



# AGRINERGY

## EU Bioenergy Policies and their effects on rural areas and agriculture policies

### Findings of the Expert Workshop, 20th of November 2007, Brussels

At November 20, 2007 an expert workshop on “EU Bioenergy Policies and their effects on rural areas and agriculture policies” took place in Brussels. The workshop was part of the AGRINERGY project, a specific support action under the 6th EU Framework Research Programme that runs from May 2007 to November 2008. The project has been launched to analyse and understand the socio-economic, environmental and societal issues of EU bioenergy cropping and assesses the interlinkages between the different environmental policies, the future Common Agricultural Policy (CAP), international trade and the development of sustainable rural development. For further details, please see <http://agrinergergy.ecologic.eu/>.

### Objectives of the workshop

The workshop aimed to reflect on the preliminary results of the project that have been compiled in the general survey in a first working step of the AGRINERGY consortium. The survey addressed the following issues:

- Linkages between EU environmental, energy and agricultural policies and bioenergy policies
- Environmental effects of biomass production
- Effects of biomass production on future development of rural areas
- Biomass policy and its relation to the future World Trade Organisation negotiations

The main findings of this survey have been summarised in background notes, which served as input to the discussions at the expert workshop<sup>1</sup>. In total three background notes have been prepared:

1. Background note on international biomass trade - What are sound policy approaches to guarantee a fair trade of biomass without further depletion of natural resources in exporting countries?
2. 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?
3. Background note on measures and policies for sustainable bioenergy supply - How can sustainability measures for bioenergy be inserted in EU agricultural, energy and environmental policies?

The first two issues on biomass and their interface to trade policies and rural development were discussed in breakout groups. The third topic on sustainable bioenergy supply addressed a wide range of policy measures and was discussed within the whole group.

The main results of the discussion are summarised below.

<sup>1</sup> All background papers can be downloaded at the conference website [www.ecologic.eu/agrinergergy](http://www.ecologic.eu/agrinergergy)



## Welcome and introduction

The workshop was opened by the research director Mr. Gros of CEPS, who welcomed the participants. Afterwards Mr Dworak (Ecologic-Austria) presented the overall aims and structure of the AGRINERGY project. His presentation was followed by Mr. Venturi (DG-RTD) who explained the research activities of the European Commission in the field of bioenergy.

Finally, Stephanie Schlegel (Ecologic Germany) gave an overview about the recent developments in EU bioenergy and related policies, particularly with regard to the implementation of sustainability criteria.

## Working group 1: Bioenergy and international trade

### 1 Key questions to be discussed

The discussion focused on what role the international biomass trade could play for the sustainable development of exporting countries. These questions have been the starting point for the discussion process:

- What are the socio-economic and environmental effects of biomass production and trade?
- What are the opportunities for matching biomass production and trade with sustainable development?
- How can agricultural and agroforestry systems be designed for sustainable biomass production and trade?
- What are the implications of existing international law on biomass trade?
- Are there perverse incentives (e.g. subsidies) in terms of sustainable use of bioenergy?
- What would be the effects of cutting tariffs for biomass products?
- How can we get an agreed set of criteria to establish a fair trade of biomass?
- Is a certification system the key solution for sustainable trade and under which conditions?
- Should biomass be qualified as an energy source that does not fall under the WTO?

The overruling question on this was how such international trade may be 'fair' for all countries involved.

### 2 Discussion / experts' views & opinions

After a short presentation of the background note, participants discussed the following issues:

- The EU and other developed countries have set ambitious targets for the development of biomass markets, motivating their policies mainly by environmental concerns and the need to reduce GHG emissions, as well as the reduction of energy dependence on imports. For these countries to meet their targets though, it is likely that extensive imports will be needed.
- In developing (exporting) countries as well there are opportunities of developing international biomass markets for rural development and poverty alleviation, since countries like in Latin America, parts of Sub-Saharan Africa, and Eastern Europe have a larger biomass production potential. Given their lower cost of labour and land, production costs are much lower and thus offer an opportunity to export biomass.
- Trading the available and underutilized biomass resources is therefore a logical and in some cases desirable route. International biomass trade connects supply and demand, which leads to increased use of biomass for energy.
- Trade flows of biomass for energy and related products are currently not sufficiently mapped. Data availability is low and uncertainties high. This situation has to be improved to better understand the current trading regime.



- Moreover, biomass trade could be one way of reducing costs compared to using domestic resources, but in order to improve competitiveness and efficiency of biomass use, technology transfer to non EU countries is essential, as well as building of infrastructure and supply chains.
- Substantial concerns were raised on additional land requirements outside of the European Union due to the EU bioenergy policy. This policy tends to lead to immense pressure on land in developing countries resulting in more land taking activities in natural areas (including rainforest and savannah ecosystems) finally ending up in an increase of GHG emissions due to deforestation and other land use changes (for details see presentation of S. Bringezu on the website). Further it has to be question, how these countries will develop until 2030 and if they still will able to export biomass. If not the EU biomass targets are unlikely to be reached.
- Other critics assert that biomass trade will have negative effects like for example in Brazil, where native unjust labour conditions are deployed in sugar cane cultivation. In the worst case, a large demand for bioenergy would compete with food production. This could result in displacing farmers from their land and jeopardize the food security of poor farmers and potentially cause large-scale deforestation and unsustainable agriculture.
- Sustainable criteria should therefore be set for biomass production systems and trade. Certification may be one way to prevent negative environmental and social effects, but a uniform certification system is required to avoid increased costs and exclusion of developing countries. Further a certification system has to cover private companies and authorities. If several systems exist, there is a high risk of confusion. Oil producing companies, such as BP and Shell, are already involved in most standardisation initiatives for biofuels, investing highly in research at least in liquid fuels.
- The development of biomass markets will though be influenced by European policies, such as the environmental policies. Biomass potential in Europe will also be restricted due to limited water supply (especially in Southern European countries). As a result, the amount of imported biomass products is expected to increase.
- European farmers are sceptical about standards and tariffs reductions. They expect high costs when sustainable production has to be ensured and this will hamper their competition with other biomass production in exporting countries. Competition problems arise then if standards are only implemented in Europe and not in the rest of the world.
- An overall land use strategy could provide information about land availability also dealing with input and output measures of land use, infrastructure needed to generate biomass potentials and the competition between biomass use for energy and other purposes.
- Another approach can start from the demand perspective. National or even regional needs in relation to land use can be analysed and prioritised focussing on end products. This can be correlated with land availability. Sustainability criteria have to be created for all land uses.
- However, such planning approaches require a consistent political framework and governance structures that are not present in all relevant countries especially outside Europe. Before sustainability criteria as well as land regulation can be established it has to be guaranteed that this can be controlled and monitored.
- Finally, when benefits for developing countries in respect to biomass trade are discussed, it has to be clarified who is really benefiting from the biofuel boom and which part of the population is rather suffering from intensification of land use, land displacements and other negative impacts. All affected stakeholders have to be involved in the process of developing sustainability standards.
- The consumers' perspective needs also to be taken into account, as there is an increasing awareness to sustainability issues in consumption.

To sum-up, biomass could be a key component of the world's future energy system. However, since biomass and agricultural products compete for the same land and intensive feedstock production might lead to negative impacts for environment and society, it seems necessary to establish common sustainability criteria – a holistic approach will be needed to do so.



## Working Group 2: Bioenergy and rural development

Much of the expressed interest during the round table centred on the impact of the production of bioenergy feedstocks on landscape, the impacts of production pathways on the rural economy, and the changes in the rural economy upon rural land-use in general. Three questions were posed.

### Q1: What are the key added values of bioenergy production to rural areas?

- In a first finding it was recognised that added values of bioenergy production in rural areas are not only a question if bioenergy is produced in rural areas, but if the benefits stay within the region, ideally at the producer's level. Experiences in different countries were reported where synergies could be explored, e.g. through using the bioenergy generated at farm level for the heating of greenhouses or social buildings. In general it was affirmed that there is most added value if bioenergy cropping and use adds to the diversification of farmer's activities, rather than replacing former activities or changing whole production systems.
- Secondly, with regard to employment effects it was assumed that bioenergy cropping should not take place on productive agricultural areas that are already in use. While it was agreed that bioenergy cropping creates jobs in rural areas, it was questioned if the net employment effect is higher or lower than in other sectors. Particularly with regard to livestock production this was doubted. Also from an environmental point of view and with regard to self sufficiency in food production it was argued that bioenergy cropping should particularly take place on formerly unused areas. Nature areas might also be affected by additional land demands. Second generation crops were identified as more beneficial in this regard, but would also add to pressures on land availability. An Estonian participant shared the experience, that due to the reuse of marginal land and the new income opportunity bioenergy production provided an incentive to stay or resettle in rural areas.
- Thirdly, it was stated that the added value largely depends on the production pathway chosen. The highest added value for rural areas was identified to be the use of combined heat and power from local feedstocks, such as cuttings or by-products and residues from agriculture/forestry.

### Q2: Which stakeholders are benefiting, and which production pathways are developing?

Closely related to the question if bioenergy production leads to an added value in rural areas is the question which stakeholders actually benefit from this development.

It seems that the main stakeholders to benefit will be those involved with short-term benefits, namely those who are providing new equipment. After start-up in bioenergy production has occurred, then the play of markets will reduce the margins of those involved in actually carrying out the investments.

Results from research activities undertaken in Germany were presented that suggested that farmers, seed producers, machinery traders (for harvesting etc.), transport companies (for biomass and residues) and energy plant producers are generally benefiting in the bioenergy sector. On the other hand drinking water suppliers, tourism and hunters were identified as losers of the bioenergy boom in Germany. It also seems that due to rising land demand and prices species protection projects may become more expensive in the future.

However, from the presentations of other experts it became obvious, that these evaluations would look very different in other European member states. For example, since biogas plants are not common in the UK, there is not much conflict with the tourism sector. Synergies were reported from Estonia where short rotation forestry was used as wind shelter, dust remover and means to hide landfills. Other synergies were examined with regard to bioenergy feedstock production and waste water management, since biological purification by plants also being an opportunity to irrigate and fertilise biofuel-feedstocks.

It was commonly agreed that most of the benefits and drawbacks for different stakeholders are highly dependent on the bioenergy pathway chosen.



Q3: What are relevant policies to promote beneficial bioenergy pathways in rural areas?

Having identified opportunities and risks of local bioenergy production and use, the discussion centered around what policy approaches are needed, to promote beneficial bioenergy pathways in rural areas.

Three main issues were identified:

- Bioenergy policies need to be designed with a holistic approach. Interdependencies to other policies must be addressed, in order to increase synergies and reduce trade offs. Other environmental planning mechanisms, as for water management and nature protection, could be used as guidance for organising land use for biomass and bioenergy. Agricultural instruments such as cross-compliance affecting all crops would also need to consider possible effects of all crops, including bioenergy crops. An interesting example of an integrated view was reported from Poland, where currently the future use of approx. 1 Mio. hectare of land needs to be decided. While bioenergy cropping is one use option, it is also considered to plant new forests.
- The importance of the choice of bioenergy production pathways was again highlighted. Heat and (combined) power technologies for bioenergy production were recognised as beneficial technologies achieving a high regional added value. Therefore, regional policies and planning instruments should be designed in a way to promote these investments. Regional planning and impacts assessments would need to consider the lifecycle assessments in production, co-production and waste to find solutions that suit the particular local conditions. Attention also needs to be paid to the scale of the feedstock conversion plant and the required area for feedstock production and the creation of regional nutrient streams.
- To promote mutually beneficial bioenergy cropping and use in rural areas, such as second generation technologies, short rotation cropping and the use of marginal land long term policies are required. Attention needs to be paid to possible distortions of agricultural markets, and provide clear long-term signals for the farmer. With regard to the recently reduced energy crop premiums it was recognised that if quick changes in support mechanisms come too quickly, farmers are unlikely to make long term investments.

## Sustainable bioenergy policies / Conclusions

In the second half of the day, the workshop discussion centred on the more general debate how a policy framework should be designed to ensure that the European targets for bioenergy are met in a sustainable way. For many aspects there was agreement among the experts, however some issues were debated more controversial. The key results of the debate are presented below:

1. **Energy resource efficiency and savings:** All efforts towards a sustainable bioenergy policy need to be accompanied by measures to increase *resource and energy efficiency* and efforts to *reduce energy demand* (savings) in general. Current policy initiatives on sustainable bioenergy focus on the level of sustainability in production of bioenergy feedstocks, but hardly address the demand side.
2. **Biomass utilization cascade:** It was recognised that from an environmental point of view it is often more beneficial to use the bioenergy feedstocks already available, e.g. agricultural residues and cuttings than to produce bioenergy crops. It would also minimise competition between energy and material if biomass would first be used as wood, then bioplastics etc. before being transformed into e.g. biogas. Adding another step in the value chain of a product also seems to be more beneficial with regard to added value in rural areas and the diversification of income at farm level.
3. **Selecting sustainable production and technology pathways:** The potential of available bioenergy feedstocks must be used in the most sustainable way, i.e. by energy efficient technologies. Policies should build on lifecycle assessments. Since research results have shown that the most energy efficient pathways are combined heat and power and direct combustion, the current focus on liquid biofuels was questioned by many workshop participants. Some experts suggested that in order to achieve the development of sustainable production pathways it may be sensible to abandon the



European 10% biofuels target and stick to the technology open 20% renewables target. Other participants mentioned that even if first generation technologies are not the most sustainable option, they are needed in order to improve further generation of technologies. However it was agreed that the development of such advanced technologies is currently overestimated and that there are high uncertainties when they will be commercially available.

4. **The ambivalent role of tariffs and subsidies:** Very different views were expressed about the benefits and drawbacks of the current bioenergy production support schemes and if subsidies and tariffs should be kept or abolished. Some participants clearly opted for a full stop, other stated that such subsidies should be kept for a certain time period. Another issue discussed was that in terms of sustainable use of bioenergy it may be more beneficial to support the desired climate friendly and energy efficient technology rather than directly supporting the production of energy crops.
5. **Sustainable biomass potential and land use:** The issue of reaching the European biofuel targets in a sustainable way and with existing agricultural land areas was debated controversial. Different results of scientific models of biomass potentials as well as their underlying assumptions of the models, such as yield increases, population growth or the availability of second generation biofuels were discussed. Additional demand for land was in the focus of discussion.
6. **Sustainability standards and certification systems:** Defining and measuring progress of a sustainable growth in the bioenergy sector will depend on the sustainability criteria chosen. In this context, the current approach of the European Commission to define sustainability criteria was discussed based on the assessment made in one of the background notes. The lack of social standards was criticised by some experts, as well as the limited focus on biofuels and the lack of a common international approach to define sustainability criteria for biomass. However some participants argued, that it is reasonable to demand higher requirements for bioenergy feedstocks than for other biomass uses.

Further it was discussed if these standards should be product specific or regional. Both approaches have different opportunities and obstacles. For the regional approach the idea of a “biomass foot print” was discussed, which is difficult to operate. With a product based standard macro effects such as land use change are difficult to address.

Another point of discussion was how sustainability standards can be implemented. Many considered certification schemes as an appropriate way to ensure the sustainable production of bioenergy feedstocks. However, other experts disagreed, claiming that due to the focus on a producer level, certification schemes can not address macro issues such as food security and indirect impacts such as land use change. Another argument put forward against the use of certification schemes, were the costs they will induce but also their inability to address the whole market given that they are voluntary. However, mandatory implementation options were questioned due to likely conflicts with WTO rules.

7. **Role of the Consumer:** It was agreed that it is important to strengthen the role of the consumer in such standards and certification systems. Different approaches were discussed, but no final solution was found. The issues should be subject to further investigations.
8. **Regionally adapted production and use:** Much potential, benefits and synergies were identified if biomass is produced and used within the same region or country. A main opportunity lies in the adaptation of the most beneficial pathways to regional conditions. Some technologies even depend on a rather regional use, since bulky feedstocks (such as landscape cuttings) are not suitable for long transport distances and can be used more efficiently in decentralised small scale facilities. Reflecting on the problem of sustainable quantities of biomass, it was also recommended that countries and regions should develop their own potential for sustainable biomass production taking into consideration their food and non-food demands as well as their domestic demand. In this context the feasibility of limiting countries biomass production levels within a certain level of magnitude was discussed, but considered as unlikely to be realisable.
9. **Need for an integrated and harmonised policy approach:** Bioenergy policy therefore interacts with many other policy fields. Bioenergy cropping from agriculture and forestry also competes with other land use requirements, such as nature protection areas, infrastructure, organic farming, recreation areas etc. Therefore, designing sustainable bioenergy policies needs an integrated policy approach and a holistic view on biomass production in general – be it for material, food, feed or bioenergy. There may also be trade offs between different policy objectives that need to be



addressed within this context. For example intensive agricultural cropping systems will lead to higher yields, but will have more negative results on water, soil, biodiversity etc. than extensive cropping systems.

### **Key message for international bioenergy policy**

Many doubts have been raised from the participants of the AGRINERGY workshop if the expansion of biomass production in exporting (developing) countries is compatible with international sustainable development. These doubts concern inter alia rising food prices with severe consequences for the poor, land competition between energy crops and food production, accelerated GHG emissions due to deforestation and land use changes, and harmed land rights of indigenous people.

The main conclusion of the experts' discussion is therefore that trade in biomass needs to be beneficial both for combating climate change and for biomass producers and society in exporting countries. Efforts should be deployed to ensure that the development of international sustainability criteria and certification systems for biomass production contribute to reaching socioeconomic and environmental objectives.



## List of Participants

|                       |   |
|-----------------------|---|
| Stefan Bringezu       | Wuppertal Institute for Climate, Environment and Energy       |
| Floor Brouwer         | LEI Wageningen  |
| Myrsini Christou      | Greek Biomass Association Centre for Renewable Energy Sources |
| Thomas Dworak         | Ecologic  |
| Berien Elbersen       | Alterra   |
| Corinne Floc'h-Laizet | Biomasse Normandie  |
| Marie Guilet          | Biomasse Normandie  |
| Katrin Heinsoo        | Estonian University of Life Sciences                          |
| Francis Johnson       | Stockholm Environment Institute                               |
| Eleni Kaditi          | Centre for European Policy Studies (CEPS)                     |
| Timo Kaphengst        | Ecologic  |
| Peter Nowicki         | LEI Wageningen  |
| Calliope Panoutsou    | Imperial College London                                       |
| Michael Rode          | Leibniz University Hannover                                   |
| Agnieszka Romanowicz  | European Environment Agency (EEA)                             |
| Pawel Rutkowski       | Agricultural University of Poznan                             |
| Ingrid Rydberg        | Federation of Swedish Farmers                                 |
| Stephanie Schlegel    | Ecologic  |
| Martin Turner         | University of Exeter  |
| Piero Venturi         | European Commission - DG Research                             |
| Geert Woltjer         | LEI Wageningen  |

## Detailed agenda

|       |  |
|-------|--|
| 9:30  | Registration   |
| 10:00 | <b>Session I – Opening</b><br><b>Chair:</b> Piero Venturi (DG Research)  |
|       | <ul style="list-style-type: none"> <li>• Welcome (N.N CEPS; Piero Venturi DG Research)</li> <li>• AGRINERGY- What is it about? (Thomas Dworak, Ecologic)</li> <li>• Bioenergy Policy in the EU (Stephanie Schlegel, Ecologic)</li> <li>• Technical introduction to the workshop (Thomas Dworak, Ecologic)</li> </ul>   |
| 11:15 | Coffee Break   |
| 11:30 | <b>Session II – Parallel Working groups</b>  |
|       | <p>1) Does bioenergy contribute to local added value and can it further enhance future development of rural areas?<br/>Chair and opening presentation addressing the key questions for the working group: (Floor Brower LEI)</p> <p>2) What are sound policy approaches to guarantee a fair trade of biomass without further depletion of natural resources in exporting countries?<br/>Chair and opening presentation addressing the key questions for the working group: Eleni Kaditi (CEPS)</p> |
| 13:00 | Lunch  |
| 14:30 | <b>Session IV – Report Back</b>  |



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|       | <p><b>Chair:</b> Piero Venturi (DG Research)</p> <p>Report back from the working groups and discussion of the conclusions (Floor Brouwer, Eleni Kaditi)</p>    |
| 15:00 | <b>Session V – Working groups</b>  |
|       | <p>3) How can sustainability measures for bioenergy be inserted in agricultural, energy and environmental policies?</p> <p>Chair: Thomas Dworak (Ecologic)</p> |
| 16.30 | Coffee Break   |
| 16:50 | <p><b>Conclusions</b></p> <p>Thomas Dworak (Ecologic), Piero Venturi (DG Research)</p>   |
| 17.10 | End of the workshop  |