

BIOGRACE II

Harmonised Greenhouse Gas Calculations
for Electricity, Heating and Cooling from Biomass



BioGrace II **Report of the First Policy Maker Workshop** **Brussels, 19 March 2014**

Final Version

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1 Introduction and objective

The policy maker workshop held on 19 March 2014 in Brussels was the first BioGrace-II policy maker workshop within the project and will be followed by a second policy maker workshop by the end of 2014. The policy maker workshops are a crucial part of work package 4 of the BioGrace-II project and have various aims:

- To inform policy makers from the European member states about the BioGrace-II project and about the status of sustainability criteria for solid and gaseous biomass on European level;
- To involve policy makers in the discussions about harmonisation of sustainability criteria for solid and gaseous biomass in general, and of greenhouse gas emission calculations in particular;
- To demonstrate how the BioGrace-II GHG calculation tool works and to inform on the background of the development of the tool: the existing EC report COM(2010)11 and its expected update as well as the work performed by the Joint Research Centre;
- To enable policy makers to give feedback on the draft of the BioGrace-II GHG calculation tool and on the calculation rules, intending to improve the GHG calculation tool and the calculation rules and make them as user-friendly possible.

The policy maker workshop was intended to be a small group meeting, rather than a large meeting, with the purpose of being more interactive and to facilitate discussions. 29 participants attended the workshop of which 18 policy makers from 12 different member states participated in the workshop. The 11 other participants are members of the project consortium. The list of participants can be found in Annex I of this report. Discussion questions were prepared and distributed up front as to enhance the discussions. These questions are added to the agenda of the workshop in Annex II.

2 Content of the workshop

This chapter contains a summary of the content of the workshop. The agenda of the workshop is provided in Annex II of this report.

2.1 Latest developments in defining sustainability criteria for solid and gaseous biomass used in electricity, heating and cooling

Giulio Volpi (European Commission - DG ENER)

The Renewable Energy Directive¹ lays down sustainability criteria for biofuels for transport and bioliquids used in other sectors but not for solid and gaseous biomass used for electricity, heating and cooling. In February 2010 the Commission published a Report² (the Biomass report) which made non-binding recommendations to Member States that had already introduced or planned to introduce national biomass sustainability requirements. Over the last couple of years, the Commission carried out an in-depth review and a wide consultation on the potential sustainability issues related to biomass use in the

¹ Directive 2009/28/EC

² COM/2010/11

energy sector and whether the absence of EU criteria has led to barriers to biomass trade. While many stakeholders asked for additional EU action on biomass sustainability, there was, however, a spectrum of views on the need for EU binding sustainability criteria for biomass. In general, local forest loggers and electricity producers are mainly concerned about trade barriers and administrative burdens and therefore tend to be opposed to mandatory criteria, whereas NGO's, academia and non-energy biomass users are mainly concerned about rising competition with other uses such as nature conservation and materials and therefore rather in favour of mandatory criteria. All elements considered, the Commission does plan to introduce EU biomass sustainability criteria for achieving the 2020 renewables targets. Potential risks will be dealt with through a variety of existing measures such as the EU Timber Regulation and the new EU Forest Strategy. The latter contains work on EU-wide sustainable forest management criteria and best practices on cascading use of biomass. However, in order to promote the smooth functioning of the internal market and to minimise administrative costs for economic operators, the Commission maintains its 2010 recommendations that Member States should align as much as possible their existing and planned national sustainability schemes, including through mutual recognition when appropriate. In order to facilitate this convergence process, Member States are invited to use the simplified GHG emission accounting methodology and updated default values that are contained in the annexes to this document. The BioGrace-II tool can play a role in facilitating this process of convergence.

Post-2020 policies on EU level are drafted in the 2030 framework for climate and energy which was presented in January 2014 and which is expected to be decided upon in October 2014 at the latest. The framework seeks to drive continued progress towards a competitive and secure low-carbon energy system with a target of 40% in terms of GHG emission reduction and a target of at least 27% renewable energy share. With regard to biomass, a key aspect of the 2030 framework is the maximisation of resource efficient use of biomass as to drive robust GHG savings and fair competition between various uses of biomass resources. Yet EU biomass consumption is expected to continue its steady increase. A sustainability framework shall be provided within the 2030 framework encompassing sustainable use of land, sustainable management of forests and indirect land use effects of biofuel production.

Questions/discussion:

- Will there be an update of the 2010 Report on solid and gaseous biomass?
Answer: Yes, it will be published by summer 2014.
- Will biogas have the same sustainability criteria for transport as for electricity and heating?
Answer: For the moment, biogas for heat and power is not subject to EU binding criteria. However, in updating the 2010 recommendation for biomass and biogas the Commission will aim at ensuring a consistent approach with transport biogas.
- A continuous increase in biomass use is predicted in the EU: where will this biomass come from? For instance, in France it is difficult to further increase the harvest of solid biomass. Is there a monitoring being performed on which member states will export and which member states will export?
Answer: According to our analysis, biomass imports will come chiefly from North America, followed by Russia, largely in the form of wood chips and densified biomass, e.g. wood pellets (including torrefied pellets after 2020). In 2010 the Commission recommended MS to monitor the origin of biomass. This issue will also be addressed in the 2nd progress report

on the renewable energy directive, that the Commission will publish by the end of 2014. Additional information will also be provided by the EU funded project called BioTrade2020+ to be start in June this year. The main aim of this research effort is to investigate the extent to which imports of biomass comply with the sustainability criteria

- Is it correct that domestic production of woody biomass is regulated by the EU forest strategy and that imported woody biomass is only regulated by the EU timber regulation?

Answer: The EU timber regulation applies to all timber products, including wood pellets, being placed on the EU market. The EU forest strategy mandates the Commission to develop, in close cooperation with the Member States, EU-wide criteria for sustainable forest management, taking into consideration international SFM processes. It is hoped that such criteria could be declined to different forest context. In this context it is interesting to recall that the ongoing EU funded projected called *Biomass Policies* will research the potential and barriers to the increased mobilisation of resource-efficient bioenergy value chains in the EU.

Rob Cornelissen (The Netherlands)

In the Netherlands, about 75% of renewable energy production is sourced from biomass. The production of bioenergy is financially supported by the Dutch government in order to drive sustainable development. In September 2013, about 40 different organisations including the national government, energy companies and environmental NGOs have signed the Energy Agreement for Sustainable Growth. This agreement includes engagements towards energy saving (1.5% yearly) and towards increased renewable energy shares (14% by 2020). Solid biomass plays an important role in these engagements and is to be supported with SDE+ subsidy. In order to be eligible for this support, biomass needs to comply with several sustainability criteria which will be agreed upon by the summer of 2014. It is expected that the assessment framework will be in place by the end of 2014 and will be functioning by 2015. The national government, the energy sector and the NGOs agreed already on the following with regard to the sustainability criteria:

- Sustainability is primarily based on the NTA8080 sustainability scheme;
- Biomass must be sourced from sustainably managed forest (FSC);
- Indirect land use change (ILUC) needs to be addressed;
- Carbon debt needs to be addressed (positive/negative list).

Questions/discussion:

- How will the ILUC issue be implemented for solid biomass as it might have opposite impacts e.g. increased demand for solid biomass induces a higher market price and as such more forests to be planted?

Answer: ILUC is a key topic for NGOs and they demand it to be included in the Energy Agreement. It is not yet clear how this will be applied. It will probably not be implemented in the same way as is considered for agricultural crops. It might be expressed as a CO₂ criterion for forest management.

- Additional remark from the EC: ILUC is not relevant for existing forest biomass production (where the issue may be rather one of supply displacement). ILUC is more relevant for annual crops used for biogas production.
- Is it already known how the positive/negative list of carbon debt will look like?
Answer: Different kinds of wood are examined, for example in the case of thinnings which trees can be used for energy purposes and which not.

Jimmy Loodts (Flemish Region, Belgium)

Flanders subsidizes green electricity production since 2002. Since then, substantial amounts of subsidies yearly flow towards the Flemish renewable energy sector. For liquid biomass, the European sustainability criteria were transposed into regional legislation. In the Flemish support system, these sustainability requirements also apply for liquid biomass used for biogas production or biomethane injection into the grid, and for solid biomass used for green heat production. Furthermore, in case of electricity production from all kinds of biomass sources, including solid and gaseous biomass, the energy used for transport and processing of the biomass is subtracted from the final renewable energy production which determines the amount of financial support. No support is given for electricity from woody biomass when the hierarchy in material use is not respected.

VREG recently published a proposal on the introduction of a Flemish biomass certification system that ensures that all necessary information with regard to these criteria is provided in a reliable and traceable manner. As such, trade of sustainable biomass sources shall be facilitated and more transparent, and social acceptance shall be enhanced. For the calculation of the energy use for transport and processing of the biomass, standard values of BioGrace are put forward. As such VREG is able to shift a highly challenged topic from the Flemish level towards the European level, hence widening the discussion to a more scientific and overarching level with better access to background data.

In future Flemish energy policy, biomass will keep playing a crucial role. It is expected that every year an amount of biomass corresponding to a financial value of at least 400 M€ will be imported in Flanders, which is a substantial amount considering the limited extent of the region. Whilst depending on large imports of biomass, Flanders is convinced that the harmonisation of sustainability criteria, or at least GHG calculations, is a prerequisite for the development of a solid and transparent biomass market. Since biomass trade is a global issue, scientific discussions should be held at a European level. BioGrace has been of great help in that.

2.2 Policy developments in member states related to sustainability criteria and GHG calculations for electricity, heating and cooling from biomass

In the second session before the lunch, policy makers were asked to give a short explanation of the status and developments on policies related to sustainability of solid/gaseous biomass in their country.

Slovakia - Hana Fratricova, Ministry of Agriculture and Rural Development

For bioliquids the sustainability criteria are implemented. For solid biomass, the colleagues of the forestry department are opposed to sustainability criteria and propose increased regulation through existing forestry legislation. For biogas there are no criteria. This sector is rather small in Slovakia with only 8 plants of about 1 MW sourcing mainly manure, waste and silage. Biogas plants receive support where more support is given for manure and waste. There are about 11 heating plants that combust straw or, in case of big plants, wood chips. The solid biomass that is used is mainly domestic. There are no national statistics about that.

United Kingdom - Rebecca Cowburn, Department of Energy and Climate Change

From April 2011 onwards, a Renewable Obligations Report is published annually. Plants with a capacity above 50 kW have to report on sustainability criteria for solid biomass and biogas. A minimum GHG reduction of 60% is required, except in case of waste sources. This concerns a life cycle calculation in which emissions related to cultivation, processing and transport of the biomass as well as processing of the feedstock, direct land use change and conversion efficiency of the plant are taken into account. Currently the option is explored in the parliament to include criteria with regard to sustainable forest management similar to or linked to the certification schemes PEFC and FSC. Electricity generators with a capacity higher than 1 MW(el) are obliged to provide an independently audited sustainability report annually. Also other aspects with regard to sustainability and the progress that is made have to be included in the report.

Poland - Piotr Czopek, Ministry of Economy

Currently there are no sustainability criteria in terms of GHG emissions, but there are plans to implement those by 2020 (although a legal proposal could come already sooner) if the proposal from the EC about this will be available. Poland has introduced some solutions to reduce the use of wood for energy purposes by promoting the use of agricultural biomass and biodegradable wastes. According to the Ministry of Economy decree of 18 October 2012 the requirement of weight percentage of so called agricultural biomass in the weight of biomass directed to combustion process was established. With regard to woody biomass, there is no support for round wood, only for residues and waste from forestry operations and wood industry. The provisions of regulation was based on the fundamental assumption that biomass for energy purposes should be used primarily in the local distributed generation and in the CHP units. The Renewable Energy Act is proposed this month which contains a system for tracing biomass from the producer to the final energy user. This proposal will possibly be accepted by the end of March 2014 and be implemented by the end of 2014.

Hungary - Marianna Jakab, Permanent representation of HU to the EU

Hungary has a renewable energy obligation of 13% of which 80% is sourced from biomass. Sustainability criteria for solid biomass are implemented through forest management rules. Since 1920, the forested area in Hungary has more than doubled to a current extent of 2,5 million ha. Forestry management is monitored by the forestry authority and regional forest action plans are in place. Each cutting needs to have a forestry certificate which ensures sustainability and is issued by the government. For electricity from biomass a feed-in tariff system exists since 2010. To prove the sustainability of liquid biomass, Hungary has a national sustainability scheme.

Italy - Livia Carratù, Ministry of Environment and Protection of Land and Sea

No binding sustainability criteria exist for solid/gaseous biomass in Italy, but in 2012 a national decree was implemented to incentivise the production of electricity, heat and cooling from solid biomass when GHG emission savings are above a certain threshold. The methodology for the calculation is based on the 2010 recommendations of the EC. Italy is willing to revise this decree in favour of harmonisation. With regard to biogas, a decree was put into place in the end of 2013 aiming at incentivising biomethane injection into the grid. The decree has foreseen the sustainability criteria for biomethane when used into transport; because of the lack of some specific provisions to apply for biomethane (local pathways, codigestion, mass balance) into the directive 2009/28/CE, the decree has foreseen to publish some technical guidance on such topics and we are waiting for the EC recommendation in order to have harmonisation.

Germany - Jeannette Pabst, Federal Environmental Agency

Due to political elections in 2013 and the corresponding restructuring of the German ministries, as well as the revision of the German Renewable Energy Act, the situation regarding renewable energy policies is currently unclear. The German Federal Government is considering to implement the same criteria for solid and gaseous biomass as for bioliquids. The methodology to do so is clarified in a leaflet which was distributed during the workshop and can be found annexed to this report. With regard to the use of solid and gaseous biomass, the focus is put on waste and residues. New plants are limited to waste material. Therefore limited additional capacity of about 100 MW annually is expected. Co-firing does not receive financing under the German Renewable Energy Act. The revised Renewable Energy Act is expected to come into place on 1 August 2014.

Sweden - Sven-Olof Ericson, Ministry of Enterprise, Energy and Communication

The situation in Sweden is particular since the country is covered to a large extent with forest. More than 50% of final energy use is renewable, half of which is sourced from biomass. According to Sweden there is no need for nationally or internationally organised sustainability criteria. With regard to woody biomass, important sustainability issues are soil nutrient cycle, water, GHG emissions and biodiversity. These issues are dealt with within forestry regulations. For instance, the recycling of biomass ash by applying it back into the forest and as such bringing the minerals back into the soil, is applied on an industrial scale. Sven-Olof indicates that biodiversity is not linked with the amount of biomass that is taken away, but rather with the kind of biomass that is taken away and where it is taken away. 25% of the area in Sweden is peat land, of which 10% is covered by forest. Most of this forest is protected yet some still under forestry activity. Sweden has the ambition to export biomass. Sweden acknowledges that if sustainability criteria are

implemented harmonisation should be preferred, at the same time it is pointed out that a one-size-fits-all approach is not applicable.

Belgium (Wallonia) - Pierre-Yves Cornélis, Walloon Energy Commission

The Walloon support system is based on an own GHG emission calculation approach. The more GHG emissions are avoided by the production of electricity from biomass the more financial support the power plant receives. The extension of the use of sustainability criteria to solid/gaseous biomass is heavily contested. Currently the main concern of Wallonia is not the GHG balance, but rather the competition for biomass resources. Waste material does not have a negative price anymore. According to Wallonia, it can be said that waste does not exist anymore but is considered as material. There should be looked across borders since national biomass policies influence the other member states and competition between member states exist. Often biomass sources are exported because it is more supported elsewhere. Wallonia states that we cannot permit this.

France - Julienne Guénola, Ministry of Agriculture, and Joseph Lunet, Ministry of Energy

In France, 60% of renewable energy is sourced from biomass, of which 60% is solid or gaseous. Sustainability of solid and gaseous biomass is a very sensitive subject within the ministries and currently no scheme exists that deals with that. However, some other policies regulate sustainability issues. For instance not all kinds of biomass are eligible, there is an energy efficiency requirement for the final conversion to electricity from woody biomass, and regulations exist for sustainable forestry and to improve the monitoring of biomass use.

Finland - Hanne Siikavirta, Ministry of Employment and Economy, and Harri Haavisto, Finnish Energy Authority

Similar to Sweden, Finland is extensively covered with forest. About 80% of the renewable energy comes from wood fuels. In 2012 wood fuels became the most used source of energy, surpassing oil. Significant share of wood fuels are wood-based residues from the forest industry. Half of the required increase of renewable energy in 2020 should come from forest chips, which are mainly made of residues resulting from forest management. In Finland trees are harvested for several purposes: lower part of the tree is used in sawmills, middle part in pulp and paper industry and e.g. tree tops and branches can be utilized for energy. The overall carbon stock of forests is increasing (i.e. the growth is higher than the use). In Finland forest chips are used in about 900 energy production plants of which about 80 CHP plants and about 800 heat-only plants and only one power plant produces only electricity. Also new bioenergy technologies are developed and taken into use such as production of bio-oil in integrated bio-oil plant based on fast pyrolysis technology. Bio-oil is bioliquid and thus subject to sustainability criteria of the RES-directive. The introduction of sustainability criteria for solid biomass for electricity and heat production would potentially have a huge impact through increased administrative burden for Finland. It is not meaningful to introduce specific criteria for one end-use of forest biomass, such as energy. Finland is not intending to introduce sustainability criteria since there is a well-developed national legislation on sustainable forestry and additional criteria would not bring any added value and lead to administrative burden and market distortions. Finland considers that sustainability of bioenergy is important and understands that those member states that import large amounts of biomass outside EU for energy use want to introduce sustainability criteria. .

Spain - Francisco Domínguez, Ministry of Industry, Energy and Tourism

Spain is not working on the implementation nor intending to work on the implementation of sustainability criteria for electricity, heating and cooling from solid biomass or biogas. Spain acknowledges that GHG calculations are very complex and that many uncertainties exist. According to Spain, more detailed work is needed to include local and regional factors. Spain favours the harmonisation of the methodology. However, it must be ensured that relevant local differences are taken into account. Therefore local participation is crucial and should be facilitated more.

Discussion

Although opinions with regard to the implementation of sustainability criteria diverge between member states, there is a general consensus amongst member states about the need for harmonisation of those potential criteria. However, the questions that were prepared by the BioGrace consortium on the way forward towards harmonisation are currently still too advanced. The Netherlands confirm that most energy companies in their country operate in an international context which stresses the need for harmonisation.

What should be discussed in view of harmonisation?

The EC points out that scientific discussions about sustainable forest management are held on national or on forest level. Discussions on European level (e.g. this workshop) should rather focus on carbon emissions. However, as long as the updated EC report is not published, it is unclear what should be discussed. There is also a demand for supply chain criteria.

Spain stressed again the need for the development of local conversion factors. The UK supports the opinion of Spain about using a similar methodological approach combined with the inclusion of local standard values and conversion factors. JRC replies that the current approach of developing the methodology and data offers already the possibility to give input on local factors. JRC is very much in favour of this and welcomes every input from member states. However, currently there is no specific procedure to give input, except for the stakeholder meetings that are organised regularly by the EC.

How can discussions on convergence of GHG methodologies be organised?

The EC recalls that this issue can also be addressed at the next meeting of the **Concerted Action on Renewable Energy Sources (CA-RES)** as an opportunity to organise meetings to discuss harmonisation of GHG calculations on a more technical level. Meetings with sustainability experts have been organised within CA-RES in the past. Belgium replied that there might be a risk that CA-RES is rather attended by higher level experts instead of technical level experts which are needed to discuss harmonisation. It was also mentioned that formal meetings should be complemented with informal meetings to discuss harmonisation as these can be very useful.

Also **REFUREC** was mentioned as an opportunity to organise harmonisation meetings although this currently only exists for biofuels.

How to make local data available in the harmonisation process?

It seems that the work of JRC with regard to GHG calculations and the opportunity for member states to participate herein is not well known within member states and broader communication is needed. JRC will consider additional communication and adaptation of the website. As soon as the

update of the 2010 report is published, JRC will also publish a report on the background data. More information and discussion on this topic is provided in the next session.

2.3 Harmonisation of GHG calculations on European level

Jacopo Giuntoli (European Commission - Joint Research Center) - Work of JRC on typical and default values calculations for solid and gaseous biomass.

After presenting a short overview of the position and function of the Joint Research Centre within the orbit of the European Union, Jacopo explained the work that has been done and currently is done by JRC with regard to GHG calculations and carbon footprint of bioenergy. As key research institute within the European area, JRC has developed and continues developing an extensive network with leading scientific organisations in Member States, Associated Countries and worldwide to collect background input data for bioenergy processes energy consumption and GHG emissions. JRC emphasizes the importance of stakeholder contribution in their work.

The path to obtain the default values for the bioenergy pathways that are used in the Renewable Energy Directive and in the 2010 report on solid and gaseous biomass runs through different stages. It is usually initiated by JRC either because of significant technological (or data availability) developments, or by request of the EC (DG ENER). Secondly, the various pathways and transport schemes need to be defined. Thirdly, appropriate data are collected for each process. These data are then converted to a common energy basis on the dry lower heating value of the materials for which a common set of fuel properties is used. In a next step, the data are inserted into an LCA calculation tool in order to calculate "typical" GHG emission reductions. In the final step, the "default" values are obtained by increasing specific sections of the typical values.

JRC has **stressed that the final calculation methodology is ultimately a result of the full political decision process within the EU institutions.** JRC supports the decision making process by providing sound scientific background information.

The updated EC 2010 report on solid and gaseous biomass will contain improvements on the type and number of pathways analysed together with updated and improved input data. Furthermore, possible methodological improvements have been suggested by JRC, such as: inclusion of non-CO₂ GHG emissions from end-use biomass combustion, a possible formula to account for co-digestion of a mix of substrates in biogas plants, exergy allocation between power and heat in case of CHP engines, updated fossil fuel comparators and global warming potentials (updated to the values of the 4th IPCC AR). As stated above, the eventual final set of data and methodological choices that will be endorsed and published by the Commission, will be the result of the political process.

With regard to solid biomass, 13 different pathways and 80 values in total have been defined and calculated based on 8 different feedstocks, 3 different biomass forms, 3 different combinations for the supply of process heat and power and 4 different transport radii. With regard to gaseous biomass, 6 different pathways and 30 values in total have been defined and calculated based on 3 different substrates, 3 different processing alternatives and 2 different end-uses. Maximum coherence of data and assumptions with RED Annex V (and its updated version) is pursued.

Stakeholder involvement remains a key issue for JRC. Various interactions with stakeholders have taken place already in the form of two workshops (one in 2011 and one in 2013) and many inputs

from stakeholders have been already taken into account for the update of the EC 2010 report. Soon after the publication of the official document from the Commission, JRC will publish a massive document including all input data, all assumptions and detailed data sources. However, the need for interaction with and for more empirical data from stakeholders remains. JRC will continue the efforts to facilitate this interaction and stresses that every input from stakeholders is valued.

Questions/discussion:

- Are the emissions from field spreading of the digestate also included?
Answer: It depends. For the manure and biowaste pathways these emissions are out of the system boundaries and thus are not included. For Maize whole crop pathways, then yes they are included when digestate is applied as organic fertilizer at the stage of the cultivation. Emissions from storage of the digestate are included, nevertheless only for methane [Note of author: JRC has now included emissions of N₂O as well from digestate storage]. France adds to this that they are currently conducting measurements on the emissions of methane, nitrogen oxides and carbon dioxide which might be useful for JRC.
- Is the pathway of biogas from sewage sludge included?
Answer: No. JRC does not have a mandate to calculate biogas from sewage sludge or landfill gas.
- Could it be explained more how co-digestion of different feedstocks for biogas production will be calculated?
Answer: This has been a large debate. JRC is not responsible for a final decision on whether or not to create an exception in the mass balance rule (as currently defined in the RED) specifically for biogas. However, JRC was requested to provide a solution that could properly provide default values for biogas pathways with co-digested substrates. The approach, as it is defined now by the JRC, provides a weighted sum of the default values from single-substrate pathways. The sum is not weighted on the input mass share of each substrate but rather on the biogas productivity of each of the substrates. A default factor for each input to account for this is provided by JRC.
Specific synergies of feedstocks within the digester may disrupt the linearity assumed in the formula. However, these synergies are not easily quantified and rarely measured. For this reason, the assumption of linearity is consistent with the accuracy required in the default values calculations.
- It was mentioned again that the work of JRC is not well known enough by its stakeholders. As for now, contacts mainly occur through personal communication. JRC will think about how to change this. A newsletter was put forward as an option to inform the public and the stakeholders of current activities. [Note of the author: a new JRC-wide website, called the ScienceHub, has recently launched (<https://ec.europa.eu/jrc/>). This website includes much information on all current activities at JRC, including the ones on biofuels and bioenergy sustainability).
It was also proposed by JRC that additional tools could be used to formalize data input from stakeholders, such as a functional mailbox.

- It is rather unclear whether there is a lack of data, and if yes, which data. It might therefore be useful to make an inventory of available data. However, it is often difficult to provide data because of confidentiality. JRC replied that it is possible to respect confidentiality by only publishing data in an aggregated form.

John Neeft (BioGrace/RVO) - BioGrace and its relation with the EC

John Neeft, project coordinator of BioGrace, explained the background of the BioGrace-II project and the development of the BioGrace-II calculation tool. The BioGrace work started with the BioGrace-I project for biofuels. This project resulted in the development of a BioGrace-I calculation tool and a voluntary scheme which was recognised by the Commission in 2013. BioGrace-I is exceptional as a voluntary scheme since the BioGrace-I tool must always be used in combination with another voluntary scheme. The BioGrace-II project started in 2012 and meanwhile a first draft of the BioGrace-II tool has been developed.

BioGrace uses calculations that are made by JRC as input to the European Commission. The two BioGrace tools therefore demonstrate how the EC default values of the RED and of the 2010 report on solid and gaseous biomass (and its expected update) are calculated. A second function of the BioGrace GHG calculation tools is that they allow economic operators to make actual calculations. The main aim of the presentation was to clarify the roles and responsibilities of JRC, BioGrace and the Commission. BioGrace will not actively participate in scientific discussions on iLUC and carbon debt. Such issues will only be included in the BioGrace tools once the Commission has included them in the GHG calculation methodology in the RED and/or the legislation on sustainability for solid/gaseous biomass. BioGrace processes input from stakeholders that is directly related to the functioning of the tool, however BioGrace does not handle requests to include new pathways or to change the methodology or default values. Nor does BioGrace help companies to make actual calculations. To get assistance with making actual calculations companies can hire a consultant that is trained to do so.

Finally it was explained that some alternative GHG calculation tools do exist for electricity and heat from biomass, such as the tool used in the Walloon part of Belgium and the UK solid biomass and biogas calculator that was developed by E4Tech. The project BioGrace-II also aims to cause that these different tools will be modified in such a way that they will give the same result when making a calculation for the same biomass/biogas and conversion unit to heat and/or electricity.

Questions/discussion:

- How are emissions allocated in case of district heating as heat does not have a lower heating value but contains exergy?
Answer: Heat and power generation must be considered separately. Allocation in this step is based on exergy content (Carnot efficiency).
- It seems that there is a wide interest amongst the participants to obtain more in depth information with regard to the calculations within the BioGrace-II tool. However, since the tool is currently only a draft version, it is not clear which information can already be distributed. John will inquire what can be send around to the participants.

- Are there any comments from member states with regard to the BioGrace-II approach as it is now?

Answer: The UK indicates that the tool should be peer reviewed. For instance, the default factors should be reviewed as well as how the conservative factor is applied. JRC replied that default factors are a political decision. The conservative factor is obtained from the spread in values, or in case there is a lack of values the worst case scenario is taken. The reason to do so is to stimulate better practices. Conservative values are used for those steps of the processing chain that have a high impact on the result. Peer review is a difficult issue as it often causes clashes with confidentiality clauses. The current approach is that JRC tries to get data published in peer reviewed publications. JRC indicated that adding an uncertainty analysis would be useful as well.

2.4 BioGrace-II GHG calculation tool

Susanne Köppen (IFEU) - Demonstration of the BioGrace-II GHG calculation tool

As a partner in the BioGrace-II project, IFEU plays the mayor role in the physical development of the BioGrace-II tool. During this presentation the general structure of the BioGrace-II tool was thoroughly illustrated as well as the functioning of the tool in practice and its verification. The demonstration included various features that were already build-in the tool to be used later, such as (i) the “track changes” option (to be used when actual calculations need to be verified) and (iii) the choice between “actual value” and “disaggregated default value” for the three separate parts “cultivation”, “processing” and “transport” within the biomass production pathways (to be used only once this element has been allowed by the EC in the methodology in the annex of the expected update of the 2010 report). The two main aims of the tool were clearly demonstrated being to create transparency regarding the calculation of default values and to allow for correct and easy actual calculations, as such facilitating harmonisation amongst existing GHG calculation tools.

Questions/discussion:

- Which value is used for the fossil fuel comparator and how was this calculated? Some member states want to use their national average for national reporting.
Answer: The fossil fuel comparator (FFC) is a choice of the Commission and is defined on a technical basis on European level to ensure a level playing field towards the performance of installations. For electricity, the European mix is taken excluding renewable and nuclear energy sources. For heat, a natural gas boiler is taken. This information is not in the Directive. Therefore, the influence on this parameter is limited. In principle, member states should be allowed to use the FFC of their choice. BioGrace adds to this that it is possible to change the FFC in the tool as it is now. The question whether to use one or another FFC depends on what you want to calculate. JRC mentioned that a publication is being prepared on this topic. Depending on the impact assessment a choice will be made by the Commission on how to proceed on this.
- Does the tool allow for changes in values for the fossil fuel comparator? France has the opinion that it might not be a level playing field when member states use different fossil fuel comparators. The use of biomass should be valued similarly in all member states.

Answer: There is a logic to use harmonised FFC's throughout Europe because then GHG calculations will give the same results, so BioGrace strongly favours using the FFC's to be published in the new EC report.

Nevertheless, the FFC's in the tool can be changed. Currently there is no binding regulation that tells which FFC's shall be used. Also when the Commission will have published its new report, the FFC's in that report will not be binding.

Consequently, a discussion developed between various member states whether best available technology is used in different member states and whether this is influenced by the fossil fuel reference values. There does not seem to be agreement on this issue (some countries are in favour, some are against). JRC concludes that the aim of the GHG calculations is not to calculate individual emission reductions in member states but to calculate and compare the reductions of different pathways in Europe. As such it does not make sense to use national FFC's.

Wallonia adds to this that they look at avoided emissions as a basis for their support system and relate the amount of their support to that. Hence, a higher FFC would result in more subsidy. Wallonia might therefore decide to use its own FFC.

John Neeft (BioGrace/RVO) - BioGrace-II: Next steps

John Neeft shortly explained the future steps in the BioGrace-II project and what can be expected in terms of project output. The tool will be distributed as soon as the update of the 2010 report is published. The tool will be published together with a methodological background document, a document with GHG calculation rules, additional standard values and a user manual. Stakeholder participation through feedback sessions and public workshops, training sessions and actions towards harmonisation will be continued.

Questions/discussion:

- On request of the participants it will be considered whether the BioGrace-II tool can be distributed already sooner to the participants.
- Will there be a BioGrace-III project? Or what will happen after BioGrace-II?
Answer: This is not clear yet. In case there won't be a BioGrace-III project, other financial sources will be searched such as fees from companies that use the tool and need the assistance and the updates.
- Italy requests to be contacted for the next round of feedback sessions.

2.5 Final discussion and closing of the workshop

In the final discussion it was asked whether the workshop has been useful, whether it should be repeated and when this should happen. There was a general consensus that the workshop has been very useful. Most policy makers came to the workshop to be informed rather than to discuss methodological issues. Most policy makers are not yet acquainted enough with those issues to be able to discuss them. Therefore it was rather difficult to reach in depth discussions on harmonisation at this point. Nevertheless, bringing together policy makers to widen the knowledge

on the issue of GHG calculations and to discuss the general approach towards harmonisation, has paved the way towards this aim. The publication of the updated 2010 report by the Commission is a prerequisite to continue the path. It was proposed to organise a second workshop sometime by the end of this year.

As a general conclusion, the next statements can be made:

- There was a strong participation from 12 member states;
- Participants indicated that the workshop proved to be very useful as to get informed and start information exchange with colleague policy makers;
- Participants however also indicated that – due to the fact that we only know quite recently that there will not be binding criteria from the European Commission – it is too early for having discussions aimed at making decisions. Most member states are still studying the different options. As a result, there was no strong response to the discussion questions that were presented after the presentations in three of the four sessions held;
- Although there were disagreements between member states regarding the implementation of sustainability criteria for solid/gaseous biomass, there was a general constructive attitude towards harmonisation of criteria;
- A general need was expressed for more communication and interaction with JRC with regard to the exchange and review of data and for the integration of local values;
- Several participants indicated that it would be most useful to have a second similar workshop in ½ - 1 year from now;
- Continuity of the BioGrace project was an important issue for various participants;
- Unanimously the participants were very satisfied with attending to the workshop.

Annex I: List of participants

MS	Surname	First Name	Organisation	Policy maker	Project partner
AT	Ludwiczek	Nikolaus	BIOENERGY 2020+ GmbH		X
BE	Buytaert	Veerle	Flemish Regulator of the Electricity and Gas market (VREG)	X	X
BE	Cornélis	Pierre-Yves	Walloon Energy Commission (CWAPE)	X	
BE	Loodts	Jimmy	Flemish Regulator of the Electricity and Gas market (VREG)	X	X
BE	Vermeulen	Caroline	Flemish Energy Agency (VEA)	X	X
DE	Fehrenbach	Horst	Institute for Energy and Environmental Research (IFEU)		X
DE	Köppen	Susanne	Institute for Energy and Environmental Research (IFEU)		X
DE	Pabst	Jeannette	Federal Environmental Agency	X	
ES	Domínguez	Francisco	Ministry of Industry, Energy and Tourism - IDAE - Biofuels department	X	
FI	Haavisto	Harri	Finish Energy Authority	X	
FI	Siikavirta	Hanne	Ministry of Employment and the Economy	X	
FR	Julienne	Guénola	Ministry of Agriculture	X	
FR	Lunet	Joseph	Ministry of Energy	X	
FR	Thonier	Grégoire	BIO by Deloitte		X
HU	Jakab	Marianna	Permanent Representation of Hungary to the EU	X	
IT	Carratù	Livia	Ministry of Environment and Protection of Land and Sea	X	
NL	Castelijm	Sipke	Netherlands Enterprise Agency (RVO)	X	
NL	Cornelissen	Rob	Ministry of Environment and Infrastructure	X	
NL	Neeft	John	Netherlands Enterprise Agency (RVO)		X
PL	Czopek	Piotr	Ministry of Economy - Renewable Energy Department	X	
SE	Ericson	Sven-Olof	Ministry of Enterprise, Energy and Communication	X	
SE	Forsberg	Maria	Swedish Energy Agency (STEM)		X
SE	Israilava	Alesia	Swedish Energy Agency (STEM)		X
SK	Fratricova	Hana	Ministry of Agriculture and Rural Development - Department of Plant Production	X	
UK	Cowburn	Rebecca	Department of Energy and Climate Change	X	
EU	Calderon	Cristina	European Biomass Association (AEBIOM)		X
EU	Font de Mora	Emilio	European Commission - EASME		
EU	Giuntoli	Jacopo	European Commission - Joint Research Centre (JRC)		
EU	Volpi	Giulio	European Commission - DG ENER		

Annex II: Agenda of the workshop

09.30 Welcome coffee

10.00 Latest developments in defining sustainability criteria for solid and gaseous biomass used in electricity, heating and cooling

- Giulio Volpi (European Commission - DG ENER)
- Rob Cornelissen (Netherlands)
- Jimmy Loodts (Flemish region, Belgium)
- **Questions for the three presenters**

11.00 Coffee break

11.15 Policy developments in member states related to sustainability criteria and GHG calculations for electricity, heating and cooling from biomass

- Short tour de table - updates of other Member States (2-3 minutes each)
- **Discussion - questions:**
 - Stakeholders (companies, NGOs) ask for harmonised sustainability criteria for electricity/heat/cooling from biomass. Without such harmonised criteria, trade (e.g. in wood pellets) will be negatively influenced.
In absence of EU sustainability criteria, how to promote convergence of national schemes?
 - For those member states that have introduced sustainability criteria or are working/considering to do so:
 - Is there willingness to work together and try to align the criteria and requirements?
 - How should this be done, what is the proper work process?
 - What are the open issues at national level (e.g. addressing ILUC, biogenic carbon emissions?)

12.30 Lunch

13.15 Harmonisation of GHG calculations on European level

- Jacopo Giuntoli (JRC - Petten) - Work of JRC
- John Neeft (BioGrace) - BioGrace and its relation with the EC
- **Discussion - questions:**
 - Is the methodology as presented a good start to facilitate convergence amongst national sustainability regulations?

- Are there any specific comments regarding the methodological choices taken?
- How can experience in the field of GHG calculations from stakeholders and from member states be collected and integrated in one common methodology including default values and conversion factors?
- What is the proper work form, who will be responsible?

14.45 Coffee break

15.00 BioGrace-II GHG calculation tool

- Susanne Köppen (IFEU) - Demonstration of the BioGrace-II GHG calculation tool
- John Neeft (BioGrace) - BioGrace-II: Next steps
- **Discussion - questions:**
 - One objective of BioGrace is to increase user-friendliness of the tools. We are organising to get feedback from companies and consultants. Should we also ask feedback from policy makers?
 - Another objective of BioGrace is harmonisation: cause that different GHG calculation tools give the same result. This can only be done if the same methodology, default values and conversion factors apply. What do we need to get there?
 - The BioGrace-I tool contains requirements on verification. Should the BioGrace-II tool contain the same requirements? If so, how is this ensured (should this be part of regulations, or should voluntary schemes using tools demand for such requirements)?

16.00 End of the workshop