

Biomass role in achieving the Climate Change & Renewables EU policy targets. Demand and Supply dynamics under the perspective of stakeholders . IEE 08 653 SI2. 529 241

Update on the report for the progress of the stakeholder meetings (Deliverable 7.2 under Biomass Futures)

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23.12.2010

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Preface

This publication is part of the BIOMASS FUTURES project (Biomass role in achieving the Climate Change & Renewables EU policy targets. Demand and Supply dynamics under the perspective of stakeholders - IEE 08 653 SI2. 529 241, www.biomassfutures.eu) funded by the European Union's Intelligent Energy Programme.

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1 Introduction

The following report is an update of the progress made under the Biomass Futures stakeholder dialogues as part of work package 7.

Over the last months, we have been able to attract the interest of a range of stakeholders in policy, supply, sustainability and demand related bioenergy issues. The list of signed declarations of interest accompanying this report demonstrates this.

In addition, stakeholder engagement has taken place with the demand group (by Imperial College) and with a combined supply and sustainability group (Alterra and IIASA with IEEP having facilitated and documented the stakeholder teleconference).

This update report depicts the progress achieved by reporting on the meetings having taken place and describes the planning for the next reporting period.

2 Stakeholder discussions so far

2.1 First teleconference demand stakeholders

For the first teleconference with demand stakeholders individual interviews have been conducted by **Calliope Panoutsou (IC)** with the stakeholders listed in the Tables below. The discussion tackled the topic “Define and rank the key factors affecting future penetration of biomass in the heat, electricity/ CHP and transport sectors”.

Participants for **Biofuels for Transport**:

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Agenda points covered in the interviews:

1. Introduction of the project & the aim of the demand analysis
2. Round for clarification questions on the briefing sent out
3. Comments per section of the briefing
 - 3.1. Additional input/ comments on the text
 - 3.2. Overview of key factors
 - 3.3. Discussion on the ranking of the factors
4. Future work within the Biomass Futures project

Key issues of the discussions

The stakeholders found the two briefings distributed informative and well structured. Their comments mainly focused on specific sections (like policy updates, accurate numbers for installed capacity and fuel quality issues in relation to the future penetration- a comment mostly made bio the automotive/ biofuel industry).

In the framework of the work on analysing the demand for biomass in the heat, electricity/ CHP and transport sectors this teleconference & the briefing aim to:

- a) provide up-to-date information for the biomass/ biofuels market in EU27 in terms of policy, market capabilities and consumer readiness for take-up, and
- b) define & characterise market segments for future penetration
- c) review the main key factors affecting future integration.

Comments per section of the briefing

Additional input/ comments on the text

The most important input/ comments per market sector & report sections are presented on the Table below:

	POLICY	MARKET CAPABILITIES	CONSUMER READINESS FOR TAKE- UP
Heat	Include all updates for heat policy(ies) from NREAPs in the final versions	Use AEBIOMs recent statistics as reference for market segment capabilities	The most mature market. Stress out policy support in MS like Austria & Germany, which have led to substantial market penetration
Electricity/ CHP	Suggest special taxation regime for bio CHP	Mapping industrial capabilities in detail would be valuable	In the CHP investors need a 10 year feasibility which makes biomass supply difficult...in terms of securing the volumes over time, various quantities & quantities
Transport	Include the Fuels Quality Directive and provide links to the impact it will have in the future market penetration	Separate mass market fuels that are low biofuels blends (E5, E10 in petrol and B5, B7 in diesel) from niche fuels that are for dedicated power-train and dedicated fuel infrastructures(eg E85 or B30). Include a section on biofuels definition and separation between first from second generation. Feedstock to produce biodiesel as it influences the quality/ where it is grown relate it to land use/ sustainability/ quality/ etc.	Introducing biofuel in transport fuel will impact the quality of the final transport fuel and therefore will impact vehicles. This will have an impact on market acceptance and importance of quality standards

Overview of key factors

The most important key factors for the heat, electricity/ CHP and transport sectors are presented below:

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	TECHNICAL	ECONOMIC	ORGANISATIONAL
Heat	Easiness of getting fuel Supply infrastructure	Incentives for small scale heat improve penetration rate substantially (e.g. pellets market)	Emissions regulations in big cities restrict the use of solid/ biomass fuels
Electricity (Stand alone)		Financing new technology is an equity risk	Reliability and long-term duration of incentives is an important issue
Cofiring	On-site blending of biomass with the primary fuel prior to co-milling has proved to be the least capital intensive approach, and is currently the most popular method	Large scale co-firing is one of the most efficient and low cost methods. Project risk increase with co-firing ratio and fuel quality	Different ministries within a country have different agendas and policy objectives.
CHP	Cost of system connections for small, renewable generators	Planning, design, authorisation, construction and commissioning of new plants can take a number of years and involve significant cost	Planning procedures require careful coordination among different authorities.
Transport	Adaptation of car engines is rather costly & time consuming for the industry so the fuel specifications need to be consistent for a long term		

Discussion on the promising market segments

Biomass for heat, electricity and CHP

Heat: It was clear from all related stakeholders that heat is a major sector for biomass in the domestic and industrial markets. As the market requirements & product specifications are also well developed, the most important segments for future penetration are the single house/ block of apartments in rural areas with proximity to fuel. The risk of switching to biomass is relatively small and the market can be supported by targeted incentives at local/ regional basis.

Electricity/ CHP: In the industrial sector, biomass is also promising (as part of CHP with or without DH) for the businesses that are closely related to forest/ agricultural- related activities (sugar, pulp industry) as they can benefit from the residual biomass on-site. Special premiums/ favourable taxation measures for industry would enhance new investment.

Biofuels for transport

Based on the majority of responses the most promising transportation segments for the prioritization of biofuels are the public road transport, focusing on buses, and the passenger vehicles, as they seem to correspond better to most of the requirements of the selected key factors. Jet engines for air transport, on the other hand, can also be proved to be a viable application for biofuels.

The sensitivity of the different market segments to a range of economic parameters can be examined, by taking into consideration for these particular segments, the biofuel supply chains, the prices in the filling stations as well as the costs of carbon displacement. The market segments of transportation, that present the largest consumption of fuels, are, as aforementioned, the road and air, and so it was suggested that BF project work focuses on these.

On the whole, the replacement of jet fuel by biomass derived fuels constitutes a matter of debate, as the cost implications that aviation alternative fuels pose, are quite high, while on the other hand the emission savings of fuel replacement are enormous.

2.2 First teleconference supply and sustainability stakeholder

The first teleconference for supply and sustainability stakeholders took place on 13 December 13, 14-15.45h. The topic was “Define and map the likely sources of bioenergy supply and their consequences”. The following participated in a discussion that was chaired by Hannes Boettcher (IIASA) and Berien Elbersen (Alterra) and recorded by Bettina Kretschmer (IEEP).

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The following points were discussed along the content of the briefing prepared as a basis for the discussion (Berien Elbersen, Briefing for first stakeholder consultation on the sustainable supply of biomass in the EU27 for the heat, electricity & CHP sectors). In this briefing, it is explained how different sources of biomass that can be used for energy production are categorised for the sake of estimating their potentials. Also, an initial overview and discussion of different sustainability criteria that are considered per category and potentially limit the potential is given. Furthermore, the different data sources used to estimate and map potential across EU NUTS2 regions are listed and example maps are given:

Agenda:

5. Welcome
6. Introduction to procedures
7. Introductory round of participants
8. Round for clarification questions on the briefing sent out
9. Comments per section of the briefing
 - 9.1. Overview of main biomass categories
 - 9.2. Spatial identification of biomass categories
 - 9.3. Overview of sustainability criteria (Do you agree with criteria? Are the main sustainability criteria covered and properly represented or are there any gaps?)
10. Answers from participants on questions 1-4 (p.3 of the briefing):
 - 10.1. How would one define 'high carbon stock areas' in Europe? Could you give examples of these types of areas and can you make suggestions on how to map them?
 - 10.2. How would one define 'highly biodiverse areas' in Europe? Could you give examples of these types of areas (preferably the ones that are part of farmland) and can you make suggestions on how to map them?
 - 10.3. How would one define abandoned and/or degraded lands in Europe? Are there suggestions on how to spatially identify them? Is this type of land resource likely to be used for dedicated biomass cropping. Would this indeed be a sustainable option?
 - 10.4. Until now limited sustainability constraints are expected to be linked to the use of by-products and waste (except for use of some primary residues from agriculture). Would you agree with this assumption or do you see specific sustainability constraints not discussed in note?

Overview of main biomass categories

The first part of the discussion focused on the “Overview of main biomass categories” presented in Table 1 of the briefing. The following summarises the main points mentioned:

- One participant advised to be more precise and transparent about the eventual use of the different feedstocks for energy purposes. This particularly referred to waste/by-products which

have alternative uses and it would be useful to involve that in their potential estimate. In response it was then clarified that for the waste categories information from Eurostat is incomplete to make this more transparent.

- Another participant pointed out work on biomass categorisation undertaken as part of WP3 of the **BEE project** (www.eu-bee.info) in order to avoid double efforts and in order to avoid inconsistency between the two projects (e.g. classification of manure as primary as opposed to secondary agricultural residue).
- It was highlighted by several participants that the Biomass Futures team should be aware of the potential danger of double counting **waste** potential. Also, it was mentioned that several forms of primary agricultural residues should not be classified as waste products.
- With regard to **agricultural biomass**, it was noted that the present categorisation focuses on biomass derived from arable land. It was suggested to extend the scope to include the biomass potential from grasslands (in terms of harvesting the grass, no ploughing up to convert it to arable land).
- Regarding the energy crop category comprising **sugar, starch and oil crops** that can be used for either food, feed or fuel, the question was raised how to distinguish between these different uses and whether **by-products** derived from converting these crops into bioenergy are accounted for. The Biomass Futures team clarified that the potential for sugar, starch and oil crops will cover the whole available potential and that this information is then fed into the economic models used in the project. The models then endogenously determine on the allocation across food, feed and fuel sectors. By-products are included in the modelling framework.
- Concerning **woody biomass**, one participant pointed out results and data generated by the EUWood project, that have just been published. Berien Elbersen made clear that the Biomass Futures team had been delaying wood related potential estimations in order to take the outcomes of EUWood into account. Important to keep in mind in the wood context are the cascade of uses of wood products and the link between bioenergy activities and the traditional forest industry as the latter will eventually determine the amount of wood residues available for the former.
- It was emphasised that **short rotation coppice (SRC)** are grown on agricultural land and thus not to be confused with forestry activities. Also, forestry policies typically don't apply to SRC and thus they should be included as a separate category as was done already. It was also suggested to include the Short Rotation Forestry as a separate category as the system is also different from a normal forest management system.
- One participant asked for a description of the structure and underlying assumption of the models used within Biomass Futures so as to understand the drivers of their results. Policy briefings providing **non-technical model descriptions** are envisaged for next year.

Spatial identification of biomass categories

The categorisation of different forms of biomass is done with the aim to spatially map the potential for the different categories in European NUTS2 regions.

- Since premium payments for growing energy crops under the CAP have been abolished, it is not possible anymore to map energy crop potentials according to direct payment statistics.
- dedicated biomass cropping within the Biomass Futures project.
- It was agreed that the eventual Biomass Futures report on mapping biomass potentials would be distributed among the stakeholder group in order to receive more detailed comments on technical aspects in written.

Overview of sustainability criteria

To begin with, it was clarified that sustainability criteria under Biomass Futures focus on the environmental dimension. There was criticism among participants about this limited scope. However, the global economic modelling with GLOBIOM will yield crop price indices that can convey bioenergy's impact on food security globally. More specific comments are summarised in the following.

- One participant missed a clear connection to the **existing legal framework** on sustainability, i.e. the sustainability criteria of the Renewable Energy Directive (RED) on high carbon stock areas.
- In response to one participant's question, the Biomass Futures team stressed that the sustainability criteria considered go beyond the inventory of existing policies to take into account perceived gaps in legislation (focusing on the environmental dimension).
- Questions on bioenergy's **lifecycle emissions** were raised. These are accounted for in the Biomass Futures models. Also, by combining supply side and demand side models, the Biomass Futures modelling framework bridges from feedstock to end-use bioenergy potential.
- The threat of overexploitation of manure is judged to be minimal: With biogas plants located close to manure sources, the residues from the digestion process (digestates) are typically brought back onto the fields. In this context and because conversion into biogas reduces the methane in manure it was stressed that manure used for **biogas** generation is considered to be very beneficial from an environmental sustainability point of view.
- Several participants highlighted that it is important to consider **current uses of residues** and prevent potentially negative diversions away from existing to new, energetic uses, and possibly encouraging the return to fossil alternatives. The relevance of these competing uses was especially underlined for forest residues.
- Concerning **forest/wood related criteria**, long-standing existing legislation and standards were pointed out as vital to be taken into account. Forestry is an area where international consensus on rather broad, encompassing criteria has been established. Specifically, one participant mentioned the work under "Forest Europe" (formerly MCPFE – Ministerial Conference for the Protection of Forests in Europe), which specified a checklist of sustainability criteria for forest resources exploitation.

Answers from participants on questions 1-4 (p.3 of the briefing)

As a more general comment, several participants stressed that one should be careful with defining the below listed types of land.

On high carbon stock areas:

While those have been defined by the European Commission, assessing whether peatlands are deemed high carbon stock land or not is difficult according to the existing RED criteria. It was suggested to use soil maps as the basis for peatland mapping, particularly the histosols. It was also mentioned that the RED criteria did still allow for dedicated bioenergy cropping on peatlands, except when it did not involve drainage of previously undrained soils. This implies that ploughing up of such lands for dedicated crops is still allowed even though that can potentially lead to enormous losses of soil carbon.

On biodiverse areas:

- Several participants stressed to take into account existing legislation, standards and research work, such as: high nature value land, nature protection areas, Natura2000, cross compliance, research on highly biodiverse grasslands by Oeko-Institut (Klaus Hennenberg).
- Berien Elbersen raised concerns about designated biodiversity rich areas actually being mapped. The quality of different mapping exercises varies considerably across Member States.

On abandoned/degraded land:

- Be aware of the distinction between abandoned land and abandoned farmland. Also note that it is mainly economic drivers that determine whether an area is abandoned or not. One participant expressed interest in knowing about the occurrence of land abandonment across Europe and on potential triggers to bring this land back into production.
- Be aware that both can have a high value in terms of biodiversity and ecosystem services benefits.
- It was advised to take into account the definition of degraded land in the context of the RED.

On limited sustainability constraints for by-products and waste:

- One participant mentioned that the issue with by-products and waste is the competition of uses, or “IRUC – indirect resource use competition”
- Waste and by-products are not without any sustainability constraints, as regards for instance leaving straw or woody residues on the soil for maintaining soil conditions and favouring biodiversity, but also regards competing uses. If present alternative uses of waste are abandoned in favour of conversion into bioenergy, alternative non-sustainable solutions could result from it.
- Several participants advised to be careful using the word ‘waste’. As long as there are other competing uses for a biomass feedstock it should be called a by-product. Waste is feedstock with non-competing uses outside energy recovery.

2.3 First teleconference with policy stakeholders

The first teleconference with policy stakeholders is scheduled for the 24th of January 2011 and will be chaired by Bettina Kretschmer with support from Pernille Schiellerup (both IEEP). The topic will be “Main issues of concerns in implementing bioenergy policy”. We will use the deliverable D6.3 report as a basis for the discussion. The aim is thus to validate the findings of the report by ‘testing’ them on policy makers directly.

3 Further steps

The following is a list of the topics of future teleconference that will take place over the next months. Note that while we combined the supply and sustainability stakeholder groups for the first teleconference which was convenient in order to receive input on sustainable supply mapping, we envisage separate teleconferences in the future.

Demand

- Promising market segments for biomass in the heat, el/ CHP & transport sectors (end Feb 2011)
- Scenarios for future biomass market penetration (April 2011)
- Role of biomass in the heat, el/ CHP & transport sectors (Autumn 2011)

Supply

- Sustainability of different supply options (end Feb 2011)
- Peer review modelled estimates of supply solutions (summer 2011)
- Review final outputs from the work (Summer to Autumn 2011)

Sustainability

- Sustainability of different supply options (end Feb 2011)

Policy

- Major policy concerns in implementing bioenergy requirements (January 2011)
- Outcomes of expert survey (Deliverable 6.2) (end February 2011)
- Focus on operationalising the sustainability scheme (June 2011)

4 Conclusions

The initial conferences that have taken place have been helpful in identifying aspects that are relevant to stakeholders. This will guide both future modelling work and the preparation of briefings based on the modelling work. The stakeholder discussions are a useful tool for identifying Biomass Futures results that will be of most interest to the different stakeholders and should therefore be communicated effectively via policy briefings.

The next months will see an enhanced effort among the WP7 leader IEEP and the whole Biomass Futures Team to finalise a series of stakeholder teleconferences. A range of topics for those have been identified already.