Issues Paper

2008 High-level Segment Thematic Debate on Rural Development

"Bioenergy, sustainable livelihoods and the rural poor"

Thursday, 3 July 2008

3:00 p.m. – 5:30 p.m.

Introduction

1. Bioenergy has generated an enormous amount of interest and more recently, controversy in the context of rising energy costs and demand and increasing food prices, along with growing awareness and concern about climate change. The topic of bioenergy has been the subject of debate at recent high-level intergovernmental meetings, including the ECOSOC High-level session on the Global Food Crisis and the FAO High-Level Conference on World Food Security: the Challenges of Climate Change and Bioenergy, held 3 – 5 June in Rome.

2. Bioenergy[1] is not a new source of energy. Since the discovery of fire, people have been using biomass (wood, charcoal, plant residue, animal waste) to heat their homes and cook their meals. Even today, nearly two billion people, mostly in rural areas of developing countries, live without electricity and rely on burning fuelwood for their household activities, a practice that has negative impacts on the environment and human health[2]. Relatively newer sources of bioenergy include ethanol, biodiesel and biogas which are derived from natural vegetation, either crops grown specifically for energy or forms of agricultural and other waste and residue. Today, bioenergy provides about 10 percent of primary energy worldwide[3].

3. Recent attention has focused in particular on liquid biofuels, which are mainly used for transportation. These fuels currently account for less than one percent of total global energy demand and for not more than three percent of global demand for liquid fuels for transportation. Thus, there is a huge potential for a rapid increase in the production and consumption of liquid biofuels. In theory, these biofuels have the potential to mitigate climate change by reducing greenhouse gas (GHG) emissions and enhancing the energy self-reliance of oil-importing countries. However, because energy is needed to grow, transport, and process bioenergy crops, the net benefits of bioenergy in terms of greenhouse gas reduction is subject to debate.

4. Under certain circumstances, cultivation of feedstocks for liquid biofuels may benefit rural poor people and smallholder farmers by increasing access to energy, farm incomes, and rural employment and, thus, have the potential to contribute to poverty reduction and rural development. However, concerns have been raised regarding the actual impact to date of expanding cultivation of biofuel feedstocks, including the role this may have played in the sudden increase in food prices. There are calls for thoughtful reflection about safeguards related to biofuel production to ensure their contribution to climate change mitigation and avoid negative effects on food security, rural communities, and the environment.

Current Situation of Bioenergy Production

5. To date, the expansion of bioenergy production has been driven primarily by OECD countries, for a number of reasons, including the search for renewable and cleaner alternatives to fossil fuels, efforts to mitigate climate change, promotion of energy security to reduce dependence on foreign oil, and support to rural livelihoods. Underpinning these drivers is the growing demand for energy, with future projections for continued expansion. Energy use is predicted to increase

[1] Bioenergy includes all energy produced from biomass, from living organisms of biological origin. Biomass is a locally available energy source that can provide electricity, heat and power. Biofuels include solid, liquid or gas fuels derived from biomass and can be divided into four categories: woodfuels, agrofuels, municipal waste, and fisheries by-products. Source: FAO
[2] UNEP "A Growing Debate: Bioenergy in the 21st Century" 2008
[3] FAO "*Bioenergy, Food Security and Sustainability – Towards an International Framework*", 2008

world-wide and global consumption of marketed energy is projected to rise by 71 percent between 2003 and 2030. Three-quarters of the increase will come from developing countries with energy demand from countries outside the OECD surpassing that of OECD countries by 2015.[4] A number of countries have adopted standards and targets to encourage increasing biofuel production.[5]

6. Biofuel production has doubled over the past five years, with investments in bioenergy increasing almost tenfold in a single year, from US$ 2.6 billion in 2005 to US$ 21 billion in 2006.[6] In 2006, it was estimated that global bio-ethanol production was around 40 billion litres, with 90 percent produced in Brazil and the United States, while 75 percent of bio-diesel was being produced in the European Union, mainly by France and Germany.[7]

7. The emerging biofuels market is a new and significant source of demand for agricultural commodities, including sugar, maize, cassava, oilseeds, and palm oil. These commodities, which have been used predominantly as food, are now also being grown as feedstock for producing biofuels. It is estimated that nearly one- third of maize output in the United States during 2008 will be used to make an estimated 42.3 billion litres of ethanol.[8] Significant increases in the price of crude oil allow agricultural commodities to become viable substitutes in countries that have the capacity to use them.

Outlook: Risks and Opportunities of Biofuel Production for the Rural Poor

8. The production of liquid biofuels is rapidly increasing, mainly through the establishment of large-scale biofuel feed stock plantations. Production and use of biofuels can produce both positive and negative impacts on the social and physical environment and can affect people's livelihoods in a variety of ways, both beneficial and adverse.

9. The majority of the world's poor live in rural areas and depend on agriculture for their livelihoods. Bioenergy provides potential opportunities for developing countries and their peoples to utilize their natural resources and attract foreign and domestic investment to advance economic and social development goals, spur other businesses requiring energy services, harness agricultural growth and reduce rural poverty. In many developing countries, bioenergy production has the potential to create jobs in the labour-intensive agricultural sector and contribute to improving availability and safety of locally produced energy, which in turn can have positive health effects among rural populations and increase productivity through better access to energy.

10. Yet, the extent to which the above benefits can be realized will depend largely on the ways biofuels are being produced and the measures, criteria, and principles that are being put in place to guide their use.

11. There is a risk that, if adequate pro-poor governance measures are not put into place at national and – especially -- local levels, the benefits of expanded production will accrue primarily to large

[4] *The Promises and Challenges of Biofuels for the Poor in Developing Countries,* J. von Braun and R.K. Pachauri, 2006
[5] Countries that set standards include the EU, US, Brazil, Thailand, India, China. The Global Bioenergy Partnership (GBEP) has produced an overview of measures taken: http://www.globalbioenergy.org
[6] UNEP "*A Growing Debate: Bioenergy in the 21st Century*" 2008
[7] IFAD 2008. "*Biofuel Expansion: Challenges, Risks, and Opportunities for Rural Poor People*."
[8] Garber, Kent. "*The Growing Food Cost Crisis*." U.S. News & World Report. 17 March 2008.

oil companies and landowners with access to considerable resources to finance the large processing plants required to achieve economies of scale. Biofuels are currently grown on about two percent of the world's cropland. It is estimated that this share will double by 2030.[9] This trend poses the risk of increased competition for land[10] and encroachment onto forest areas, indigenous territories, and other common property land resources, and could lead to a diversion of agricultural land away from traditional food production, to the detriment of food security.[11] Rapid increases in the large-scale production of liquid biofuels in developing countries can also exacerbate the marginalization of women in rural areas who have limited access to required resources such as land, water, chemical fertilizers, and pesticides.[12]

12. Environmental concerns regarding biofuel production are relevant to a considerable number of natural resources, including land, water, soil, forests, and biodiversity, and represent complex challenges for land use and natural resource management. On current trend lines, accelerating biofuel production may lead to large tracts of agricultural and virgin land being used for industrial-scale production. The conversion of forests and wetlands into cropland for biofuels threatens biodiversity and can create a "carbon debt" by releasing significant GHG emissions. Considerable amounts of water are also needed to grow biofuels and even more water is required to convert the agricultural products into actual fuel.[13]

13. As large-scale biofuel productions gain prominence, there is concern that expanded production could displace smallholder farmers, especially women, and forest dwellers without secure property rights, undermining their livelihoods, and leaving them few options except to become employees on the same land that they once owned or farmed. Some communities are already facing forceful eviction from their land and the subsequent loss of livelihoods and culture due to expanding biofuel crop plantations.[14] There are increasing reports of land acquisition by large commercial entities interested in the biofuels markets.[15] The poor, who often farm under difficult conditions in remote and fragile areas and generally have little negotiating power, may be tempted to sell their land at low prices. Alternately, where land is owned "de jure" by the state (a situation typical in most African countries), poor farmers may find their land allocated to large, outside investors.

14. An additional constraint imposed by insecure land access and tenure is that smallholders may be limited in their ability to take advantage of higher commodity prices because they lack incentives to invest in measures to increase or sustain productivity, or because lack of registered title may diminish their access to credit to support increased input levels[16]. Whether held under customary or private property systems, clear and secure rights to land are thus essential if smallholders are to benefit from the opportunities presented by increased biofuel production.

15. Bioenergy production can be beneficial to poor producers, particularly in remote areas that are far from the consumption centres, where inputs are more expensive and prices lower, making

[9] FAO "*Bioenergy, Food Security and Sustainability – Towards an International Framework*", 2008
[10] [10] Land-use, as well as and land control and ownership.
[11] IFAD. "*Promoting Equitable Access to Land and Tenure Security for Rural Poverty Reduction*. January 2008.
[12] FAO, "*Gender and equity issues in liquid biofuels production*" 2008
[13] UNEP: "*A Growing Debate: Bioenergy in the 21st Century*" 2008
[14] Mihlar, Farah, "*Minority and indigenous groups –silent victims of climate change*" 11 March 2008
[15] See: New York Times, 5 June 2008, "*Food is Gold, So Billions Invested in Farming*"
[16] High costs of inputs also explain why farmers may not benefit of higher farmgate prices in the short run.

food production, by and large, non-competitive[17]. Many of these farmers can benefit from the production of biofuels, especially from crops that do not compete with food crops (such as jatropha and pongamia) or multiple-use, low water-usage crops (such as sweet sorghum and cassava) that can meet the varied needs of small producers for food, cash income, and animal feed. Other biofuel crops, such as tropical sugar beet, are as efficient as sugar cane in producing bio-ethanol but require far less water and, most importantly, can grow in alkaline or sodic soils that are basically unsuitable for food crop production.[18] Crops need to be matched to geo-climatic conditions, as well as experience with a set of crops in a given country.

16. Unlike so-called 'first generation' biofuels which are mainly produced from sugar or starch of food crops and, thus, have given rise to concerns about food security, 'second'[19] and 'third'[20] generation biofuels have the potential to reduce some of the land use change and emissions concerns associated with 'first generation' biofuel programmes[21]. Some non-edible crops such as jatropha and pongamia grow in fragile agro-ecological conditions and on degraded lands where they also have the potential to improve soil quality as well as reduce erosion and, hence, may offer signification environmental and social benefits.

Beyond food *versus* fuel

17. The key question is not whether to choose between food *or* fuel but how to promote both food *and* fuel production in a way that promotes energy security, mitigates climate change, alleviates poverty, promotes food security and rural development, and does not deplete natural resources or negatively impact biodiversity. Hence, in addressing the risks and opportunities of biofuel production consideration needs to be given to questions of equity and sustainability. Several initiatives are underway to guide member states and other stakeholder in their bioenergy planning, policy-setting and investment efforts.[22]

18. The High-level Taskforce on the Global Food Security Crisis of the Secretary General[23], in its Comprehensive Framework for Action,[24] observed that "there is an urgent need to establish a greater degree of international consensus and agreed policy guidelines on biofuel production which take full account of food security, income and energy needs at local levels in all countries, especially in relation to climate change mitigation and adaptation efforts, and ensure economic and environmental viability, in order to ensure responsible and sustainable use of resources in

[17] The fact that about 1.6 billion people are without access to modern form of energy and can easily have access to local biomass to produce bioenergy represents also an important opportunity for improving access to energy in rural areas.
[18] IFAD 2008 *Biofuel Expansion: Challenges, Risks and Opportunities for Rural Poor People*
[19] Second generation biofuels use biomass such as the residues of non-food parts of crops (stalks, leaves, husks) that are left behind once the food crop has been harvested, and include non-edible crops that can grow on marginal lands.
[20] Third generation biofuel production from algae is currently under research but has the potential to become a low-cost, high-yield alternative that requires less land than conventional biofuel feedstock and its processing allows to capture large amounts of CO2.
[21] Environmental and social impacts associated with second and third generation biofuels will also need careful consideration.
[22] Examples include UN Energy (http://esa.un.org/un-energy/); the Roundtable on Sustainable Biofuels which has proposes a set sustainability principles and criteria for bioenergy production (http://cgse.epfl.ch/page65660.html); and the 'International Panel for Sustainable Resource Management' which will assess the environmental risks of biofuel production (http://www.unep.fr/scp/rpanel/).
[23] The High-level Task Force was established by the Secretary-General in April 2008 to promote a unified UN response to the global food price challenge (http://www.un.org/issues/food/taskforce/)
[24] http://www.un.org/issues/food/taskforce/Documentation/Framework_for_action_on_Food_Security.pdf

agriculture, the international response to biofuel development should harmonize policy objectives across food security, climate change, and biofuel policies."

19. In promoting environmentally sustainable and pro-poor biofuel development, consideration needs to be given to ensure that poor people with smallholdings can benefit from the emerging opportunities. Such alternatives should aim to integrate energy crop production into existing local agro-food systems without compromising food security or the environment. The development of biofuel crops that can be grown in marginal lands, saline and poor soils and that require less water should be encouraged. Particular attention to the impact of biofuel production on women is needed to avoid their further marginalization and exacerbation of women's vulnerability to hunger and poverty. Policies are needed in developing countries to strengthen the participation of small holder farmers, especially women, in biofuel production by improving their access to land and agricultural inputs, and promoting their involvement through associations or participatory business models linked to larger-scale operations. Generally speaking, the rural poor must have greater say in decisions over the use of land and natural resources that matter to their livelihoods.

20. The social and environmental sustainability of bioenergy will depend on whether its production is efficient, well-planned and managed, and if the rights of poor rural people, including indigenous peoples, are recognized and respected. This requires a careful consideration of sectoral policies related to forests, land-use and land tenure change issues, water use change, as well as pro-poor sustainable development strategies in a rapidly changing global context. It will also require efforts to strengthen governance and rights regimes related to natural resources and strategies and polices on biofuels are needed for both developed and developing countries to ensure ecosystems maintain their functions and resilience. Social, economic and environmental sustainability concerns have also led to calls for a comprehensive set of policies or even an international agreement on bioenergy to assure that bioenergy is produced in a sustainable manner and in accordance with environmental and social laws and regulations.

Central questions to be addressed by the Panel:

(i) *How does biofuel development affect the food security, energy needs, and employment opportunities of poor rural people?*

(ii) *How can the agriculture sector meet biofuel demand without compromising food security, accelerating deforestation, or reducing availability of water for food production?*

(iii) *How can the land rights of smallholder producers, women and indigenous peoples be safeguarded and secured in the face of increasing demand for biofuel and rising competition for land for food and fuel crop production?*

(iv) *What opportunities does biofuel production create for poor people, in particular peoples living in dry and degraded lands?*

(v) *What measures need to be put in place to ensure that women and female-headed households have the same opportunity as men to engage in and benefit from the production of biofuels?*