

The Promises and Challenges of Biofuels for the Poor in Developing Countries

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The changing world energy situation has generated intensive discussion about biofuels, much of it promising a source of environment-friendly energy that would also be a boon to the world's farmers. But to make a difference in the lives of poor people and farmers as both energy producers and consumers, advances are required in biofuel technology, and appropriate investments and policies must be carefully considered.

Biofuels include fuel sources that have been used for millennia, like fuelwood and charcoal, as well as newer sources like ethanol, biodiesel, and biogas. These new sources depend on natural vegetation, on crops grown specifically for energy, or on agricultural or other forms of wastes and residues. Appropriate processing can make these biofuels cleaner and more efficient than traditional forms of biofuels, if they are produced in ways that reduce net carbon emissions.

Energy crops could provide farmers with an important source of demand for their products, like sugarcane, maize, soybeans, oil palm, and rapeseed, and many developing countries already grow or could grow these crops. A modern biofuel industry could also provide developing-country farmers with uses for crop residues like stalks and leaves, which can be converted into ethanol or electricity, and for new crops like *jatropha*.

Biofuels could also improve the lives of poor people as energy consumers by helping to meet their basic needs and enhancing their livelihoods.

Locally produced biofuels could provide power for cooking, water pumping, lighting, transport, and agroprocessing.

The future of biofuels in the context of world agriculture and the world energy sector is hard to assess. Rather than aiming to "predict" such a future, IFPRI researchers looked into a set of scenarios of alternative policies and their outcomes using IFPRI's International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT). An aggressive biofuel scenario that assumes that current plans for expansion of the sector in Africa, Asia, Europe, and North and South America are actually realized could lead to significant price increases for some food crops by 2020—about 80 percent for oilseeds and about 40 percent for maize—unless new technologies are developed that increase efficiency and productivity in both crop production and biofuel processing. When this scenario is combined with productivity improvement and second-generation cellulosic conversion, price increases are softened to about 40 percent for oilseeds and 20 percent for maize by 2020.

In any case, other crop and animal product prices would also increase because of input and



output market linkages. Hence, without technologies to improve productivity, the price changes associated with aggressive biofuel growth would adversely affect poor, net-purchasing households and would also exceed the possible income gains in many small farm households.

So, although there are some risks that crop production for biofuels may compete with food production, thereby increasing food insecurity, farmers can combine food production with energy production if innovative technology comes into play or if energy crops are targeted to more marginal lands. In addition, research must help enhance overall crop productivity.

Currently, however, investments in biofuel capacities are running far ahead of investments in research to enhance agricultural productivity. The result could be a risky situation for the world food equation. Moreover, stronger linkages between oil price fluctuations and food prices, due to use of a growing share of crops for biofuels, could lead to new sources of instability in food prices and consequent food security risks. Such food price fluctuations may actually be more serious for the poor than any gradual increases of food prices that could result from biofuels' shifting effects on the world food balance. Biofuel trade can help reduce price fluctuations when markets are linked. Therefore the international community must create a level playing field for trade in biofuels.

Indeed, actors at international, national, and local levels all have crucial roles to play in developing a biofuels sector that is sustainable and pro-poor. International institutions must help transfer knowledge and technology for developing an efficient and sustainable biofuels industry

to poor countries. At the national level, policymakers must take steps to create a well-functioning market for biofuels in coordination with other energy sources and the automobile industry. They must also provide farmers who wish to grow energy crops with research and extension services, credit, and access to infrastructure. With sound technology and trade policies, win-win solutions—that is, positive outcomes for the poor as well as for energy efficiency—are possible with biofuels in developing countries.

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