Biofuels and food security

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Biofuels were considered an industry without prospects at the end of the 1990s. However, many national governments have recently developed new biofuel policies that directly or indirectly provide incentives to companies and banks to invest in biofuel production and processing plants. The USA, EU, Brazil and other national governments show strong commitment to increasing biofuel production by formulating ambitious production targets and by requiring mandatory blending.

One of the most compelling reasons for national governments to adopt biofuel policies is the expectation that fossil fuel reserves are depleting and cannot meet the increasing world energy demand. Other reasons include: the ambition to mitigate climate change through the use of alternative energy sources; the political goal to decrease dependencies on import of fossil fuel from unstable regions; recent oil price increases; and the crisis in rural areas of many OECD countries following over-production of agricultural commodities, low crop prices (at least until recently), land set asides and low income levels for farmers.

However, biofuel policies are not without controversies. One of the most controversial issues is whether increasing food insecurity is the price the world has to pay. This policy brief does not pretend to describe how exactly biofuel expansion will affect food security of different countries and categories of people but identifies three key issues that define the relationship between biofuel expansion and food security. This brief also lists three approaches to prevent or reduce the risk that biofuel expansion increases food insecurity.

Three key issues

The first key issue is on sourcing and technology. Biofuel is energy made from food, fat, wood or waste. The technology to make energy from food or fat is called first-generation technology. The technology to make energy from wood or waste is called second-generation technology.

There are some clear signals now that the use of staple food crops (like maize and wheat) for making energy has contributed to higher food prices and subsequently to civil unrest in big cities of poor countries. World Bank studies show that caloric consumption among the world's poor declines by about half of one percent whenever the average prices of all major food staples increase by one percent. IFPRI projections suggest that the number of food-insecure people in the world will rise by over 16 million for every percentage increase in the real prices of staple foods (Runge and Senauer 2007). In contrast to urban areas, there is yet little evidence on effects of biofuel expansion on small farmers, landless labourers and other inhabitants of rural areas in developing countries. Some believe that the 'biofuel boom' is marking the beginning of an agricultural renaissance, with small farmers earning higher incomes due to increased demand of agricultural crops for energy production (Schmidhuber 2007). UN agencies and NGOs have reported incidences of 'biofuel refugees': dwellers of forests or common land that are being chased away by private companies taking the land to make energy from food crops.

The expectation is that second-generation technology will not compete with food production and can be used on marginal lands. However, this technology is still under development. In addition, it is not likely that companies will simply give up their investment in first-generation technologies. Finally, the use of scarce water and expensive fertilizer to make energy from woody material or nuts (like jatropha) to be cultivated on marginal land may take away critical sources needed for food production. This leads us to our second key issue.

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The second key issue is to what extent energy farming will substitute existing food production and put a competing claim on land and water. Some technical scientists state that there need not be a food versus fuel competition if agricultural productivity increases and land can be made available for energy cropping. In their view, governments need to induce a new green revolution by facilitating heavy R&D investments in agriculture and not promote cultivation of crops with low energy conversion rates (like soy) that require huge amounts of land to reach biofuel production targets. Other technical scientists fear that many African countries will not be able to overcome a Malthusian crisis, let alone increase agricultural productivity to meet both food and energy demands. Moreover, social scientists and NGOs expect that the private sector will first consider the use and expansion of existing food crops and existing infrastructure for energy production – even if this concerns crops with low energy conversion rates – rather than heavily investing in new infrastructure and new crops with higher energy conversion rates. This would bias large-scale energy farming.

The third key issue is to what extent the increased demand for feed will intensify the food versus fuel dilemma. Economic growth in China and India has led to increased demand for feed crops as a result of increased meat consumption. This has put an upward pressure on world market prices of food commodities. In 2006 world cereals reserves fell to their lowest level in more than two decades. According to Fresco (2006), the food versus fuel dilemma is probably better renamed *feed* or *fuel*, since the main energy crops (maize, soybean) are also feed crops. However, this is a bit misleading as feed crops end up as food for (new) middle income classes. The issue is not whether the production of food, fuel or feed compete with each other but to what extent and how. This competition can be more or less direct (in case of food-cum-energy crops), direct-and-double (in case of food-cum-feed-cum-energy crops) and indirect (in case of pure energy crops) in terms of competing claims on resources.

Three approaches

To counteract the supposedly negative impact of biofuel production on food security, three major approaches can be distinguished:

The first approach is for the government to let the market do its work, that is, to remove or uphold all fiscal incentives and financial subsidies for companies to invest in biofuel production. This would imply that every national government has to review its production and blending targets. Several NGOs have proposed a moratorium on mandatory blending and government subsidies of biomass production until effects at macro level have been documented and hard guarantees have been given that imported biomass meets sustainability criteria, including social ones. Similarly, the Special Rapporteur on the Right to Food has called for a five-year moratorium on biofuel production using current methods, to allow time for technologies to be devised and regulatory structures to be put in place to protect against negative environmental, social and human rights impacts.

The second approach is to formulate criteria or pre-conditions for the production of biofuels. The UN-Energy group has proposed that all policymakers who are shaping the development of the liquid biofuels sector need to ensure that food security considerations are given priority. For this purpose, policymakers in the fields of energy, environment, agriculture and trade need to understand the interactions among their various policy domains and how this affects food security. From a right-to-food perspective, that emphasizes the obligation of every state to do no harm to existing access to food of every individual. This could be further specified: every biofuel policy or act should state that existing physical and economic access to food of every individual should not be undermined.

The third approach is to seek technological and agricultural solutions, directed at mixed farming and development of circular bio-based systems at both farm and country level (as proposed by IFPRI, PRI and others). Mixed farming is, for instance, to combine food and wood, or milk and grass production. Circular systems are combining food production with energy production using crop residues. The third approach is to provide an alternative to mono-culture, large-scale production and export of biofuels as an emerging global commodity.

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