BioTrade2020plus

Supporting a Sustainable European Bioenergy Trade Strategy

Intelligent Energy Europe
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Deliverable 6.4

Report of Workshops

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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 wood chips, pellets, torrefied biomass and pyrolysis oil from current and potential future major sourcing regions of the world (Canada, US, Russia, 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 D1.1 – Quality Control Plan (QCP) of BioTrade2020+. It has been prepared by: CENER, .with the contribution of VITO and WIP.

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Dissemination Level		
PU	Public	x
PP	Restricted to other programme participants (including the Commission Services)	
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 under task 6.6 of WP6, there are the following tree events:

- Collection end-users tool requirements[1].
- Midterm and cooperation IEA Bioenergy workshop (M8- October 2014, Brussels).
- Final Dissemination workshop (M30, August 2016, Brussels).

The following report aims at describing the main issues (organization, celebration and outcomes) from the Midterm and Cooperation IEA Bioenergy Workshop held on October 24th in Brussels.

[1] This action it was considered as a workshop in the Annex 1- Description of the work. Finally, in order to get a higher impact was replaced by personal interviews in the 22th European Biomass Conference and Exhibition (for more details, see deliverable D4.2. of the project).

2. Midterm and Cooperation IEA Bioenergy workshop

2.1. Workshop objective

One of the objectives of the BioTrade2020+ project is to propose appropriate long-term strategies and support frameworks which can form a basis for a balanced approach between promoting the use of domestic biomass, while also keeping markets open for sustainable imports of biomass.
This workshop aimed to bring people together to initiate discussions on how these trade strategies can be framed. The central points of discussion were:

- How to define sustainable export potentials?
- Which opportunities and risks are connected with biomass trade and how these can be addressed?
- Which are the key principles that sustainable biomass trade should fulfil? (one important point is the interaction between local use and exports in the sourcing regions).

2.2. Workshop organization

The workshop was held in VLEVA *(Liaison agency Flanders-Europe)* in Brussels the 24 of October 2014, Friday. They kindly provide a meeting room to carry out the event.

It was co-organized by BioTrade2020plus consortium (lead by VITO) and IEA Bioenergy Task 40. Participation was free of charge but registration was required (through BioTrade2020plus website). 66 people participated in the workshop, from the following sector: 13 policy makers, 12 solid biomass related industry, 4 biomass suppliers, 8 consultants to policy and industry, 23 academia & research, 3 NGOs and 3 other. The participants came from 11 Member States (AT, BE, DE, DK, ES, IE, IT, FI, NL, SE and UK). Also, there was participation from the fallowing EU policy domains: DG ENER, DG ENV, DG AGRI, DG RTD and EASME.

The workshop included an Interactive discussion with the participation of the whole audience.

A copy of the programme is included in the Annex.

2.3. Workshop minute

The workshop began with an introduction of the project by **Luc Pelkmans (VITO)** and **David Sanchez (CENER)**. The project is currently at its beginning stage and some preliminary results have been produced. Pelkmans pointed out that this workshop provides opportunities for 66 stakeholders from a diverse background and different continents, including Europe, Africa, Southeast Asia, Australia, North America and South America to come together and initiate discussions on how trade strategies can be framed. The outcome of these discussions will then be used as inputs for the project. More details about the project are available on the project website.

Martin Junginger (UU), leader of IEA Bioenergy Task 40, presented an overview on the history and future expectations of biomass trade for energy. He revealed that in the past century, biomass consumed for energy purposes largely occurred locally. However, due to advanced pretreatment technologies, inter-continental trade became economically feasible around the year 2000 and has increased exponentially since then. In recent years, the EU has become the biggest importer of biomass energy stimulated by a series of promoting policies in several Member States, but East Asia has emerged as a new market for biomass. Junginger indicated that last year there was about one million tons of pellet exported to Korea, mainly from Vietnam and Canada. “Without policy support, there will be very little bioenergy trade,” Junginger stressed. For the future, Junginger pointed out that in order to make demand and supply for bioenergy meet, traded volumes will have to increase drastically, to levels of 100 million tons per year. Main exporting regions could be Latin America, Sub-Saharan Africa and Russia, main importing regions the OECD countries, China and India. Last year, Task 40 has published a book “International Bioenergy Trade: History, status & outlook on securing sustainable bioenergy supply, demand and markets” which compiles lessons and insights on the trade of global bioenergy commodities. It is available for purchase on the Springer website.

Uwe Fritsche (IINAS), Leire Iriarte (IINAS), Thuy Mai-Moulin (UU) and **Bah Saho (ECREEE)** then presented preliminary work on the methodology framework and case studies on Southeast USA and Mozambique/Kenya and an overview of the bioenery sector in the ECOWAS region (not included as an specific case study but presented by Mr Saho). Currently, a methodological framework has been setup using a mix of approaches to assess sustainable biomass potential. Technical potentials of lignocellulosic biomass are determined first, and then further screened by imposing several sustainability constraints. Fritsche pointed out that the next step would be to adapt a spatially explicit approach which is able to address local conditions more precisely than aggregated approach at regional or national level.

In the two case studies, local demand is computed based on national data and projected using qualitative assessment instead of complex economic modeling. It was stressed by the participants that local market conditions must be taken into account more carefully especially considering the cost and price issues. The additional sustainable potential supply after deducting local demand is regarded as potential for export. Luc Pelkmans indicated that such setting avoid displacement effect between

local demand and export potential. Such connections between local and extra-local markets contribute as a basis for legislation in addressing local development. Bah Saho emphasized that local participation is the key for successful mobilization of biomass. He suggested a few potential measures, such as providing economic incentives, formulating legislations for biomass, and demonstration by the companies to convince the local communities. One workshop participant pointed out that by improving efficiency not only in production but also in local biomass usage (which is currently of very low efficiency), extra volume of biomass could be available for export.

After the first panel session the participants were split into four groups for an interactive discussion (more info in section 4).

In the afternoon session, **Martin Junginger** led the panel debate joined by **Patrick Lamers (INL), Maria Almeida Aranha (UNICA), Bah Saho, and Michael Deutmeyer (Green Resources)** on the motion "*Export or local use of biomass, is it a dilemma?*".

Deutmeyer presented the activities of GreenResources in East Africa. They replant forest on degraded forest and bush land in Tanzania, Mozambique and Kenya, currently up to 40,000 ha, and aim to expand for up to 200,000 ha in the future. The company applied FSC certification and has created jobs. For the moment, forest products serve only the local market, such as charcoal. However, they aim for oversea market in the future with large scale production of fibre along with their expansion. Deutmeyer emphasized that it is crucial to deal professionally with local communities (e.g. providing jobs) with regular monitoring. The company has proven successful in dealing with conflicts. They have also considered and accommodated losses incurred, e.g. unauthorized harvest by local communities, as part of the cost.

"About 80% of local cooking fuel comes from the forest," **Bah Saho** said, "… there is a need for investment and national legislation enforcement with promotion and partnership with companies." The Africa panelist also stressed that it is important to ensure that there is no illegal harvest from natural forests.

The current development in Brazil was elaborated by **Maria Almeida Aranha**. In 2013, about 25% of the Brazilian energy matrix came from biomass (~15% from sugarcane). Biomass energy is complementary to hydropower between dry and wet seasons. There are already several commercial plants commissioned for second generation biofuel production. It is expected that large amounts of second generation biofuel will be produced from bagasse and straw in the near future. She also pointed out that the development is largely triggered by domestic demand, but export could become an important factor, if external market has become more attractive. The competition with traditional use is not worrying, according to the Brazilian panelist, as it is not a major type of feed with essential nutrition.

Meanwhile in the US, the demand for biomass is not as certain as liquid biofuel, as mandates are made for renewable electricity at state level and not specified for bioenergy. For biofuel, it is expected that by 2022, according to the Energy Independent and Security Act (EISA, 2007) and within the 36 billion gallons (Bga) of

renewable fuels targeted at least 21 Bgal will be advanced biofuels, 16 Bgal cellulosic biofuels and 1 Bgal biomass based diesel In terms of supply, there will be about 140 Mt woody biomass supply, compared to projected demand in 2025 at about 100 MT. Patrick Lamers, the US panelist explained that the supply-demand dynamics in the US largely depends on the private land owners who are not bound to any legislation but attracted by economic incentives. He mentioned that currently the biochemical conversion pathway of agricultural residues is more advanced than the thermochemical conversion of woody biomass to 2nd generation feeedstocks. He therefore expected the demand for woody biomass to produce biofuels not to increase dramatically on the short term. Also the increased use of biomass to substitute coal was deemed unlikely, given the current opposition of NGO's and the ongoing use of shale gas to replace coal in the US. In terms of socio-economic aspect, Lamers said that there might be some tax incentives if the industry creates new jobs, especially in the rural areas. Lamers suggested adding urbanization as one scenario to be considered in the study, as urbanization is deemed as a strong competitor on land-use.

The moderator questioned about the realistic approach to determine land availability for bioenergy. "Put in place regulation," Saho stressed, pointing out the importance of formalizing the classification of forests and lands. Almeida pointed out that the Brazilian government has already determined expansion areas for sugarcane in the future. "About 7.5% of arable land can be utilized for sugar cane cultivation, currently, only 1.5% is used.", For the US, Lamers pointed out that the large amounts of private land owners can largely decide themselves what they want to produce on their land, and that determining land availability was not possible in a straightforward manner.

Participants in the panel debate

All workshop presentations are available at: http://www.biotrade2020plus.eu/news-events.html

2.4. Interactive discussion: extended summary

The audience was divided in 4 groups of around 15 people, taking into account people's background in terms of sectors and regions. Each group had a moderator and a rapporteur from the BioTrade consortium.

4 items were discussed in a timeframe of 1.5 hours:
1. how to translate technical potentials into sustainable potentials?
2. how to assess local demand?
3. opportunities and risks of international biomass trade
4. key principles for sustainable trade and policy options

1. How to translate technical potentials into sustainable potentials?

The translation of technical potentials into sustainable ones for the selected countries (and respective feedstocks) is a key activity within the Biotrade2020plus project. In this session we aimed to collect stakeholder opinions regarding the following three statements:

1. Sustainability criteria and indicators and respective thresholds should apply to all feedstocks regardless where they are consumed (domestically or in third countries –exports-).

The discussion on the 1st question concentrated on the following aspects:
- *No distinction in biomass utilization when applying sustainability requirements* (so not only for energy as is often the case now). Most people agreed with this. However, this is not easy to implement and can only be done step by step.
- *Can we apply the same requirements/indicators/thresholds for domestic and imported biomass?* It was stressed that some specificity will be needed as countries have different backgrounds. One participant stated that *criteria (and principles)* should be generic and apply to all feedstocks and locations; the application of these principles in indicators can be region and feedstock specific. Example is the application of FSC and PEFC. Transparency is very important.
- *Can we expect that similar sustainability criteria are applied regardless where the biomass is consumed?* Different countries will have a different approach in this. We can't expect every country to adopt the same requirements for all types of biomass and all applications. Nevertheless it would be better to have a consistent approach, also to avoid leakage (unsustainable products being used in sectors or countries with low requirements).

Some other remarks of the participants:
- If applied to all biomass feedstocks and applications, sustainability requirements should also be applied to *fossil feedstocks*. Otherwise there is no level playing field.
- First focus on capacity building before we start to certify.

2. ***Sustainability requirements not only need to be taken into account when translating the technical potentials into sustainable potentials but should consider as well the <u>full value chains</u> (e.g. for GHG emissions derived from processing or transporting to EU).***

There were some discussions how far this value chain would reach: up to the EU harbor (where the biomass enters the EU market) or including end use:

- Some participants stated that that we should focus on the sustainability of the feedstock production.
- Others would limit the value chain to the port of entrance (including pretreatment and transport). The end use is a different matter.
- Many participants felt that efficient end use also needs to be included.

3. ***Translating technical potentials into sustainable potentials should distinguish between <u>"basic"</u> sustainability requirements (those considered within the RED) and a more <u>"advanced"</u> set.***

There were differences of opinion: some participants wish to extend the criteria to the advanced set, others stated that this would be too ambitious, difficult to evaluate and decrease the competitive position of bioenergy compared to fossil fuels. One group concluded that basic requirements are the ones to be applied on the market (maybe slightly extended, e.g. with social criteria and soil quality), the advanced set will serve for monitoring. For calculating sustainable potentials the advanced set can be used.

2. How to assess local demand?

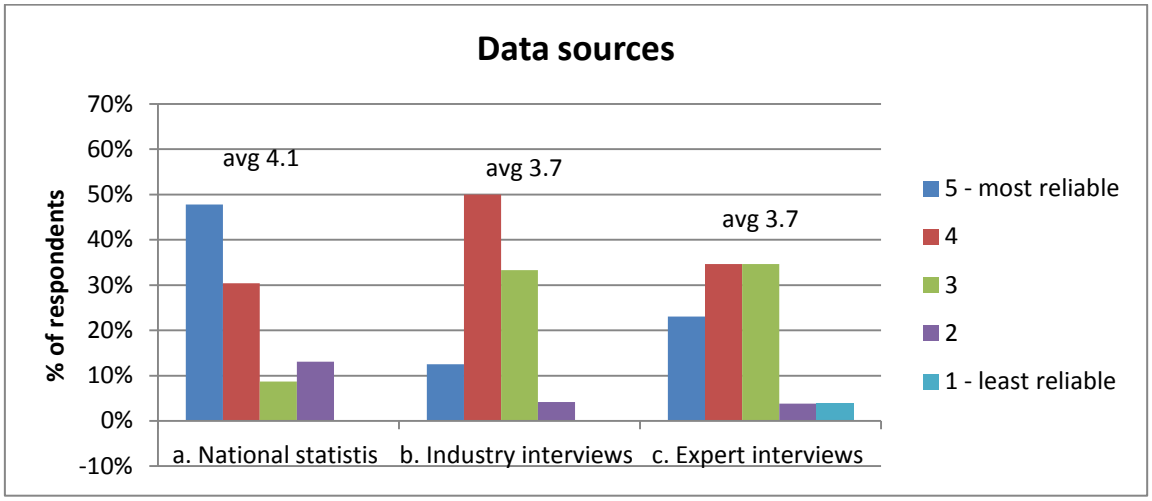
The local demand for energy and other uses at sourcing regions is assessed by investigating the use of lignocellulosic biomass for food, feed as well as traditional purposes (paper & pulp, construction material) and new material purposes (biochemical, plastics), use of lignocellulosic biomass for local traditional energy, and use of lignocellulosic biomass for local modern small scale and modern large scale energy uses that might already exist or arise in the future.
There are a number of data sources to support the assessment of local demands for lignocellulosic biomass. In the BioTrade2020plus project, we rely on national statistics, international projections (e.g., from IEA) as well as questionnaires and interviews with project partners and stakeholders in the international sourcing regions for the estimation. Furthermore, site survey is also another method with assistance of project interns to collect data in those countries. Results of external reports and projects are equally used to ultimately achieve an overall estimation of domestic uses of dominant agricultural products, energy crops and forest feedstocks at present, in 2020 and in 2030.

1st question: How reliable do you assume the assessment of current (and future) local demand using the following methods:

a. *Based on national statistics (e.g. population, GDP, biomass uses for materials and energy by different users)*

b. *Interview and questionnaires with industries that use biomass for energy and other purposes*
c. *Interviews with experts to assess uses of biomass outside the formal economy (e.g. use of fuel wood by local people)*

The figure below shows the spreading of responses (with average scoring per data source, on a scale from 1 to 5). National statistics score higher than interviews.



It was frequently stated that a combination of different sources of information is needed. The reliability of the different methods is also country specific.

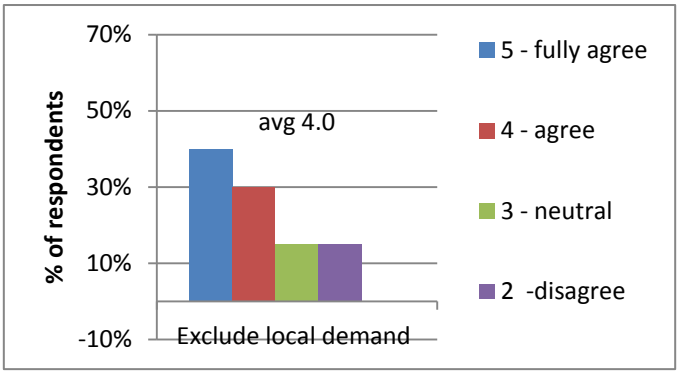
- *National statistics*: may be OK for OECD countries, but unreliable for less developed countries.
- *Interviews/questionnaires with industries*: data should be available, preferably from associations to get the whole picture. Strategic agenda from individual companies?
- *Interviews with experts* (other biomass uses): relevant for small scale use. Methodology must be known. Indicative general view.

Other methods mentioned: policy target analysis; site surveys (time consuming); modelling; estimates of professionals; consultation.

2nd question: For the calculation of export potentials, we suggest to exclude local demand for biomass (for food & feed and material purposes, traditional energy or modern bioenergy purposes, both now and in the future). So local demand gets priority over exports. Do you agree with this approach?

The figure below shows the spreading of responses. 70% responded 'agree' or 'fully agree'. Nevertheless there were some critical remarks:

- How to deal with local inefficient and unsustainable use of biomass?
- It doesn't reflect market complexities, how markets work. This relates to a large number of variables (price, product, availability …).
- Added value should be the first priority.
- OK that domestic *residential* demand gets priority, not industrial demand (some products are locally produced for world markets).
- There are links between domestic markets and exports (they can reinforce each other, create flexibility).

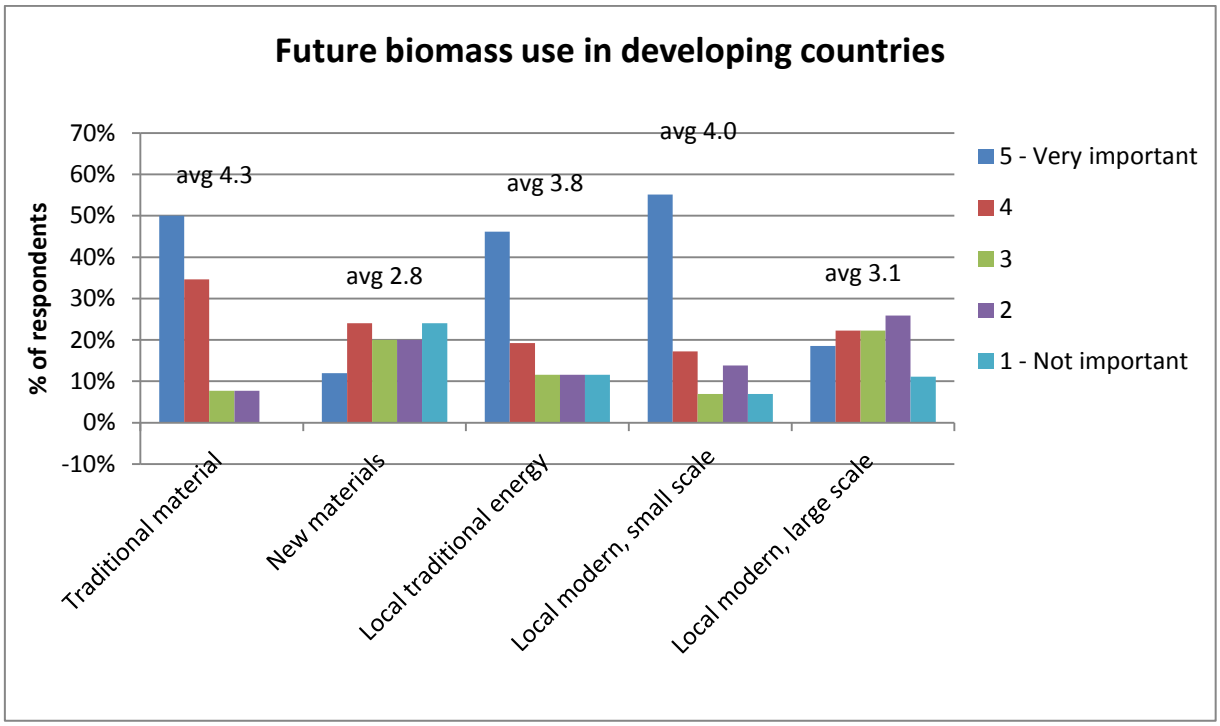


3rd question: How would you see the different applications of lignocellulosic biomass evolve in the future (by 2030)?

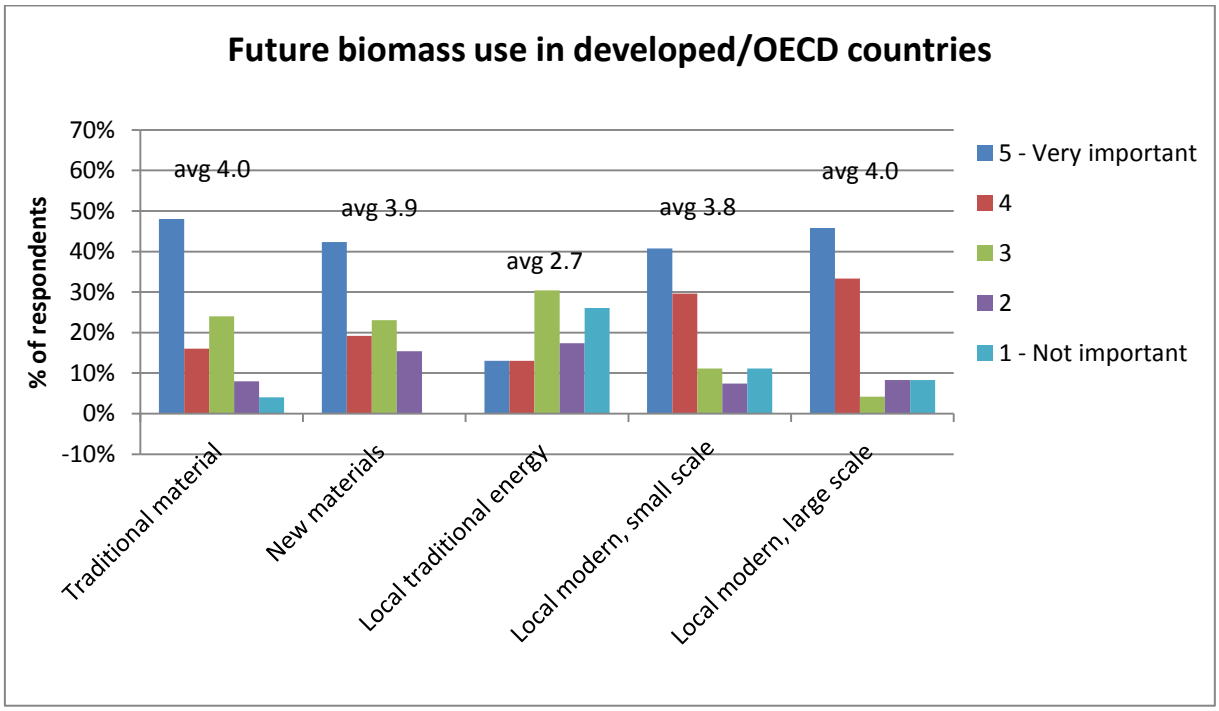
We make a distinction between developing countries and developed/OECD countries. The participants were asked to rate the following five types of biomass use according to their importance.

- *Use of biomass for **traditional material purposes** (e.g. paper & pulp, construction material)*
- *Use of biomass for **new material purposes** (e.g. biochemical, plastics)*
- *Use of biomass for **local traditional energy use** (fuel wood)*
- *Use of biomass for **local modern, small scale use** (e.g. modern stoves, small-scale district heating)*
- *Use of biomass for **local modern, large scale use** (e.g. large-scale electricity production, 2nd generation biofuels)*

The following figures show the responses, including the averages (on a scale from 1 to 5).



The respondents rated *traditional material use*, *small scale modern use* and *traditional energy use* as most important in developing countries by 2030. Large scale modern installations and new material production were considered less important.
As a general remark it was stated that the expectations differ by region – we can't put all developing countries in one group. E.g. prospects for Latin America are very different from Southeast Asia or Africa.



For developed/OECD countries *local modern large scale use*, *traditional material*, *new materials* and *local modern small scale* were considered in the same range of importance. Local traditional energy was considered less important by 2030.

Some additional remarks:

- Synergies between traditional materials and new materials (new materials may be developed alongside traditional, e.g. in paper industry)
- Synergies between large scale biofuels and new materials (in biorefineries)
- Small scale: we should facilitate the transition from traditional (inefficient) local energy to modern small scale. Better statistics needed.

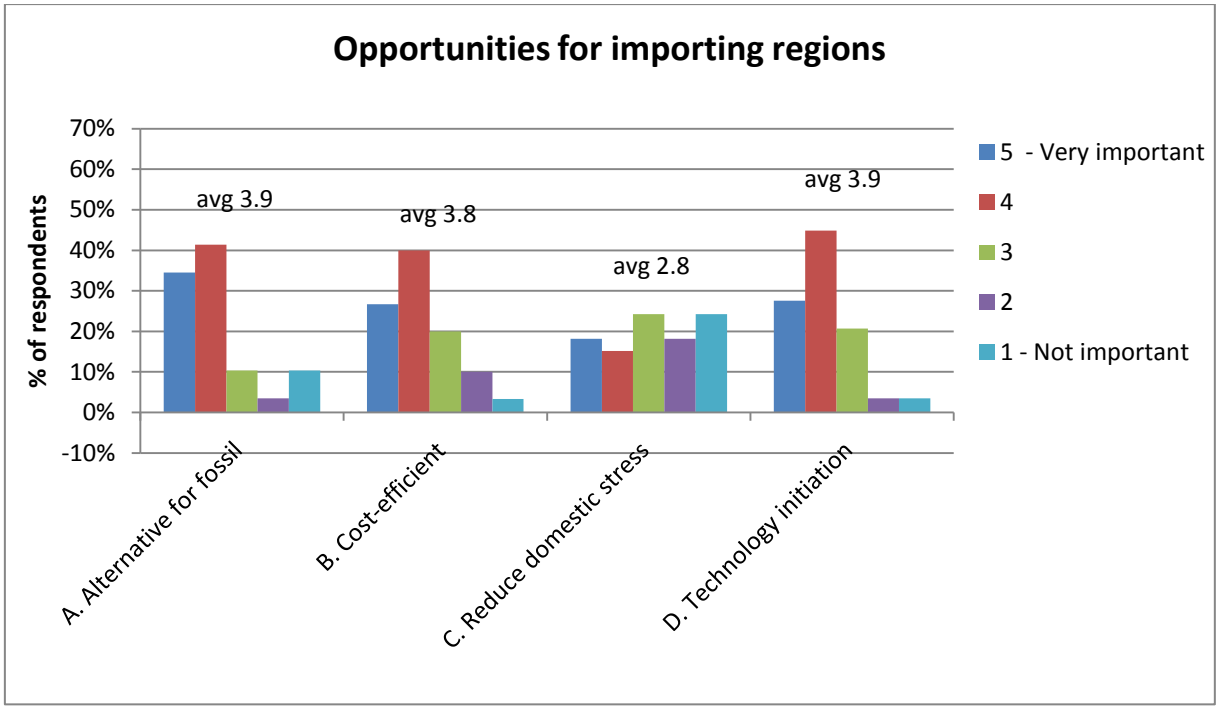
3. Opportunities and risks of international biomass trade

A number of potential opportunities and risks were provided. Distinction was made between opportunites/risks for importing regions (EU countries) and for exporting regions. The participants were asked to rate the opportunities and risks in terms of importance.

Opportunities for importing regions (EU):

A. *Biomass provides an alternative for fossil energy, and it is not weather dependent or intermittent. Imported biomass can contribute to this when domestic resources are limited.*
B. *Imported biomass can be a cost-efficient way to reach renewable energy targets.*
C. *Opening markets for imported biomass can reduce the stress on domestic biomass resources (e.g. for existing biomass processing industries)*
D. *EU countries can initiate technological solutions (e.g. advanced biofuels) which need high biomass volumes (which may not be available on the domestic market)*

The figure below shows the responses, including the averages (on a scale from 1 to 5)



Opportunities A, B and D were generally considered important to very important. The opinions on reducing domestic stress on biomass (Opp C) were mixed.

Some remarks of participants:

- Biomass production is also weather dependent and seasonal (Opp A). Nevertheless short term variability and storage options are totally different from solar or wind energy.

- Biomass is a good alternative when other renewables are not available/efficient (so not replacing, but additional to other renewables).
- Only looking at cost is too narrow and short term focused (Opp B).
- There may be hidden subsidies in the 'cost-efficient' imported biomass.
- Reasoning for UK import is lack of biomass supply and availability of large scale cheap biomass elsewhere. Market forces and cost dominate.
- Import reliance should be transitional, not long-term.
- Avoid protectionism, we can't prioritize local industries.
- Bioenergy should significantly reduce GHG emissions and replace fossil (in reality, i.e. including indirect effects). But we shouldn't build demand on imports.

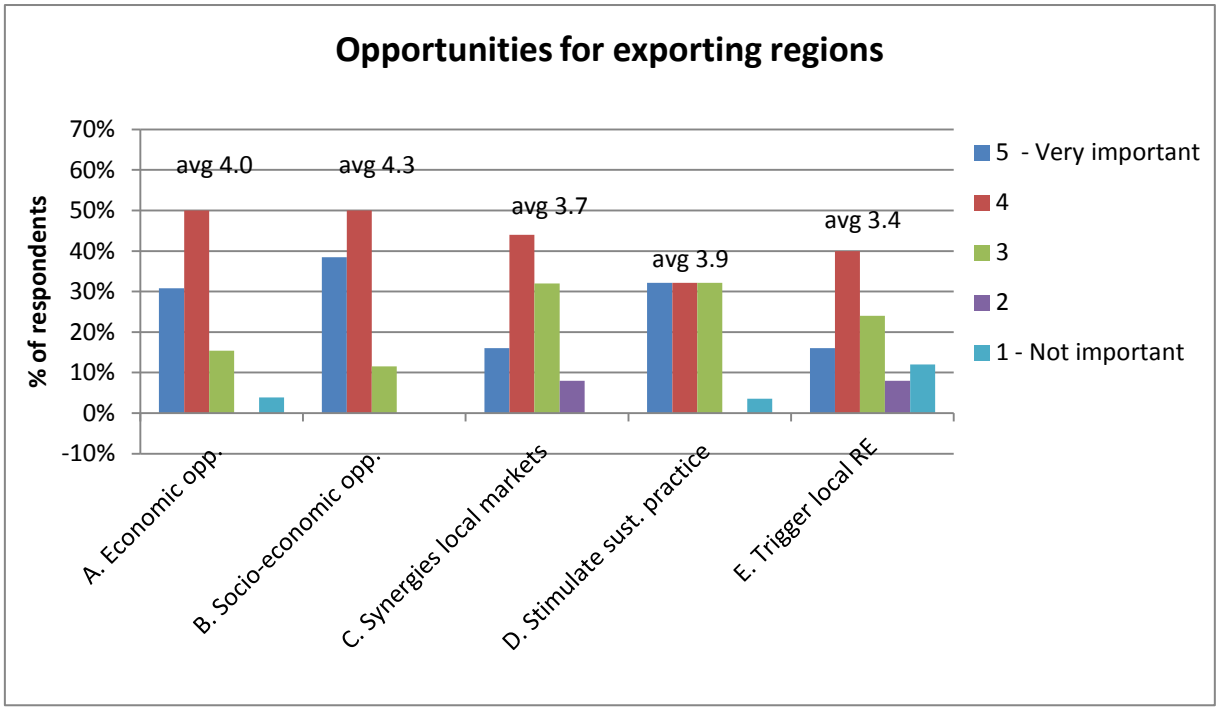
Additional opportunities for importing regions:

- Increase feedstock portfolio.
- Hedging against price hikes in local markets
- 3rd country development (stronger trade partners)
- Initiate sustainable resources for the bioeconomy
- Imports can facilitate the development of local bioenergy infrastructure/development

Opportunities for exporting regions:

A. *Export markets create economic opportunities to market (abundant) local feedstocks*
B. *It creates socio-economic opportunities (incl. job creation) in forestry, agriculture, industry, …*
C. *There are synergies with local markets (e.g. forest products, wood processing industry, agricultural products)*
D. *Demand from outside the region will stimulate/trigger sustainable practices in forestry, agriculture, industry.*
E. *Initiating mobilization of biomass (with demand from outside the region) will trigger local production of renewable energy.*

The figure below shows the responses, including the averages (on a scale from 1 to 5)



Most people considered economic opportunities (A), socio-economic opportunities (B) and stimulation of sustainable practices (D) in exporting regions as important to very important. There was somewhat less agreement on local market synergies (C) and triggering local renewable energy (E).

Some remarks of participants:

- Local markets can be a driver for export (synergies).
- If sustainability criteria are required for traded biomass, this may stimulate sustainable practices (Opp D).

Additional opportunities for exporting regions:

- Improve attitudes and know-how of bioenergy options
- Increase local product portfolio
- Political tool to reduce energy dependency (see Ukraine & Russia)

Risks for importing regions:

A. A lot of energy is lost in transport, reducing the overall greenhouse gas performance, making it difficult to fulfil binding GHG criteria.

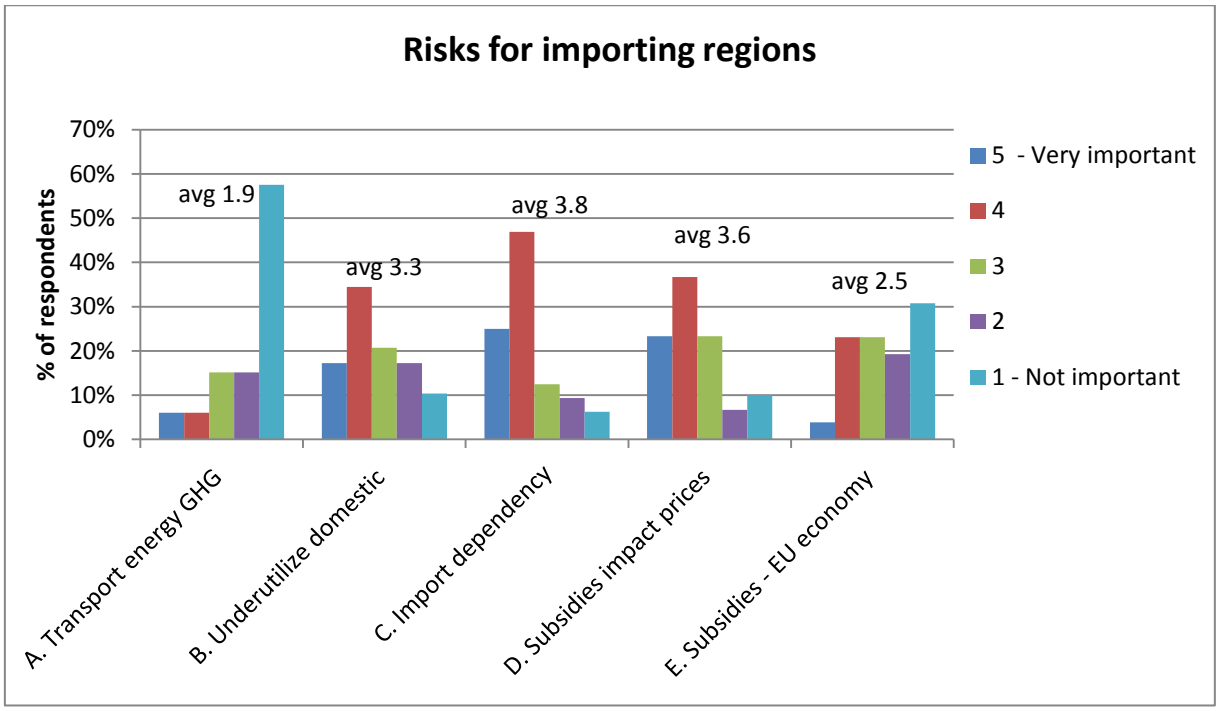
B. Domestic potential in the EU may be outcompeted by cheaper imports, leaving some of the domestic potential underutilized.

C. Relying on imported biomass only moves our problem of energy import dependency from one region to another – presents no real solution.

D. Demand from the energy side, and in particular the involved subsidies are impacting world market prices for other sectors. This creates an unlevel playing field.

E. European subsidies are flowing outside the EU, and do not contribute to the European economy.

The figure below shows the responses, including the averages (on a scale from 1 to 5)



The answers show a wide divergence of the answers of participants. Risks C (import dependency) and D (subsidies impacting prices) were indicated as most important. Risk B (underutilize domestic resources) had more opponents. Risk E (EU subsidies flowing outside EU economy) was less supported, and for risk A (transport energy) most participants felt that this was of low importance.

Some remarks of participants:

- Risk A: Transport is a relatively small part of the overall GHG/energy consumption as overseas transport is very efficient. There is still an opportunity to decarbonize this part.
- Risk B: Domestic biomass can compete on price with imported biomass.
- Import from “cheap” countries (with low labour costs, low environmental constraints) may indeed outcompete EU resources and reduce the socio-economic benefits for domestic resources in the EU. There may be hidden subsidies, e.g. US state support for local economic development.
- Trade is as old as mankind. It will happen when it makes economic sense.
- Risk C (import dependency): we are now in a learning path.
- Risk D (subsidies and prices): ‘renewable carbon’ currently has different value in various sectors/end use purposes. If there was a common (and sufficiently high) price for carbon in the different markets the problem would be much less.
- Risk E (EU economy): also bring in energy efficiency by development of new industries
- Impact on economy needs to be analysed.

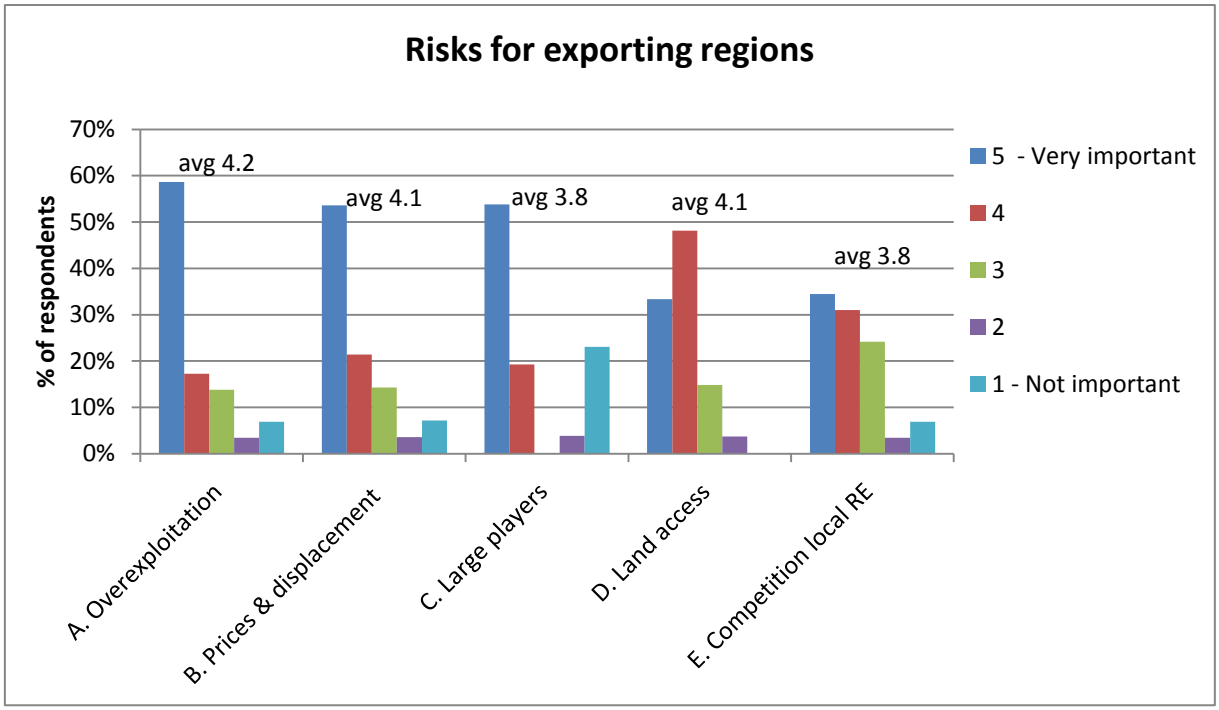
Additional risks for importing regions:

- Extend the life of co-firing installations, leading to longer reliance on coal for energy production.
- No international climate agreement creates a disadvantage (higher cost) for European sectors (no level playing field on global markets).
- Risk that sustainability criteria show unsatisfactory, either due to incomplete knowledge or limited data availability.
- Claim of GHG savings which are not justified.
- Volatilities in financial systems (e.g. currencies)

Risks for exporting regions:

A. *Additional demand for these types of biomass generates a risk of overexploitation in forestry and agriculture, resulting in biodiversity loss and a loss of carbon in forests and agricultural soils.*
B. *Additional demand may increase prices for these feedstocks and lead to displacement, i.e. draw away feedstocks from existing local applications (e.g. paper, panel boards).*
C. *Focus of international trade is generally on large scale players. There may be limited opportunities for smallholders to access these new export markets.*
D. *There is a risk of 'land grabbing' of large players, moving away indigenous people or smallholders.*
E. *Claiming certain feedstocks for export may lower opportunities in sourcing regions, e.g. to use their own resources for energy production*

The figure below shows the responses, including the averages (on a scale from 1 to 5).



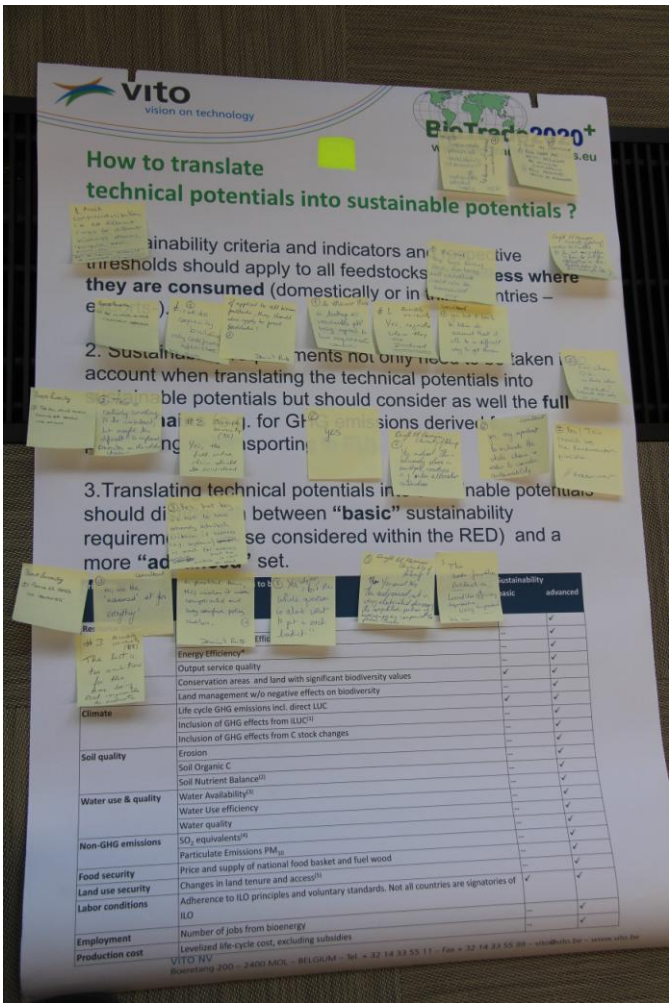
Most respondents agreed that these five identified risks were important to very important. There was a little lower support for risks C (large players) and E (competition local RE).

Some remarks of participants:

- Risks A, B & D: Risk of sustainability, land grabbing or displacement can be important for some countries, in some cases. There should be differentiation, e.g. depending on the existing policy framework and enforcement.
- Risk B & E: Needs investigation to quantify displacement.
- Displacement is possible; however, there is still room for development in low populated areas.
- Risk C: Different schemes (CoC rules) may be thresholds to participate, certainly for smallholders.
- Risk E: if local regulations are missing, they will not cease these opportunities

Additional risks for exporting regions:

- Dependency on multinational companies
- Changing frameworks & export conditions
- Volatilities in financial systems (e.g. currencies)



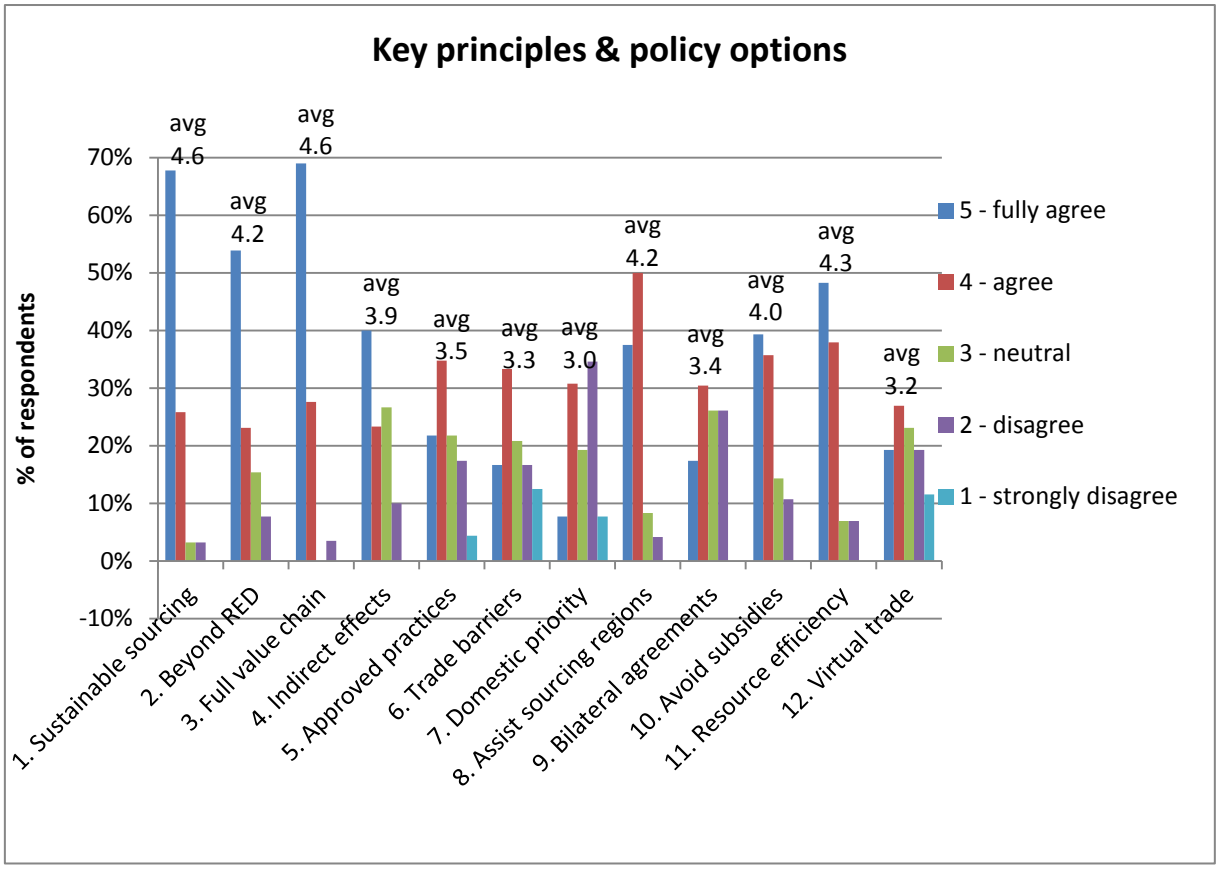
Some photos from the interactive session

4. Key principles for sustainable trade and policy options

The following statements were presented, providing potential principles and policy options for sustainable trade of biomass. The participants were asked to rate if they agree or disagree with these statements.

1. **Sustainable biomass sourcing** is a precondition for all imported biomass to the EU, and for all domestically sourced biomass, the same principles and criteria are to be applied.
2. Sustainability should go **beyond the RED criteria** (as defined for biofuels) and consider other fundamental aspects such as sound management in sourcing areas and social issues.
3. When applying performance-based sustainability requirements (e.g. for GHG, efficiency), these need to be based on the **full value chain** (= incl. production and logistics).
4. We need to understand and quantify **indirect effects** (e.g. iLUC, materials displacement) and include them in value chain assessments.
5. The EC and/or Member States should define **approved practices** that avoid/reduce negative indirect effects.
6. Markets should be open, **no** discrimination (~WTO) or **trade barriers** because of too demanding quality & sustainability requirements.
7. Renewable energy from **domestic** sources should have **priority** over imports.
8. The EC / Member States need to **assist sourcing regions** towards sustainable practices in biomass production and harvesting.
9. The EC should adopt **bilateral agreements** with sourcing regions to recognize existing legislation and management practices.
10. Member States need – at least in the longer-term - to **avoid subsidies** as these create market distortions.
11. **Resource efficiency** should be required as a basic principle (e.g. minimum overall efficiency), for locally produced and imported feedstock.
12. The EC / Member States should stimulate local developments in renewable energy or GHG savings in sourcing regions and create **virtual trade mechanisms** (see carbon markets, ETS mechanism) instead of physical trade.

The following figure shows the responses for the 12 statements, with ratings on a scale from 1 to 5. Averages are also indicated.



There is most support for statements 1 (sustainable sourcing), 2 (beyond RED), 3 (full value chain), 8 (assist sourcing regions) and 11 (resource efficiency).

Some remarks of participants:

Statement 1 (sustainable sourcing): *94% agree / fully agree; 3% disagree*

- The statement should make distinction between (a) sustainable sourcing, (b) for all biomass applications
- Who defines what is sustainable or not?
- Region specificity?

Statement 2 (beyond RED): 77% *agree / fully agree; 8% disagree*

- RED criteria are only for biofuels, there should be harmonized sustainability criteria for all uses.
- How far beyond RED? Not too strict, it should be manageable for markets.
- Social criteria should be included. Can be difficult for WTO.
- Use of biomass should be included.
- Also include cascade use

Statement 3 (full value chain): *97% agree / fully agree; 3% disagree*

Statement 4 (indirect effects): 63% *agree / fully agree; 10% disagree*

- The statement should make distinction between (a) understanding and quantifying, (b) include iLUC factors in assessments.
- Very important to understand and identify, however, quantifying in value chain assessment is difficult and risky to block market development. Caution !
- Only if this is also included for food, feed, materials and fossil fuels.
- We need a better approach than current methods (iLUC), which are very assumption dependent. Also need data that is difficult to collect.

Statement 5 (approved practices): 57% *agree / fully agree; 21% disagree/strongly disagree*

- This is difficult and requires careful thought (e.g. regional difference). Appropriate practices may be different in different circumstances.
- Too prescriptive – principles and criteria should be sufficient.

Statement 6 (trade barriers): 50% *agree / fully agree; 30% disagree/strongly disagree*

- We must comply with WTO.
- The more sustainability criteria, the more difficult trade will be.
- We should find a balance between sufficiently strong quality and sustainability requirements (see statements 1-2-3) and market access.

Statement 7 (domestic priority over import): 39% *agree / fully agree; 43% disagree/strongly disagree*

- Difficult to enforce because of WTO.
- Maybe good to start domestic markets, but not necessary in the long term.
- Depends on a large number of variables.

Statement 8 (assist sourcing regions): 88*% agree / fully agree; 4% disagree*

- Very important to cooperate.
- Can be linked to statement 5 (approved practices).
- If we help countries to comply our requirements, do we subsidize their markets to be established? Requirement for sustainable practices should be reflected in the price we pay.

Statement 9 (bilateral agreements): 47*% agree / fully agree; 26% disagree*

- May help to open fair markets

Statement 10 (avoid subsidies): 75*% agree / fully agree; 11% disagree*

- Tax differentiations related to external cost should be possible + subsidies to initiate promising technologies (should be limited in time)
- Only if all support/subsidies can be avoided => as long as there are subsidies for fossil and nuclear energy …
- Depends on the way you use subsidy instruments.
- We should distinguish between short-term and long term subsidies and mechanisms. Agree that subsidies should be avoided for the *long term*.

Statement 11 (resource efficiency): 86*% agree / fully agree; 7% disagree*

- What is understood under resource efficiency? E.g. cascade use/ multipurpose use / energy efficiency
- Principle is OK, but should not be legally enforced.
- How does this work for developing countries?

Statement 12 (virtual trade mechanisms): 46% *agree / fully agree; 31% disagree/strongly disagree*

- High risk for misuse.

Additional suggestions:

- An overall key principle could be to increase efficiency and diversity at the same time (diversity in all systems: bio, market, political)
- Full GHG balance
- Level playing field with fossil fuels
- Integration with other uses (food/feed/materials).
- Sustainable use

3. BioTrade2020plus Consortium

CENER – National Renewable Energy Centre, Biomass Department, Spain

Project Coordinator BioTrade2020plus

Contact persons: David Sánchez González & Inés del Campo Colmenar

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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

4. Appendix 1: Workshop programme

BioTrade2020+
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IEA Bioenergy
Task 40: Sustainable International Bioenergy Trade

International workshop:

Towards sustainable international biomass trade strategies

Friday 24 October 2014, Brussels

We cordially invite you to join this workshop, which is co-organised by the BioTrade2020+ consortium and IEA Bioenergy Task 40.

Today in the European Union, the cost-effective achievement of existing and future bioenergy targets set in the legislation implies that in addition to using domestic sustainable and cost-competitive biomass potentials, European markets will also (partly) rely on sustainable and cheap(er) imports of biomass. Some well-positioned regions of the world are already playing a role in supplying biomass to the European markets and could become increasingly relevant in the near future.

One of the objectives of the BioTrade2020+ project is to propose appropriate long-term strategies and support frameworks which can form a basis for a balanced approach between promoting the use of domestic biomass, while also keeping markets open for sustainable imports of biomass.

This workshop aims to bring people together to initiate discussions on how these trade strategies can be framed. The central points of discussion will be (1) how to define sustainable export potentials, (2) which opportunities and risks are connected with biomass trade and how these can be addressed, and (3) which are the key principles that sustainable biomass trade should fulfil – one important point is the interaction between local use and exports in the sourcing regions.

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Programme:

8.45 Registration

9.15 Welcome and introduction

Luc Pelkmans (VITO) & David Sanchez (CENER, coordinator BioTrade2020plus)

9.30 Biomass trade for energy: history & future expectations

Martin Junginger (Utrecht University, Task Leader IEA Bioenergy Task 40)

9.45 Assessing sustainable biomass export potentials: methodological considerations

Uwe Fritsche (IINAS)

10.15 Case study: woody biomass from Southeast USA

Leire Iriarte (IINAS)

10.45 Coffee break

11.00 Interactive workshop: break-out sessions to discuss the following topics:

- how to define sustainable export potentials?
- opportunities and risks of international biomass trade
- key principles for sustainable trade and policy options

12.30 Lunch

13.30 Reporting of the break-out sessions

13.50 Case study in Africa, first results

Thuy Mai-Moulin (Utrecht University), Bah Saho (ECREEE)

14:20 Panel debate, representatives from (potential) export regions:

- export or local use of biomass, is it a dilemma?

Moderator: Martin Junginger (Utrecht University)

Panellists: Patrick Lamers (INL - USA), Maria Almeida Aranha (UNICA - Brazil), Bah Saho (ECREEE - Africa), Michael Deutmeyer (Green Carbon Group)

15:20 Main conclusions

Luc Pelkmans (VITO)

15:30 Closing

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IEA Bioenergy
Task 40: Sustainable International Bioenergy Trade

Practical information:

Date:

Friday 24 October 2014

Location:

VLEVA *(Liaison agency Flanders-Europe)*
Kortenberglaan / Avenue Cortenbergh 71, BE-1000 Brussels, Belgium

Registration:

Participation is free of charge, but registration is required. Please register before 15 October 2014 through www.BioTrade2020plus.eu.

More information:

luc.pelkmans@vito.be, tel. +32 14 33.58.30

BioTrade2020plus:

The main aim of the European project BioTrade2020plus is to provide guidelines for the development of a European Bioenergy Trade Strategy for 2020 and beyond. It shall ensure that imported biomass feedstock is sustainably sourced and used in an efficient way, while avoiding distortion of other markets. BioTrade2020plus is supported by the Intelligent Energy for Europe Programme of the European Commission. The project started in April 2014 and will continue until October 2016.
www.biotrade2020plus.eu

IEA Bioenergy Task 40:

Task 40 is an international working group under the IEA Bioenergy Implementing agreement. The group conducts studies and organizes events on various topics related to sustainable international bioenergy trade.
www.bioenergytrade.org

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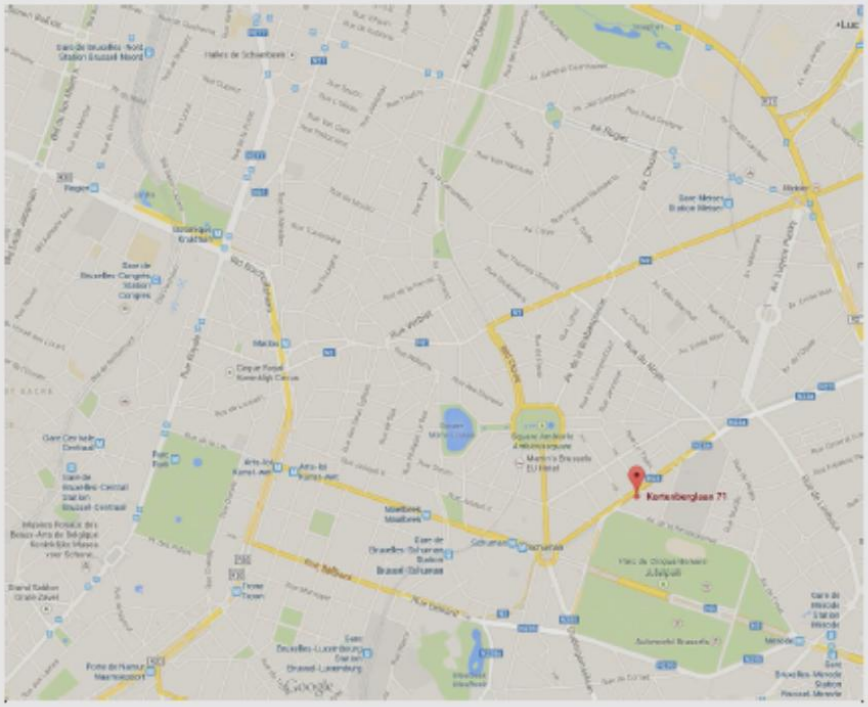
www.BioTrade2020plus.eu

IEA Bioenergy
Task 40: Sustainable
International Bioenergy Trade

Venue:

VLEVA, Kortenberglaan/ Avenue Cortenbergh 71, 1000 Brussels

400 m from Schuman Square (European district)



5. Appendix 2: Background document

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IEA Bioenergy
Task 40: Sustainable International Bioenergy Trade

International workshop:

Towards sustainable international biomass trade strategies

Friday 24 October 2014, Brussels

Background document for the interactive discussion

Today in the European Union, the achievement of existing and future bioenergy targets implies that in addition to using domestic biomass, European markets will also **rely on imports of biomass**. Some well-positioned regions of the world are already playing a role in supplying biomass to the European markets and could become increasingly relevant in the near future.

Trade can be a logical result of the **supply-demand balance**: some regions have excess potential, while other have shortages, which can balance out through trade. Another argument is that export regions potentially have more **cost-efficient production systems** - reasons can be climatic or also cheap labour - so they can compete with EU domestic resources, even with trade cost included. Some of these regions are developing export markets, but don't (yet) focus on domestic use of their resources. To some extent, in this phase their **market** is **initiated** by European demand.

The main aim of the European project BioTrade2020plus is to provide guidelines for the development of a **European Bioenergy Trade Strategy** for 2020 and beyond. Some of the principles of this strategy will be to ensure that imported biomass feedstock is sustainably sourced and used in an efficient way, while avoiding distortion of other markets. It will be important to find a basis for a balanced approach between promoting the use of domestic biomass, while also keeping markets open for sustainable imports of biomass.

The project will focus on **lignocellulosic biomass** (woody resources, agricultural residues and cellulosic crops), for the following sourcing regions: *North America* (Southeast United States), *South America* (Brazil, Colombia), *East Europe* (Ukraine), *Southeast Asia* (Indonesia/Malaysia) and *East Africa* (Kenia/Mozambique/Tanzania).

This workshop aims to initiate discussions on how these trade strategies can be framed. The central points of discussion will be

(1) how to define sustainable export potentials,
(2) which opportunities and risks are connected with biomass trade and how these can be addressed, and
(3) which are the key principles that sustainable biomass trade should fulfil.

One important point, which will also be discussed in the panel debate, is the interaction between local use and exports in the sourcing regions.

The following pages contain the points which will be discussed in the interactive discussion.

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How to translate technical potentials into sustainable potentials?

The translation of techical potentials into sustainable potentials for the selected countries (and respective feedstocks) is a key activity within the Biotrade2020plus project. In this workshop we aim to collect stakeholder opinions regarding the following statements:

1) Sustainability criteria and indicators and respective thresholds should apply to all feedstocks **regardless where they are consumed** (domestically or in third countries –exports-).
2) Sustainability requirements not only need to be taken into account when translating the technical potentials into sustainable potentials but should consider as well the **full value chains** (e.g. for GHG emissions derived from processing or transporting to EU).
3) Translating technical potentials into sustainable potentials should distinguish between **"basic"** sustainability requirements (those considered within the RED) and a more **"advanced"** set. The list proposed by the BioTrade2020plus is:

Criterion	Indicator (thresholds to be defined)	Sustainability	
		basic	advanced
Resource Use	Land Use Efficiency*	--	✓
	Secondary Resource Efficiency*	--	✓
	Energy Efficiency*	--	✓
	Output service quality	--	✓
Biodiversity	Conservation areas and land with significant biodiversity values	✓	✓
	Land management w/o negative effects on biodiversity	--	✓
Climate	Life cycle GHG emissions incl. direct LUC	✓	✓
	Inclusion of GHG effects from iLUC[1]	--	✓
	Inclusion of GHG effects from C stock changes	--	✓
Soil quality	Erosion	--	✓
	Soil Organic C	--	✓
	Soil Nutrient Balance[2]	--	✓
Water use & quality	Water Availability[3]	--	✓
	Water Use efficiency	--	✓
	Water quality	--	✓
Non-GHG emissions	SO_2 equivalents[4]	--	✓
	Particulate Emissions PM_{10}	--	✓
Food security	Price and supply of national food basket and fuel wood	--	✓
Land use security	Changes in land tenure and access[5]	--	✓
Labor conditions	Adherence to ILO principles and voluntary standards. Not all countries are signatories of ILO	✓	✓
Employment	Number of jobs from bioenergy	--	✓
Production cost	Levelized life-cycle cost, excluding subsidies	--	✓

** = considering by- and co-products of bioenergy life cycles*

[1] Data for 2020; until 2030, a revised ILUC factor should be determined which reflects progress regarding international policies to contain or reduce LUC effects
[2] See http://www.iinas.org/Work/Projects/REDEX/redex.html
[3] New bioenergy cropping and conversion facilities placed outside of areas with severe water stress
[4] Calculated for life cycles, should be lower than fossil benchmark
[5] Degree of legitimacy of the process related to the transfer (i.e. change in use or property rights) of land for new bioenergy production, and extent to which due process is followed in the determination of the new title

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How to assess local demand?

The local demand for energy and other uses at sourcing regions is assessed by investigating the use of lignocellulosic biomass for food, feed as well as traditional purposes (paper & pulp, construction material) and new material purposes (biochemical, plastics), use of lignocellulosic biomass for local traditional energy, and use of lignocellulosic biomass for local modern small scale and modern large scale energy uses that might already exist or arise in the future.

Local demand is impacted by a number of factors including lignocellulosic biomass production in agricultural, forestry and bioenergy crop sectors, growth drivers of population, GDP, income and living standards. It is additionally influenced by other pressures such as environment and energy regulation, impacts of climate change and related commitment and political stability.

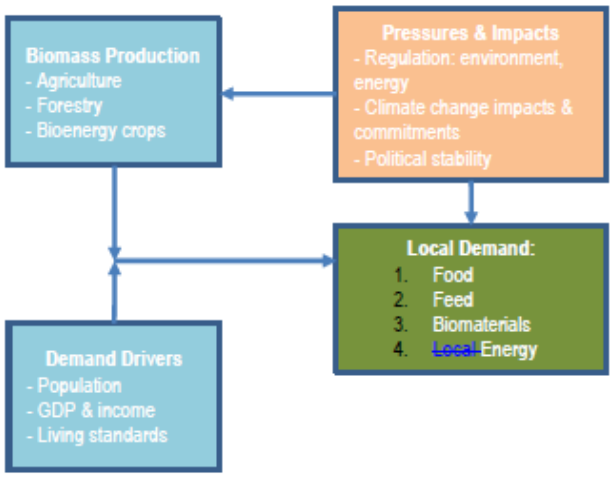

Figure of Local Demand Drivers and Impact Factors

As the percentage and usage of lignocellulosic biomass for energy and non-energy purposes in developing and industrialized countries are different, it is important to carefully investigate local demands and review the difference.

There are a number of **data sources** to support the assessment of local demands for lignocellulosic biomass. In the BioTrade2020plus project, we rely on **national statistics, international projections (e.g., from IEA)** as well as **questionnaires and interviews** with project partners and stakeholders in the international sourcing regions for the estimation. Furthermore, **site survey** is also another method with assistance of project interns to collect data in those countries. Results of external reports and projects are equally used to ultimately achieve an overall estimation of domestic uses of dominant agricultural products, energy crops and forest feedstocks at present, in 2020 and in 2030.

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Questions in the posters:

1. *How reliable do you assume the assessment of current (and future) local demand using the following methods:*
   a. Based on national statistics (e.g. population, GDP, biomass uses for materials and energy by different users)
   b. Interview and questionnaires with industries that use biomass for energy and other purposes
   c. Interviews with experts to assess uses of biomass outside the formal economy (e.g. use of fuel wood by local people)

2. *For the calculation of export potentials, we suggest to exclude local demand for biomass (for food & feed and material purposes, traditional energy or modern bioenergy purposes, both now and in the future). So local demand gets priority over exports. Do you agree with this approach?*

3. *How would you see the different applications of lignocellulosic biomass evolve in the future (by 2030)?* We make a distinction between developing countries and developed/OECD countries:

   1. Use of biomass for **traditional material purposes** (e.g. paper & pulp, construction material)

   2. Use of biomass for **new material purposes** (e.g. biochemical, plastics)

   3. Use of biomass for **local traditional energy use** (fuel wood)

   4. Use of biomass for **local modern, small scale use** (e.g. modern stoves, small-scale district heating)

   5. Use of biomass for **local modern, large scale use** (e.g. large-scale electricity production, 2nd generation biofuels)

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Which are the main opportunities related to biomass trade for energy?

A number of potential opportunities are provided in the following list. Please indicate on the poster how important you rate a certain opportunity – argumentation is welcome. If you feel some opportunities are missing, please feel free to suggest additional ones.

FOR IMPORTING REGIONS (EU):

A. Biomass provides an alternative for fossil energy, and it is not weather dependent or intermittent. Imported biomass can contribute to this when domestic resources are limited.

B. Imported biomass can be a cost-efficient way to reach renewable energy targets.

C. Opening markets for imported biomass can reduce the stress on domestic biomass resources (e.g. for existing biomass processing industries)

D. EU countries can initiate technological solutions (e.g. advanced biofuels) which need high biomass volumes (which may not be available on the domestic market)

E. ...

FOR EXPORTING REGIONS:

A. Export markets create economic opportunities to market (abundant) local feedstocks

B. It creates socio-economic opportunities (incl. job creation) in forestry, agriculture, industry, ...

C. There are synergies with local markets (e.g. forest products, wood processing industry, agricultural products)

D. Demand from outside the region will stimulate/trigger sustainable practices in forestry, agriculture, industry.

E. Initiating mobilization of biomass (with demand from outside the region) will trigger local production of renewable energy.

F. ...

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Which are the main risks related to biomass trade for energy?

A number of potential risks are provided in the following list. Please indicate on the poster how important you rate a certain risk – argumentation is welcome. If you feel some risks are missing, please feel free to suggest additional ones.

FOR IMPORTING REGIONS (EU):

A. A lot of energy is lost in **transport**, reducing the overall greenhouse gas performance, making it difficult to fulfil binding GHG criteria.

B. Domestic potential in the EU may be outcompeted by cheaper imports, leaving some of the **domestic potential underutilized**.

C. Relying on imported biomass only moves our problem of **energy import dependency** from one region to another – presents no real solution.

D. Demand from the energy side, and in particular the involved subsidies are impacting **world market prices** for other sectors. This creates an unlevel playing field.

E. European **subsidies** are flowing outside the EU, and do not contribute to the European economy.

F. ...

FOR EXPORTING REGIONS:

A. Additional demand for these types of biomass generates a **risk of overexploitation** in forestry and agriculture, resulting in biodiversity loss and a loss of carbon in forests and agricultural soils.

B. Additional demand may increase prices for these feedstocks and lead to **displacement**, i.e. draw away feedstocks from existing local applications (e.g. paper, panel boards).

C. Focus of international trade is generally on large scale players. There may be limited opportunities for **smallholders** to access these new export markets.

D. There is a risk of **'land grabbing'** of large players, moving away indigenous people or smallholders.

E. Claiming certain feedstocks for export may **lower opportunities in sourcing regions**, e.g. to use their own resources for energy production

F. ...

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Task 40: Sustainable International Bioenergy Trade

Key principles and policy options for sustainable trade

The following statements provide potential principles and policy options for sustainable trade of biomass. Some statements may be somewhat provocative; we don't expect you to agree with everything, your reaction is appreciated. Please indicate on the poster if you agree or disagree with a certain statement – argumentation is welcome. If you feel some principles or policy options are missing, please feel free to suggest additional ones.

1. **Sustainable biomass sourcing** is a precondition for all imported biomass to the EU, and for all domestically sourced biomass, the same principles and criteria are to be applied.
2. Sustainability should go **beyond the RED criteria** (as defined for biofuels) and consider other fundamental aspects such as sound management in sourcing areas and social issues.
3. When applying performance-based sustainability requirements (e.g. for GHG, efficiency), these need to be based on the **full value chain** (= incl. production and logistics).
4. We need to understand and quantify **indirect effects** (e.g. iLUC, materials displacement) and include them in value chain assessments.
5. The EC and/or Member States should define **approved practices** that avoid/reduce negative indirect effects.
6. Markets should be open, **no** discrimination (~WTO) or **trade barriers** because of too demanding quality & sustainability requirements.
7. Renewable energy from **domestic** sources should have **priority** over imports.
8. The EC / Member States need to **assist sourcing regions** towards sustainable practices in biomass production and harvesting.
9. The EC should adopt **bilateral agreements** with sourcing regions to recognize existing legislation and management practices.
10. Member States need – at least in the longer-term - to **avoid subsidies** as these create market distortions.
11. **Resource efficiency** should be required as a basic principle (e.g. minimum overall efficiency), for locally produced and imported feedstock.
12. The EC / Member States should stimulate local developments in renewable energy or GHG savings in sourcing regions and create **virtual trade mechanisms** (see carbon markets, ETS mechanism) instead of physical trade.
13. ...