BioTrade2020plus

Supporting a Sustainable European Bioenergy Trade Strategy

Intelligent Energy Europe
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Deliverable 6.7

Report on the progress of BioTrade2020plus stakeholder consultations

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The BioTrade2020plus Project

Objectives

The main aim of BioTrade2020plus is to provide guidelines for the development of a **European Bioenergy Trade Strategy for 2020 and beyond** ensuring that imported biomass feedstock is sustainably sourced and used in an efficient way, while avoiding distortion of other (non-energy) markets. This will be accomplished by analyzing the potentials (technical, economical and sustainable) and assessing key sustainability risks of current and future lignocellulosic biomass and bioenergy carriers. Focus will be placed on lignocellulosic biomass from current and potential future major sourcing regions of the world (US, Ukraine, Latin America, Asia and Sub-Saharan Africa).

BioTrade2020plus will thus provide support to the use of stable, sustainable, competitively priced and resource-efficient flows of imported biomass feedstock to the EU – a necessary pre-requisite for the development of the bio-based economy in Europe.

In order to achieve this objective close cooperation will be ensured with current international initiatives such as IEA Bioenergy Task 40 on “Sustainable International Bioenergy Trade - Securing Supply and Demand” and European projects such as Biomass Policies, S2BIOM, Biomass Trade Centers, DIA-CORE, and PELLCERT.

Activities

The following main activities are implemented in the framework of the BioTrade2020plus project:

- Assessment of **sustainable potentials of lignocellulosic biomass** in the main sourcing regions outside the EU
- Definition and application of sustainability criteria and indicators
- Analysis of the **main economic and market issues of biomass/bioenergy imports** to the EU from the target regions
- Development of a dedicated and **user friendly web-based GIS-tool** on lignocellulosic biomass resources from target regions
- **Information to European industries** to identify, quantify and mobilize sustainable lignocellulosic biomass resources from export regions
- **Policy advice on long-term strategies** to include sustainable biomass imports in European bioenergy markets
- **Involvement of stakeholders** through consultations and dedicated workshops

More information is available at the BioTrade2020plus website: **www.biotrade2020plus.eu**

About this document

This report corresponds to D6.7 – Report on the progress of BioTrade2020plus stakeholder consultations. It has been prepared by: CENER, through contributions of VITO, WIP and Imperial College.

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RE	Restricted to a group specified by the consortium (including the Commission Services):	
CO	Confidential, only for members of the consortium (including the Commission Services)	

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1. Introduction

BioTrade2020plus aims at strengthening links and information exchange between stakeholders involved in international sustainable biomass trade. For this reason among the several dissemination activities scheduled during the course of the project and under WP6 three stakeholder working groups have been established:

- WG1: Biomass importers and end-users (e.g. industries, representatives of competing markets, biomass traders, NGOs, policymakers)
- WG2; Biomass producers and exporters (e.g. agricultural, forestry and industrial sector in biomass producing countries, NGOs, policy makers in sourcing countries)
- WG3: Long-term strategies and support frameworks

The set-up, composition and establishment procedure of each working group is defined in the periodic deliverable 6.2 (Report of the set-up and engagement of working groups). Versions corresponding to M3, M6, M12 and M30 are available in the project website (www.biotrade2020plus.eu)

As reported in D6.2, for each working group a series of telephone conferences were periodically organized. All these conferences are aimed to collecting user requirements, provide feedbacks on initial inputs and assumptions and provide feedback and validate draft deliverables. Previously to the conference calls a background paper was sent to all participants in order to boost the contribution during the meetings. After these teleconferences brief minutes are prepared and circulated to all the participants in order to compile all the information gathered and discussed.

Two former progress reports were published in January 2015 and February 2016 showing the main conclusions from the following teleconferences:

- November 27th, 2014. Topic: key principles on biomass trade; Working Group 3
- December 5th, 2014. Topic: sustainability criteria and indicators; Working Group 2
- December 11th, 2014. Topic: sustainability criteria and indicators Working Group 2
- January 27th, 2015. Topic: sustainability criteria and indicators Working Group 2
- December 15th, 2015. Topic: US-Case Study Working Group 2
- January 19th, 2016. Topic: Brazil Case Study Working Group 2
- February 19th, 2016. Topic: Ukraine Case Study Working Group 2

During this new period (March-August 2016), the following teleconferences have been carried out:

- June 20th, 2016. Topic: BioTrade2020plus Tool- Working Group 1 & 2
- June 30th, 2016. Topic: Strengths and weaknesses of the US as sourcing region for biomass to the EU. Working Group 2 & 3
- June 30th, 2016. Topic: Strengths and weaknesses of Brazil and Colombia as sourcing region for biomass to the EU. Working Group 2 & 3
- July 13th, 2016. Topic: Long term strategies for biomass trade. Working Group 3
- July 22th, 2016. Topic: Colombia Case Study. Working Group 2

The participant lists of these teleconferences are shown in the Appendix 1.

This report aims at compiling all the information extracted from these teleconferences in order to have an overview and identify synergies and links between the stakeholders activities and the tasks developed under BioTrade2020plus. The opinions reflected here are not necessarily accepted by the majority of the participants neither by the consortium team.

2. Teleconference on the BioTrade2020plus Tool

This teleconference was held on 20 June 2016. The participant list can be found in Annex 1.

2.1. Objective

One of the central outputs of Biotrade2020+ is an interactive online tool that provides coherent insights in quantities (under sustainability constraints), prices and GHG emissions of the various feedstocks in the regions.
The objective here was to go through the tool, discuss its features and discuss questions and wishes from stakeholders.

2.2. Discussion on the BioTrade2020plus tool

BioTrade2020plus partners welcomed the attendees and introduced the tool and went through different case studies (US; Colombia, Brazil, Ukraine) showing the different menus and the data available.
Then, the attendees were invited to show their impressions and ask some questions. The most relevant questions and comments are shown below:

- A partner is interested in knowing if the calculations that lead to the final potentials are shown in the tool. It would be good if this methodology is shown or at least a link is made on the data source and methodology.
- The current scope of the tool covers the six case studies selected under BioTrade2020plus, but some partners asked if it will be possible to enlarge it in order to include more regions. Or even develop a protocol to include new countries (e.g. Argentina).
- Some partners offer themselves to supply info for the tool:
    - A partner from Brazil can facilitate more material from Brazil from the Babethanol project as they have data available and maps. This info could be included in the tool.
    - A partner from Argentina is interested in the protocol in order to develop a map for Argentina. Therefore he will send the information available in order to be included as a new case study. (GJ will send the formats and the methodology)
- Some partners asked if it is possible to include the most relevant infrastructures in the map (i.e.: railways, roads, ports) (e.g. ports in E-Brazil). In fact, one suggests that there is an available study for Argentina developed by FAO (Wisdom http://www.fao.org/docrep/011/i0900s/i0900s00.htm) that includes the available infrastructures
- One partner asked why the cost-supply curve in Ukraine includes Austria, Italy, and The Netherlands. This is due to the different delivery options.
- The participants wanted to know when the tool is publicly available. It will be ready in July 2016

Further suggestions:

- The cost-supply curves are not dynamic. Need to be more developed
- The tool could be developed for further regions. The current case studies included can be a reference and in the future it could be extended to other regions
- The link to the case study reports will be included in the tool

3. Teleconference on strengths and weaknesses of the US as sourcing region for biomass to the EU

This teleconference was held on 30 June 2016. The participant list can be found in Annex 1.

3.1. Objective

In this telco the focus of the discussion was on the SWOT statements for the United States, which were also part of an on-line survey (see further). It was also anticipated to have a discussion on Canada, but the invited stakeholders from Canada could not attend.

The comments have been integrated in the final version of Deliverable 5.2 ('*Strategies for bioenergy in potential supply regions and regulatory SWOT analysis as trade partner to the EU*').

3.2. Main comments and points discussed in the telephone conference

The following table shows a summary of the comments per statement. The statements were distributed to the participants beforehand (the same were also included in the survey).

	Statements on United States
General conditions	
1	(+) The US has a **strong economy** and **regulatory stability**, with a **positive investment climate** and a **high trade orientation**. This makes the US a **stable trade market** for the EU.
2	(-) The US has very **high energy consumption** per capita, with **high greenhouse gas emissions** related to fossil fuel consumption. Considering the global climate targets, substantial efforts will be needed in energy savings and renewable energy and a **major growth in domestic use of lignocellulosic biomass** can be anticipated (for transport fuels, renewable energy, biobased products). This reduces the room for biomass export in the medium term.
Comments: Most participants did not agree with statement 2; the 'major growth' of domestic use of biomass was questioned: - The US EIA does not anticipate biomass playing an increasing role in US energy usage, in their 2016 reference case projections. In fact it believes that "Biomass, which includes wood as well as liquid biofuels like ethanol and biodiesel, remain relatively flat, as wood use declines and biofuel use increases slightly. In contrast, wind and solar (for electricity) are among the fastest-growing energy sources in the projection, ultimately surpassing biomass and nuclear, and nearly exceeding coal consumption in the Reference case projection by 2040"[1] - Fossil fuels are inexpensive in the US, which makes domestic use of biomass difficult. - The bioeconomy focus is on biobased products and biofuels, particularly, drop-in biofuels for aviation and military fuels, since light duty transport can move towards electric or hybrid systems.	

[1] http://biofuels-news.com/display_news/10696/fossil_fuels_still_king_of_us_energy_consumption_eia_study_finds/

Export conditions for biomass from forestry	
3	(+) The highly forested area in the US Southeast is **easily accessible** for trade with the EU through its Atlantic harbours.
4	(-) The uptake of sustainable forest management (SFM) **certification** in the US is relatively low, so the sustainability of forest biomass from the US is difficult to demonstrate.
5	(+) While SFM is not very common, a relatively high share of US forests is managed with a **forest management plan** and **national regulations** address aspects in terms of biodiversity, water and soil through best management practices.
6	(+) Forest area and carbon stock in forests in the US has continued to grow in the past decades, resulting in a net **greenhouse gas sink from LULUCF**, so US forest biomass (residues) is not associated with a loss of forest carbon.

Comments:

Statements 4 and 5 are clearly linked.

- There were many comments on the apparent reliance on SFM certification in the statements presented, especially given the US rank in the trends in forest stocks and land area in the analysis reported; and that there should be consideration given to equivalent mechanisms/methodologies that satisfy sufficient proof of sustainability.
- There are intensive monitoring programmes of US forests. Certification is a piece of paper, most important is action on the ground. The evolution of US forest land and carbon stocks show the ability of the US system to have sustainable forest and fibre production.
- The basis for forest management in the US are Federal and State legislation, e.g. Endangered Species Act, Clean Water Act, and Best Management Practices (BMPs). BMPs are either required or voluntary depending on the State, but in practice there is over 90% implementation rate. There is a lot of focus on sector education, including loggers and procurement foresters.
- Most important is a rigorous monitoring system and analysis of the data, rather than relying on specific anecdotal findings.
- Certification will only be applied if it pays off (higher price or access to a certain market). It puts the reporting responsibility at the forest land owner, but this is too expensive for small land owners.
- Fibre sourcing standards (at procurement level) are commonly applied - all pellets producers apply this. This includes logging practices, also on smaller land (family land owners).

There was a short discussion on potential requirements from EU side (revision of Renewable Energy Directive). It is likely that similar requirements will come for solid biomass as what is now valid for liquid biofuels. Some level of certification (mostly chain of custody) will certainly be required, including no-go areas. There could be a risk-based approach (or bilateral agreements), based on an assessment of a certain region. It was stated that this may work, but the details of the process will be decisive.

There was some reference to statement 5 for Canada (insects/forest fires), which could also apply to the US. Sustainable forestry moved away from restricting harvests. In many settings, thinning and active forest management actually improves forest growth, biodiversity and resilience to fire and insects. (*extra statement*)

Available markets for what is otherwise unmerchantable material provides incentives/opportunities for restoration and management activities that can increase the resilience of systems.

We need adaptive systems with strong monitoring, not a fully prescriptive approach.	
Export conditions for biomass from agriculture	
7	(-) **Agriculture** is relatively **intensive** in the US, with reduced carbon content in the topsoil and high irrigation needs. Further intensification of harvesting in agriculture may induce sustainability risks.
8	(+) The US has sufficient area to supply domestic food and feed demand through its own agriculture and there is **room for diversification to include non-food crops**.
9	(-) Considering the stimulation of **domestic biofuels from agricultural residues or energy crops** (corn stover, switchgrass) through the RFS2, there will be little room for exporting agricultural biomass to the EU.

Comments:

Statement 7: energy crops and use of agricultural residues can enhance sustainability of agricultural land.

- Agricultural systems in the US also have BMPs to maintain carbon on the site and in soils. The monitoring system is different.
- Soil loss and water quality are in focus for agricultural practices. There are BMPs stimulating no till farming; this also includes limited stover removal.
- Yields of traditional crops may increase through crop improvement. This also leads to a higher production of residues (e.g. corn stover).
- Practices involving perennial crops may enhance sustainability, including improved water quality.

Statement 9: the stimulation of advanced biofuels through RFS has not been as successful as anticipated in the law. EPA reduced lignocellulose biofuels targets consistently based on projections of volumes from operation of pioneer plants. However, EPA has increased the list of approved renewable fuel pathways; biodiesel and renewable diesel (hydrotreated vegetable oil HVO) increased significantly since 2012, with HVO now at a million metric tonnes. In addition, jet fuel and heating oil were also approved, with biomass pyrolysis oils with ASTM standards, already sold to replace fossil heating oil to institutional organizations.[2]

[2] https://www.epa.gov/renewable-fuel-standard-program/approved-pathways-renewable-fuel

4. Teleconference on strengths and weaknesses of Brazil and Colombia as sourcing region for biomass to the EU

This teleconference was held on 30 June 2016. The participant list can be found in Annex 1.

4.1. Objective

In this telco the focus of the discussion was on the SWOT statements of two regions, Brazil and Colombia, which were also part of an on-line survey (see further). The Colombian participant had problems to access the telco, but we received his comments by mail.

The comments have been integrated in the final version of Deliverable 5.2 ('*Strategies for bioenergy in potential supply regions and regulatory SWOT analysis as trade partner to the EU*').

4.2. Main comments and points discussed in the teleconference

The following table shows a summary of the comments per statement.

	Statements for Brazil
General conditions	
1	(+/-) Although there are potential issues related to **corruption control**, Brazilian **modest economic growth** projections and average levels of **country governance**, make Brazil a **relatively stable trade market** for the EU.
2	(+) Brazilian **energy consumption** per capita is relatively low, with **low greenhouse gas emissions** related to fossil fuel consumption. There is a high share of renewable energy, with an important role of biomass, through a **consistent policy focus in renewable energy**. So no abrupt changes in biomass use (just a consistent growth) are projected to fulfil climate targets.
3	(-) The decrease of **hydro-power production** due to several years of droughts might increase biomass power production, inducing a higher use of domestic biomass and **reducing the availability for export**.
Comments: Statement 1: there are major political problems and an economic crisis in Brazil. Nevertheless agriculture is going well and the condition for sugar cane is very stable, providing residues which can be available for domestic use or trade. On the longer term Brazil has proved to be a stable trading partner for the EU. Statement 3: it is not likely that the reduction of hydropower will increase the domestic use of biomass. Bio-electricity depends on public policy (tenders and prices); today there is already more capacity than can be sold to the grid. In particular straw is still underused. A move to bioeconomy (e.g. for chemicals) may decrease availability of biomass for trade. Suggestion for extra statement on the huge potential of biomass in comparison with other countries (see case study).	
Export conditions for biomass from agriculture	
4	(+) The agricultural area in Brazil Southeast and South is **easily accessible** for trade with the EU through its Atlantic harbours.

5	(-) Brazil has low average **carbon content** in its topsoil. Further intensification of harvesting in agriculture may induce sustainability risks.
6	(+) Brazil has sufficient area to supply domestic food and feed demand through its own agriculture and there is **room for diversification to include non-food crops**.
7	(+) There are prospects of **increasing productivity** of extensively managed grasslands (higher yields, but also increasing soil carbon content).
8	(+/-) Brazil is investing in **advanced ethanol** from lignocellulose, and will prefer trade of ethanol instead of biomass.
Comments: Statement 5: sugar cane is a semi-perennial crop, which leads to more carbon in the soil. The majority of the sugar cane expansion is on deteriorated, low quality land, where soil conditions will improve. Good management techniques are needed. Statement 7: Brazil is indeed investing in intensification of crops and higher land yields. Statement 8: is also a positive trend. These evolutions would not impede biomass exports, considering the considerable amount of biomass available.	
Export conditions for biomass from forestry	
9	(-) Both the uptake of sustainable forest management (SFM) **certification** and share of **forest management plans** are very low, so the sustainability of forest biomass from Brazil is difficult to demonstrate.
10	(-) Although at lower rates in the past decades, forest area and carbon stock in forests in Brazil have continued to decline, resulting in elevated levels of **greenhouse gas emissions from LULUCF.** So Brazilian forest biomass (residues) are still associated with a loss of forest carbon.

	Statements for Colombia
General conditions	
1	(+/-) In terms of **governance** Colombia has issues related to political stability & absence of violence/terrorism, rule of law and control of corruption. On the other hand, regulatory quality is positive, and overall the **investment climate** is rated positive.
2	(+/-) Colombia shows relatively low energy consumption that may increase with economic growth. Besides, biomass is starting to play an important role in the energy mix of the country. Furthermore, a higher share of biomass in the electricity mix is envisaged in long term plans. This may **reduce the room for biomass export** in the medium term.
3	(-) The **accessibility** of some sourcing areas in Colombia makes it difficult to transport biomass to the ocean harbours.
Comments: *Statement 1*: The transformation in security, political and economic stability of Colombia has been instrumental, together with its geographical position, so that several companies are filed and use it as a special place to expand their markets at low costs. The 'Doing Business' World Bank report argues that Colombia is the third in Latin America and the Caribbean in terms of business environment; and a study by J.P. Morgan states that it is the second most promising country in terms of investment in Latin America. *Statement 2*: Recent studies suggest that the production of bagasse (estimated at 1.5 million tons), rice husks (with 457,000 tons per year) and oil palm fruit have great potential in the development of biomass In Colombia. Although much remains to be done. *Statement 3*: The most suitable areas to generate biomass for energy are the Santanderes, the Eastern Plains and the Atlantic Coast. There is a road infrastructure program in Colombia	

that proposes the construction and operation concession of more than 8,000 km of highways, including 1,370 km dual carriageways, and 159 tunnels. Its main objective is to improve the country's competitiveness, reducing the cost and time of transporting people and especially cargo to export manufactured goods through ports.	
Export conditions for biomass from forestry	
4	(-) Colombia has a high share of private ownership of forests. No uptake of **sustainable forest management** certification (FSC or PEFC) is reported, nor is there reporting of forests with a management plan. So the sustainability of forest biomass from Colombia is difficult to demonstrate.
5	(-) There has been **some reduction of forest area** (net deforestation) and forest carbon in the past years in Colombia, resulting in net LULUCF emissions.
Comments: *Statement 4:* Only a small share of the forestry potential of Colombia is used. Commercial forest plantations span over 350,000 ha, while there is a potential for the development of forestry projects of 24 million hectares. Some companies have an FSC label in Colombia, e.g. Smurfit Kappa Cartón de Colombia (67,000 ha) and Monterrey Forestal Pizano (20,000 ha).	
Export conditions for biomass from agriculture	
6	(+) Agriculture in Colombia shows quite **high yields**, with **high average carbon content** in the topsoil and **low freshwater withdrawal**, which are very good circumstances for agriculture.
7	(+) In Colombia, **sugarcane mills** play an important role in agriculture residues management. Currently the bagasse is the main residue used to generate power in sugarcane mills, but starting to use **thrash** (leaves) could increase biomass availability for export.
8	(-) The level of undernourishment and food inadequacy in Colombia is relatively high, as well as the cereals import dependency, meaning that Colombia should **prioritize domestic production of food and feed in its agriculture**, with little room for diversification to include non-food crops. Potential trade should focus on **agricultural residues**.
Comments: *Statement 7*: Bagasse from sugarcane can be used for cogeneration. There is a potential to expand the production area of sugar cane with more than one million hectares. This would mean that cogeneration can increase at least 5 times compared to current levels, resulting in a high increase of domestic renewable energy production. *Statement 8*: The National Government of Colombia has developed a plan to grow an extra one million hectares in crops to ensure adequate food security over time. This is done on the basis of agricultural maps indicating which products are suitable for planting and in what areas. An atlas of the energy potential of residual biomass in Colombia has been developed, as well as policies to support unconventional sources of energy.	

5. Teleconference on long term strategies for biomass trade

This teleconference was held on 13 July 2016. The participant list can be found in Annex 1.

5.1. Objective

The final deliverable of WP5 of the BioTrade2020plus project will be an 'Advisory document on long-term strategies to include sustainable biomass imports in European bioenergy markets'. This will build on the work and stakeholder consultations done in the past two years in the frame of this project.
In this telephone conference the main suggestions for the advisory document were discussed.

5.2. Discussion on the main points for the advisory document on long term strategies

The suggestions were grouped in 10 groups. Each group was discussed separately. A summary of the comments per group is indicated below.

1. Open Markets
   - Balance between imports and domestic biomass
   - Most discussion about sustainability of bioenergy is about imported material. However, the major part of bioenergy is still expected to come from domestic biomass.
   - Trade is a natural part of all markets (supply-demand); some regions are short of material, other abundant; some regions have lower production costs / better growing conditions than other.
   - Open markets provide more flexibility in feedstock sourcing and stabilize prices.
   - WTO compliance: equal treatment of domestic and imported material as a basis – sustainability requirements can be justified in terms of environmental protection goals (if not used as trade barrier).

Comments:

- *Purchasing power of EU players is stronger than local players in sourcing regions, so they can outcompete these. Some protection may be needed, export barriers can be justified. Principle of local application first is nice, but how can you enforce this?*
- *There is a very thin line between sustainability requirements and trade barriers.*
- *In terms of WTO rules, involvement of legal experts would be needed.*
- *Sustainability requirements should go broader than environmental and also include socio-economic requirements. Requirements should be considered in the frame of the UN Sustainable Development Goals.*
- *Strategies should be defined with export countries. Mechanisms are already in place on food security or land tenure, e.g. temporary export restrictions to safeguard these. This doesn't have to be part of a certification system.*

- *What do you consider as 'balance' between imports and domestic? It can be subjective or have different meanings - is this economic, ecologic, social, …? Balance should be considered in terms of sustainability terms, with its three pillars.*

- *For the balance, the counterfactual should be taken in to account – does it replace fossil imports or local energy sources?*

- *The GBEP debate on sustainability indicators has already covered issues like security of supply (including the counterfactual), import-export balance and substituted energy carriers. GBEP indicators would be good material to refer to.*

- *Draw on lessons learned from the Renewable Energy Directive. The principle of sustainability is an important issue.*

- *Mind that international markets on biomass can be volatile, e.g. related to harvest yields (good or bad growing seasons, droughts), forest fires, storms, …, so import-export balances will fluctuate.*

2. <u>Biomass production and harvest should fit in the frame of long-term sustainability.</u>
   - for energy and other purposes
   - sustainability performance should be demonstrated
   - Sustainability requirements are important, but they need to be workable in practice *(don't create tougher barriers than needed => cost of doing nothing)*
   - Preferably build further from existing systems, e.g. EU Timber Regulation/FLEGT or voluntary schemes in the market
   - Transparency and controllability is key, labelling as a tool
   - Considering imports: risk-based approach, bilateral agreements with sourcing regions
   - Consistency in sustainability requirements along different markets & Members States to avoid market distortions !

<u>*Comments:*</u>

- *Definition of sustainability should be included. It includes environmental, social and economic parts. Biomass production and harvesting also depends on socio-economic conditions. UN Sustainable Development Goals should be the basis.*

- *Systems shouldn't start from zero, but build on existing schemes.*

- *EUTR: it is indeed foreseen that the EUTR will go a step further to include sustainability criteria.*

- *EUTR is on trade issues, which is EU competence. On the other hand, forest management is Member State's competence. We should clarify if these recommendations are for EU level, or also for Member States.*

- *What is meant with bilateral agreements? This option is also foreseen in the Renewable Energy Directive. It is based on an assessment of the governance system in a sourcing country.*

- *Sustainability is one of the most crucial points. Mind that trade of biomass for energy is still much lower than other biomass commodities (for food/feed, timber, …). A*

harmonized approach for different biomass applications is difficult. Depending on the region, a specific priority list of key indicators could be made.

- *The project doesn't suggest a harmonized system for all biomass applications. But in the long term sustainability of biomass production systems (forestry and agriculture), all harvests (for food, materials, energy) need to be considered. A sustainability frame is to be applied to the forest or agriculture overall, independent of the end use of its products.*
- *The concept of sustainability in this point refers to production and harvest. Will the rest of the value chain (including end use) also be considered? Yes, in point 5 on efficient use of resources.*
- *In terms of trade balance, also flows of nutrients can be considered (e.g. imports of phosphorous, nitrogen from South America to Europe). Mind that this is most relevant for feed, and less for lignocellulosic material.*
- *Last point: different markets is in the first place for energy carriers (biofuels, heat, electricity), but could open up to material applications.*

3. Urgency to reduce consumption of fossil fuels
   - A serious reduction of fossil fuels is needed in the frame of climate change mitigation.
   - Markets and systems are designed for fossil fuels, these are still the standard (it is easy to do nothing and continue to use fossil fuels).
   - Avoid that complexity of biomass provides an excuse to do nothing.
   - Fossil fuels should also demonstrate sustainability performance (level playing field), e.g. in terms of GHG, land use.
   - *Carbon tax* as a tool for energy carriers and materials (level playing field between energy and materials).

Comments:

- *This is a very important idea. Fossils fuels will never be sustainable, so it is urgent to phase them out.*
- *A carbon tax is not EU competence, so this is more a suggestion towards Member States. Stability in CO2 prices is important, and the EC has tools like the ETS.*
- *Carbon tax is one example of a tool. An alternative tool is the deliberate phase-out of fossil fuels in certain markets. Then biomass doesn't need to follow (and compete in) fossil fuel markets. In this project we can only touch upon the topic of phasing out fossil fuels, it is not part of this project to analyse this. It would require more dedicated work. The same goes for potential sustainability requirements (GHG balances) for fossil fuels.*
- *Sustainability matters, a certain level of complexity to demonstrate the sustainability of biomass is unavoidable. The message for this point was that there are so many sides to biomass (carbon, land use, biodiversity, water, emissions, …) that some policy makers choose to avoid the issue of biomass.*

4. Support sustainable **mobilisation** of biomass
   - Mobilisation is the key for further deployment of the biobased economy
   - There are opportunities for concurrent benefits (social, environmental, …), e.g. in increasing agricultural productivity and food production, improve soil carbon and sustain soil fertility or biodiversity, improved waste management, sustainable forest management, …
   - Cooperation/good practice exchange should happen with other regions in the world to facilitate progress in agricultural productivity, forest management and waste management.
   - Demonstrate low iLUC approaches.

Comments:

- *The main discussion was on the last point, in relation to iLUC. Some suggested to leave out the issue because of its controversy. Most said we can't leave it out, but maybe reformulate. Biomass in general is limited by land use. This is a big different with fossil fuels. Could reformulate to 'Demonstrate innovative approaches to avoid or deal with iLUC and identify cases where iLUC is low or even positive'.*

- *There may also be other indirect effects (apart from land use), e.g. in terms of employment, displacement, competition, … There is distinction between biomass production (e.g. iLUC) and use (e.g. iWUC); these may be treated separately.*

- *Direct and indirect effects should be monitored, see point 6.*

- *Mobilisation of biomass for the biobased economy to some extent goes further than this project which focuses on trade. Nevertheless it is an important point to mention. E.g. through mobilisation of domestic biomass less imports may be needed, and on the other side assisting in mobilisation outside the EU may provide biomass for trade, but also concurrent other benefits.*

5. **Efficient use** of resources / trias energetica
   - Trias energetica, priorities: (1) reduce energy demand, (2) improve efficiencies, (3) replace by renewable resources
   - Monitor energy use in the value chain, improve conversion efficiencies. => can do more with the same amount of biomass
   - Biorefinery approach: look for synergies between energy and (new) material markets

Comments:

- *GHG balance of the full chain (including end use) should be included in this list.*

- *The issue of biorefineries is less related to trade. Also the trias energetica is about energy per se, not specifically bioenergy. This should be covered in the post 2020 EU energy policy.*

- *Reduced energy demand is clear for the EU, but in developing countries energy demand is still expected to rise with their further development.*

- *It is important to define 'efficiency'. Does it mean energetic, economic, society goals, …? Energetic is of course key, but the broader aspect of resource efficiency (do more with less) also comes in.*

- *We shouldn't avoid end use in the advisory document.*

- *There was a discussion whether cascading use of biomass needs to be mentioned instead of biorefineries. Cascading defines a certain priority of use (materials, energy). It was argued that this should not be a fixed priority list, but markets should decide the value and what they buy.*

- *Most international biomass trade is for non-energy use.*

6. Monitor **direct and indirect impacts** of EU policies on markets (EU and outside).
   - Can be positive (stimulate good practices) or negative (e.g. displacement)
   - Not always clear from the beginning when policies are adopted, further fine-tuning may be needed to avoid negative impacts.
   - Monitoring (real impact) is complementary to modelling (simplifies reality)

Comments:
- *There are co-benefits and trade-offs; not all impacts are negative (even if discussions in the media mainly focus on negative impacts).*

- *Question is who is most competent and capable to carry out the monitoring. There will be different levels (MS, economic operators, traders). How to implement this in a practical way?*

7. Inform the **public debate**
   - Carbon accounting principles (diverging opinions/slogans & methodologies)
   - Assessment based on monitoring (be careful with models, or anecdotal information)
   - Provide clarity for policy makers & the public

Comments:
- *Carbon accounting is an important point to make. We should also highlight the comparison to fossil fuels.*

- *Need to include other applications of biomass (e.g. for feed, materials) and how energy relates to these markets.*

- *Why only focus on carbon accounting? For the public, local effects may be more important (e.g. number of trucks, emission impacts, deforestation, land ownership, …). Bioenergy is not only about avoiding fossil GHG emissions (see also manure digestion).*

- *carbon content in the atmosphere is increasing due to fossil fuels and this is an important focus in the public debate.*

8. Provide **financing** / investment models
   - Risk perception is high in the biobased economy and access to finance is an issue.
   - Governments can use tools to reduce financing risks (e.g. guarantees, loans)

Comments:

- *Not only project financing, support can also be about knowledge (support of research, demonstrators).*
- *This point is more about long term access to financing. Subsidies are a transitional mechanism.*
- *It is important to clarify where (which part of the value chain) it is best to put subsidies (smart financing). This depends on the risks and rewards in the value chain. Everyone should have a fair piece of the pie. It could be very effective to support mobilising (e.g. in forest management).*
- *Platforms bringing together the different sectors may also lead to better access to project financing.*

9. **Biomass quality & commodities**
   - Variability of biomass quality is an issue, particularly for residues, herbaceous material
   - Most potential is in low-quality material; high quality material demand in other markets (risk for competition).
   - Turn lignocellulosic material into real **commodities**
     - Compatibility with conversion technologies
     - Technical standards (international level)
     - Facilitates contracting, opens markets, access to finance
   - Governments can stimulate this process

Comments:

- *No comments on this statement*

10. Long term **stable policy framework**
    - Frequent policy changes are detrimental for investments; long term perspectives are needed.

Comments:

- *Policy changes per se are not necessarily detrimental. Policy needs to be consistent, but also dynamic to be effective. What is important is to have a long term policy **vision**.*
- *What policy framework is meant here? There is an important interrelation between different policy fields (agricultural, water, air, soil, energy,..). This is complex, but the different policy dimensions are interesting for impact assessment.*

General comments:

- Policies may change the way land is used. E.g. the decision to stop milk quota in Europe has led to an increase of cattle in regions like the Netherlands, and a decrease in Finland, Lituania. So in the end, NL has increased its import needs from Latin America, while less land is used in North Europe. In terms of biomass trade, such shifts may also occur, with different hotspots.
- Carbon accounting as established in the Climate Agreement treats imports more favourable than domestic production (carbon footprint of imports is not accounted). This can be counterproductive. Such system boundaries lead to ‘exports of environmental impacts´

6. Teleconference on Colombia´s sustainable biomass potential for export consideration to the EU

This teleconference was held on 22 July 2016. The participant list can be found in Annex 1.

6.1. Objective

The BioTrade2020plus consortium finalised the report on the Case Study in Colombia: "**Colombia's sustainable biomass potential for export consideration to the EU**".
The objective of this Telco is to discuss with key stakeholders from Colombia the findings of the case study in order to be incorporated in the final report to the European Commission.

6.2. Main comments and points discussed in the teleconference

The following questions were discussed with the audience:

- Question 1: The case study focuses on residues of sugar cane and palm oil in specific regions in Colombia. Do the participants agree these regions are the most valuable for possible exports to the EU?
- Question 2: The report shows the sustainable potential of these two types of residues considering current uses. Are there any additional considerations for future use of these residues within the regions?
- Question 3: Are there any additional considerations regarding the logistics to transport the residues to the ports?
- Question 4: Are there any additional plans from the sugar cane and palm oil industry that may affect the considerations of the report for future biomass exports to the EU?

Question 1:

- The attendees agree with the regions. The east of Colombia was not considered in The BioTrade2020plus case study. As this region has plans to extend its palm oil cultivation, it should be also considered. However, the transport costs need to be considered, as it is a long way to the coast and harbors. This region is expected to improve its infrastructure considerably within the next 10-15 years.
- In 2030 it would be possible look into other regions of Colombia due to the expansion in the cultivation of palm oil and other crops. In agreement with a national plan. In a first period residues may be left on the plantation in order to improve soil quality, however, in the long-term considerable amounts of biomass could be potentially mobilized.
- Colombian government is interested in developing agricultural programs including palm oil in the eastern region.

Question 2:

- The residues are an important source of cellulose. Now they are looking for alternative uses of cellulose (green chemical products→ biorefinery). There´s no specific certainty now but is an issue to be considered in the future.

- Maybe to produce more electricity, but not sure because it has more sense to produce higher value products. Using crop residues up to 20-30 % for co-firing more than this higher probability to have problem with the boilers. There is still high potential of using residues for other uses rather than energy/electricity in the boilers. Using it for burning should be huge investments on equipment and is much better to have higher investment in more valuable products.
- Fedepalma has developed a project from producing energy in the palm oil producing plants using biomass and biogas, some of them are now producing.
- *Question from one member of BioTrade2020plus project: why didn't the policy developed in 2014 for renewables biomass have a big role? Does it mean that there are not incentives to bioenergy?*
- There are incentives (tax exemptions, import duties exemptions, short time depreciation and gross income reduction) and other two…) to produce energy from biomass. These incentives applied in Fedepalma's project have a big impact in the financial indicators indications of Fedepalma model
- Regarding other uses in Colombia, electricity is one, the second is the fresh organic matter. In Fedepalma we have even researching putting back into biorefinery. We also want to produce high value products. Important to look for new products (ie: pellets and other higher value products).

Question 3: logistics

- The infrastructure available in the east area is not enough but will be improved in the future (10 years). Although costs will be higher
- *Question from BioTrade2020plus: will it be worthy to use the rail or the rivers to move the biomass*?; are assumptions about logistics realistic?.
- The attendees are not sure. Now are using them in regular trade.
- The mills are located in different places (dispersion), difficult to collect and transport. We produce more biomass for pellets. The amount we are producing we have to store the biomass and if there is no material to export, it would be an issue. It is more than transport, it's storage and also the availability.

Question 4:

- There are no specific plans by now for biomass. Chances of producing high value products that will affect the amount of biomass to affect the exports.

Other questions:

Question from BioTrade2020plus: is the production of electricity from biomass competitive enough in Colombia? vs for example wind mills?

- For the sugarcane sector CHP is used. Heat is required. If wind-mills are cheap it is an issue for the country not for the sugar sector. The problem is when using biomass for electricity generation only. We have low tax incentives for non-conventional technologies e.g. for solar in the case of companies or homes that can put the panels but this is

another project to support but this does not compete with biomass. In our case is not so related e.g. lowering the cost. For the country is another consideration.

- It seems that there are two possible scenarios
    - Use biomass for energy or other applications
    - Biomass for exports

    Both scenarios are feasible but there is also biomass left aside used for composting that could be used for exporting. Oil Palm has a 30 year life and after that there is biomass available. Oil palm residues (trunks) are interesting for a future scenario.

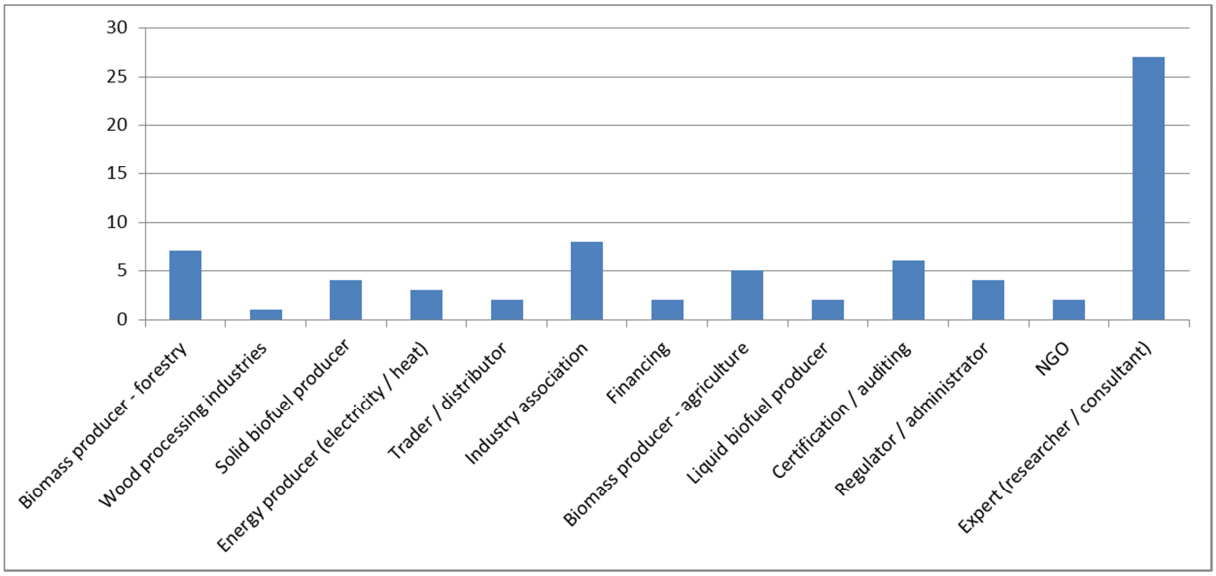
7. Survey on SWOT of sourcing regions

In Deliverable 5.2 several criteria have been considered which in some way indicate strengths and weaknesses of a certain country in terms of potential biomass trade to the EU. This was based on background data from international databases. Also an overview was made of the main bioenergy related strategy documents of the different sourcing regions.

On the basis of the collected background data a number of SWOT statements were produced for the different sourcing regions (6 to 10 statements per region) divided in general conditions, export conditions for biomass from forestry and export conditions for agricultural biomass. The statements were discussed in an Advisory Board meeting, in two webinars (see before) and through an on-line survey.

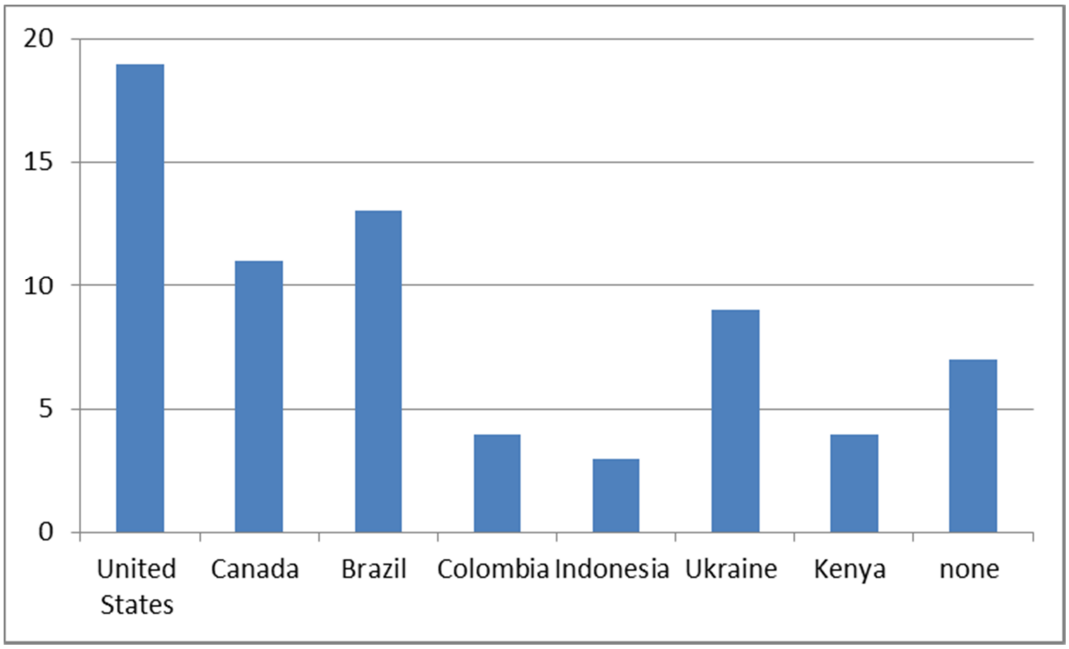
The draft statements were entered into an on-line SurveyGizmo survey (http://www.surveygizmo.com/s3/2807987/67e19fea8229).

The survey was distributed to several stakeholders on 3 June 2016 and it was kept open until 8 July 2016. 46 valid responses were received.



Most of the respondents classified themselves as ‘expert’, but different sectors were also represented (people could indicate multiple selections).

The following figure shows how many of the responses were received for each sourcing region. Responses related to Kenya, Colombia and Indonesia are limited, indicating a relatively low interest from these regions in trade of lignocellulosic biomass with Europe.



The concrete results per sourcing region and the reactions to the SWOT statements (also from the advisory board meeting and the webinars) have been integrated in the final version of deliverable 5.2 ('*Strategies for bioenergy in potential supply regions and regulatory SWOT analysis as trade partner to the EU*').

8. BioTrade2020plus Consortium

CENER – National Renewable Energy Centre, Biomass Department, Spain

Project Coordinator BioTrade2020plus

Contact persons: David Sánchez González & Inés del Campo Colmenar

Imperial – Imperial College London, Centre for Environmental Policy, United Kingdom

Contact persons: Dr Rocio Diaz-Chavez

DLO – Alterra, Wageningen University and Research, The Netherlands

Contact persons: Dr Gert-Jan Nabuurs & Dr Berien Elbersen & Dr Wolter Elbersen

IINAS – International Institute for Sustainability Analysis and Strategy GmbH, Germany

Contact person: Leire Iriarte & Uwe Fritsche

***VITO - Flemish Institute for Technological Research,* Belgium**

Contact persons: Luc Pelkmans

UU - Utrecht University, Faculty of Geosciences, Energy & Resources, Copernicus Institute of Sustainable Development, The Netherlands

Contact persons: Dr Martin Junginger & Thuy Mai-Moulin

WIP- WIP Renewable Energies, Germany

Contact persons: Dr Rainer Janssen & Dominik Rutz

9. Appendix 1: participants of the teleconferences

Teleconference on BioTrade2020plus Tool.
Monday 20 June 2016. 2:00 pm CET (Central European Time).

Participants

Moderator:

- Gert-Jan Nabuurs, Alterra, Wageningen University and Research, The Netherlands

Facilitators and technical set-up of the telco:

- Dominik Rutz, WIP Renewable Energies, Germany

Project partners:

- David Sánchez González, CENER, Spain
- Ines del Campo Colmenar, CENER, Spain

Stakeholders:

- Kim Cesafsky, Enviva, USA
- Jorge Antonio Hilbert, INTA, Argentina
- Robert Malmsheimer, SUNY ESF, USA
- Rubens Lamparelli, NIPE/UNICAMP, Brazil
- Jessica B. Marcus, US Industrial Pellet Association, USA

Teleconference on strengths and weaknesses of the US as sourcing region for biomass to the EU.
Thursday 30 June 2016, 16:30-17:30 CEST

Participants
- Nadine Block, SFI (Sustainable Forestry Initiative), United States
- Marilyn Buford, US-FS (United States Forest Service), United States
- Virginia Dale, ORNL (Oak Ridge National Laboratory), United States
- Christopher Galik, Duke University, United States
- Robert Malmsheimer, SUNY-ESF (State University of New York College of Environmental Science and Forestry), United States
- Steve Marshall, US-FS (United States Forest Service), United States
- Jessica Marcus, USIPA (US Industrial Pellets Association), United States
- Fahran Robb, USDA-FAS (Foreign Agricultural Service), United States
- Guy Robertson, US-FS (United States Forest Service), United States
- Dave Wear, US-FS (United States Forest Service), United States

Participants of the BioTrade2020plus consortium:
- Luc Pelkmans, VITO, Belgium (moderator)
- Rainer Janssen, WIP, Germany (facilitator)
- Kevin Fingerman, IINAS / Humboldt University, United States
- Ines del Campo Colmenar, CENER, Spain
- Rocio Diaz-Chavez, Imperial College London, UK

Expressed interest but could not attend (will also receive the minutes):
- Robert Abt, NCSU (North Carolina State University), United States
- Helena Chum, NREL (National Renewable Energy Laboratory), United States
- Jennifer Conje, US-FS (United States Forest Service), United States
- James Griffith, SFI (Sustainable Forestry Initiative), Switzerland
- Bill Hohenstein, USDA, Global Change Office, United States
- Jennifer Jenkins, ENVIVA, United States
- Keith Kline, ORNL (Oak Ridge National Laboratory), United States
- Gordon Murray, Wood Pellet Association of Canada, Canada
- Barry Parish, Georgia Biomass, United States
- Carlos Rodriguez Franco, US-FS (United States Forest Service), United States
- Marcela Rondon, USDA-FAS / US Mission to the EU and Belgium, United States
- Yves Ryckmans, Engie/Laborelec, Belgium

Teleconference on strengths and weaknesses of Brazil and Colombia as sourcing region for biomass to the EU.
Thursday 30 June 2016, 15:30-16:30 CEST

Participants

- Rubens Augusto Camargo Lamparelli, NIPE/UNICAMP, Brazil
- Maria Almeida Aranha, Brazilian Sugarcane Industry Association - Brussels Office, Brazil
- Juan Carlos Mejia Nariño, Ministry of Agriculture, Colombia

Participants of the BioTrade2020plus consortium:

- Luc Pelkmans, VITO, Belgium (moderator)
- Rainer Janssen, WIP, Germany (facilitator)
- Ines del Campo Colmenar, CENER, Spain
- Rocio Diaz-Chavez, Imperial College London, UK
- Lotte Visser, Utrecht University, The Netherlands

Expressed interest but could not attend (will also receive the minutes):

- Suani Coelho, Brazilian Reference Center on Biomass (CENBIO), Brazil
- Geraldine Kutas, UNICA, Brazil
- Sergio Ugarte, SQ Consult, Spain

Teleconference on long term strategies for biomass trade.
Wednesday 13 July 2016, 14:00-15:30 CET.

Participants

- Veerle Buytaert, VEA, Belgium
- Marc Londo, Energy Research Centre of the Netherlands (ECN)
- Praktriti Archambeau, European Biomass Association (AEBIOM)
- Stefan Essel, Deutsche Gesellschaft für internationale Zusammenarbeit (GIZ), Germany
- Ludger Wenzelides, Fachagentur Nachwachsende Rohstoffe (FNR), Germany
- Heinz Kopetz, World Biomass Association (WBA)
- Eise Spijker, Join Implementation Network (JIN), Netherlands
- Sergio Ugarte, SQ Consult, Spain
- Elizabeth McDonnell, UK Dpt. of energy and climate change (DECC)

Participants of the BioTrade2020plus consortium:

- Luc Pelkmans, VITO, Belgium (moderator)
- Rainer Janssen, WIP, Germany (facilitator)
- Ines del Campo Colmenar, CENER, Spain
- Dominik Rutz, WIP, Germany
- Uwe Fritsche, IINAS, Germany

Expressed interest but could not attend (will also receive the minutes):

- Fanny-Pomme Langue, European Biomass Association (AEBIOM)
- Giulio Volpi, European Commission, DG Energy
- Birger Kerckow, Fachagentur Nachwachsende Rohstoffe (FNR)
- Juan Carrasco, EERA Bioenergy
- Peter Wilson, Sustainable Biomass Partnership
- Peter-Paul Schouwenberg, RWE Essent, Netherlands
- Jenny Walther-Thoss, WWF Germany

Teleconference on Colombia´s sustainable biomass potential for export consideration to the EU
Friday 22 July 2016, CET.

Participants

- Johan Martinez- ASOCAÑA, Colombia
- Jesus Alberto Garcia Nuñez- FEDEPALMA, Colombia
- Adriana Marcela Gomez- POLIGROW, Colombia
- Jaime Fernando Valencia- FEDEPALMA, Colombia
- Juan Carlos Mejia Nariño- Ministry of Agriculture, Colombia
- Ivonne Briceño- FEDEPALMA , Colombia

Participants of the BioTrade2020plus consortium:

- Wolter Elbersen, (moderator), DLO-Wageningen University, the Netherlands
- Jan Van Damm- Wageningen University, the Netherlands
- Rocio Díaz-Chavez, (moderator), Imperial College, United Kingdom
- David Sánchez, CENER, Spain
- Dominik Rutz, WIP, Germany
- Uwe Fritsche, IINAS, Germany
- Inés del Campo, CENER, Spain