

Position paper on Biofuels for the ACP-EU Energy Facility

Introduction

The purpose of this paper is to establish criteria for biofuels projects to be supported by the ACP-EU Energy Facility. This will include criteria in line with EF objectives and sustainability criteria defined in the EU directives on renewables and fuel quality and adapted to the context of ACP countries. It is important to note that these projects should have as an aim to **contribute to increase access to energy services** in rural and peri-urban areas in the country where the biofuels are produced.

I. Definitions and types

Bioenergies refer to energy extracted from any kind of biomass such as plants, wood, forest and agriculture residues and waste. Bioenergies comprise the traditional biomass for cooking (from wood or charcoal), but also cogeneration from biomass (for example from bagasse, waste product of the sugar industry), power plants from solid biomass, gaseous and liquid biofuels.

Biofuels are part of the bioenergy family, and refer to energy produced from biomass products which can be transformed into fuels, notably for transport, stationary use or productive purposes.

There are liquid and gaseous biofuels but the latter are not considered in this paper because they are included in the position paper on biomass.

Generally, a distinction is made between first and second generation liquid biofuels.

First generation liquid biofuels could be split into the 3 following categories:

- Straight **Vegetable Oil (SVO)** or **Pure Plant Oil (PPO)** or **raw vegetable oil** are produced from seeds or fruits of oil plants such as rapeseed, oil palm, jatropha curcas, soya... and can substitute the diesel as long as the motor or generator is adapted.
- **Biodiesel** are obtained from SVO or from animal oils which are transformed by a chemical process called transesterification. Biodiesel can be blended with fossil fuels without any motor's transformation. Biodiesel might also be used as pure biodiesel (B100). This usually requires modification of the motor or generator.
- **Bioethanol** are produced the fermentation of sugars or starches from sugar cane, cassava, maize, potatoes, sorghum, sugar beet, wheat.... Bioethanol can be used as 1) Substitute of MTBE¹; 2) As a blend to gasoline (E5, E10...) and 3) In Flex-Fuel cars, e.g. (E85).

Second-generation biofuels are produced from wastes (incl. food waste), residues, non-food cellulosic and ligno-cellulosic material, i.e. 'woody' sources or the non-edible parts of plants, by freeing the sugar molecules from cellulose using enzymes, steam heating, or other pre-treatments which convert biomass to liquid (BTL). These second generation fuels are currently under development and not expected to be commercially available before 2020. For developing countries second-generation biofuels will play in the short and mid-term a minor role.

This paper will focus on first generation liquid biofuels, which are currently the major stake.

¹ Methyl tert-butyl ether, used as a fuel component in motor gasoline

II. Context

There has been a phenomenal growth in the global production and use of liquid biofuels over the last 5-10 years: it has been multiplied by four between 2000 and 2008. The renewed interest in biofuels is attributable mainly to the rising and volatile price of oil, the fight against climate change and also ongoing efforts to revitalize the agricultural sector facing low commodity prices.

Brazil and the US are the leaders for bioethanol production in the world generating 89% of the total production, with sugarcane in Brazil and mainly corn in the US.

The EU has the largest production of bio-diesel, with Germany, France and Spain in the lead. The revised Fuel Quality Directive (FQD) and the Renewables Directive (RES-D) were adopted in December 2008 by Council and Parliament. The FQD contains an obligation for fuel suppliers to reduce lifecycle GHG emissions from fuels by 6% by 2020, providing an incentive to use better GHG performing biofuels. The RES-D contains a mandatory target of 10% renewable energy in transport by 2020, most of which is likely to be biofuels.

Both directives contain an identical set of sustainability criteria for biofuels, addressing e.g. GHG saving thresholds, biodiversity or conversion of high carbon stock land. They also share the methodology aim to calculate lifecycle greenhouse gas emissions from biofuels. These directives do not include mandatory social criteria (labour conditions, land tenure, etc.), nor food security criteria, because of the difficulty to verify the link between individual biofuel consignments and the respect of these particular criteria. But both directives require the Commission to monitor and report on the impacts of increased biofuel production on the social situation, including availability of foodstuffs at affordable prices, in the EU and third countries, and to propose corrective action, if appropriate..

In ACP countries, the longest continuously operating biofuels programme is in Malawi, where ethanol from sugarcane has been blended with gasoline since 1982. In recent years, with the renewed interest in biofuels, a number of new pilot projects and exploratory studies have been made in African, Caribbean and Pacific countries. Several sub-regional conferences have been held in the past years aiming to define regional strategies regarding biofuels² and some strategy documents on biofuels have been established³.

III. Opportunities offered by biofuels

Depending on the implementation conditions, the growing of energy crops and the production of biofuels could represent the following opportunities on ACP countries:

1. **Increased access to safe and sustainable energy services** in rural areas;
2. **Increased energy supply security** through diversification and progressive substitution of oil;
3. **Reduced national oil importation bill;**
4. **Increased agricultural productivity** through notably the use of agricultural residues and waste in productive processes;
5. **Increased income for farmers** due to better market access for biofuel feedstocks and investments in infrastructure

² E. g. Guyana, August 07, Ouagadougou in November 07, Dominican Republic, Marc 09... See bibliography

³ E.g. "Sustainable Bioenergy Development in UEMOA Member Countries", see bibliography

6. **Increased employment** opportunities in associated sectors i.e. agriculture, industry, infrastructure and research in both rural and urban areas;
7. **New investment and trade opportunities with prospective access to the international market;**
8. **Reduced emission of pollutants, including greenhouse gases**, thus providing both local and global environmental benefits.

Objective 1 is the main objective of the Energy Facility. Objective 2 and 8 are important objectives of the EF as well.

IV. Issues to be addressed

1. Biofuels and food security

The increases in the level of food prices in 2007 and 2008 are mostly due to the combination of temporary factors (shortfalls in cereal harvests of the main world suppliers in 2006 and 2007) and of structural factors (rising demand for food and feed from emerging markets). In this already tight market situation, the additional demand and market speculation for biofuels has contributed to an extra rise in commodities prices. In the longer term this has a net small but detrimental effect on the poor that may be significant in specific locations. Shorter-term effects are likely to be significantly greater.

The use of agricultural land to grow energy crops also compete with the use of land and water for food and animal feed production, driving up the prices of commodities like cereals. On the other hand steady raising prices for agricultural commodities are necessary for rural development.

The present food security problems are mainly due to issues of food affordability, rather than availability. Therefore income raising activities could in many cases improve the situation of the poor - like production of cane, sorghum, or other crops, whether for the food, fuel or feed, domestic or export markets (and this will not depend on whether the country is a net food importer or not). The structure of the supply market and the sharing of the benefits from biofuels production will determine in large part the impacts on food security and availability.

2. Biofuels and environment

a. Climate change and change of land use

At first sight, biofuels seem GHG neutral. However, while considering biofuels life cycle analysis, “from well-to-wheel” as it is said in case of fuels used for road transportation, this is not so evident. GHG emissions linked to the production of biofuels (irrigation, inputs, transportation, process, etc.) are in some cases as important as the reduction linked to the substitution to fossil fuels.

The use of biofuels could even increase greenhouse gas emissions if land would be converted from forests, wetland and reserves for conservation to grow more corn or soya beans. Therefore strict sustainability criteria are required, including a minimum GHG savings requirement, in order to reduce potential negative effects from inappropriate production practices.

When a country or region has ineffective (or no) land-use policies, negative impacts of “shifts” in land-use due to bioenergy development are possible (such as significant deterioration of habitats, GHG emissions, competition with food crops, etc), including indirect land-use change impacts.

b. Biodiversity, water and other environmental issues

The use of land for energy crops could affect either agricultural or high value natural land. In both cases it can imply an incremental natural resources pressure on the given area as these crops usually require **more fertilisers and pesticides** than traditional ones. Also **water and land requirements** are bigger in the case of energy crops in order to obtain a large scale production that could increase the investment profitability. The Gallagher Review⁴ has estimated however there is sufficient land available to satisfy demand for food, feed and fuel to 2020, but this needs to be confirmed in a local and regional context before global supply of bioenergy increases significantly. Current policies do not ensure that additional production moves exclusively to suitable areas.

Biofuels production without appropriate sustainability safeguards can represent a high risk to **biodiversity**, especially in the case of forest and grasslands cleared to plant these crops.

3. Biofuels and social impacts, including land tenure

There is some evidence that attractive prices for some biofuel feedstock, especially palm oil and sugar cane, have led to land grabbing and the involuntary displacement of people. Also have been reported a range of social issues including poor working conditions for labourers and loss of land rights⁵ for indigenous peoples where new plantations for feedstock are established.

The main factors affecting smallholders farming can be considered at the institutional level (land access and credit access), the policy level (anti poverty and sustainability), the organization level (cropping pattern, complying with food security objectives and industrial crops production objectives) and technical level (soils and varieties).

Farmers have to get access to the market and to credit facilities for fertilizers and other agricultural inputs. Effective and balanced partnership between smallholders and agro-industrial companies should provide a solution to the cash problem, since the company provides at least partly the necessary inputs to the farmers on a credit basis, and the value of inputs is offset from the crop value at harvest.

V. Barriers to development of biofuels in ACPs

The dissemination of biofuels in ACP countries faces several barriers including:

- lack of information on options and opportunities,
- low income and lack of access to financing services in the rural areas,
- lack of conducive legal, policy and regulatory frameworks (incl. poor energy pricing regimes that do not consider the environmental cost of energy / subsidise fossil),
- lack of capacity to operate and maintain technologies related to biofuels,
- absence of institutions that would support the promotion of such technologies,
- difficulty in accessing land can also be a major problem for developing biofuel feedstock cultivation in certain developing countries.

⁴ See bibliography

⁵ In some countries the land tenure law is weak, giving little protection to smallholders. Those often clash over land rights with landlords, who use to call for the help of the police, resulting in human rights violations.

VI. Minimum criteria for biofuel projects to be supported by the Energy Facility⁶

1. The project has to **contribute to increase access to energy services** in rural and periurban areas in the country where the biofuels are produced. This implies a local production for a local use. It shall **contribute to the social and economic development** of local, rural and indigenous peoples and communities.
2. The biofuel project shall **follow all applicable laws** of the country in which they occur. In particular, it shall **not violate land rights, human rights or labor rights**, and shall ensure decent work and the well-being of workers.
3. The project shall **contribute to climate change mitigation** by significantly reducing GHG emissions (35%) as compared to fossil fuels⁷. This excludes for instance palm oil (without methane capture at oil mill). **Air pollution** from biofuel production and processing **shall be minimized** along the supply chain
4. The project shall **avoid negative impacts on biodiversity, ecosystems**, and particularly areas of **high conservation value** (that is to say primary forest, designated nature protection areas, highly biodiverse grasslands) and **land with high carbon stock** (that is to say wetlands, continuously forested areas and undrained peat lands).
5. Biofuel production shall **not impair food security**.

VII. Further recommendations

The convenience of promoting biofuels production in developing countries must be assessed according to the specific situation of every country and location in a trans-sectoral way: its energy supply pattern (imported/domestic, fossil fuels/renewables, etc.), its production potential and the necessary environmental and social risks/benefits analysis. Hereinafter are summarized some of the recommendations for projects to be supported by the ACP-EU Energy Facility:

General principles

Biofuels projects shall be **designed and operated under appropriate, comprehensive, transparent, consultative, and participatory processes that involve all relevant stakeholders**, especially those at local level. Biofuels shall be produced in the **most cost-effective way**. The use of technology must improve production efficiency and social and environmental performance in all stages of the biofuel value chain.

Food security

⁶ Criteria mainly based on the overall objectives of the Energy Facility, the EU sustainability criteria for biofuels as defined in the Renewable Energy Sources directive – RES-D (2009/28/EC and those defined by the international Roundtable on Sustainable Biofuels)

⁷ See Annex V of the RES-D (<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2009:140:0016:0062:EN:PDF>)

Any biofuels policy or intervention has to be established in a food-security-sensitive framework. **Bioenergy development** should be encouraged **for crops which compete the least with food and other uses**, and need the least resources such as **lands and water** either directly (they are not staple foods) or indirectly (they have higher yields, hence use less land⁸).

Food security issue must be mainly tackled at the international level by **trade regulations**, at the national level by policy measures such as **tariff, fiscal and customs regulations**, and at a more local level by **secure access to land** for smallholder farmers (cf. § on Land tenure here below), **participatory land use planning, good agricultural management practices**, diversification of farming system, access to markets (input and supply markets).

Biodiversity

Significant increases in the use of land for feedstock production should respect rigorous and **effective controls** in order to avoid indirect negative **impacts on biodiversity** and GHG emissions. The main **areas to be protected** include high-nature-value areas (e.g. intact close-to-nature ecosystems, natural habitats, primary and virgin forests), land needed to maintain critical population levels of species in natural surroundings, relevant migration corridors and environmental buffer zones around sensitive areas (such as habitats of rare, threatened or endangered species).

Sustainable farming/production practices are equally important to avoid non desirable impacts from energy crops cultivation and to boost the positive ones. These practices include management plans and farming operations protecting high-nature-value farming systems⁹ and nature-oriented forestry, preservation of genetic diversity by cultivation of a variety of species and varieties and alien species should only be cultivated under conditions of careful control and monitoring.

Water and soils

Biofuel production shall promote practices that seek to **improve soil health and minimize degradation** and shall **optimize surface and groundwater resource use**, including minimizing contamination or depletion of these resources, and shall not violate existing formal and customary water rights. Positive impacts also need to be taken into account in this context, for example the restoration of degraded land by bioenergy activities, e.g. planting perennial plants.

Land tenure

Secure tenure over land and resources is essential to the eradication of extreme poverty and sustainable development. On this regard, governments need **to assign clear rights to land and police**, and responsible private enterprises can set standards and follow codes such as those of the Roundtable on Sustainable Palm Oil (RSPO).

While the economics of large plantation systems are quite well known, smallholder farming systems usually receive far less attention. The challenge in this regard in most ACP countries is to make an efficient combination of both systems in order to maximize agriculture production and bring a solution to a crucial social question.

Smallholders' schemes are appropriate for entering in synergy with nucleus private enterprises. While getting the support of the Government policy in the rural sector on the basis of a governmental plan for participatory land use planning for biofuels feedstock cultivation, they could also access to credits and subsidies for their development.

⁸ 1 ha of sugar cane produces approximately 7.500 l of ethanol, of maize 2.500 l.

⁹ e.g. on grass land or small patterned traditional farming systems

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