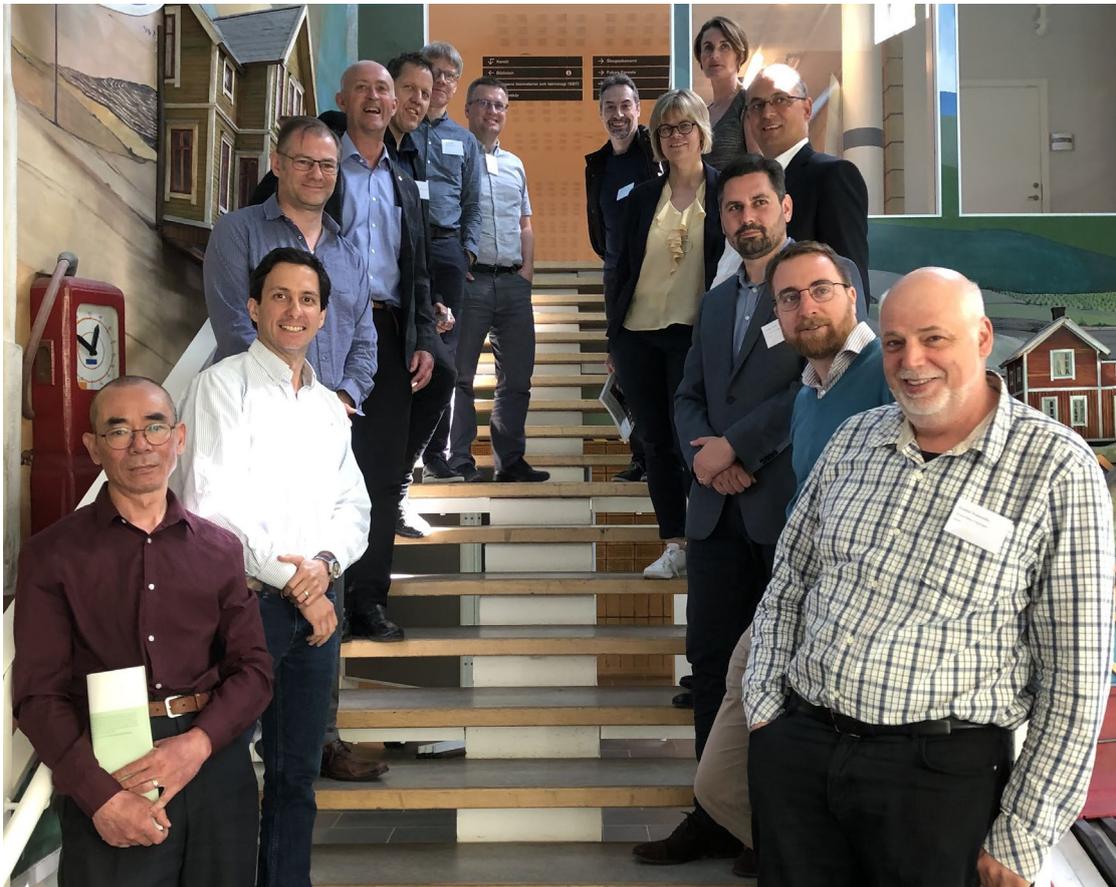

**5th Meeting of the
UNECE/FAO Team of Specialists on Wood Energy
3-4 June 2019
Swedish University of Agricultural Sciences Umeå, SWEDEN
Meeting report**



FIELD TRIP:

The formal meeting of the ToS on Wood Energy was preceded by a half-day field trip, which provided an excellent framework for informal, technical discussions on how wood is mobilized in Sweden and how wood energy is integrated in the urban energy mix – both for heat and electricity.

The trip included a visit to a harvesting site of a member of the Northern Swedish Family Forest Association (NORRA) with a final harvest by harvester and forwarder. NORRA is managing forests for about 16,000 forest owners and owns two sawmills (www.norra.se). Mr. Linus Elldgren from NORRA provided a short introductory presentation and led the Team to the visit of the harvesting operation.

A few observations from the visit of the logging operations were:

- Currently no use is made of harvesting residues (branches, tree tops, stumps, etc.) – this is mainly due to prices of household and industrial waste as well as other biomass assortments such as recycled wood;
- No other local down-stream wood processing industry that could use all the sawmill residues – hence wood energy is the only economically viable local use;
- NORRA exemplifies a horizontal ownership model where landowners cooperatively engage in land management, timber supply and processing to add value. Sawtimber and pulpwood are two of the main revenue-generating materials for the facilities with wood for energy being a supplementary material.

In a second part of the field trip the Team visited the main district heating plant for the city of Umeå, called Dåva. Umeå Energi provides heating for 80% of the total indoor area in the city. Mr. Erik Torshage from Umeå Energi provided a short presentation and led the discussion with the team of experts followed by a guided tour of the facilities. The Dåva plant consists of two Combined Heat and Power plants. The first one is dedicated to mainly local municipal waste incineration – it is one of the most energy efficient and environmentally sound waste incineration plants in the world. The second CHP is a biomass-fed plant that is commonly used during the main heating season in autumn, winter and spring (www.umeaenergi.se). Biomass (mainly woody residues) correspond to 54% of the feedstock (in energy terms) used in the district heating operations.

A few observations from the visit of the CHP plants of Umeå Energi were:

- The Dåva 2 plant was designed to use wet biofuel (40% of the biomass feedstock is comprised of bark) and utilizes an average of 240 thousand green tons per year.
- The biomass-fed Dåva 2 plant operates at 95% conversion efficiency with annual production of 400-450 GWh heat and 120-140 GWh of electricity.
- In addition to its high efficiency in conversion the plant maintains very strict emission levels.

OFFICIAL OPENING

The official part of the meeting started at 14:00 of 03 June 2019 and the meeting was opened by Mr. Dinko VUSIC, as leader of the Team of Specialists on Wood Energy (ToS). The Secretariat represented by Mr. Florian Steierer took notes of the main points discussed and decisions made. The list of participants is attached in Annex III. 12 experts from 8 countries took part in the meeting. Represented countries were Austria, Croatia, Estonia, France, Germany, Netherlands, Serbia and Sweden.

At the beginning of the formal meeting, Ms. Camilla Widmark, Department of Forest Economics from the Swedish University of Agricultural Sciences (SLU) and head of the EFI Forest Bioeconomy Network (<https://efi.int/research-networks/bioeconomy>) welcomed the team on behalf of SLU, the host institution of the meeting. SLU provided in-kind support to the event, such as transportation for the field trip, meeting facilities, online meeting streaming as well as a dinner on the evening of the first day.

Mr. VUSIC, before opening the meeting officially, tabled the proposed agenda of the meeting for discussion. The team agreed with the agenda and adopted it. The final version of the agenda of the meeting is included in Annex I of the report.

JEFFREY SKEER

The team observed a moment of silence to remember Jeffrey Skeer who recently passed away. Jeffrey was a member of the Team, representing the International Renewable Energy Agency.

TRANSITION OF LEADERSHIP AND ELECTION OF NEW CO-LEADERS

The secretariat provided a short introduction for the Terms of Reference of the Teams of Specialists and the main points regarding the election of team leaders as provided by the “*Guidelines for ECE/FAO Teams of Specialists*”. The guidelines can be found in the Warsaw Integrated Programme of Work ([ECE/TIM/2017/2-FO:EFC/2017/2](https://www.unece.org/DocumentData/ECE/TIM/2017/2-FO:EFC/2017/2)).

The team unanimously elected Mr. Francisco Aguilar (Sweden) as its new team leader and confirmed Mr. Dinko Vusic (Croatia) as co-leader. Matthias Dees (Germany), former deputy leader of the team was not able to attend the meeting but accepted to continue serving as co-leader for the next term on 26 June 2019. The secretariat, on behalf of the ToS invited Karen Abt (United States) to become a member of the core group and serve as a co-leader, which she accepted on 19 June 2019.

UPDATES ON LATEST JOINT UNECE/FAO WORKING PARTY AND WORK DONE BY THE SECRETARIAT

The secretariat provided an overview of its work on wood energy since the last Team meeting. The presentation can be found here: <https://www.unece.org/fileadmin/DAM/timber/meetings/2019/20190603/5th-tos-we-3-secretariat-intro-and-overview.pdf>

WOOD ENERGY IN THE UNECE REGION – UPDATE ON OUTREACH ACTIVITIES;

The secretariat thanked the ToS again for the compilation of the study on “*Wood Energy in the ECE Region: Data, trends and outlook in Europe, the Commonwealth of Independent States and North America*”. The study was published in May 2018 and was launched during a roundtable discussion organized by the Convention on Long Range Air Pollution (Air Convention). The secretariat highlighted the important role that Francisco Aguilar has played in coordinating and compiling the information and thanked him for his dedicated and successful work. The study is publicly available on the website of the secretariat:

English: <https://www.unece.org/fileadmin/DAM/timber/publications/SP-42-Interactive.pdf>
French: <https://www.unece.org/index.php?id=48593&L=1>
Russian: <https://www.unece.org/index.php?id=48593&L=2>

In addition to the successful publication of the study, the secretariat also highlighted the significant success of the short educational video “*More heat with less wood*”. The video was released on 23 March 2016 and has since attracted more than 86,000 views. It will soon be the most viewed video on the UNECE YouTube channel (<https://www.youtube.com/watch?v=9z-EGVeKTrc>).

UPDATE ON CONVERSION FACTORS STUDY

The secretariat briefly presented the status of the ongoing FAO/UNECE/ITTO study on forest products conversion factors.

The team reminded the secretariat about the discussions during the last ToS meeting (see meeting report from Durham: https://www.unece.org/fileadmin/DAM/timber/meetings/20170517/meeting-report-4th-ToS-on-wood-energy-final_draft.pdf).

Nominal density does not influence the conversion factor for higher/lower heating value because the heating value is expressed in MJ/kg or GJ/t; but the share of species as well as the average nominal density are important when re-calculating the energy potential of wood reported in solid volume (to recalculate into mass). The team acknowledged that the secretariat was not in a position to amend the study on conversion factors since it is well advanced. The team therefore requested the secretariat to make sure adequate wording is found in order to highlight the issue of higher heating value vs. lower heating value in the upcoming publication (e.g. in the notes, footnotes, as asterisks, etc.).

The team suggested that the UNECE should provide conversion factors for lower heating value in addition to the higher heating value added before the next round of the JWEE to facilitate harmonization of JWEE data and energy statistics, which generally measure energy in lower heating value. Conversion factors for lower heating value would take into consideration the nationally typical average water content, the share of coniferous and non-coniferous wood as well as the typical nominal density of wood in member states.

The team asked the secretariat how many countries modified the conversion factor in the JWEE. The secretariat was not able to provide this feedback during the meeting and will deliver this information after the meeting.

The secretariat took note of the comments and questions and will ensure that these are taken into consideration before publishing the study and before launching the next round of the JWEE.

IMPROVING SECRETARIAT'S SUPPORT FOR COMMUNICATION WITHIN THE TEAM AND TO OTHER ORGANIZATIONS

The secretariat provided a short introduction on the topic that the ToS discussed as follows:

The team recognized that numerous key persons in international organizations have changed recently. The team asked the secretariat to reach out to IRENA, IEA, REN21, Eurostat, UNSD and other relevant organizations to enhance the visibility of the secretariat's work and the work done by the ToS. The team proposed to send e-mails out to (re)-introduce the work and to actively seek to have a seat at podiums e.g. IEA biomass webinars or others. The team advised the secretariat to aim attend meetings as a panelist or speaker since these will be much more visible than participating as simple participant.

In the ensuing discussion, the team highlighted that wood energy statistics and wood energy policy making often is undertaken by different ministries and how difficult it is at national level to coordinate with and agree on data on wood energy. Here is a brief summary from the discussion:

- FR: Various ministries involved and it's difficult to find the right person in order to coordinate;
- AT: One ministry (Federal Ministry for Sustainability and Tourism formerly the Federal Ministry of Agriculture, Forestry, Environment and Water Management);
- SE: Three ministries are involved. Ministry of Enterprise and innovation, Ministry for Infrastructure and Ministry of Environment but they work closely together (the Swedish Energy Agency did the JWEE for the Swedish Forestry Agency);
- DE: At least three ministries are involved – Federal Ministry of Food and Agriculture, Federal Ministry of Environment, Nature Conservation and Nuclear Safety, Federal Ministry for Economic Affairs and Energy. Attempts are made to harmonize energy and forest products statistics. Only forest products statistics can provide information on the sources of wood energy. National correspondents for IEA and Eurostat (joint renewables questionnaire) are very interested in this information and the forest sector is trying to provide them with solid information in Germany;
- HR: It is not main point who is responsible. It is important to have matching data between energy and forestry sector. Based on the data reported in the Budapest workshop it is evident that the

gap between the data reported by the forestry and by the energy sector does not exist primarily in the countries where one person is the correspondent for both sectors. The solution that was suggested would be to not to have only one correspondent (as this does not guarantee that the data will be correct), but rather that the correspondents from the forestry sector and the energy sector work in close cooperation. There is also different interest in data (sources vs. consumption) that need to be balanced, so that both policy sectors have correlating information.

- RR: In Serbia the solution to develop a consistent set of data across ministries was the implementation of a joint project such as WISDOM – this really helped to better understand the important role of wood from outside forests;
- NL: National Renewable Energy Action Plan reporting is very important in the Netherlands (reporting on energy efficiency and renewable energy). The information on where the wood is expected to come from and who will be using it is important. The national reporting experts are key, but also the experts who do the analytical work for the European Commission is important.

Conclusions:

- Secretariat to reach out to relevant organizations and invite them to nominate an expert as focal point on wood energy (who would be member of the ToS and would receive all information about the ToS' work).
- Highlight better the possible role wood from sources outside forests may play;
- NREAP are a good place to provide JWEE information – team members should be pro-active in reaching out to the NREP experts to provide information in source and user and the secretariat should invite a NREAP expert from the European Commission.

Annex II contains the outcome of the discussion in form of “Action Items”.

IMPROVING DATA QUALITY AND AVAILABILITY OF WOOD ENERGY PRODUCTION, TRADE AND CONSUMPTION

Mr. Sebastian Glasenapp provided a short update on the current status of the Joint Wood Energy Enquiry 2017. Ms. Noemi Cazzaniga presented how relevant the information from the JWEE is for the analytical work undertaken by the Joint Research Centre of the European Commission. In her presentation, Ms. Cazzaniga highlighted that the JRC did use the JWEE data for developing wood flow diagrams and wood resource balances. The JRC checked the quality of the JWEE data against data on wood energy in the JQ and the National Renewable Energy Action Plans Progress Reports and concluded that the JWEE appeared to be of better quality than NREAP data regarding the amount of woody biomass used for energy in 16 of member countries of the EU28. The main conclusion of the wood balance developed by JRC was that the European wood balance was not balanced and that the current (2015) deficit amounts to 117 million m³ in the EU28. Much of this imbalance is assumed to be caused by informal removal of wood fuel that is not accounted for by official statistics. The JRC finished the presentation by concluding that it would be desirable to improve the wood fuel data in the JFSQ based on JWEE. It would further be highly desirable if data in the NREAP Progress Reports and data in forestry databases become more streamlined (e.g. by working closer together with NREAP experts at any level) since NREAP and JWEE data show strong disagreement, which cannot always be explained by conversion factors. JRC also suggested to have a good set of country specific conversion factors for wood energy.

The TOS discussed the issue of unrecorded removals in more detail. Austria confirmed, that one of the main conclusions from the national wood flow assessment was that a significant amount of fuelwood is harvested from woody plants outside the forests. Residues from wine growing and management represent a significant source of woody biomass in relevant regions in Austria and are not at all accounted for. Current practice and trading traditions lead to consistent underestimation of wood volumes brought to the market (rounding down of diameter and length). Post-consumer wood volumes are still being significantly underestimated.

The team discussed with JRC how to further improve data coverage in the future and how to ensure better consistency of data in different databases regarding wood energy production and consumption (JWEE, NREAP, JFSQ, other). The JRC indicated that they do not have direct contacts with the energy

community and the national experts involved in NREAP reporting. However, they would try to reach out to the Commission to get their contacts for inviting them to the meeting. The JRC invited the ToS to contact them again in the future, closer to the planned capacity building event in order to better coordinate and collaborate.

SHORT UPDATE ON WOOD ENERGY ACTIVITIES BY TOS MEMBERS IN THE UNECE REGION

Holger Weimar, Thünen Institute Germany, gave two short presentations. The first one on “*Wood Resource Monitoring: Supply and use of wood resources in Germany*” looked back on how the wood resource monitoring developed. The presentations highlighted that the ad hoc approach from the past with empirical surveys will be continued on a regular basis in the future. Mr. Weimar referred to the presentation and discussion with the JRC. He emphasized that to improve the data at national level one person or institution committed to constantly work on that is needed to ensure data accuracy and compatibility between different sources. 18% of gap shown in the JRC presentation for Germany referred to official removals from the statistical office which is not fully consistent with the empirical data collection and verification approach of the Wood Resource Balance and wood raw material monitoring approach. The presentation showed results from recent survey regards the use of wood in the energy sector. Mr. Weimar also gave an outlook on upcoming surveys which will be conducted in the current cycle of the project. New data on wood energy for Germany could be available spring 2020 for households and in spring/summer 2021 for non-residential plants ([link to the presentation](#), [link to the project website](#)). In the short discussion following the presentation, Estonia confirmed that they also apply a wood resource balance approach before replying to any international surveys, questionnaires and enquiries.

The second presentation on “*Wood biomass for energy in the sector business, trade and services (BTS)*” outlined the approach taken by Germany to determine how much wood energy was consumed in the business, trade and service (BTS) sector between 2003 and 2017. The problematic issue for this sector in Germany is that there are no statistical data available. However, the wood energy use of the sector sums up to a reasonable amount and is therefore relevant for international reporting and statistics on renewable energy. For estimation an offcut approach is used. The presented method relies on the assumption that German wood resource monitoring identifies the entire national wood energy consumption in Germany. Energy statistics gather information on total wood energy use except wood energy consumption in BTS sector. Exclusion of BTS sector is due to cut-off thresholds in official reporting. Thus, the difference between total wood energy consumption (from national wood resource monitoring) and wood energy consumption recorded by official enquiries (from energy statistics) should provide information on wood energy consumption in BTS sector. This project denotes an example for increasing collaboration of forestry and energy sectors in Germany ([link to the presentation](#), [link to the website](#)).

Mr. Richard SIKKEMA briefly presented the FORCLIMIT project.

The FORCLIMIT project ([link to website](#)) aims for an analysis of mitigation and adaptation incentives in the European forest sector, and to identify the predefined impact of Climate smart forest (CSF) strategies on age structure, carbon stock and sustainable harvest of wood in the forests of Romania, Sweden and the Netherlands. As an intermediate step, forest owners response curves will be compiled to test CSF effects in terms of forest owner numbers (in %) and the size of their forest land (ha). The specific approach is adapted from Aguilar et al (2014) for compiling forest owner’s willingness to harvest. In a similar way, the collected responses of a survey about policy measures (subsidies) and economic measures (carbon tax advantages) are used to predict whether European forests are going to be managed in a more or less active way ([link to presentation](#)). The curves are used for running the EFISCEN Space model, i.e. to test the predefined impacts in 2020-2050. One of the discussion points was whether harvested wood and bioenergy are complementary (Aguilar et al 2014) or counteracting products (Blennow et al 2014). So far both products are split into two complementary scenarios in FORCLIMIT: biomass package and quality wood package, next to other CSF packages for nature conservation, carbon stockage and climate change.

Mr. Kasimir Nemestothy presented a short overview on wood energy in Austria ([link to presentation](#)). The presentation stressed the importance of solid biomass in the share of total energy consumption of energy from renewable resources in Austria and other European countries. The presentation further underlined that most of the growth of renewable energy consumed from renewable sources since the year 2000 was

achieved by using more solid biomass. In concluding, Mr. Nemestothy emphasized that without bioenergy the RES-share stagnates at 10-13% (Hydro, Wind, PV, Solar thermal & Heat pump) and that solid biomass is key for achieving EU RES targets (2020 & 2030).

Mr. Sebastian Glasenapp provided an overview of recent research results published by Thuenen Institute, Swedish University of Agricultural Sciences, University of Hamburg and INFRO. Members of these organizations econometrically analyzed effects on wood energy consumption of an average German household. Main findings suggest that central wood heaters facilitate greater wood energy consumption, new buildings consume less wood energy and wood energy is strongly correlated with temperature and competing energy prices. In addition, better wood accessibility seems to increase residential wood energy consumption. It was surprising that income was positively associated with wood energy use, suggesting that wood energy has luxury good characteristics in Germany ([link to presentation](#), [link to publication](#)).

Mr. Jonas Danielsson informed the ToS about progress made in producing torrefied wood pellets by a local producer Bioendev ([link to presentation](#), [link to company website](#)). Bioendev is prepping to transition from an experimental to a full commercial scale through production and licensing of its technologies.

WOOD ENERGY AND AIR QUALITY:

The secretariat provided a short introduction to the topic of wood energy and air quality. The topic of air quality, indoor and outdoor, is a big focus of the World Health Organization (WHO). This topic receives at least as much attention and support as the WHO's effort to ban smoking. Wood fuels, burnt in open fireplaces of cheap and inefficient stoves is in many parts of the ECE region one of the biggest sources of toxic emissions, deteriorating indoor and outdoor air quality. The secretariat highlighted the successful cooperation in a small project in 2015 with WHO and colleagues from the ECE Air Convention. The outcome of this work was a workshop as well as a short educational video on sustainable, efficient and clean wood energy. The video with the title "More heat with less wood" is now the most viewed video on the ECE website (<https://www.youtube.com/watch?v=9z-EGVeKTrc>). The original video was English voiceover and Russian subtitles and was translated into several languages, such as Albanian, Georgian and Turkish.

- The ToS confirmed that issue of air pollution caused by wood energy for cooking and heating in households is very important.
- The ToS recommended that the secretariat works more closely with the UNECE Committee on Urban Development, Housing and Land Management in order to find out about (i) whether this group already has information on types of heating and cooking devices used by households in ECE member states and (ii) propose closer cooperation between the two sub-programs. Such a cooperation could focus on an inventory of heating systems (single family v.s. multifamily).
- The discussion about how polluting and harmful solid biomass is important, but in many cases not based on factual information. Lobby groups from competing fuels use these arguments to reduce public and policy support for solid biofuels. Sustainable, efficient and clean wood energy is a complex, emotional matter, which can easily be undermined by simplified negative information. In order to successfully gain support among public, engaging professional PR experts may help better communicate the positive aspects of wood energy. In Austria pellet boilers are often the main heating equipment of the homes and the country did enact tough regulations coupled with subsidy schemes for installing new equipment meeting the regulations. Neighboring countries enacted similarly strict emission standards. A possible spill-over effect of discussion on wood fuel and air pollution may backfire on technology leader due to increasing uncertainty among consumers about the future use of wood for energy – which could lead to less demand for pellet boilers.
- France confirmed that air quality and wood fuel is an important issue. Each year in the peak of the pollution period in winter media highlight the issue with pictures with air pollution in big cities and valleys (Pyrenees and Alps). Regional air quality agencies (website: <https://atmo-france.org>) report on the air quality in France. There are 800,000 households in Ile de France (wider Paris) – which can use wood for heating. There are regularly warnings to be careful with wood energy and

to use energy efficient stoves.

- Air quality is a big issue in the Netherlands with one of the densest populations. Biomass-heated combined heat and power plants face tremendous opposition from public due to misperception and misinformation. Scientific experts were quoted in articles in national newspapers explaining to the public that new CHP plants have very low fine particulate and nitrogen oxide emissions. In one case, a CHP plant for 10,000 households was calculated to have about the same emissions as ten bonfires. Here are the links to two examples:
 - Use of wood for district heating in Diemen (Vattenfall NUON) versus emissions of particle matter (PM10). <https://www.volkskrant.nl/wetenschap/een-biomassacentrale-verwarmt-duizenden-huizen-met-de-fijnstof-uitstoot-van-slechts-enkele-open-haarden-klopt-dit-wel~b45112ff/>
 - Use of wood chips for district heating in Utrecht (ENECO) versus air quality. See <https://www.trouw.nl/groen/reusachtige-houtkachels-leveren-duurzame-energie-maar-zijn-ook-een-bron-van-zorgen~aad35e1b/>
- Transport and households are the main polluter in Serbia during the heating season. A project by the German development agency (GIZ) aimed at improving wood energy efficiency by education. Testing wood fuel consumption before and after the educational campaign – results are available on the website ([link](#)).
- The Swedish Energy Agency also engages in educational outreach about energy efficiency and wood fuels to reduce associated air pollution (<http://www.naturvardsverket.se/vedeldning>). Particulate matters is an important topic in Sweden. Therefore, Sweden provides incentives and support schemes for heat pumps rather than fuel stove. Everything can be solved technically, and the question is more about the economic viability of the measures taken.

PRESENTATIONS FROM SLU FACULTY ABOUT RESEARCH TAKING PLACE ON CAMPUS AND WORK UNDERTAKEN WITH PARTNERS

Mr. Gustaf Egnell presented an overview on how the energy supply in the host country, Sweden, evolved since 1970 ([link to presentation](#)). The presentation in particular outlined the role of wood energy and the various sources and the role of the wood processing industry as energy producer. The use of wood for energy in Sweden, one of the leading countries in modern and efficient use of wood energy increased while the biodiversity, share of broadleaved trees and amount of deadwood remaining in forests all increased. A study conducted by a group of experts, including the speaker, demonstrates that an increase in harvesting of logging residues by 2.5 times might be sustainable. However, the study also identifies a number of risks and the sustainability depends on a number of requirements that should be fulfilled, such as ash-recycling ([link to the publication](#)).

After the presentation the team discussed the following questions:

- The accounting rules for energy production still favour electricity production from nuclear power.
- Carbon and biodiversity are big questions in the energy sector. Integration of new production systems in the landscape are becoming more important. Semi-open landscapes – e.g. removing naturally regenerated fields by using fast-growing broadleaved trees, is being considered to increase production of woody biomass.

Ms. Karin Öhman presented the Heureka system for evaluating the effect on biodiversity and other ecosystem services from harvesting bioenergy in Swedish forests ([link to presentation](#)). The Heureka system is a decision support system for forest planning and analysis. The system allows for long term projections of forest conditions and consequences for ecosystem services on the basis that the forest is managed in different ways.

- Austria asked whether the model could also take into account the increasing impact of abiotic

disturbances (Austria had to shift to emergency mode due to tremendous amount of snow never seen before in some parts in the country and southern part of the country heavy storm impact). In her response, Ms. Öhman explained that forest disturbances cannot be easily integrated into the model.

Ms. Sylvia Larsson presented SLU's pilot scale research to feed the growing bioeconomy sectors ([link to presentation](#)). In her presentation Ms. Larsson showcased how difficult it is to make the step from research and applied science to application of innovative products and processes in the industry. The Biomass Technology Centre, Swedish University of Agricultural Sciences, Umeå, Sweden conducted research on mechanical and thermal biorefining for the past 20 years.

- In the discussion following the presentation the team asked whether CO₂ generated by the various production processes could be used for Carbon Capture and Storage (CCS). The fuel used for the process contains a significant amount of non-fossil carbon. This Bio-energy with carbon capture and storage (BECS) has the potential to make future energy generation become carbon negative. The technology however is very expensive and energy demanding at current technological status.

Mr. Peichen Gong presented ([link](#)) the Baltic ForBio project. The regional project is financed by the European Union and aims at increased production of renewable energy, improved institutional capacity of public authorities and relevant organizations for promoting wood harvest and use of logging residues. The main outputs expected are:

- A GIS-platform and database
 - Innovative business models
 - Decision support tools
 - Handbooks and guidelines for harvest of logging residues and small trees
 - Demonstration sites for biomass recovery in pre-commercial thinning
 - Training programs
- In the discussion following the presentation, the ToS wondered whether there are already any result of the modelling and calculations on the additional amount removed of wood that could be potentially removed from the forest after the project. Mr. Gong said final information is not available and that it will take time to analyse this.
 - The team also discussed that increased mobilization is often hindered by legislative challenges due to road administration. The ToS wondered whether there is going to be a GIS based planning tool online for improving mobilizations. Often roads are not maintained (e.g. in France maintenance is duty of the commune) and this hinders mobilization of wood.
 - Austria again highlighted that the forest sector in the country is in emergency mode due to current bark beetle infestations. How to mobilize was the question before and under the current situation. Austria did not find a satisfactory solution on how to mobilize infested trees out of the forests. In some case trees are not taken out but chipped in the forest.

DISCUSSION ON FUTURE OUTPUTS OF THE TOS AND BRAINSTORMING ABOUT PRIORITY POLICY BRIEFS FOR ADDED VISIBILITY TO OUR GROUP'S EXPERTISE

After all these inputs and discussions outlined above, the ToS discussed future outputs. The main outcomes of the discussion were:

- Compile short policy briefs (1-2 pages) that provide expert information on current policy topics related to wood energy. Some of the topics suggested were wood energy and...
 - Air Quality
 - Sustainable Development Goals (SDG's)
 - Efficiency along the energy efficiency pathway
 - Carbon neutrality of woody biomass (Paris, LULUCF)
 - Sustainability criteria @ EU – what do they mean and how are they put into place.
 - Energy security/Bioeconomy
 - Energy balances (%)
 - European Union Renewable Energy Directive II
 - Rural development
- The team discussed the possibility of preparing an inventory of wood heaters in UNECE member states;
- The team further discussed the possibility of organizing capacity building events related to wood energy. The team requested the secretariat to follow-up with the German Ministry and the Thünen Institute about the possibility of organizing the JWEE capacity building event in Germany. In case the two to three days capacity building will be possible the team considered holding the next full size ToS meeting back to back with the capacity building event;
- The ToS asked the secretariat to improve contact with other agencies (e.g. IEA) inclusive of their national correspondents (e.g., NREAP correspondents) and to inform them about the work undertaken and to regularly invite these agencies to relevant meetings;
- The ToS advised the secretariat to consider improving the set of wood energy related conversion factors (namely lower heating value and average water content);
- The ToS discussed significant wood energy meetings in Europe and how to attend these meetings. In general, the ToS strongly encouraged the secretariat to only attend the meetings with high visibility and where also active role of the secretariat (presentation) can be guaranteed. Some of the meetings are:
 - European Pellet Conference during the World Sustainable Energy Days in Wels, Austria (4-5 March 2020; [link to the meeting website](#));
 - Pellets day during the 6th Central European Biomass Conference (CEBC 2020) 22 January 2020 in Graz, Austria ([link to the website](#));
 - Bioenergy Europe – European Biomass Conference (date and place tba).
- Provide support to the secretariat regarding its work on the JWEE. This could comprise:
 - Enhance visibility
 - Streamline it with the IEA/IRENA questionnaire
 - Promote information about the JWEE and its uses in order to increase the number of replies

The team leader closed the meeting at 15:00 on 04 June 2019.

ANNEX I:

Meeting agenda:

Monday 03 June

- 08:00 Field trip - **“Wood energy management and utilization in Northern Sweden”**
- 12:45 Return to Swedish University of Agricultural Sciences.
- 14:00 Official opening of the meeting
Welcome and special address by Ms. Camilla Widmark, Department of Forest Economics, Swedish University of Agricultural Sciences.
- 14:30 Adoption of the agenda
Moment of silence for remembering Jeffrey Skeer
- 14:40 Update on team activities and the secretariat work. Discussions led by team leader and secretariat:
- Transition of the leadership and election of a new co-leader(s);
 - Updates on latest joint UNECE/FAO Working Party and work done by the secretariat;
 - Wood Energy in the UNECE region – update on outreach activities;
 - Update on conversion factors study;
 - Discussion.
- 15:30 Improving Secretariat’s support for communication within the team and to other organizations
- 15:45 Improving data quality and availability of wood energy production, trade and consumption
- Joint Wood Energy Enquiry 2017 (update by Secretariat);
 - Joint Research Centre of the EU – Synergies with JWEE data;
 - Brainstorm to discuss opportunities to add value to JWEE data (e.g. National Renewable Energy Action Plans and reporting, SDG reporting, Energy Communities, etc.).
- 16:20 Short update on Wood Energy activities by ToS members in the UNECE region;
- [German wood resource monitoring \(link\)](#) and use of [wood biomass in the sector trade, commerce and services \(TCS\) \(link\)](#) not covered by official statistics (two short presentations) (Mr. Holger WEIMAR).
 - “Mobilizing and Monitoring Climate Positive Efforts in Forests and Forestry (ERAGAS NET project Forclimit)” [Forclimit \(link\)](#)(Mr. Richard SIKKEMA)
 - Others
- 17:00 Adjourn meeting

Tuesday 04 June

- 08.30 Short update on Wood Energy activities by ToS members in the UNECE region (Continued); [Bioendev \(link\)](#) (Mr. Jonas Danielsson, site manager at Bioendev).
- 09:30 Wood energy and air quality:
Short introduction by Secretariat
Efficiency of devices using firewood for heating / cooking
- 10:00 Presentations from SLU faculty about research taking place on campus and work undertaken with partners
- Gustaf Egnell: Wood fuel in Sweden and Environmental Sustainability
 - Karin Öhman: Using the Heureka system for evaluating the effect on biodiversity and other ecosystem services from harvesting bioenergy in Swedish forests
 - Sylvia Larsson: Pilot scale research to feed the growing bioeconomy sectors
 - Peichen Gong: Increasing the production of forest bioenergy in the Baltic Sea Region ([ForBio project \(link\)](#)).
- 12:00 Lunch break;
- 13:00 Discussion on future outputs of the ToS and brainstorming about priority policy briefs for added visibility to our group's expertise;
- 14:45 Reporting from the discussion, wrapping-up and conclusions;
- 15:00 End of the meeting.

ANNEX II:

Action Items (for follow-up after the meeting):

- Upload all presentations of the meeting to the meeting website;
- Contact Mr. Matthias Dees (Germany) to verify whether he wants to remain deputy leader;
- Contact Ms. Karen Abt (USA) and Mr. Warren Mabee (Canada) regarding their availability to join the core group of the ToS;
- The secretariat, in close communication with the local organizer, will send out thank you letters to the hosting organization, organizations who provided speakers and guides for the field trip;
- Compile the meeting report, share the first draft with the Team Leader and deputy leader and upon agreement on the draft circulate it to the participants to verify the content and provide relevant weblinks;
- Contact relevant organizations (e.g. IEA, IRENA, JRC, NREAP coordinators, etc.) and invite them to become member of the ToS;
- Communicate to FAO and UNECE about the issue of higher heating value in the study on conversion factors and propose to include a footnote that better information on lower heating value and typical water content of wood fuels will be compiled by the ToS soon;
- Update list of the proposed 2020 activities by the secretariat with the outcomes of the discussion during the meeting;
- Send e-mails out to (re)-introduce the work and to actively seek to have a seat at podiums e.g. IEA biomass webinars or others;
- The ToS asked the secretariat to improve contact with other agencies (e.g. IEA) and to inform them about the work undertaken and to regularly invite these agencies to relevant meetings;
- Check opportunities in preparing an inventory of wood heaters in UNECE member states and reach out to potential partners (e.g., DG Energy).

ANNEX III:

List of meeting participants

Title	First name	Last name	Organization
Dr.	Francisco	AGUILAR	Swedish University of Agricultural Sciences (SLU)
Mr.	Andrea	CAMIA*	European Commission - Joint Research Centre
Mrs.	Noemi	CAZZANIGA*	European Commission - Joint Research Centre
Mr.	Philippe	FRANCAIS-DEMAY	French Agriculture Ministry, SSP
Mr.	Sebastian	GLASENAPP	German Federal Research Institute for Rural Areas, Forestry and Fisheries
Dr.	Branko	GLAVONJIC	Belgrade State University
Dr.	Ragnar	JONSSON*	European Commission - Joint Research Centre
Ms.	Milka	MUMOVIC*	Energy Community Secretariat
Mr.	Kasimir	NEMESTOTHY	Austrian Chamber of Agriculture
Mr.	Madis	RAUDSAAR	Estonian Environment Agency
Dr.	Richard	SIKKEMA	Wageningen University and Research Centre
Mr.	Florian	STEIERER	UNECE/FAO Forestry and Timber Section
Dr.	Johan	VINTERBÄCK	Swedish Energy Agency
Dr.	Dinko	VUSIĆ	University of Zagreb, Faculty of Forestry
Dr.	Holger	WEIMAR	German Federal Research Institute for Rural Areas, Forestry and Fisheries
Dr.	Camilla	WIDMARK	Swedish University of Agricultural Sciences

* these meeting participants participated partially on the first day via video conference link.