

INTRODUCTION TO THE STUDY

1 CONTEXT OF THE STUDY

The present study is developed in the framework of the European Commission evaluation programme regarding all policy measures causing a budgetary expenditure, and meets as well the indication for a study on the aid for energy crops and bio-ethanol already scheduled by the EC-DG Agriculture.

The study – focusing on energy gained from biomass, which is object of both a market analysis and a policy impact analysis – appears to have a specially high interest, also considering the political and economical framework which it falls in.

The commitments of the European Union under the Kyoto-protocol on greenhouse gas emissions have put a new significance on the use of renewable energy sources, among which biomass is meant to play a relevant role. Moreover - also as a consequence of the recent evolution of some agricultural markets - the cultivation of energy crops as well as the development of bio-energy related activities as a complement to conventional agricultural ones, is now looked at as an opportunity for the primary sector, in terms of new market outlets and redeployment of production.

The Biomass Action Plan presented by the EC in December 2005, as well as the EC Communication about "An EU Strategy for Bio-fuels"¹ sets out precise actions to promote the production and the use of bio-fuels both in the EU and in the developing countries.

2 OBJECTIVES AND SCOPE OF THE STUDY**2.1 Objectives**

The study provides an analysis of the EU bio-energy market, an evaluation of Energy crops CAP measures, including an assessment of the impacts concerned, as well as an outlook for future market development and policy recommendations.

The focus of the *market analysis* is on the sources of bio-energy (bio-ethanol, bio-diesel, bio-gas and direct burning of biomass), with also a look at the two other related markets within the supply chain, i.e. the market of agricultural biomass and the market of bio-energy for heating, transport and electricity. The main objectives of the market analysis in the framework of the study can be summed up in the following:

- to give a description of the market of the products concerned (bio-fuels as well as biomass and bio-energy uses).
- to determine the production costs for energy gained from biomass.
- to estimate the reduction in greenhouse gases emissions as well as the saving of fossil fuels which can be associated to the use of energy gained from biomass.

As for the *evaluation part* of the study, it is aimed at assessing the impact of the *direct aid measures* (decoupling, non food on set aside regime, aid for energy crops) and of the *rural development measures* on a number of variables concerning:

- cultivation of energy crops;
- income for farmers concerned;
- linkages with other EU and national measures regarding bio-energy;
- CO2 reduction and saving of fossil fuels;
- environmental effects at the level of primary production.

The assessment of the impacts on the above mentioned variables is related to the diverse objectives which the CAP measures feature, which are identified in the first part of the evaluation work.

Finally, the *outlook and recommendations part* of the study aims at outlining the future development of the EU market of energy from biomass, as well as providing advice concerning the EU policy for the sector, on the basis of the analyses and of the evaluation work carried out in the study.

¹ Commission of the European Communities, *Communication from the Commission – An EU Strategy for Bio-fuels*, 08-02-2006.

2.2 Scope of the study

2.2.1 Product coverage

The study covers – both for the market analysis and for the evaluation part – the main sources of bio-energy, namely: bio-ethanol, bio-diesel, bio-gas, direct burning of biomass.

As for the sources of biomass, all the crops cultivated for energy purposes are concerned (rape seed, soybean, sunflower seeds, sugar beet, maize, barley, rye, potatoes, wheat, willow, miscanthus, grass), as well as agricultural residues.

When relevant for the purpose of the study, also other additional sources of biomass are considered, among which animal waste, forestry and wood residues as well as thinning wood.

Finally, the bio-energy uses which are relevant for the study are electricity, transport and heat.

2.2.2 Geographical and time coverage

The study regards the EU territory. The evaluation of policy measures is limited to the EU-15 territory, because of the lack of information and of a relevant period for the assessment of impacts in the case of the New Member States.

As for the time coverage, the market analysis provides an evolution of the relevant markets in the EU, but is more focused on the present situation, while the evaluation part of the study covers the period between 1992 and today.

2.2.3 CAP measures coverage

The CAP measures to be covered in the evaluation include the Direct Aid Measures and Rural Development Measures specified below.

Direct aid measures	Rural development measures
<ul style="list-style-type: none"> - Decoupling - Aid for energy crops (AEC) - Non food on set aside regime (NFA) 	Chapter I: <ul style="list-style-type: none"> - on-farm investment in equipment for the use of biomass as energy source; - support for planting multi-annual biomass crops; Chapter VII: <ul style="list-style-type: none"> - investment in installation for first treatment of biomass (e.g. packaging); - investment in installation for the production of by-products (e.g. non refined plant oils); Chapter VIII: <ul style="list-style-type: none"> - non industrial processing and marketing of forestry products/afforestation; Chapter IX: <ul style="list-style-type: none"> - promoting the adaptation and development of rural areas.

Other relevant policy measures at national and EU level (tax exemption, tariffs, obligations regarding shares of renewable energies, etc.) are also considered as they have an influence on the economics and operations of the bio-energy supply chains.

Other non-CAP EU policies (in the fields of energy, environment, transport, employment, competition, research), which would normally fall outside the scope of the evaluation, are considered wherever relevant because of their interaction and possible synergies with the CAP measures listed above.

3 ORGANISATION OF THE REPORT

The report is structured in four main sections, according to the main topics dealt with.

- *Methodology*, containing a synthetic description of the general approach to the evaluation study (chapter 4).
- *Policy and regulatory framework*, containing a description of the CAP and non-CAP measures relevant for the study, as well as of their recent evolution (chapters 4-5).
- *Market analysis* (chapters 6 – 11).
- *Evaluation Questions*, containing the answers to the twelve evaluation questions and a general conclusion on the evaluation work (chapters 12-24).
- *Outlook and recommendations* (chapter 25).

The study is completed by a series of annexes containing details for methodology, data and information used in the framework of the market analysis and of the evaluation questions, as well as monographies for the nine regional case studies carried out in the framework of the evaluation.