



Background note on Biomass production and future rural development in Europe

Does bioenergy contribute to local added value and can it further enhance future development of rural areas?

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1 Introduction

Production of bioenergy is expected to contribute to rural development through job creation, diversification of rural employment opportunities and income generation in rural areas, thus acting to slow down rural depopulation in developing countries and in EU. Perspectives for jobs creation are centred on new forms of biomass exploitation, such as: collective heating, CHP or producing liquid / solid biofuels. Within the AGRINERGY project this issue was assessed more deeply.

2 Key findings

Positive effect of bio-energy on creation of new jobs

The production of bio-energy is expected to contribute to rural development through job creation, diversification of rural employment opportunities and income generation in rural areas (from highly skilled experts in science and engineering to agricultural labour). As the majority of bioenergy-related employment would occur in producing (farming or harvesting), delivering and processing biofuels, most of these jobs are likely to be created in rural areas, where under-employment is a crucial issue. Due to the bulky nature of biomass, feedstocks have to be ideally used at a reasonable distance from their production place, thus generating local jobs, which are less subjected to be delocalized outside the EU.

Such mechanisms would thus act to slow down rural depopulation. Perspectives for job creation are centred on new forms of biomass exploitation, such as: collective heating, combined heat and power or producing liquid/solid biofuels. The Impact Assessment supporting the Renewable Energy Roadmap, for example, estimates that 650,000 additional jobs could be created in the EU if the 20% target on renewable energy

sources for 2020 was achieved, mainly in rural areas, especially in regions that operate on the economic margin.

The report *Biofuels in the European Union*¹ states that “the employment balance of biofuels is estimated to be about 16 jobs per ktoe, nearly all in rural areas (each 1% proportion of biofuels in total fossil fuel consumption will create between 45000 and 75000 new jobs in rural areas). If one assumes that there will be a production capacity of about 30 Mtoe in the short term (IISD, 2007), then this represents 480.000 jobs. Increased use of biofuels will have *direct* and *indirect* employment effects. Another study, by the European Renewable Energy Council, estimates that meeting the EU target for renewable energy for 2010 will result in a growth in net employment in the biofuels sector of 424 000 jobs, which is a similar figure to the one calculated on the basis of the IISD information. An *indirect* effect could be the multiplier opportunities which could increase the direct effect. On the other hand, jobs in the biofuels sector might replace other jobs, and the net employment effect could be much less. Results from a Commission (DG ECFIN) modelling study using the QUEST model indicate that the above mentioned indirect effect on net employment could range between minus 40 000 to plus 15 000 jobs, depending on how wages and unemployment payments react to higher energy prices.

On the other hand, even taking into account the arable production necessary to produce biofuels, the projected decrease in agricultural employment on the horizon of 2020 is at least 3.5 million jobs. Biofuels production – in terms of agriculture and the transformation from feedstocks to fuels – will provide real, but limited, labour opportunities in a rural environment that will increasingly depend on non-agricultural employment possibilities. Agriculture at the current time only accounts for 4% of the Gross Value Added within the rural

¹See: http://ec.europa.eu/research/energy/pdf/draft_vision_report_en.pdf



economy, and this percentage will progressively decline. Migration studies, however, reveal that the rural environment is becoming increasingly attractive to the secondary and tertiary sectors, and the development of rural areas will largely depend on these sources of economic activity.

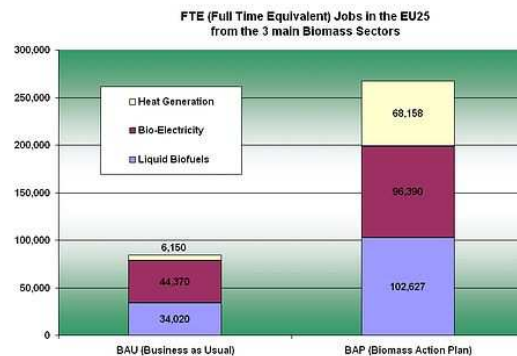
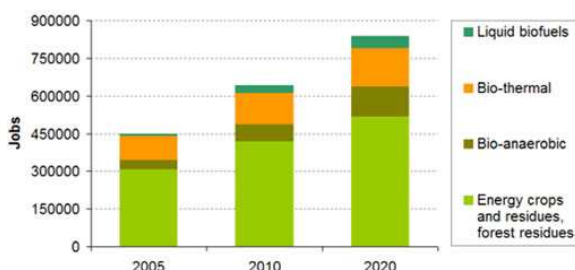
Job creation in the heating and cooling sector

Employment balance for heat production from biomass varies from one country to the other. As an example, results of a previous “Wood Energy and Local Development” programme in France show that 5 permanent jobs were created for each 1000 toe of wood valorised (Source ADEME). In Sweden, SVEBIO estimates the number of jobs at 3.5 per ktoe; and, in Germany, the Ministry of the Environment estimates that 30.000 jobs are allocated overall to the biomass sector taken as a whole

According to a 2006 study from Haas et al, the implementation of the BAP’s objective for biomass heating would lead to the creation of about 580.000 new jobs in the next 10 years, dedicated to installing biomass heating systems, on one hand, and operating the installations on the other hand:

- a) 280.000 new jobs created for the installation of new biomass heating systems, based on the ratio that the replacement of 1 Mio toe of fossil fuels with biomass would have the effect of creating 70000 jobs for producing and installing new heating systems (combination of collective and individual biomass combustion technologies),
- b) 300.000 jobs for operating biomass heating systems, including production of the raw material (biomass from forestry or dedicated energy crops), processing of raw material (production of chips, briquettes, pellets ...), storing, trading, delivering, maintaining and operating the systems (district heating networks, bioenergy services to house owners and rural enterprises, etc.).

The new net jobs in bioenergy employment relative to the base in 1995 is summarised in Figure 1.



Impacts might be highly variable across rural regions

Liberalisation of agricultural trade may increase intensification in regions that are most competitive on the world market, and extensification and eventual abandonment of land in other regions. bioenergy production could be an option for farmers facing difficulties due to the reform of the sugar regime, as well as the planned abolition of the intervention purchases for maize. International competition in the world beef market from the main competitors of the EU will increase, and the demand for feed coming from pasture and fodder crops should subsequently decline. In contrast to these trends, social benefits might arise from the increasing opportunities of biofuel production through the creation or maintenance of employment in agriculture.

Social effects would be associated with changes in the market power structure and distribution of costs and benefits throughout the food chain

Duffey (2006) identified the possible impacts of biofuel brought about by changes in the distribution of production costs and the availability of primary resources among supply chains that are managed by the food industry and those managed by the fuel industry. Peskett et al. (2007) also identifies the impacts of biofuels on rural societies in low-income countries. With sugarcane, for example, biofuel yields can be very high, reducing the pressure on the land although the required economies of scale may reduce ability of the poor to use their land in such an intensive manner as the major land-owners.

Current funding mechanisms to strengthen rural areas through higher biomass production

The Rural Development programmes that are part of the second pillar of the CAP, also include elements that are related to bioenergy production.



Under the latest Rural Development Regulation (Council Regulation 1698/2005) a range of measures could be used to aid specific bioenergy production approaches. This Regulation introduces a single instrument to finance rural development policy: the European Agricultural Fund for Rural Development (EAFRD), which was set up on 1 January 2007. The use of a single Fund will improve the competitiveness of agriculture and forestry, promote environmental measures and rural land management, as well as improve the quality of life and the diversification of the rural economy. A link to bioenergy issues can be established among all three thematic axes of the RDR:

- Axis 1 (Improving Competitiveness) provides measures with the aim to develop new outlets for agricultural and forestry products, which include the development of renewable energy materials, and the processing capacity for them. It also covers support to the establishment of environmental farm advisory services and their use by farmers (with priority given to working with those having the larger farms).
- Axis 2 (Land Management/Environment) can be used to support the environmentally friendly production of energy crops (e.g. agri-environmental schemes) or to establish agro-forestry systems (which could have a purpose related to energy production);
- Axis 3 (Diversification, Quality of Life) includes measures for training and education as well as the diversification into non-agricultural activities.

Lastly, it would also be possible to use the cross-cutting LEADER measure for the development of locally developed and diversified renewable energy programmes from agricultural and other sources.

Some examples on support provided under the Rural Development Schemes during the period 2000-2006 are presented in the following:

- A flat rate of support per hectare, provided to farmers in England for growing miscanthus. Eligible costs included the purchase of planting material, ground preparation, fencing and first year cutback. Applicants needed to demonstrate that an appropriate end use for the crop existed within a reasonable distance of the enterprise (8 – 16 km), and beneficiaries needed to comply with good practice guidelines for planting and growing miscanthus.

- Support for willow grown for energy use in Northern Ireland, with a plantation of at least 3 hectares, coppice stools maintained for at least 5 years from the date of planting. Support to owners, tenants, groups of farmers, end users or district councils was provided on a competitive basis in order to select the highest quality applications. Eligible costs were for for planting, cultivation, cutting back, overheads (accounting) and costs of machinery.
- Support for investments in machinery for processing short flax fibres in Austria. Flax straw was delivered to a factory on a contractual basis by 150 farmers in a region (and planted surface to be around 350 hectares). The factory processed the short fibres to produce thermal insulation slabs and noise insulation slabs, as well as insulation fibres. The costs of the investments amounted to slightly over 1 million euro, with 134 keuro from the Rural Development programme, national public funding of 146 keuro, and private contribution of 807 keuro.

The type of activities which could be funded from the Rural Development Programme needed to contribute to the national priorities, being consistent with first pillar payments (e.g. support for energy crops), the Structural Funds (energy, environment, transport, employment, competition, research) and overall consistent with the national biomass policy.

3 Main questions

Questions to be discussed during the workshop:

- What are the key added values of bioenergy production to rural areas? What are the trade offs? Is there a net value added in rural areas that can be referred to the development of bioenergy and biomass production?
- Which stakeholder groups are mostly benefitting from bioenergy and biomass production? Which stakeholder groups are instead negatively affected?
- Which pathways of bioenergy (biogas, biofuel, combustion) bare the highest benefit potential for rural development?
- Which regions might benefit most from the promotion of bioenergy production?
- How can policies (agricultural, transport, energy, IT, RTD policies) be designed to further ensure that rural areas benefit from production and provision of bioenergy?