

International Federation of Agricultural Producers

SUMMARY OF IFAP DRAFT POLICY PAPER ON “ Bringing the benefits of bioenergy to farmers”

CONTEXT

The FAO predicts that it will be necessary to double world food production over the next 25 years using essentially the same land area. More over, according to the United Nations, the world population will grow to over 9 billion people, with an annual growth rate of 1% according to the Centre for World Food Studies (Amsterdam). Therefore, energy needs are meant to increase worldwide while energy efficiency is primarily needed for sustainability purposes.

Today, the world economy depends heavily on fossil oil, gas and coal to meet the world energy needs and less than 10% of the world energy needs are covered by bioenergy sources.

However, the continuing rise in gasoline prices has become a concern worldwide. Indeed, oil production is already peaking and yet, consumption is expected to continue rising in the coming years. More over, fossil fuels, the largest single source of world energy will eventually run out. Besides, from an agricultural point of view, this rise in gasoline prices has significant impact on agricultural costs borne by the farmer.

A JUSTIFIED ENTHUSIASM FOR RENEWABLES: WHY IS THE DEVELOPMENT OF BIO ENERGY IMPORTANT FOR FARMERS?

For these reasons, renewable energy¹ is increasingly being looked at as an interesting and viable alternative and sustainable source of energy for energy independence.

First, there is a need to **diversify energy sources** due mainly to insecure supplies. Fossil fuel energy sources are expected to run out and oils prices are peaking.

Second, there is a general trend towards the development of **more environment friendly sources of energy** to mitigate climate change and limit advanced environment degradation. Indeed, the negative environmental impacts of certain fossil fuels are often pointed out.

Bio energy represents an **outlet for farm products** and a **way to diversify risk**. The increased utilisation of this renewable source of energy will have a significant impact on agriculture on both the short and long term. Both developed and developing countries see them as an opportunity to keep expenditures on energy within the domestic economy, even though the implementation of policy mechanisms will not be the same. Whereas bioenergy represents an opportunity, there is a need to analyse the real effect of this new product on producer's income According to experts, many producers would benefit from it but at the same time, others would not (due mainly to an increase in costs of production). There is also a need to identify which renewables are the most effective and efficient and for which purpose. Therefore, it is important that governments, organisations and producers be cautious before engaging in this production. Otherwise, they can generate a lot of activity which may be detrimental to producers, and could be difficult to reverse.

MAIN CHALLENGES FOR THE AGRICULTURAL SECTOR AND PRODUCERS

Despite benefits to address such issues as: energy security, climate change and economic development, many challenges relate to food security, economic and environmental sustainability, including land issues and trade.

Therefore, there is a need for careful analysis to weigh benefits and costs of bioenergy to measure long term economic, environmental, social and other effects, by type of crop and location.

¹ Renewable energies include: biomass for fuel (wood and straw), biogas, biofuel (bioethanol and biodiesel), electricity cogenerated from sugar cane, solar energy, wind energy, thermal hydroelectricity, and fuel cells. Bioenergy which encompasses agroenergy and wood energy sources, can be marketed, depending on the needs of the customer, as a source of electricity, heat or fuel.

There is also a need to identify policies and incentive mechanisms to be implemented to ensure farmers reap the benefits in producing bioenergy. And finally, there is still a lot to do to improve efficiency in energy use.

BENEFITS OF BIOENERGIES

Besides providing an important option for world energy, the production and use of bioenergy are linked to a host of issues, such as crop management and cropping systems, food security, land use and rural development, sustainable forest management, biodiversity conservation, and mitigation of climate change.

Environmental benefits

- Bioenergy is an opportunity **for resource protection**, reducing pressure on the local environment. For example, Bioenergy stored in the form of biomass is available on demand at any time. There is an untapped potential of energy from wood. 60% of the world total wood removal from forests and trees excluding forests are used for energy purposes (30% in developed countries and 80% in developing countries).
- Bioenergy provides **climate protection** and is a carbon saving source through carbon sequestration in forests and soils. Bioenergy can be CO₂ neutral if the inputs are from renewable sources.
- Bioenergy have **agronomic benefits**: Biogas production leads to improvement of the agronomic value of wastes through fermentation
- Biofuels and blended fuels burn cleaner than fossil fuels emissions and will as a result improve the air quality which in turn will reduce smog levels.
- Bioenergy contributes to **energy balance and efficiency**. This is critical to farmers. A sustainable biofuels production can make available more energy than is required for its production. e.g biodiesel is energy positive at a ratio of 3 to 1, the ratio for bioethanol is 2 to 1. The reduction of greenhouse emissions amount to 70-75%.
- Bioenergy (in particular biomass) allow recultivation of lands, making use of set aside and marginal lands.

ECONOMIC BENEFITS

Positive effects on the economies of developed countries

- Risk diversification opportunities: The development of bioenergy allow farmers to sell their products to the most lucrative market (food or energy)
- Income benefits: ethanol and biodiesel prices are tied up with oil prices rather than with food market prices. Fuel prices affect the price of biofuel feedstock. (high fuel prices lead to high commodity prices).
- Bioenergy gives an added value to the product through transformation of non food crops into energy crops.
- Cost competitive cellulosic ethanol (2nd generation of biofuel) lead to higher profits.

Positive effects on the economies of developing countries

- Production of bioenergy helps lower fuel expenditures through reduction of transportation costs and reduced energy dependence.
- Cash crop opportunities: bioenergy production allows income generation through export of value added energy crops.
- Cellulosic ethanol presents many advantages: (domestic and export market for biomass, diversification of cash crop strategies).
- Production of bioenergy contributes to rural development through job creation, diversification of rural employment opportunities and income generation in rural areas, thus acting as a deterrent to rural exodus. The development of bioenergy contributes to rural poverty reduction (2.5 billion rural poor worldwide, 4 out of 5 people in rural areas in developing countries live without electricity, according to FAO).

At the international level

- **Stabilisation effect on agricultural market prices**

Biofuels outlets adjust to prices, as opposed to food demand (elasticity in overall demand).

Fluctuations in agricultural markets will stabilise through more elasticity in the overall demand.

- **Biofuels have a moderating effect on the price of petroleum**

According to the European Union, there is a depression effect of 2 to 3% on the price of petroleum for a 14% incorporation of Biofuels, in the EU.

▪ **Biofuels have positive impacts on commodity prices** as they create a threshold for agricultural prices which benefit most farmers. e.g Corn +20% (\$120 versus \$100), wheat +40% (\$200 versus \$140), Sugar +50% (\$300 versus \$200), Oils (+50 to 100%) (\$750 to \$900 versus \$500)². There is a direct link between the price of Biofuels and the price of oil. Rising fuel prices will put upward pressure on the price of crops for fuel feedstocks.

▪ **Availability of agricultural products**

High prices will affect the supply side as follows:

- Recultivating set aside land (in the EU and USA in particular)
- Boosting technical advancements (leading to yield improvements)
- A certain degree of rationing on food demand

Are the requirements in agricultural raw materials for Biofuels compatible with supply?

e.g. for the grains: 70 million tons of corn in the USA represent 10% of the world production and 5 to 6 years of production growth.

For biodiesel: 20 million tons of biodiesel at the global level represent 4 years of growth in production (growth in the production of vegetable oil: 5 MioT/year).

POLICY PROPOSALS

To benefit from the promising aspects of bioenergy, farmers worldwide need **investment capital and market access**. Farmers need to become providers of value added products instead of producers of raw materials and buyers of energy. Farmers' ownership of the entire value chain from production to distribution is key and must be facilitated to ensure income improvements and avoid all benefits going to large multinationals.

To achieve this goal, *farmers ask governments to:*

- **Create enabling environments with coherent political and legislative framework** on bioenergy which reflect the needs of farmers. In particular, small scale farmers' needs must be addressed.
- Establish a whole **value chain strategy** supporting farmers. This includes: tax incentives for: investment, processing facilities, quality standards, direct marketing of bioenergy for consumers. In partnerships with stakeholders (retailers, financial institutions, cooperatives, the business sector,
- **Identify appropriate incentive mechanisms for farmers' investment**. These include measures to:
 - improve market access for farmers e.g income tax credit for small bioenergy producers
 - Finance bioenergy plants and increase farmers' participation e.g a system of matching grants.
 - address regulatory issues e.g establishing strong regulatory systems such as appropriate quality control systems
 - Reduce business risk for the commercialisation of new technologies e.g direct capital investment in the project, provision of a commercial loan guarantee.
 - Carbon accreditation to reward farmers e.g accreditation for bioenergies and enhancement of positive externalities instead of economic and trade principles.
 - Internalise collateral benefits of bioenergy to offset the price difference between fossil fuels and biofuels. Ex. Energy plantations and technology transfers through the Clean Development Mechanism (CDM) of the Kyoto Protocol.

▪ **For a competitive domestic feedstock policy**

Feedstock competitiveness will be a burning issue. A competitive domestic policy for commodities and energy feedstock is needed to avoid distortions on global markets.

▪ **Increased support for Research & Development**

- The development of small scale technology is needed to benefit all farmers.
- Diversification of the possible sources of bioenergy is needed through strong primary research on new energy crops, new energy-specific varieties of existing crops, increased production efficiency, improved processing techniques and crops that yield both high energy content and high quality by-products.

▪ ² Source FAPRI, European Commission

- **Data base and information sharing** : There is a need to develop standardised databases and websites for investors and farmers to exchange information.

The role of farmers' organisations

- Farmers' organisations have their share to play. They need to provide extension services and technology transfers for farmers e.g training support on bioenergy production, information sessions for farmers to enter the biofuels business, provision of local agricultural advisers...

UNCERTAINTIES AND CHALLENGES

- **Bioenergy is not a miracle solution to farmers' incomes** :
 - There is a need for careful planning including a long term assessment of economic, environmental and social prospects to avoid unfulfilled expectations. In particular, it is important to ascertain immediate and long term prospects in terms of rational land use policy, appropriate selection of crops and production areas and the protection of rights of farmers.
- **Economic uncertainties**

With the predicted increase in reliance on imported biofuels, comes an associated increased exposure to currency fluctuations.
- **Insufficiencies**
 - There is an untapped potential of wood energy and agro-energy in forestry and agriculture to be adapted according to locations. There is little information on costs as well as opportunities.
 - There is a lack of information on biomass potential for energy
 - There is a lack of trained human resources on bioenergy
 - In developing countries, there is a lack of knowledge on harvesting, transportation, storage and use of bioenergy
 - There is a lack of data on quantity, quality and potential of bioenergy sources, poor understanding of energy balances e.g GHG emissions and on the interrelations between wood and agro-energy systems.
 - There is a lack of data in developing countries to make the right choices on the development of bioenergy production (how, what and when to produce).
- **Sustainability challenges**
 - Land issue: There is a risk of displacement of farmers (small scale in particular) for bioenergy production to the benefit of large integrated bioenergy conglomerates which can impose rigid quality standards on farmers, depress prices, impose unfair contractual agreements....
 - The other challenge relates to increased prices for natural resources such as water and land due to a diversion of large tracts of land to energy feedstock production. In particular, farmers are concerned about the price of water which should remain reasonable and affordable. Therefore appropriate pricing policies need to be implemented.
 - There is a danger that bioenergy ventures use more energy than they produce thus harming the environment and causing damage to natural resources (land, water, biodiversity, forests)...There is also risk that an uncontrolled development of bioenergy production backfires on farmers e.g deforestation in the island of Borneo as a result of aggressive expansion of palm oil plantations. For all these reasons, the development of bioenergy should be part of a global and integrated strategy which would take into account the sustainable management of natural resources. In particular, this integrated approach should make sure that water resources are managed in an integrated and rational way (IWRM).
 - Do we need certification standards for Biofuels? What are criteria to measure sustainability? (cultivation practices, land use, climate mitigation, livelihood of farmers..). If the answer is yes, then, there is a risk to use certification as a trade barrier to protect domestic production.

To overcome these challenges, governments need to ensure coherence between agricultural policies (food security) and sustainable energy policies. Farmers consider sustainability of bioenergy production as critical.

- **Food versus energy: what effects on food supplies?**

- There are negative effects on food net importing countries in particular in the cities in developing countries. There is a need to balance supply and demand of food worldwide while protecting the environment. Reduction of transportation of food and energy crops is also needed for sustainability.
- Also, part of the solution lies in growing multi-purpose crops which can both be used for energy and food purposes.

- **New prospects on biotechnology (second generation biofuels)**

- There is a need to look beyond food and feed crops and tap in the potential of 2nd generation Biofuels which include biomass (cellulose, wastes and other by products). However, given the high costs of second generation biofuels, cost competitiveness of cellulosic energy crops is key.
- In order to develop 2nd generation bioenergy, the first generation bioenergy needs to be ensured in order to provide the necessary R&D.

These new developments will help overcome the issue of food versus energy production and balance off food and non food needs as well as supply and demand needs.

- **Effects of bioenergy development on prices and competition issues**

- The price of biofuel is linked to the price of oil. Therefore, rising fuel prices may put upward pressure on the price of crops for fuel feedstocks. However, up until now, this has partially been caused by Biofuels. A steady and sustained increase in commodity prices should enable farmers to resume agricultural production and to improve their incomes and the living conditions of rural communities (after 40 years of depressed agricultural prices) which would allow them to invest and to improve their productivity (especially in developing countries). Nevertheless, we are well aware that this trend could have adverse effects on the livestock market and meat producers e.g. meats through higher process for animal feeds. Alternatively, if bioenergy industries produced a significant amount of protein feed as a by-product, then this would reduce costs in the livestock industries and stimulate production.
- The recent rise in food prices is often described by the Media as a result of the increase in demand for Biofuels. In reality, the main reasons for this trend are due to bad harvesting and also to speculations in the food chain (increased profits benefit retailers and not farmers). In Europe, in 2006, less than 1.3% of the grains production was used for bioethanol. And yet, the prices of wheat have peaked. Similarly, sugar prices are depressed despite the rise in demand for sugar-based ethanol. Therefore, even though farmers are concerned about the rise in food prices, this issue should be managed by implementing sound governmental regulation policies, but this should not be done at the expense of the farmers;

- **Investing on bioenergy in developing countries**

- Developing countries lack the capacity to invest in this production.
- There is a need for foreign direct investment. But then, what are the benefits for farmers and local agriculture? What cooperation systems should be developed to ensure that developing countries benefit from this opportunity?

- **Trade issues**

Trade prospects for bioenergies and in particular biofuel exports from developing countries are limited due to: a lack of clear classification (agricultural, industrial, and environmental), non-trade barriers and production standards, Biofuels need to become internationally tradable commodities conform to international standards. Cf. Aid for trade discussions in WTO.

CONCLUSION

There are significant income opportunities for farmers in the high level of attention that is currently being given to the development of bioenergies worldwide. However, if farmers are to benefit from the development of bioenergies, there is a need for careful analysis and planning to identify real opportunities aimed at improving producers' incomes, before pursuing bioenergy programs. The potential for bioenergy to provide a better alternative to fossil fuels with environmental benefits and economic and social opportunities for farmers is a good reason to try and work out sound strategies along with the different stakeholders. Farmers' organisations need to push for the creation of the right incentive mechanisms that will allow their members to benefit from this new opportunity and generate complementary incomes. Further research and development are needed in order to avoid competition between food and fuel uses of certain food crops.