



Workshop

Policy options for sustainable biomass trade

Wednesday 3 June 2015, Vienna (Austria)

Side event of the 23rd European Biomass Conference & Exhibition (EUBCE 2015)

Workshop Summary

BioTrade2020plus

Supporting a Sustainable European Bioenergy Trade Strategy

Intelligent Energy Europe

IEE/13/577/SI2.675534



Co-funded by the Intelligent Energy Europe
Programme of the European Union

Workshop background

Timing: 3 June 2015, 15:00 – 19:00

Venue: Messe Wien – Congress and Exhibition Centre

This workshop took place on the occasion of the 23rd European Biomass Conference & Exhibition (EUBCE 2015) in Vienna, Austria.

The event was organised in the framework of the project BioTrade2020plus (www.biotrade2020plus.eu) supported by the European Commission in the Intelligent Energy for Europe Programme. 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.

This event served to present and discuss results from the BioTrade2020plus project with focus on policy options ensuring sustainable biomass trade.

Contact persons

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Workshop summary

Prepared by: Luc Pelkmans, Nathalie Devriendt, Rainer Janssen, Ines Del Campo, Leire Iriarte, Rocio Diaz-Chavez

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

Workshop Summary

The workshop "Policy options for Sustainable Biomass Trade", organised by the BioTrade2020+ consortium, was held on 3 June 2015 at the Vienna Messe, as a side event of the 23rd European Biomass Conference & Exhibition. The workshop was organized to present and discuss policy options related to biomass trade (to the EU), with an extended discussion on the options to ensure sustainable biomass sourcing and how to avoid displacement of local use. **50 people** participated at the workshop. The attendants list can be found in Annex.

After a short introduction by **Rainer Janssen (WIP)**, the moderator before the coffee break, the workshop began with an introduction of the BioTrade2020+ project by **Ines Del Campo (CENER)**. The project is currently half way with most tasks fully active. Within the project it is very important to have interaction with stakeholders. More details about the project are available on the project website (www.biotrade2020plus.eu).



Heinz Kopetz (WBA) was invited as speaker, external to the project (*although being involved in the Advisory Board of the project*), to give his view on potential opportunities of biomass trade. He took two starting points which are decisive for future trends: (1) climate change mitigation policies which will need get more serious in the next decades ('carbon budget approach') and (2) population growth and economic development, specifically in Africa in Asia, resulting in a higher need of land for food. Kopetz stressed that biomass is in the first place a local issue, so countries should first consider local use. Looking at the natural



resources in the different continents, he concluded that *Africa* will need to use their land and biomass for their own needs, *Asia* will rely on imports, *Europe* will need to use its available land and resources better (including Russian resources), the *Americas* could have room for export, in particular Canada and Latin America. The US would have limited export potentials, if they

implement serious climate policies. *Oceania's* potential is limited due to climate restrictions.

Mind that global supply of biomass for energy is expected to rise from 54 EJ in 2010 up to 125-150 EJ in 2035. Within the EU a lot can be produced with dedicated energy crops and agricultural residues.

The basic principles of biomass use should be (1) efficient use (use residual heat of power plants!) and (2) sustainability (don't use more biomass than is grown). The carbon absorbed and released by biomass is part of the natural carbon cycle (opposite to fossil). Bioenergy is one of the only renewable energy sources which can be delivered on demand. So it is complementary with other RE sources.

Questions:

- Role of improving energy efficiency and reducing energy demand?

It is recognized that this is complementary with renewable energy. Nevertheless with growing economies in developing countries a growing energy demand in these regions can also be anticipated.

Leire Iriarte (IINAS) presented the methodology of the case studies carried out in the BioTrade2020+ project to determine sustainable potentials in the sourcing regions. She also presented interim results of the case study in Southeast US. Focus is on pellets from forest residues and thinnings. There is not much space for expansion of forest plantations. For energy crops it is assumed that these will mainly be used for domestic applications. The current surplus of forest biomass in the SE-US is estimated around 20 million tonnes (od), according to the estimates of Pöyry. In the past years pulp and paper demand declined, but this seems to have stabilized again. The longer term availability for export will depend on US demand for wood products and energy so renewable energy policies will play a relevant role. All these variables will be assessed by means of different scenarios.

Martin Junginger (Utrecht University) presented the results of a case study in Kenya. Of the total potential, 2/3 consisted of sugar cane residues (straw is currently not being used). There is no land available for energy crops and there is a shortage of fuel wood (with on-going deforestation). Agricultural yield is one of the most important factors for the potential.

Junginger stressed that ground truthing is needed to look at the local situation (what happens currently with the biomass and land). Another uncertain factor is how the Kenyan energy system will develop on the longer term.



Questions:

- How is sustainability currently taken into account for the potentials?
The most important restriction is the amount of residues which should be left in the field. In principle this depends on the soil type.
- Are there similarities with the other countries in Africa?
Mozambique has also been analysed and the situation is clearly different from Kenya (climate, rainfall). The key factor is agricultural productivity.
Africa can't be generalised. Each country/region has its particularities.
- Exogenous factors: improving agriculture
this seems to be a crucial factor, but the question is what we can do to make this happen. The main drivers are agricultural prices and access to capital. There are synergies with bioenergy, but bioenergy is clearly not the main driver for improving agriculture. Dedicated approaches are needed.

After the coffee break, **Luc Pelkmans (VITO)** introduced the topic of policy options, starting with an overview of opportunities, risk and barriers of international biomass trade. For opportunities and risk distinction was made between importing regions (EU) and sourcing regions. These items were also part of the on-going international survey (<http://www.surveygizmo.com/s3/1979784/Biotrade2020plus>). Some preliminary trends of the survey were highlighted. A list of policy options were presented; participants could provide their opinion on these policy options in a short questionnaire as an introduction to the panel discussion. 27 participants handed over a filled-in questionnaire (see Annex 4).



The subsequent panel discussion focused on these policy options, which two central questions: (1) How to ensure sustainable biomass sourcing, (2) How to avoid displacement of local use. The following people were part of the panel:

- **Heinz Kopetz, World Bioenergy Association** (*chairman of WBA, global organisation dedicated to supporting and representing the wide range of actors in the bioenergy sector*).
- **Rocio Diaz-Chavez, Imperial College, UK** (*expert in sustainability assessments for South-America, Asia and Africa; originally from Mexico*)
- **Rainer Janssen, WIP Renewable Energies, Germany** (*experience in biomass projects in Africa and Latin America*)
- **Serge Braconnier, CIRAD, France** (*working on production and use of biomass in local regions, worldwide*)

- **Iris Lewandowski, University of Hohenheim, Germany** (*working on energy crops in Europe and abroad; past work experience at Utrecht University and Shell, with a broad international view*)
- **Kees Kwant, Netherlands Enterprise Agency, Ministry of Economic Affairs, the Netherlands** (*chairman of IEA Bioenergy; involved in the Dutch debate on sustainable biomass*)
- **Peter Canciani, Central European Initiative (CEI)** (*intergovernmental organisation, supporting the development of sustainable biomass value chains in South-East Europe*)



We had a very lively debate. The main debated points are summarized below. A more detailed report on the discussions can be found in Annex 3.

Summary of the main points discussed:

Local use of biomass should have priority, but there are clear opportunities in international markets, in particular for certain regions (e.g. Americas) – it is necessary to map where there is potential for exports, depending on sustainability requirements and local strategies for using the biomass themselves. It will be difficult to prevent displacement, but in fact all we do creates displacement. Is it a bad thing if local actors respond to changing market demands? Of course if multinationals displace local actors this is a different issue. The question is if policies need to steer the local priority or should we leave it to the markets.

Agricultural improvement in developing countries is key, predominantly for food production, but it can also provide opportunities for energy. There can be synergies between food and energy. Capacity building in good agricultural (and forestry) practices is very important, but a longer term effort. There was much discussion on African countries, but it is clear that Africa's opportunities in terms of biomass are merely for their own use, less for international trade. Nevertheless, examples from the past have shown that **capacity building** in sustainable production (e.g. through certification) is possible if markets require this.

There are different positions in terms of **sustainability criteria** for solid biomass (on EU level). Some views defend that sustainability of forest biomass is already covered through MS regulations, and an additional requirement from the energy sector would create an extra administrative burden. Voluntary schemes (e.g. as developed by SBP) could then cover imported biomass. Other countries, which rely to a great extent on imports, would like to see a uniform EU system of sustainability requirements. The main discussion (with NGOs) is about imported biomass; there is a need to safeguard the sustainable supply of these resources. Mind that these safeguards will also be needed when a biobased economy further develops. It is crucial to have transparency about imported biomass. The discussion on sustainability criteria is actually about capacity building and creates an awareness on how to produce biomass in a sustainable way. Mind that making criteria over strict may just block further developments, which is in the interest of fossil industries. It is important to find a good balance. In the end we should come to a system that sustainability criteria are valid, no matter what application the biomass is produced for.

An extra proposed sustainability criterion is to consider if sourcing regions are also putting efforts in **mitigating their own GHG emissions**. This can be part of bilateral agreements. It needs to be seen if this is WTO compliant.

Listing of no-go areas and feedstocks are popular instruments for policy makers but care should be taken. Situations are usually not black-white, and may change over time. In this, identifying and promoting replication of "best practices" might be helpful.

Annex 1: Workshop Programme

Wednesday, 3 June 2015 (15:00-19:00)

15:00 Welcome to the Workshop

Rainer Janssen, WIP Renewable Energies, Germany

15:10 BioTrade2020+ - Introduction and Activities

Ines Del Campo, CENER, Spain

15:30 Global Biomass Resources – Potential Opportunities for Trade

Heinz Kopetz, World Bioenergy Association (WBA)

16:00 Results of BioTrade2020+ Case Studies

Leire Iriarte, IINAS, Spain

Martin Junginger, Utrecht University, Netherlands

16:30 *Coffee Break*

17:00 Opportunities, Risks and Barriers of International Biomass Trade

Luc Pelkmans, VITO, Belgium

17:30 Panel Discussion on Policy Options

- **How to ensure sustainable biomass sourcing?**
- **How to avoid displacement of local use?**

Moderation: Luc Pelkmans, VITO, Belgium

Panellists:

Heinz Kopetz, World Bioenergy Association

Rocio Diaz-Chavez, Imperial College, UK

Rainer Janssen, WIP Renewable Energies, Germany

Serge Braconnier, CIRAD, France

Iris Lewandowski, University of Hohenheim, Germany

Kees Kwant, Netherlands Enterprise Agency

Peter Canciani, Central European Initiative (CEI)

18:30 Summary and Conclusions

Luc Pelkmans, VITO, Belgium

Annex 2: Participant List

First Name	Last Name	Company/organisation	Country
Stefano	Amaducci	UCSC (Università Cattolica del Sacro Cuore)	Italy
Andi Krishna	Arinaldi	PT Perusahaan Gas Negara (Persero) Tbk	India
Dina	Bacovsky	BioEnergy2020+	Austria
Philippe	Barré	Imerys	France
Tina	Beuchelt	ZEF (Center for Development Research - University Bonn)	Germany
Serge	Braconnier	CIRAD	France
Jan	Bünger	Danish Energy Agency	Denmark
Peter	Canciani	CEI (Central European Initiative)	Italy / Central Europe
Juan	Carrasco	CIEMAT	Spain
Jorge	Cristobal	EC-JRC	EU
Jean-François	Dallemand	EC-JRC	EU
Cristina	de la Rúa	CIEMAT	Spain
Inés	Del Campo	CENER	Spain
Nathalie	Devriendt	VITO	Belgium
Rocio	Diaz-Chavez	Imperial College	UK / Mexico
Berien	Elbersen	DLO-Alterra	Netherlands
Wolter	Elbersen	WUR	Netherlands
Ana Luisa	Fernando	FCT-UNL (University of Lissabon)	Portugal
Chun Sheng	Goh	Utrecht University	Netherlands / Malaysia
Katarzyna	Golkowska	LIST (Luxembourg Institute of Science and Technology)	Luxembourg
Ruben	Guisson	VITO	Belgium
Leire	Iriarte	IINAS	Spain
Rainer	Janssen	WIP	Germany
Martin	Junginger	Utrecht University	Netherlands
Gerald	Kalt	Austrian Energy Agency	Austria
Cosette	Khawaja	WIP	Germany
Heinz	Kopetz	World Bioenergy Association	global

Nike	Krajnc	SFI (Slovenian Forestry Institute)	Slovenia
Kees	Kwant	RVO (Netherlands Enterprise Agency), Ministry of Economic Affairs	Netherlands
Hi Sun	Lee	KEI (Korea Environment Institute)	Korea
Iris	Lewandowski	Univ. of Hohenheim	Germany
Ricardo	Martins	Imperial College	Mozambique
Robert	McQuillan	Lafarge	Ireland
Rita	Mergner	WIP	Germany
Calliope	Panoutsou	Imperial College	UK
Eleni	Papazoglou	Agricultural University of Athens	Greece
Luc	Pelkmans	VITO	Belgium
Svetlana	Proskurina	Lappeenranta University of Technology	Finland / Russia
Foluke	Quist-Wessel	AgriQuest	Netherlands
Jacqueline	Ramirez Almeyda	UNIBO (University of Bologna)	Italy
Dominik	Rutz	WIP	Germany
Sebastián	Sánchez	Jaén University	Spain
Nicolae	Scarlat	EC-JRC	EU
Fabian	Schipfer	TUWien	Austria
Neeta	Sharma	ENEA	Italy / India
Raphael	Slade	Imperial College	UK
Peter	Soldatos	Agricultural University of Athens	Greece
Dragoslava	Stojiljkovic	University of Belgrade	Serbia
Evelyne	Thiffault	Laval University	Canada
Birka	Wicke	Utrecht University	Netherlands

Annex 3: Notes of the panel discussion

We tried to note down discussions quite literally. The reporting on the following discussions has been kept anonymous.

Discussion on the first question: How to ensure sustainable biomass sourcing ?

Role of trade

- In principle the shortest route between production and end-user would be the most sustainable way. To use the biomass in the local region and this around the world would be a step forward. It is difficult for me to judge on trade between continents, my expert focus is on local production and use. If trade is happening outside the local region, then displacement on the local markets should be taken into account. But I see that this is being considered in the project.
- Next to all kinds of fossil and depleting resources, we trade other commodities like coffee, cacao and tobacco. Why can't we trade biomass for energy?
- The Netherlands depends on imports for more or less everything.

Climate commitments

- Suggestion for an additional sustainability criterion: we only accept biomass exports as sustainable if the sourcing country can prove it is mitigating its GHG emissions. We should avoid countries which don't put any effort in reducing their fossil fuel use, but still like to earn money exporting biomass for energy to Europe (in that sense we support their unsustainable energy system). Of course you should work with a couple of years of transition to such a system.
- This means for instance that countries that have not signed and implemented the Kyoto agreement would not be able to export biomass for energy to Europe.

Binding criteria for solid biomass?

- Let the development of new systems with the industry. Look at the Sustainable Biomass Partnership (SBP) of several large energy production companies in Europe (Drax, GDF Suez, Vattenfall, etc.). Policy makers often create too much administrative burden with their new systems. So suggestion for Brussels: take over the market system instead of introducing a new bureaucratic system. Don't go for additional forest management obligations. Europe has already such sustainable management in every Member State.

- This may be fine with domestic biomass, but how to deal with imported biomass? Imports are a reality. Is a voluntary market scheme enough? What with the different rules in different Member States?

- You will never find a perfect solution. Start with this system that is already followed by 7 leading energy companies. They can create pressure on other energy suppliers that in first instance don't follow the same rules on imported biomass.

- The Netherlands is an importing country. Sustainability schemes are in place and are agreed upon by NGO's, policy makers and the utility sector. In this agreement there is a cap of 25 PJ on imported co-fired biomass to be used in the Netherlands. The scheme in the Netherlands is more strict than the SBP voluntary scheme. Carbon debt and ILUC are included. Before reaching the agreement, the discussion took 1.5 years. The Netherlands would like to see a similar process for the EU. Also in the UK and in Denmark similar discussions are going on.

At the moment, the Dutch government is using budget for capacity building to implement these additional requirements. They will be part of the SDE+ funding scheme together with a control system. The control system is the most tricky part of it. The Netherlands will be using as much as possible existing schemes for all systems of co-firing and also heating installations above 10 MW_{th}.

- The public perception of this question is different in the different Member States. The Netherlands have few forests. Finland on the other hand has a lot of local forest and it is growing, so they know what good forest management is. Why then implement extra requirements?

- Not all utility companies have the same discipline, so I would be in favour of an obligated scheme. I'm very open for the idea of 'surplus trade', it opens up a lot of different issues, but you will run into troubles with WTO-regulation. You could exclude non-Kyoto countries.

- Be careful with this suggestion. You should find the golden way in between not exporting anything and implementing additional sustainability criteria.

- The EU needs import for their biobased economy, but you need transparency for that. The public acceptance of biomass has changed from a positive opinion to a negative one. So to turn that around you need to be transparent and have simple rules otherwise the biobased economy will not stand a chance.

- NGO's have played an important role and received a lot of power in this public debate, also in the UK. All the 'bad examples' were highlighted. In my opinion you don't need to harmonize a sustainability system on a EU level. Sustainable Forest Management is already in place in Europe, what you miss is a European label. We don't need to put more strict requirements, for our biomass as a commodity we are far more strict than for other commodities.

Interaction with other applications?

- Will such a requirement for product certification for biomass for energy have an effect on the producing countries? The energy demand may receive the certified biomass, while the 'bad' biomass will flow to food/feed/other applications.
- The way forward is to expand the criteria to other applications. Refer to the example of RSPO: currently also Unilever wants to use RSPO for their palm oil. Bioenergy is in this way an example.
- We need to put emphasis on good practices and cooperations. Perhaps a good monitoring system would help: start small, motivate positive change, make the systems economically viable and apply it later in other sectors.
- Could we learn lessons from what has happened with the biofuels? It seems that in some regions the discussion on sustainable production for biofuels has changed the mindset on sustainable crop production in general.
- In Brazil we have seen that the pressure has gone up. Even if not all production is certified, a lot has improved: child labour, burning residues in the field. The Global GAP system has had an impact, not yet for all, but it is changing. Also fair cotton is a good example.
- We focus on sectors, but in production of biomass it doesn't matter where the biomass will be used. So please put the different sectors together so you can go for 'fair trade'.

Capacity building

- Trade will be necessary. In Quebec there is a renewable surplus, not for the whole of Canada. The forestry sector is not really aware of these opportunities. You need to focus on capacity building, to a transition away from fossil, less on sustainability criteria.
- In the end Canada will also need to reduce their CO2 emissions. If Europe will be too strict, the biomass will go to other continents. We are not alone in the world and we cannot oblige strict regulations to the whole world.
- I think that the discussion on sustainability criteria IS capacity building. We have to explain to the public what we are doing. But the main issue is how complicated we make it to 'prove' it. We need to lay down the priorities, we need to make it simple but we should not stop with sustainability criteria. Cacao and hunger: the discussion on this theme is again on the table thanks to bioenergy.
- I want to react on the Canadian case. Every region can look at opportunities BUT in a sustainable way. Everything comes down to the point of trust. We as a government needs to explain if we give subsidies to certain technologies. Mistakes are being made in the past followed by a negative atmosphere and therefore we need those sustainability criteria to gain trust again.
- The criteria are very strict in the Netherlands, the US for example has very few certified forest that can meet these criteria.

- This may be an argument for the US to put efforts in sustainable forest management. We are not solely relying on the US. In other places like Canada or Russia there is certified forest.
- In Canada you have certified forest, but there is a total lack of awareness on climate change. The EU is the lighthouse of the world.
- Again we come to capacity building. The East could be a perfect partner for the EU in a sustainable way.

I don't agree with the discussion on carbon debt. There is only carbon debt for fossil fuels not for biomass (if consumption remains below growth levels). The issue of carbon debt is influenced by fossil lobbies.

- We have to live with the scientists with good selling formulas to politicians in Brussels. You need to find a solution for this.
- Europe should finally show some courage and legitimacy. Are there good examples for coffee and cacao? Will these new technology be beneficial for everybody? Why do we need to consume more energy? Europe should drastically decrease their energy consumption and we cannot find that in EU policy. Don't talk about best practices. The West is solely responsible for climate change. Why does Europe does not change its agriculture to growing wood and other energy crops, instead of pushing countries outside Europe?
- Energy efficiency is part of EU policies.

Discussion on the second question: How to avoid displacement of local use?

- Not many policies intervene with displacement. In the current requirements for biofuels and liquid biomass no-go areas are defined. EU could also give incentives for positive practices. What does the panel think about this?
- Incentives are good, but not suitable for no-go areas. Displacement will occur, competition will come and not only for the EU but also of companies that are trading.
- It is important who will decide on the displacement. Local partners should have the power to decide on this. It is a totally different problem when multinationals force the displacement.
- Indirect effects should be quantified. It is important to link biomass to rural development. We are discussing way to technical! We need to link more to the farmers who are doing the agriculture, step away from the scientific approach and use the efforts for policies for farmers rather than new energy policies. Link it to the real life, to the local farmer.
- Agricultural yield improvement needs a holistic approach about agriculture and management. It is a complex issue. More money will be needed.

- Agricultural improvement is a long term strategy. Now there is the need to answer the question how we can provide the short term demand of biomass. In my opinion there is need of a list of no-go areas.
- It is dangerous to work with a 'list'. If palm oil is on the list as 'not good' that is not completely true. The residues of palm oil can be used in a good way. You also need to be careful with 'trust' in local politicians.
- Mozambique has a very strict legal forest management system. Nevertheless 1% of tree cuttings is done in a legal way, all the rest is illegal yield. Why do we not say to EU farmers: start growing trees instead of strawberries?
- Can bioenergy contribute to local law enforcement like in Brazil?
- I can ask the same question back? Is there not a fair chance to gain income for other countries like in Africa?
- This is what is termed 'neo-colonization' ... In Mozambique nothing has moved. On the other hand in Kenya and Tanzania the flower market that needed to comply with strict standards has been taken up by these countries.
- Good examples can also be found in Sierra Leone for the RSB standards and can be replicated.
- Each country needs to do his enforcement itself, the EU cannot do this. Brazil is a good example looking at the improvements they made the last 8 years.
- You should all read the African-EU dialogue document, many answers to your questions can be found there.

Annex 4: Questionnaire on policy options for sustainable biomass trade

Below an initial overview can be found of the responses of 27 participants to the workshop. These results – and the provided comments - will be integrated in a discussion document on opportunities, risks and barriers of international biomass trade, key principles for sustainable trade and potential policy frameworks around imports (together with the survey results).

	Totally agree	Agree	Neutral	Dis-agree	Totally disagree	Don't know
Sustainability criteria for bioenergy						
1. Harmonized/common binding sustainability criteria are needed on EU level, also for solid and gaseous biomass for energy.						
	10	14.5	1	0.5	0	1
2. Requirements should go further than the current RED criteria for biofuels (greenhouse gas emissions, biodiverse land, high carbon stock land).						
	8	11	4	4	0	0
3. When forestry biomass is used, a proof of sustainable forestry management (e.g. FSC, PEFC) should be required.						
	12	12	3	0	0	0
4. The EU should put more dedicated efforts in cooperation/good practice exchange with sourcing regions towards sustainable practices in biomass production and harvesting, and capacity building .						
	10	14	3	0	0	0
Standards & labelling						
5. Technical standards for traded biomass should be agreed at international level , e.g. ISO.						
	11	12	3	0	0	1
6. All wood-derived products (i.e. materials and energy carriers) should be labelled to indicate if they come from legal and sustainable forests or not.						
	15	12	0	0	0	0
Displacement/indirect effects						
7. Certain types of feedstock that have higher risks of indirect effects/displacement should be excluded from support , or support can be capped to a certain amount of feedstock.						
	5	12	3	4	1	2

	Totally agree	Agree	Neutral	Dis-agree	Totally disagree	Don't know
8. There should be incentives for practices that avoid/reduce negative indirect effects . The EC should clearly define such practices.						
	12	8	7	0	0	0
9. Indirect effects should be quantified and included in value chain calculations (e.g. in terms of GHG balance).						
	6	8	5	7	1	0
Monitoring						
10. Better monitoring systems with distincts classifications are needed for international trade flows of wood and other lignocellulosic products.						
	7	16	3	0	0	1

Annex 4: BioTrade2020+ Consortium

CENER – National Renewable Energy Centre, Biomass Department, Spain

Project Coordinator BioTrade2020plus

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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

