

## TASK 40: Sustainable International Bioenergy Trade: Securing Supply and Demand

### Overview of the Task

The core objective of IEA Bioenergy Task 40 is to support the development of sustainable, international bioenergy markets and trade, recognizing the diversity in resources and applications. Through the international platform provided by IEA Bioenergy, combined with industry partners, government bodies and NGO's, the Task contributes to the development of sustainable bioenergy markets both in the short- and long-term and on different scales (from regional to global). Key aims are i) to improve the understanding of biomass and bioenergy markets and trade; ii) to analyze the possibilities to develop biomass resources and exploit biomass production potentials in a sustainable way, including supply chains and required logistics; iii) to perform coherent analyses of biomass markets and trade by modeling and scenario analysis; and iv) to evaluate the political, social, economic and ecological impact of biomass production and trade, and develop frameworks to secure the sustainability of biomass resources and utilization, and v) to provide a vital contribution in the coming years for market parties, policy makers, international bodies as well as NGO's by providing high quality information on these topics. The vision of the Task on global bioenergy trade is that it will develop into a real 'commodity market' which will secure supply and demand in a sustainable way. Sustainability provides the key ingredient for long-term security.

**Participating countries:** Belgium, Brazil, Canada, Finland, Germany, Italy, the Netherlands, Norway, Sweden and the United Kingdom.

**Affiliated Member:** FAO

**Task Leader (Scientific):** Dr. André Faaij, Copernicus Institute, Utrecht University, the Netherlands.

**Task Leader (Administrative):** Mr. Peter-Paul Schouwenberg, Essent Energy

**Operating Agent:** Mr Kees Kwant, SenterNovem, the Netherlands.

**Alternate Operating Agent:** Mr Erik Wissema, Ministry of Economic Affairs, the Netherlands.

The Task Leaders direct and manage the work programme. A National Team Leader from each country is responsible for coordinating the national participation in the Task.

For further details on Task 40, please refer to Appendices 2-6 inclusive; the Task website [www.bioenergytrade.org](http://www.bioenergytrade.org) and the IEA Bioenergy website [www.ieabioenergy.com](http://www.ieabioenergy.com) under 'Our Work: Tasks'.

### Progress in R&D

#### Task Meetings and Workshops

During 2006, Task 40 (jointly) organized three workshops:

In January 2006, a 'Future Visions of Biomass Trade' -workshop was jointly arranged in Utrecht, the Netherlands by Task 40 and EUBIONET II for an invited group of experts. The workshop was a part of a research project carried out by the Lappeenranta University of Technology within a framework of Task 40 (deliverable 3). The workshop was focused on collecting and preliminary refining experts' knowledge, experiences, and tacit information towards the future scenarios of biomass trade and markets. Totally 14 experts were attended the workshop. After the workshop, the research will continue and scenario drafts will be further developed together with the participants. The results of the study were presented at the 3rd IEEE International Conference on Management of Innovation and Technology, 21-23 June 2006 in Singapore.

The second major workshop held so far in 2006 was the joint Task 38 and Task40 in Trondheim, Norway (in cooperation with Enova). The main objective addressed and discussed in this joint workshop were the advantages of the various trading possibilities, the necessary accounting rules, and criteria to select the most efficient mechanisms under varying circumstances. It provided a forum for government, business, and academic representatives to exchange and gain information on the status of the various biomass-carbon trading and certificate trading markets. Presentations included amongst others examples of actual biomass imports currently in several EU countries, methodological frameworks to compare the advantages of physical trading and carbon trading, certification of biomass, and an overview of developments within the clean development mechanism (CDM). In total, about 50 participants joined the workshop. The workshop concluded that the various trading options for biomass and emission credits produced by biomass have various pros and cons for buyers and sellers, depending on the potentials, markets, and timeframes considered. Nevertheless, trading options strongly enhance the use of biomass altogether, because supply and demand for energy, CO2 emission reduction and other benefits of biomass can be matched where this was previously not the case. Furthermore, developing proper and workable GHG accounting systems and overall sustainability evaluations (e.g. for biofuel production and trade) are needed, but could be developed in conjunction with the lessons (being) learned for CDM bioenergy projects. This is a very important field for market parties, policy makers and the teams of IEA Bioenergy Tasks 38 and 40 that will certainly be addressed in future work.

The third major activity (and the final activity of Task 40 of the 2004-2006 triennium) was a workshop in Finland. Lappeenranta University of Technology, Finnish Funding Agency for Technology and Innovation (Tekes), ClimBus Technology Programme, IEA Bioenergy Task 40, and EUBIONET II jointly organised an international seminar on developing bioenergy markets focusing on forest sector and Russia. The workshop was held in Lappeenranta, Finland 24–25 October, 2006, in the premises of Lappeenranta University of Technology. The main objectives addressed and discussed in the seminar were the possibilities and challenges facing up to growing bioenergy markets paying special attention on forest industry sector and Russia. The target group of the seminar included specialists working in bioenergy and forest sectors as well as academics and officials who deal with related issues in their every day work. Totally the seminar gathered nearly 90 participants, of which 40 were foreign visitors representing 19 different nationalities. After the seminar EUBIONET II project in collaboration with IEA Bioenergy Task 40 organized a two-day bioenergy study tour to St. Petersburg area (25–27 October).

The presentations given at these workshops and meeting reports are available from the Task 40 website [www.bioenergytrade.org](http://www.bioenergytrade.org).

The Task had two formal internal meetings in 2006, preceding the workshops in Norway and Finland. During these task meetings, the progress and finalization regarding the various deliverables was presented and plans were made on how to continue the Task in the 2007-2009 triennium.

### ***Future Meetings***

An overview of Task activities scheduled for 2007 is provided below:

<b>Date</b>	<b>Location</b>	<b>Description</b>
19 -20 February 2007	Rotterdam, the Netherlands	Joint workshop with Eubionet2 on policy, biomass certification and biomass trade
20-21 February 2007	Utrecht, the Netherlands	1,5 day internal Task 40 Kick-off meeting of the new triennium, finalization of working schedule
7-11 May 2007	Berlin, Germany	Planned workshop on international bioenergy trade during the biomass conference
11 May 2007	Berlin, Germany	1 day internal task meeting
September 2007	Montreal, Canada	Tentative, details to be discussed at task meeting in February

### **Work Programme and Outputs**

An overview of the work programme, and the outputs and deliverables in 2006 is given below.

***Market Experience. Coordinator: Sweden – supported by all participants***

The aim of this part of the work programme is to obtain an overview of current trading experiences and markets as well as potential future markets.

A total of eight country reports were either first published or updated in 2006. These reports have been disseminated via the Task 40 website, and are downloaded frequently. The final synthesis report is currently written using this data, and will be included in the special issue of biomass and bioenergy. The Netherlands are mainly responsible for the finalisation of this deliverable

***Advice on Barriers, Opportunities and Strategy. Coordinator: Netherlands – supported by all participants***

The aim of this part of the work programme is to compile a strategic document that covers an inventory of barriers (technical, logistic, economic, organisation, regulatory) and opportunities for developing working biomass and bioenergy markets and (international) trade, and to formulate strategies to cope with those barriers.

At the end of the first triennium from 2004-2006 and a preparation period of about 1,5 years, Task 40 has published a key deliverable, describing the opportunities and various barriers for international sustainable bioenergy trade. The report also includes a number of strategies to overcome the main barriers currently hampering parts of the international bioenergy trade which were formulated unanimously by all Task members (from industry, governmental and scientific institutions). A shortened version (mainly describing the barriers for trade) has also been published as a technology report.

***Modelling Markets. Coordinators: Norway, Netherlands, Finland***

This activity should provide insight in the development of biomass resources and supplies in relation to market demand; e.g. by applying various (modelling) tools

For this deliverable, in 2006 a review was undertaken of current modelling efforts in regard to biomass and trade. This work was funded by the extra budget available in 2006, and is the main responsibility of Norway, supported by the Netherlands. This work was carried out during autumn and winter of 2006, and preliminary results were presented at the Task meeting in Finland. The final study will be available in February 2007.

***Supply Chain Analysis. Coordinators: Finland, Canada, Norway, Sweden, Netherlands***

This work covers performance evaluations (techno-economic) and further development/ optimisation of long distance bioenergy supply chains, in particular sea transport. This was approached by doing concrete case studies of chains and transport systems.

Under this deliverable, in the past a number of logistic chain analysis studies have been carried out in Canada, Norway, Finland and Russia. On the demand-side, a study has been published on the co-firing fuel supply situation in the UK, these efforts are currently being summarized, and will be published in a synthesis paper by the beginning of 2007.

***Certification Systems. Coordinators: Netherlands, FAO, UK***

Issues regarding certification, standardisation and terminology for sustainable bioenergy trade were the focus of this part of the work programme.

After several publications and activities on biomass certification and sustainability criteria, input for the final result of this deliverable, a scientific paper for Biomass and Bioenergy; though it can also be published in leaflet form to reach a broader audience. The paper covers biomass certification systems,

related certification systems in agriculture and forestry, policy developments within the T40 member countries on certification (mainly the Netherlands, the UK Belgium and Germany), describes boundary conditions and possible drawbacks of certification systems, and formulates several strategies on how to further introduce biomass certification. This work was lead by the Netherlands, in co-operation is sought with FAO (Gustavo Best and Ingmar Jürgens), the UK (Jeremy Woods and Frank Rosillo-Calle) and the Oekoinstitut (Uwe Fritsche). The final work was published in December 2006 on the task 40 website, and will also be included in the special issue for Biomass and Bioenergy.

As an additional output, the Copernicus Institute and The University of Campinas published an extensive report on the sustainability of ethanol from sugar cane produced in Brazil, its compliance with newly-defined Dutch sustainability criteria for biomass and potential additional costs to meet the most demanding sustainability criteria. This report will also be available on the Task 40 website.

#### ***Pilot Projects and Case Studies – Impact Analysis. Coordinators: FAO; Netherlands, UK, Canada***

The aim was to identify possibilities for pilot- and demonstration projects and aim for supporting their development; especially in developing countries (e.g. Africa), and to provide insight (e.g. through case studies and best practice examples) in the socio-economic and ecological impacts of biomass production and trading schemes and demonstrate how bioenergy trade can contribute to general (sustainable) development targets.

Over the course of the past triennium, several desk top case studies have been carried on e.g. dedicated biomass plantations in Mozambique or the sustainability of ethanol production from sugarcane in Brazil. The establishment of actual pilot projects in developing countries has been slow, but in 2006 the FAO was setting up case studies in Chile, Brazil, Tanzania, Madagascar, Senegal & the Philippines to test principles, criteria and indicators for 1) forest biomass used for energy and 2) woodfuel & charcoal production systems.

#### ***Evaluation of Markets – Ethanol. Coordinators: Brazil, UK, Canada***

The focus of the research is on evaluating markets for fuel ethanol trade and, more specifically, on the Brazilian experience on large-scale fuel ethanol production and exports. The ethanol market research was conducted over the course of 2005 and 2006. It will also be submitted to the special issue of Biomass and Bioenergy.

As funds were available for the remainder for 2006, it was decided at the Trondheim Task meeting to carry out two additional market studies:

1. A European market study for (pyrolysis) bio-oil, carried out by Doug Bradley (Canadian NTL). The report was finished and published in December 2006.
2. The second market study is on pellets and sawdust. This study is currently carried out by ETA Florence, Lappeenranta University and the University of Campinas. Results will be presented published in spring 2007.

#### ***Dissemination. Coordinators: Netherlands - supported by all participants***

Dissemination of the work and results of Task 40 has been actively been carried out at a number conferences and workshops in 2006 (see below). Currently, a full-colour leaflet is prepared together with Task 38 on trading GHG emission reduction certificates versus trading physical biomass. Also, the Task has issued a leaflet on its general activities.

Another key tool for dissemination of information is the Task 40 website. The website has been developed continuously over the period 2004-2006. In 2006, amongst others, a library function was added. Visitor numbers increased from an average of 1600 per month in 2005 to over 2000 in the second half of 2006. Also the amount of monthly downloaded data increases continuously. Next to the Task 40 deliverables (such as the country reports, logistic chain studies, the report on opportunities and barriers for trade etc.), also all presentations given at workshops are available online. As a number of key

deliverables have been published in the winter of 2006, we expect visitor numbers to increase further in 2007.

### **Collaboration with other Tasks/Networking**

As described above, events were organised jointly with IEA Bioenergy Task 38, Eubionet2 and other institutions. At these activities, the work of IEA Bioenergy Task 40 was disseminated in several presentations. Parts of the work of Task 40 was also presented to a number of audiences, including (not exhaustive):

- World Bioenergy Conference & Exhibition, Jönköping, Sweden, May/June 2006, ,
- Launching conference of the European technology platform for biofuels, Brussels, Belgium, June 2006,
- UN Commission for Sustainable Development (CSD-14): International cooperation on bio-energy, UN Building, New York, United States, May 9, 2006
- International Conference: Biofuels for Transportation – Global Potential and Implications for Sustainable Agriculture, Energy and Security in the 21<sup>st</sup> Century, Washington DC, United States, June 7, 2006.
- Intercoop Europe, 17th General Assembly 2006; workshop “Bio-based Economy and the role of Agriculture” Oostende - Belgium, June 9-10, 2006.
- Workshop: “The way forward to sustainable bio-energy”, organized by WWF International, June 29, 2006, Brussels, Belgium
- Konferenz: Bioenergie – Welche Forschungsfragen stellen sich? Organized by: der Deutschen Bundesstiftung Umwelt und der Universität Kassel, Kassel, Germany, July 3, 2006
- Bio-energy Transportation. Mareforum, September 2006, Rotterdam, The Netherlands
- Conference: "Growing Fuel in Developing Countries: Lessons from Brazil and India“, organized by the Global Subsidies Initiative International Institute for Sustainable Development, Bern, Switzerland, 31 October 2006
- Round-Table Conference on Biofuels, Organized by Houthoff Buruma N.V., Brussels - Belgium, November 7<sup>th</sup>, 2006.
- Symposium: Kyoto, bioenergy and forests 22. November 2006; Organized by: Den Kgl. Veterinær- og Landbohøjskole (KVL), Copenhagen -Denmark; 22 November 2006.
- Expert Meeting organized by UNCTAD (UN Commission for Trade and Development): Participation of Developing Countries in New Dynamic Sectors of World Trade - Geneva; Palais des Nations - Switzerland, November 30<sup>th</sup> 2006

The Task aims to continue this wide collaboration in 2007. A joint workshop with Eubionet2 on biomass policy, certification and trade is scheduled for February 2007. Furthermore, in the proposal for prolongation for Task 40 for the 2007-2009 triennium, collaboration is envisioned with other IEA bioenergy tasks and topics such as tasks 34 and 39 on biofuels, tasks 32 and 33 on cofiring, and tasks 29, 30, 31 and 38 on follow-ups of previous joint workshops. Also other joint workshops are envisioned, such as a joint workshop on international pellet trade with the EU-funded Pellet-@las project.

### **Deliverables**

In the final year of the first triennium of Task 40, a number of key deliverables were published, which are described in detail above. Publications in 2006 included a special issue of the ‘Journal Energy for Sustainable Development’ on bioenergy trade and sustainable development. Furthermore, several task members published in different journal such as renewable energy world and the international sugar journal. Please see appendix 4 for a full list of publications in 2006. For 2007, a special issue of Biomass and Bioenergy will be published containing a number of the key deliverables mentioned above. Further publications and activities both in 2006 and planned for 2007 have been discussed extensively in the sections above.

## **APPENDIX 4 TASK 40**

Minutes from the Task meeting in Trondheim, Norway, April 2006.

Minutes from the Task meeting in Lappeenranta, Finland, November 2006.

**Batidzirai, B., Faaij, A.P.C., Smeets, E.**, Biomass and bioenergy supply from Mozambique, Energy for Sustainable Development, Special issue on international bio-energy trade and development as a result of the work of IEA Task 40 and Task 29 under the International energy Agency Bioenergy Agreement and the World Bank, Volume X, No. 1, March 2006, p. 54-81.

**Bolkesjø, T.F., Trømborg, E., Solberg, B.**, Biomass market and trade in Norway: Status and future prospects. Updated country report 2006.

**Bradley, D.**, Canada Biomass-Bioenergy Report, May 31, 2006. Country report for IEA Bioenergy Task 40, May 2006.

**Bradley, D.**, European Market Study for BioOil (Pyrolysis Oil), Report for IEA bioenergy Task 40, December 2006.

**Dam, J. van, Junginger, M., Faaij, A., Jürgens, I., Best, G., Fritsche, U.**, Recent developments in sustainable biomass certification, report for IEA Bioenergy Task 40, December 2006.

**Faaij, A.P.C., Domac, J.**, Emerging international bio-energy markets and opportunities for socio-economic development, Energy for Sustainable Development, Special issue on international bio-energy trade and development as a result of the work of IEA Task 40 and Task 29 under the International energy Agency Bioenergy Agreement and the World Bank, Volume X, No. 1, March 2006, p. 7-19.

**Faaij, A., Schouwenberg, P.P., Junginger, M.**, Progress Report to ExCo57, Paris, France, May 2006.

**Faaij, A., Schouwenberg, P.P., Junginger, M.**, Progress Report to ExCo58, Stockholm, Sweden, October 2006.

**Hansson, J., Berndes, G., Borjesson, P.**, The prospects for large-scale import of biomass and biofuels into Sweden – a review of critical issues, Energy for Sustainable Development, Special issue on international bio-energy trade and development as a result of the work of IEA Task 40 and Task 29 under the International energy Agency Bioenergy Agreement and the World Bank, Volume X, No. 1, March 2006, p. 82-94.

**Heinimö, J., Alakangas, E.**, Solid and liquid biofuels markets in Finland – a study on international biofuels trade. Country report for IEA Bioenergy Task 40 and EubionetII, April 2006.

**Hektor, B., Ling, E.** Country Report, Sweden, Country report for IEA Bioenergy Task 40, August 2006.

**Hillring, B., Trossero, M.**, International wood-fuel trade – an overview, Energy for Sustainable Development, Special issue on international bio-energy trade and development as a result of the work of IEA Task 40 and Task 29 under the International energy Agency Bioenergy Agreement and the World Bank, Volume X, No. 1, March 2006, p. 33- 41.

**Johnson, F.X. and Matsika, E.**, Bio-energy trade and regional development: the case of bio-ethanol in southern Africa, Energy for Sustainable Development, Special issue on international bio-energy trade and development as a result of the work of IEA Task 40 and Task 29 under the International energy Agency Bioenergy Agreement and the World Bank, Volume X, No. 1, March 2006, p. 42-53.

**Junginger, M., Faaij, A., Schouwenberg, P.P., Arthers, C., Bradley, D., Best, G., Heinimö, J., Hektor, B., Horstink, P., Grassi, A., Kwant, K., Leistad, O., Ling, E., Peksa, M., Ranta, T., Rosillo-Calle, F., Ryckmans, Y., Wagener, M., Walter, A., Woods, J.,** Opportunities and barriers for sustainable international bioenergy trade and strategies to overcome them. November 2006.

**Junginger, M., Faaij, A., Schouwenberg, P.P., Arthers, C., Bradley, D., Best, G., Heinimö, J., Hektor, B., Horstink, P., Grassi, A., Kwant, K., Leistad, O., Ling, E., Peksa, M., Ranta, T., Rosillo-Calle, F., Ryckmans, Y., Wagener, M., Walter, A., Woods, J.,** Opportunities and barriers for sustainable international bioenergy trade. IEA Bioenergy Task 40 technology report, November 2006.

**Junginger, M., de Wit, M., and Faaij, A.** IEA Bioenergy Task 40 Country report for the Netherlands – update 2006. Copernicus Institute for Sustainable Development - Utrecht University, August 2006.

**Junginger, M., Faaij, A., Robertson, K., Woess-Gallasch S., Schlamadinger, B.,** Workshop Summary: ‘Greenhouse gas credits trade versus biomass trade – weighing the benefits’, jointly organised by IEA Bioenergy Tasks 38 (GHG Balances of Biomass and Bioenergy Systems) and 40 (Sustainable International Bioenergy Trade: Securing Supply and Demand), and ENOVA, Trondheim, Norway 3-7 April 2006.

**Junginger, M., Faaij, A., Rosillo-Calle, F., Woods, J.,** The Growing Role of Biofuels- Opportunities, challenges and pitfalls, Renewable Energy World, September-October edition 2006.

**Junginger, M., Faaij, A., Rosillo-Calle, F., Woods, J.,** The Growing Role of Biofuels- Opportunities, challenges and pitfalls, International Sugar Journal, November 2006.

**Marchal, D., Ryckmans, Y.,** Country report of Belgium, Country report for IEA Bioenergy Task 40, September 2006.

**Perry, M., Rosillo-Calle, F.,** Co-firing Report- United Kingdom, Report T40UK02R, report for IEA Bioenergy Task 40, November 2006.

**Rosillo-Calle, F., Perry, M.,** Country Report for United Kingdom, Report T40UK01R, report for IEA Bioenergy Task 40, September 2006.

**Rosillo-Calle, F., Walter, A.,** Global market for bioethanol: historical trends and future prospects, Energy for Sustainable Development, Special issue on international bio-energy trade and development as a result of the work of IEA Task 40 and Task 29 under the International energy Agency Bioenergy Agreement and the World Bank, Volume X, No. 1, March 2006, p. 20-32.

**Smeets, E., Junginger, M., Faaij, A., Walter, A., Dolzan, P.,** Sustainability of Brazilian bio-ethanol, Report NWS-E-2006-110, ISBN 90-8672-012-9, August 2006.

**Walter, A., Dolzan, P., Piacente, E.,** Biomass Energy and Bioenergy Trade: Historic Developments in Brazil and Current Opportunities, Country report for IEA Bioenergy Task 40, June 2006.

*Presentations held at the joint Task 38 / Task 40 workshop in April 2006, Trondheim / Norway on Greenhouse gas credits trade versus biomass trade – weighing the benefits:*

Task 40 Norwegian country report, State of the art at the Norwegian bioenergy scene  
Torjus Bolkesjø, The Norwegian University of Life Science, Norway

GHG balances of Canadian biomass exports (combined T40/T38 work)  
Douglas Bradley, Climate Change Solutions, Canada

Eletrabel’s implementation strategy for large scale biomass imports

Yves Ryckmans, Electrabel, Belgium

Next steps for co-firing biomass including certification. Martin Junginger, Copernicus Institute, on behalf of Peter-Paul Schouwenberg, Essent Energy Trading, The Netherlands

Trading biomass or GHG emission credits?  
Jobien Laurijssen, Copernicus Institute-UU; The Netherlands

CO<sub>2</sub> emissions from international biomass transport  
Lisa Näslund, Mid Sweden University, Sweden

GHG reporting and accounting rules for wood products including biomass for energy  
Kim Pingoud, VTT, Finland

The EU ETS in the Finnish context: Does the ETS support local bioenergy implementation?  
Pirkko Vesterinen, VTT, Finland

Overview on CDM bioenergy projects  
Joergen Fenhann, Risoe National Laboratory, Denmark

Implementing the Clean Development Mechanism - A project developer's perspective  
Bruce Talbot, Danish Centre for Forest, Landscape and Planning, Hoersholm, Denmark

Bioenergy and Climate Change Activities in Canada: Carbon Offset Trading, CDM/JI and Government Incentives,  
Terry Hatton, National Resources Canada, Canada

Future developments of CDM / JI - policy, programmes, approaches  
Axel Michaelowa, Hamburg Institute of International Economics, Germany

CO<sub>2</sub> trade vs. biomass trade from the view of the local sustainable development of the exporting / host country  
Bernhard Schlamadinger, Joanneum Research, Austria

Norwegian experiences in marketing and trading of renewable energy and green certificates  
John Ravlo, Marketing Directo Enviro Energi, Norway

From traditionally forestry to biofuel and bioenergy  
Pål Bæverfjord, Managing Director of Industriflis Nord, Norway

Dry bulk shipping, an essential in developing efficient biofuel supply chains  
Emil Brandrud, Platou Shipping, Norway

*Presentations given at the joint workshop in October 2006, Lappeenranta, Finland on developments in the forestry sector and Russia by the Lappeenranta University of Technology, IEA Bioenergy Task 40, EUBIONET II, Finnish Funding Agency for Technology and Innovation (Tekes) and ClimBus Technology Programme:*

Emerging Bioenergy Markets and Russia – Future Challenges and Opportunities for Forest Industry  
Director Stefan Sundman (Finnish Forest Industries Federation)

Sustainable International Bioenergy Trade – Market Overview and Future Challenges  
Dr. Andre Faaij (Associate Professor, Copernicus Institute, Utrecht University)

Trade of Solid Biofuels in Europe  
Senior Research Scientist Eija Alakangas (VTT)

European Trends in Bioenergy Policies - Results of Implementing European Legislation in EU25 [Ir.  
Kees Kwant (SenterNovem)

Possibilities for Biomass Industry in Brazil  
Professor Arnaldo Walter (State University of Campinas)

Future Visions of International Biomass Markets  
Researcher Jussi Heinimö (Lappeenranta University of Technology)

Value Creation of Global Forest Products Companies – Potential for Emerging Regions  
Professor Jaana Sandström (Lappeenranta University of Technology)

Latest Development of Sustainability Criteria and Certification of Biomass  
Dr. Martin Junginger (Copernicus institute, Utrecht University)

Bioenergy Technologies Integrated to Forest Industry Platform – New Opportunities for Forest Industry  
Chief Research Scientist Paterson McKeough (VTT)

Challenges of the Developing Bioenergy Markets in Russia  
Dr. Olga Rakitova (Wood Industries Confederation of North-West Russia, WIC NWR)

The Effect of Emission Trade on Biofuels Markets in the Baltic Sea Region  
Research Scientist Pirkko Vesterinen (VTT)

Bioenergy Trade, Sources and Markets Seen from a Company Perspective  
Senior Advisor Bo Hektor (TallOil AB)

Reduction of Greenhouse Gas Emissions in North-West Russia – Business Opportunities  
Professor Lassi Linnanen (Lappeenranta University of Technology)

Possibilities for Energy Wood Procurement and Use in the Leningrad Region  
Professor Timo Karjalainen (Finnish Forest Research Institute METLA)

Investments in Bioenergy in Russia – Experience of a Power and Heating Plant Supplier  
General Manager, R&D Juha Huotari (Wärtsilä Biopower Oy)

Promoting Investments in Forest Industry Sector in Russia  
Project Manager Seppo Pulliainen (International Finance Corporation)

## APPENDIX 5: TASK 40 — Sustainable International Bioenergy Trade: Securing Supply and Demand

**Operating Agent:** Kees Kwant, SenterNovem, the Netherlands  
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 For contacts see Appendix 6.

The Task is organised with ‘National Teams’ in the participating countries. The contact person (National Team Leader) in each country is listed below:

<b>Country</b>	<b>National Team Leader</b>	<b>Institution</b>
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Canada	Douglas Bradley	Climate Change Solutions
Finland	Tapio Ranta Jussi Heinimö	Lappeenranta Technical University Lappeenranta Technical University
Germany	Uwe Fritsche	Oeko-Institut
Netherlands	Andre Faaij Peter-Paul Schouwenberg Rob Remmers Martin Junginger	Copernicus Institute-Utrecht University Essent Energy Essent Energy Copernicus Institute-Utrecht University
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