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**Joint FAO/UNECE Working Party
on Forest Statistics, Economics and Management**

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Agenda item 4 (a) of the provisional agenda

Guidance on Work Area 1: Markets and Statistics

**AGENDA ITEM 4 (a) – UNECE/FAO FORESTRY AND TIMBER SECTION
ACTIVITIES ON WOOD ENERGY**

Note by the secretariat

Summary

This document aims to inform participants to the thirty-fifth session of the Joint FAO/UNECE Working Party on Forest Statistics, Economics and Management about work achieved in the field of wood energy since the last session in March 2012, notably through the fourth round of the Joint Wood Energy Enquiry (JWEE).

I. Joint Wood Energy Enquiry 2011

A. Responses

1. The JWEE 2011 was sent to 53 UNECE member states in September 2012. The overall response has improved compared to previous rounds. At the time of writing, 24 member states responded to the data request providing replies of sufficient quality. 8 member states have provided JWEE data for the first time ever. A number of member states have informed the secretariat that work on the enquiry is under way, but no data has been received so far. Correspondents from four countries stated that they did not have sufficient means for submitting any data due to lack of resources and/or perceived role of wood energy at a national level.
2. Reminders have been sent out periodically, and the deadline for responses was regularly extended. Each reminder has generated a few more replies and/or clarified doubts.
3. *The secretariat invites member states that have not yet done so to provide data.*

B. Processing

Pre-filling

4. The JWEE 2011 workbook maintained the same overall structure as previous rounds. It was prefilled with data from the Joint Forest Sector Questionnaire (JFSQ) to the extent possible. A few changes and additions were made as a result of discussions at the Paris workshop.
5. Since roundwood volume for UNECE/FAO purposes and many national roundwood measurement standards is reported underbark, estimates for bark volume were prefilled assuming that bark represents 3% of roundwood consumption. This estimate is unlikely to reflect real volumes. In fact, in the UNECE region, the bark of conifers and non-coniferous species ranges from as little as 4% of the total over bark volume (and weight) to as much as 30%. It is important to note, however, that bark volume typically decreases during handling from forest to mill, so the potential volume as reflected in over bark to under bark volumes are seldom available and highly volatile depending on log handling practices and season. Hence, the rather conservative estimate of 3%.
6. As in previous rounds, an estimate for black liquor (without crude tall oil) was prefilled, based on JFSQ information on chemical pulp production. For this round, the amount was listed in metric tonnes¹.

Estimates using International Energy Agency data

7. National energy balances for primary solid biofuels² as reported to the International Energy Agency (IEA) were used as benchmarks for data comparison purposes. At the time of writing, however, only 2010 data was available³. In a number of cases, IEA data was shared with correspondents for guidance purposes and in the case of Canada, Italy and Romania, the Secretariat estimated wood energy consumption figures in agreement with the respective correspondents.

Challenges

¹ Production of 1 m.t. of air-dried chemical pulp (10% moisture content) yields 2.14 m.t. of concentrated black liquor (20% moisture content). 65% of black liquor solids are organic and combustible.

² Defined by the IEA as any plant matter used directly as fuel or converted into other forms before combustion. This covers a multitude of woody materials generated by industrial process or provided directly by forestry and agriculture (firewood, wood chips, bark, sawdust, shavings, chips, sulphite lyes also known as black liquor, animal materials/wastes and other solid biofuels). Estimates were calculated by taking energy consumption figures (in ktoe) and applying a generic heating value for fuelwood of 20.21 GJ/t d.m. Values were corrected to a conservative 90% to account for any solid biofuels of agricultural or other origin.

³ 2011 IEA figures will be added as soon as they become available.

8. Over the years, correspondents have been able to provide data with increasing levels of detail. Most of the UNECE member states seem to be improving wood energy information. However, challenges remain in a number of areas:

- a) Many countries seem to have difficulty reconciling fuelwood consumption figures (especially in the residential sector) with official figures for fuelwood supply. The latter are often incomplete due to unrecorded removals and trade.
- b) Only a handful of countries were able to provide data on transformation inputs into processed wood-based fuels (Table III).
- c) In some cases, correspondents had figures about total amounts being consumed by a specific sector but no further detail on the specific category of wood fibre being consumed. Common issues include incomplete data on post-consumer wood and difficulty separating chips and particles from industrial residues.
- d) The treatment of autoproducer undertakings⁴ poses challenges to a number of correspondents. Data on autoproduced electricity, heat and combined heat and power should be included with figures for the final consumption of wood energy in the appropriate sector. The intention is to have a complete picture of wood energy use within a sector such as the pulp and paper industry by complementing information on the energy used by establishments in support of their primary activity with data on the energy delivered to external users (as a secondary activity). However it seems that correspondents may not always have access to such a detailed breakdown of autoproduced quantities by primary activity.

Presentation of data

9. A number of indicators introduced in 2009 have been/were modified as follows:
- a) References to “*roundwood and fuelwood*” have been replaced with “*roundwood*” to ensure consistency with the JFSQ definition for roundwood, which includes fuelwood.
 - b) “*Total domestic woody biomass supply (including cascaded use)*”, has been recalculated for all years to comprehensively include JFSQ data on non-energy wood products and is now called “*Total calculated domestic supply of woody biomass*”⁵.
 - c) “*Total wood energy generation (1000 m³)*” has been renamed “*Total wood energy supply, volume basis (1000 m³)*” to specify that it represents the total solid wood equivalent volume of the respective wood energy products consumed.
 - d) “*Total wood energy generation (ktoe)*” has been renamed “*Total wood energy supply, energy basis (ktoe)*”. It is now calculated based on the energy contents of the respective wood energy products consumed.

⁴ In several industrial establishments electricity and heat are produced as “secondary products” on a significant scale. Much of the own produced energy is used within the establishment where it is produced, but some is also sold to users outside the producing unit. Undertakings that generate electricity and/or heat, wholly or partly for their own use as an activity which supports their primary activity are thus defined as “autoproducers”. Examples include the use of waste materials and residues in the pulp and paper and wood-processing industries to produce a combination of heat and electricity which in part is delivered to users outside the establishment that produces it. On the other hand, “main activity producer” undertakings generate electricity and/or heat for sale to third parties, as their *primary activity*.

⁵ This indicator adds the supply (consumption) of wood in primary non-energy products in m³ solid wood equivalent (swe) from JFSQ to the wood energy supply (calculated on a volume basis) from JWEE. Roundwood equivalent was avoided on the basis that it may lead to double-counting of wood used in energy products, such as chips from sawmilling.

- e) “*Direct mobilisation of woody biomass for energy production from forests available for wood supply*” was changed to “*Share of net annual increment⁶ directly used for energy*”. It is hoped that this allows for a better indication of the sustainability of fuelwood extraction⁷.
- f) The indicator “*Total woody biomass used for energy per ha of Forest available for wood supply*” was dropped as it may have misrepresented countries that rely heavily on wood imports due to limited domestic resources.
- g) The indicators “*Share of wood energy in TPES*”, “*Share of wood energy in RES*” and “*Share of black liquor in wood energy*” are now calculated using the total wood energy supply, energy basis (ktoe)⁸.

10. The datasheets now also provide the data provided by countries on wood energy supply by product (corresponding to JWEE Tables I and II) and wood energy uses by product and economic sector (JWEE Table IV).

Further steps

11. In the coming weeks, results and estimates will be shared with correspondents for their review and validation before publishing. The Secretariat will also follow up with countries that have promised data and proposes producing estimates for countries that have not provided JWEE data.

12. During its 34th session, the Working Party on Forest Statistics, Economics and Management highlighted a potential convergence between the UNECE/FAO and Eurostat reporting process and proposed to explore means for the Joint Wood Energy Enquiry (JWEE) data for EU countries to feed into the template for NREAP progress reports. Following this proposal, “EU-27 NREAP progress report – Table 4” has been developed and included in the JWEE 2011. The table is compatible with Table 4 of the EU “Template for Member States progress reports under Directive 2009/28/EC”⁵ and aims at easing the task of JWEE correspondents from the EU-27. The JWEE 2011 therefore offered a table that automatically compiled submitted data to pre-fill table 4 of the NREAP progress report template. The Secretariat would be pleased to know if the respondents to the enquiry found this useful.

13. ***Delegates are invited to:***

- ***Express their opinion on the JWEE process so far (structure, communication, timeline)***
- ***Review data for their respective member state over the next months;***
- ***Provide guidance on the usefulness of the indicators presented;***
- ***Reflect on the possibility of completing the dataset using estimates from other sources.***

C. Overview of preliminary results

14. 2011 data has been integrated with data from previous rounds into one database. However, only a partial comparison of results is possible, due to slight changes in structure, in the processing methodology, in national data collection processes, as well as in the conversion factors among rounds.

⁶ Most recent net annual increment figures were used from State of Europe’s Forests reports and other sources. Figures were adjusted to their underbark value using a 0.88 factor (adapted from UNECE/FAO Discussion Paper 49 “Forest Product Conversion Factors for the UNECE Region”, 2010).

⁷ Net annual increment is calculated based on national definitions of growing stock/standing volume which cover a specified forest area and may not include parts of the tree below specified dimensions.

⁸ The latest available figures (reference year 2010) on total primary energy supply, TPES and renewable energy supply, RES were retrieved from the IEA. Indicators will be updated using 2011 figures as soon as these become available.

15. Overall wood energy accounts for 3.4% of the total primary energy supply (TPES) and 38.9% of the renewable energy supply (RES) in the responding countries in 2011, confirming its role as the leading source of renewable energy. Around 40% of all mobilised woody biomass supply is used for energy purposes.

16. Results of the Joint Wood Energy Enquiry 2011 indicate that solid and liquid co-products and residues from forest-based industries, including processed wood fuels with improved energy content such as wood pellets, briquettes and charcoal, contribute 57% of the wood energy supply. A 34.1% share originates from woody biomass from forests and other wooded land such as logging residues, thinnings and clearings, while recovered waste wood (mainly waste from construction, but also packaging and old furniture) accounts for 3.7% % of the wood energy supply.

17. Wood energy is consumed 48.4% by forest-based industries, while households account for 34.4%. However, wood energy use by private households is often higher than official records indicate. The power and heat sector represents 15% of wood energy use.

18. It was possible to identify trends in the use of wood energy and to provide a comparison based on a subset of countries that have responded to previous rounds of the enquiry. Between 2009 and 2011, the amount of wood used for energy purposes grew annually by 4.8%. The role of wood in total primary energy supply increased slightly from 4.3% to 5.4%. The share of wood energy among renewable energy sources increased from 46.1% to 48.7%.

II. Capacity building and outreach activities

A. Wood Energy Policy Debate, Geneva, May 2012

19. A distinguished group of speakers discussed the pros and cons of the rising use of wood energy during the “UNECE/FAO Policy Debate on Wood Energy”, held on 8 May 2012 at the Palais des Nations in Geneva. The discussions, led by Tom Miles, Chief Correspondent for Thomson Reuters News, touched upon the economic, environmental and social aspects of the increasing demand of wood for energy purposes.

20. The Policy Debate provided an open and comprehensive dialogue among a wide and varied group of stakeholders. Discussions mainly revolved around the sustainability of the increasing use of wood for energy purposes and the resulting competition with material uses of wood, namely for wood products.

21. The benefits of using wood as a source of energy were highlighted by speakers representing the wood industry, utility companies and forest owners and entrepreneurs. Besides contributing to energy security by diversifying energy resources and reducing dependence on fuel imports, wood energy stimulates social and economic development by increasing the profitability of forestry and creating investment and job opportunities, especially in rural areas. However, these actors are all well aware that economic and ecological responsibilities should not be neglected; the use of wood for energy purposes should not harm the demand and supply for industrial use or damage the vitality of forests. They all agreed that the production and consumption of woody biomass for energy purposes must be accompanied by the development of certification schemes and criteria to meet sustainability requirements while achieving renewable energy and biological diversity targets.

22. Negative environmental and social aspects of wood mobilisation were on the other hand emphasised by representatives of environmental NGOs. Besides contributing to particulate matter emissions, wood burning and biomass extraction could lead to drastic ecological impacts on forest health and biodiversity. Energy efficiency should have a high-level priority, including the clean and efficient consumption of wood energy, which could mean focusing on local use of industrial leftovers rather than relying directly on forests for energy. Thus, they called for continued investment in research and development of all non-wood renewable energies such as

wind and solar power. A policy brief summarizing the views and recommendations of the various stakeholders that participated in the debate was published in September 2012.

B. JWEE capacity building workshop, Paris, June 2012

23. The UNECE/FAO Forestry and Timber Section supplemented its policy work with capacity-building activities. Thanks to the generous support of the French Ministry of Agriculture, the French Ministry of Sustainable Development and the FAO Forestry Department, over 60 participants from 23 countries and 8 international organizations met in Paris on the premises of the Ministry of Agriculture from 11 to 13 June 2012 at a UNECE/FAO workshop on “Improving Wood Energy Data for Better Policy Making”. Participants discussed the reliability of current wood energy data and identified weaknesses and constraints. Countries shared experiences, tools and solutions for improving data. A growing network of correspondents and experts is being established as improving data requires constant communication between all stakeholders at both the national and international level.

C. 6th InterEnerStat meeting, Paris, December 2012

24. The UNECE/FAO Forestry and Timber Section was invited to participate in the sixth meeting of the International Energy Statistics which brings together international organisations, either collecting or using energy statistics. Representatives of organizations such as Eurostat, the United Nations Statistics Division (UNSD), the International Renewable Energy Agency (IRENA) and others met under the auspices of the IEA to discuss how best to use harmonised definitions in their own work. Organizations also exchanged experiences and shared best practices on training activities. Back-to-back with the InterEnerStat meeting, the organisations held a brainstorming session on the quality of solid biofuels data, which includes firewood and charcoal. Organisations estimate solid biofuels’ share in global energy consumption at around 9% to 10%. But with proper data, this share might prove much larger. Participants agreed that solid biofuels data needs to be more accurate, given concerns about the impacts that underestimated data could have on energy, social and environment policies. The issue will be discussed further at a World Solid Biofuels Workshop later in 2013.

III. Wood Energy in the Programme of Work

25. Wood energy is currently a sub-theme under Work Area 1 of the current UNECE/FAO Integrated Programme of Work on Timber and Forestry. So far, wood energy activities have focused on data collection and analysis and capacity building through workshop events. There are plans to establish a Team of Specialists on Wood Energy to be active in the next programme of work 2014-17 with the main task of providing guidance on the JWEE.

JWEE Responses

Country	2005	2007	2009	2011
Albania	-	-	-	A
Armenia	NC	NC	-	B
Austria	A	A	A	A
Azerbaijan	NC	-	-	-
Belarus	-	-	I	-
Belgium	-	-	A	EXP
Bosnia and Herzegovina	-	-	I	A
Bulgaria	-	-	-	NC
Canada	A	B	I	S
Croatia	-	-	-	-
Cyprus	NC	A	A	A
Czech Republic	A	-	A	A
Denmark	-	-	-	A
Estonia	-	-	A	A
Finland	A	A	A	A
France	A	A	A	A
Georgia	-	-	-	-
Germany	A	A	B	A
Greece	-	-	-	-
Hungary	-	-	-	-
Iceland	-	-	NC	A
Ireland	-	A	A	A
Israel	-	-	NC	NC
Italy	NC	-	B	S
Kazakhstan	NC	NC	-	-
Kyrgyzstan	NC	-	-	-
Latvia	-	B	-	-
Liechtenstein	-	B	A	NC
Lithuania	A	A	A	-
Luxembourg	-	-	-	A
Malta	-	-	-	-
Montenegro	-	-	-	EXP
Netherlands	A	A	-	A
Norway	A	NC	A	A
Poland	-	NC	-	A
Portugal	-	-	-	-
Republic of Moldova	-	-	-	-
Romania	-	-	-	S
Russian Federation	-	B	A	-
Serbia	-	A	A	A
Slovak Republic	-	A	A	-
Slovenia	A	A	A	A
Spain	-	-	-	EXP
Sweden	A	A	A	A
Switzerland	A	A	A	A
Tajikistan	-	-	-	-
The former Yugoslav Republic of Macedonia	NC	-	-	-
Turkey	-	NC	I	I
Turkmenistan	-	-	-	-
Ukraine	NC	-	-	A
United Kingdom	A	A	A	A
United States	A	A	A	A
Uzbekistan	-	-	-	-

Legend:

A: good dataset. Table IV filled in.

B: partial dataset. Table IV was not filled in. Only aggregated data on sources and uses of wood energy (sheet: Table S->U) was provided.

S: Secretariat estimates based on IEA 2010 data

I: insufficient data.

- : no response.

NC: no capacity

EXP: expected reply

Note:

Andorra, Monaco and San Marino are not included in the JWEE process.