analysis of all major oilseeds, oils and oil meals supply, demand and price outlook; Oil World International

¹⁰ Oil World Annual 2012-2004, Global Analysis of all major oilseeds, oils and oil meals supply, demand and price outlook; Oil World International

¹¹ Oil World Annual 2012-2002, Global Analysis of all major oilseeds, oils and oil meals supply, demand and price outlook; Oil World International

¹² DG-AGRI, June 2010: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Agri-environmental_statistics

¹³ "Placing the 2006/08 Commodity Price Boom into Perspective", World Bank, 2010.

¹⁴ "Biofuel Co-Products as Livestock Feed", The Food and Agriculture Organization of the United Nations (FAO) 2012, p.14.

¹⁰ Oil World Annual 2012, Global Analysis of all major oilseeds, oils and oil meals supply, demand and price outlook; Oil World International

¹¹ Oil World Annual 2012-2002, Global Analysis of all major oilseeds, oils and oil meals supply, demand and price outlook; Oil World International

¹² "Why speculation is not a prime cause of high and volatile international agricultural commodity prices: An economic analysis of the 2007-2008 price spike", Harald von Witzke and Steffen Noleppa, 2011, p.17.

¹³ Commission Communication on FOOD PRICES IN EUROPE (COM(2008) 821 final), p.3.

Other aspects affecting food availability should be addressed

It is worth noting that approximately 90 million tonnes of food is wasted annually in the EU. This amount is expected to increase by 40% and reach to approximately 126 million tonnes by 2020¹⁴. Indeed, there is sufficient agricultural raw materials to supply all markets.

Global demand for oils/fats is tentatively forecasted at 186 million tonnes in 2012/13. As in past years, much of the increase in global demand is expected to originate in Asia, with China as a dominant player and with food and oleochemical uses as the main areas of growth. 62% of world soybean imports go to China, compared to 19% ten years ago. Today, China and India alone account for 30% of global vegetable oils and fats consumption. India and China are also the largest importers of palm oil with 7.1 million tonnes (17%) and 6.7 million tonnes (16% of global trade) respectively.

The phasing out of biofuels will not lead to more food availability nor necessarily provide cheaper food

The phasing out or reduced volumes of biofuels production would neither lead to making more food available nor provide cheaper food for the EU or third countries.

If the EU were to phase out conventional biofuels, this would lead to a significant drop in the demand for vegetable oils, and in particular rapeseed oil. Only small quantities of excess production could be exported to third countries given the availability of cheaper vegetable oils on the world market. There would be no alternative market for the 7 million tonnes of vegetable oils supplied to biofuels.

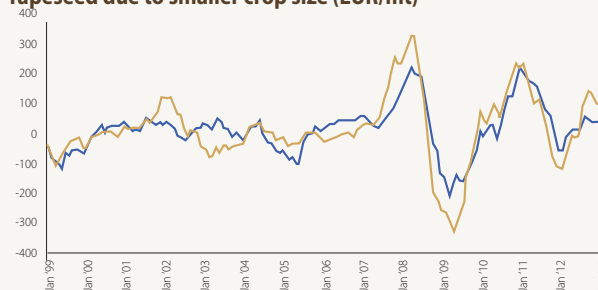
It is important to note that the production of more than 13 million tonnes of proteinmeal would also be put at risk and the corresponding volumes of animal feed material would need to be imported from third countries. The sudden drop in vegetable oil prices would make manufacturers get out of business. The absence of market alternatives would lead to a downscaling by more than one third of oilseed processing capacities in Europe.

In the absence of a market outlet, European farmers are likely to reduce rapeseed production by over 70%. As FAO predicts¹⁵, this would

affect approximately 5 million hectares of agricultural land, which would be left idle.

A much lower crop size for rapeseed would cause higher price volatility. The case of sunflower seed illustrates that smaller crops are more sensitive to higher price variations.

Figure VII – Price deviation of sunflower seed higher than rapeseed due to smaller crop size (EUR/mt)



Source: Oil World data¹⁶

Food supply concerns could be addressed via flexible policy mechanisms

Droughts, floods and other natural events always present a risk and can impact agricultural production negatively. If farmers were to scale down their production to only supply food and feed markets, the risk and consequences of supply shortages would be worse. As demonstrated in figure VII, smaller crops' market prices would have higher volatility.

Increased agricultural production within the EU could serve as a buffer against crop shortages, ensuring agricultural raw materials availability for food and feed.

For any additional demand for agricultural raw materials beyond 2020, carefully geared biofuels policies, open to conventional biofuels, could help mitigate these problems. Biofuels policies encourage farmers to produce adequate volumes of raw materials for food, feed and non-food markets. In an event of supply shortage or of crop failure, a biofuels policy with a flexible mandate could help alleviate the problem, as the feedstock intended for biofuels could then serve as a buffer and be redirected to the extent necessary for the demand of the food sector. Legislation should allow for enough flexibility to be able to adjust to exceptional circumstances and consider necessary mechanisms to prevent acute food supply shortages.

¹⁴ EP Report on "How to Avoid food Wastage: Strategies for a More Efficient Food Chain", Committee on Agriculture and Rural Development, 4 February 2011 <http://www.europarl.europa.eu/sides/getDoc.do?pubRef=-//EP//NONSGML+REPORT+A7-2011-0026+0+DOC+PDF+V0/EN>

¹⁵ "Biofuel Co-Products as Livestock Feed", The Food and Agriculture Organization of the United Nations (FAO) 2012, p.14.

¹⁶ Oil World Annual 2012-1999, Global Analysis of all major oilseeds, oils and oil meals supply, demand and price outlook; Oil World International



FEDIOL is the federation representing the European Vegetable Oil and Proteinmeal Industry in Europe.

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