

## Biofuels and food security

*Fostering biofuels has become a momentous policy fashion in the rich countries, and their farmers and processing industries grab the new opportunities. But what does this mean for food security in the poor countries?*

Most governments in the OECD area now promote the production and use of biofuels. It is easy to understand why: switching to sources of energy that reduce green house gas emissions sounds like a good idea, as does improving energy security by making us less dependent on oil and gas from unreliable suppliers. At the same time, subsidies for biofuels please powerful domestic political constituencies. With this mix of factors, the promotion of biofuels is a proposition that must be plainly irresistible for many politicians.

An impressive variety of policy measures are employed to promote biofuels. A cornerstone of these policies is typically a declared target for the share of bioenergy in overall energy consumption, or for the proportion of biofuels in total fuel use for road transport. In some cases such targets are directly translated into blending requirements for fuel suppliers. Car and truck drivers are then implicitly made to subsidise the suppliers of biofuels. In other cases, direct subsidies or tax breaks are granted. Most developed countries also maintain tariff barriers against the import of biofuels, protecting both domestic farmers and the biofuels conversion industry.

The combined effect of such policies, present and planned for the future, is to greatly expand the consumption of biofuels in the OECD

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area, and correspondingly the use of agricultural commodities for their production. The latest OECD-FAO Agricultural Outlook 2007–2016 (Paris 2007) includes projections of the biofuels sector, based on declared policy targets, though with some caution regarding the degree to which they may actually be realised. Figures 1 and 2 show how this expansion might look like in the two major cases of the United States and the EU.

Overall, this expansion of the biofuels sector is becoming a major factor in the development of global markets of agricultural commodities. Take the case of cereals. Ethanol production in major countries where cereals are

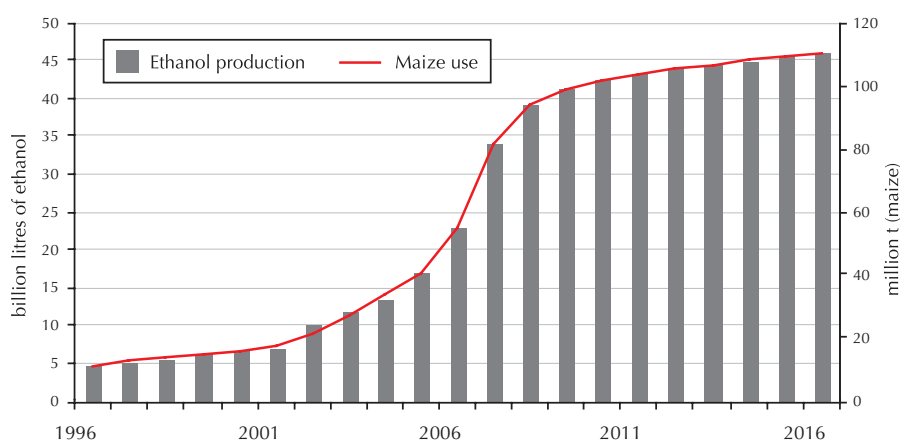


Photo: fotolia

used as raw material (US, EU, Canada, China) is expected to take up around 150 million tonnes of cereals by the year 2016. Given that world production of cereals (excluding rice) in 2016 is projected to be around 1850 million tonnes, this means that somewhat more than eight percent of the world's output of cereals will be taken out of the food and feed sector and converted into fuel use.

What does all this may mean for global food security? Will car drivers in the rich countries compete with the hungry in the poor countries? How

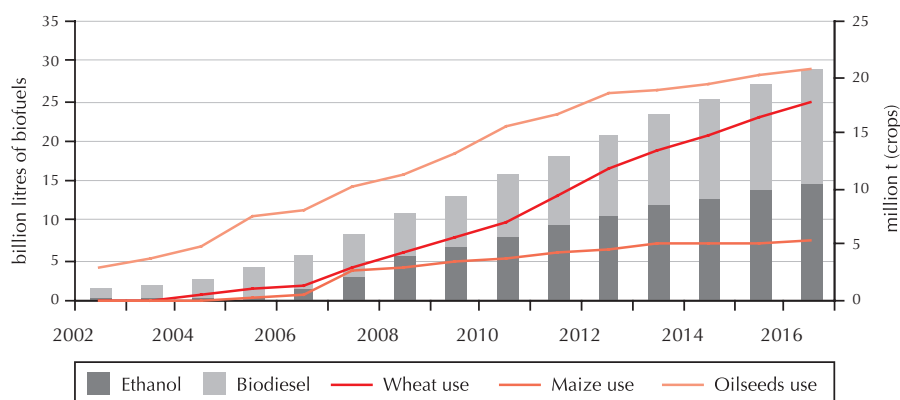
**Figure 1: Ethanol production and maize use in the United States**



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**Figure 2: Production of ethanol and biodiesel, and use of maize and oilseeds in the European Union**



many of the 800 million malnourished people in the third world could potentially be fed if 150 million tonnes of cereals could be used for food rather than fuel? Would this not make a large part of world hunger disappear? Yet, physical balances, i.e. tonnes per person, are not an appropriate indicator of the impact that biofuels might have on food security. We must take a look at the underlying causal relationships before we arrive at a clearer picture.

### *What determines food security?*

Hunger is fundamentally an economic phenomenon. People go to bed hungry not because there is an insufficient amount of food around in the world. They suffer from hunger because they lack the purchasing power to buy enough food for their families. Hence, we must ask how the use of agricultural commodities for the production of biofuels affects the purchasing power of the poor, more specifically the level of income relative to the level of food prices. In other words, the promotion of biofuels in the rich countries has an effect on food security in poor countries if, and to the extent to which, it impacts on either the capacity of the poor in developing countries to earn incomes, or on the level of food prices they are faced with.

Obviously, there are several channels through which biofuels policies in the developed countries can have

an influence on incomes and food prices in developing countries. Two relationships are particularly relevant. First, biofuels used in rich countries can originate from developing countries. Cases in point are ethanol produced from sugar cane in Brazil and biodiesel generated from palm oil in Malaysia. In such cases, the expansion of biofuels consumption in the OECD countries can contribute to income generation in developing countries and in this way potentially have a positive impact on food security. This would at least be the case where the additional income generated in the developing countries accrues, at least to a significant extent, to poor people – a matter that very much depends on the policies pursued in the developing countries concerned, and largely outside the control of policies in the countries where biofuels are used. But what government policies in rich countries can influence is whether the opportunity for income generation in developing countries is exploited to the largest possible extent. In this regard, the assessment is not altogether positive. After all, most of the rich countries maintain tariff barriers around their markets for biofuels, thereby making it difficult for developing countries to produce more biofuels for export and benefit from the resulting employment and income opportunities.

A second relationship is the one acting through food prices. There is little

doubt that the expansion of demand for agricultural commodities resulting from the use of biofuels in rich countries has an inflationary impact on global food prices. The precise order of magnitude remains a matter of debate and investigation. The OECD is strongly engaged in research on the market impacts of biofuels policies, and in the months to come more evidence will be provided. One finding, though, is clear already. The current price hike on world food markets, very much felt in many poor countries, is only partially the result of biofuels policies in developed countries. It is primarily the consequence of successive years with an unusually low global output of cereals, due mainly to unfavourable weather conditions, in particular in Australia. As a result, global cereal stocks are at a record low, and the extreme price hike for cereals and related foods, including livestock products for which feed grains are an important input, is an immediate consequence of this situation. Once global cereals output returns to more normal levels, global food prices are expected to decline again. They will, though, most likely remain at a higher level than in the past. According to the OECD-FAO market outlook, world market prices for agricultural commodities for the coming ten-year period will remain some 20-40 percent above those that have prevailed on average in the past ten years. A good part of that price increase, perhaps as much as one half of it, will be due to the extra demand for agricultural products resulting from the expansion of biofuels.

### *Are high food prices good or bad for developing countries?*

Whether higher world market prices for food are positive or negative for food security in developing countries depends, simply speaking, on whether the poor are net food producers or net food consumers, i.e. whether they produce more or less food than they consume. Overall, the

developing countries are net buyers of food on aggregate. Taken together as a group, the developing countries are projected by the OECD and the FAO to be net importers of cereals (excluding rice) to the tune of somewhat more than 140 million tonnes in 2016. Sub-Saharan Africa, where food security is particularly precarious, is expected to have a net cereals import requirement of 18 million tonnes in 2016. Hence, rising prices of cereals, as a result of biofuels expansion in the developed countries, have a negative economic impact on developing countries, and in particular on the poorest among them. What is more, and possibly surprising to some, in developing country agriculture the poorest farmers are often net food consumers as their limited endowment with resources, in particular access to land, does not allow them to produce all the food they need to feed their families.

With all this in mind, there is little doubt that the growing use of agricultural commodities for the production of energy in the rich countries has a negative impact on food security in developing countries. The biofuels lobby in developed countries does not tire to emphasise that the world has sufficient productive capacity to produce both food and agricultural commodities for use in biofuels production, and hence that there is no trade-off between biofuels and food security. That may well be true, in principle, in a purely physical sense. However, as suggested

above, food security is not a matter of physical availability. It is fundamentally an economic phenomenon. And the economics involved plainly suggest that, mainly because of the inflationary impact of biofuels on food prices, food security in poor countries is negatively affected by the growing use of agricultural commodities for the production of biofuels.

## Are the benefits worth the costs?

The issue of biofuels versus food security could well be said to be a moot question if the expansion of the biofuels sector were a pure market phenomenon. Debating the benefits and costs of biofuels would then be akin to questioning whether rain is good or bad – there is little one can do about it. However, for the time being demand for the biofuels currently mainly in use, often referred to as first generation, is largely not driven by market forces but by government policies. This is because neither ethanol nor biodiesel can, in most developed countries, be produced profitably at market prices, even at current high crude oil prices. The intensive government policies used to promote biofuels, referred to above, are testimony to this lack of market profitability. This raises the question of whether the benefits, in terms of climate change, energy security and rural incomes in the rich countries, outweigh the costs in terms of food security in developing

countries, not to speak of the significant economic welfare costs caused in the developed countries. This question cannot be discussed here in detail. However, there are reasons to doubt the significance of the benefits (OECD, *Biofuels for Transport: Policies and Possibilities*. Policy Brief, Paris 2007). Given that the production of first-generation biofuels requires significant inputs of fossil fuel, the positive impacts on climate change may well be overestimated. The benefits for energy security are limited if one considers that no more than a rather small share of total energy consumption can be replaced by biofuels. And any positive impacts on farm income in the rich countries are achieved at rather large overall costs to their economies.

All this may be different if and when biofuels of the second generation, based on ligno-cellulosic raw materials that compete less, or not at all, with food production, can be produced profitably. Supporting technology development for second-generation biofuels may, therefore, be more beneficial than subsidising first-generation biofuels. A redirection of rich country policies to that end might also do away with the trade-off between biofuels and food security. And an elimination of tariffs on the imports of biofuels into the rich countries could, finally, turn this trade-off into a mutually positive economic relationship.

## Zusammenfassung

Die Regierungen der reichen Länder fördern Biokraftstoffe mit einer Vielzahl von Zuschüssen und ähnlichen Maßnahmen, und die Größe der landwirtschaftlichen Anbauflächen für die entsprechenden Nutzpflanzen nimmt rapide zu. Bald werden fast zehn Prozent der weltweiten Getreideernte für die Erzeugung von Biokraftstoffen verwendet. Natürlich treibt diese Nachfrage die Getreidepreise auf den internationalen Märkten in die Höhe. Da die Entwicklungsländer letztlich mehr

Getreide und andere Lebensmittel importieren als ausführen, hat die staatliche Förderung von Biokraftstoffen in den reichen Ländern negative Folgen für die Ernährungssicherung in armen Ländern.

## Resumen

Los gobiernos de los países ricos usan una amplia gama de subsidios y medidas similares para promover los biocombustibles, y la cantidad de productos agrícolas usados como insumos crece rápidamente. Casi el diez por ciento

de la producción mundial de cereales podría estarse usando en un futuro próximo para producir biocombustibles. No cabe duda de que esta demanda adicional impulsa el incremento en los precios de los alimentos en el comercio internacional. Como los países en desarrollo son, en conjunto, importadores netos de cereales y otros alimentos, las políticas de biocombustibles de los países ricos tienen un impacto negativo sobre la seguridad alimentaria de los países pobres.