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Supplementary file S1

Survey form on deliveries of forest chips and energy wood.

Survey on the supply of forest chips and energy wood

15 of April 2024, CONFIDENTIAL

Natural Resources Institute Finland (Luke) collects information on the volumes of forest chips and raw materials of forest chips i.e. different energy wood assortments delivered and the distances between the supply areas of the plants in 2023. Please note that the survey only covers deliveries directly to our own or our customers' heat-only and combined heat and power (CHP) plants or to the terminal of the end-user customer purchasing the fuel. In addition, the questionnaire will address issues related to the origin and storage of wood fuels. We hope to receive responses to the survey by Friday, 3 May 2024. In the absence of precise information, please provide your best estimate of the information requested in the questionnaire.

The information collected will be used to study the balance between the use and supply of forest chips and to assess the security of supply implications of energy wood. The future of energy production from forest chips will also be studied. The research is part of Luke's REPower research project to promote the development of Finland's energy system. The research is funded by the European Union's REPowerEU Innovation Fund.

Responding to the survey is voluntary. The estimated response time is around 15-30 minutes. If you do not feel that you are the right person to answer the survey, please forward it to the right person in your organisation.

The information collected will be treated confidentially, and no information from individual respondents will be published. You can read more about data protection on Luke's website. If you wish, you can also provide the information requested on the form in a free-form format, for example, by e-mail or telephone. When submitting information by e-mail, we recommend that you use the secure message at <https://turvaviestiluke.fi/> and indicate tuomas.niinisto@luke.fi as the recipient.

For additional information, please contact:
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1 Information of respondent

Name	
Phone	
Email	
Organisation	

2 The respondent organisation is, choose the most suitable option

Company or association engaged in energy wood harvesting and trade in energy wood/wood chips	
Energy wood/forest chips broker	
Energy company that uses energy wood itself	
Forest industry company	
Other, what? (specify further in the additional information field)	

Additional information

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Definition of forest chips and energy wood in the survey

The questionnaire collects information on deliveries of forest chips and raw materials of forest chips, which refers to the energy wood assortments included in Statistics Finland's fuel classification class 21.10 and the chips made from them. The survey does not distinguish between energy wood assortments and ready-made wood chips. In the absence of precise data, you can give your best estimate.

Energy wood and forest chip raw materials refers to the following energy wood assortments

Small-sized pruned stemwood and unpruned small-sized trees (whole trees): small-diameter pruned or unpruned stemwood that is not suitable for processing by the forest industry. These trees are usually felled from nurseries being restored or from young thinning forests, or from the residues of these fellings. Included in Statistics Finland's fuel classification under category 21.10.20 Chips from roundwood.

Large-sized timber, unsuitable for processing by the forest industry: defective or dead large-sized roundwood felled during harvesting that is not eligible as forest industry raw material (e.g. logs). This category includes large-sized roundwood with decayed butts. Included in Statistics Finland's fuel classification under category 21.10.20 Chips from roundwood.

Roundwood, suitable for processing by the forest industry: Roundwood that is suitable for processing by the forest industry. This category includes wood that could have been harvested for raw material for forest industry production in terms of size and quality. This category also includes logs and pulpwood that were originally pruned and cut to forest industry dimensions, but eventually ended up in energy production. Included in Statistics Finland's fuel classification under category 21.10.20 Chips from roundwood.

Logging residues: branches and tops from regeneration felling of forests, harvested for energy. Statistics Finland's fuel classification category 21.10.30.

Stumps: tree stumps and rhizomes. Statistics Finland's fuel classification category 21.10.40.

3.1 Forest chips and energy wood supplied in 2023 directly to heat-only and combined heat and power (CHP) plants

Please provide in the table the amount of domestic and imported forest chips and/or raw materials of forest chips delivered directly to your own or your customers' heat-only or CHP plant, by plant.

Please also indicate, from the point of view of domestic energy wood and forest chips, the distribution of the delivery volume into the seven different transport distance categories defined in the form, expressed as a percentage (%). Please indicate the transport distances from the forest, i.e. from the place of harvesting, even if the wood is sometimes transported to the company's own intermediate storage. In the absence of precise information, please provide your best estimate.

Please note that the sum of the percentages of the different transport journey categories per row must be 100%.

[illegible]

Additional information on deliveries directly to heat-only and CHP plants

3.2 Forest chips and energy wood supplied in 2023 to customers' terminals

Please provide in the table the amount of domestic and imported forest chips and/or raw materials of forest chips delivered to your customers' terminal.

Please also indicate, from the point of view of domestic energy wood and forest chips, the distribution of the delivery volume into the seven different transport distance categories defined in the form, expressed as a percentage (%). Please indicate the transport distances from the forest, i.e. from the place of harvesting, even if the wood is sometimes transported to the company's own intermediate storage. In the absence of precise information, please provide your best estimate.

Please note that the sum of the percentages of the different transport journey categories per row must be 100%.

[illegible]

Additional information on deliveries to customers' terminals

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relation to the total amount of forest chips and/or raw materials of forest chips delivered in 2023. In the absence of precise data, please provide your best estimate.

Energy wood assortment	Proportion, %
Small-sized pruned stemwood and unpruned small-sized trees (whole trees)	
Large-sized timber, unsuitable for processing by the forest industry	
Roundwood, suitable for processing by the forest industry	
Logging residues	
Stumps	

Additional information on the proportions of energy wood assortments

5 Delivery volume of wood sourced from land-use change areas

The question collects information on the volume of energy wood sourced from land-use change areas, such as building sites and electricity or road lines. Please provide the delivery volumes for 2023 by energy wood assortment.

In the absence of precise data, please provide your best estimate. You can also provide additional information or, for example, a percentage estimate in the additional information field below.

Energy wood assortment	Delivery volume	Unit of measurement
Small-sized pruned stemwood and unpruned small-sized trees (whole trees) (or forest chips made from such wood)		
Large-sized timber, unsuitable for processing by the forest industry (or forest chips made from such wood)		
Roundwood, suitable for processing by the forest industry (or forest chips made from such wood)		
Logging residues (or forest chips made from such wood)		
Stumps (or forest chips made from such wood)		

Additional information on wood sourced from land-use change areas

6 Delivery volume of imported forest chips and energy wood

The question collects information on the volumes of deliveries of imported forest chips and raw materials of forest chips in 2023. Please indicate the volumes by energy wood assortment.

In the absence of precise data, please provide your best estimate. You can provide additional information or, for example, a percentage estimate in the additional information field below.

Energy wood assortment	Delivery volume	Unit of measurement
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Small-sized pruned stemwood and unpruned small-sized trees (whole trees) (or forest chips made from such wood)		
Large-sized timber, unsuitable for processing by the forest industry (or forest chips made from such wood)		
Roundwood, suitable for processing by the forest industry (or forest chips made from such wood)		
Logging residues (or forest chips made from such wood)		
Stumps (or forest chips made from such wood)		

Additional information on deliveries of imported forest chips and energy wood

7 Delivery volume of other imported wood fuels

The question collects information on the volumes of deliveries of imported other wood fuels in 2023. Please indicate the volumes by wood fuel assortment.

In the absence of precise data, please provide your best estimate. You can provide additional information or, for example, a percentage estimate in the additional information field below.

Wood fuel assortment	Delivery volume	Unit of measurement
Bark		
Sawdust		
Cutter chips, grinding dust, etc.		
Industrial chips		
Recycled wood		
Wood pellets		

Additional information on deliveries of other imported wood fuels

8 Does the organisation you represent practice wood swaps/guest deliveries, or have you considered introducing a model to reduce transport distances?

9 Has the organisation you represent prepared for the implementation of the updated European Union Renewable Energy Directive (RED III) and assessed its impact on wood fuel procurement? If so, how do you see its impact?

10 Has the organisation you represent prepared for the implementation of the European Union Regulation on Deforestation-free products (EUDR) and assessed its impact on wood fuel procurement? If so, how do you see its impact?

11 Please indicate the energy wood terminal capacity in hectares and/or volume of wood used by the organisation you represent.

A terminal is a permanent, year-round available biofuel storage and/or production area of at least approximately 0,5 hectares, where unchipped energy wood can be stored, produced and possibly also chips or shreds can be stored.

Do not include customer terminals in the capacity, only the capacity used by the organisation itself. In the absence of precise information, please provide your best estimate.

	Total capacity, ha	of which asphalted capacity, ha	Total capacity, wood volume	of which Asphalted capacity, wood volume	Unit of measurement for wood volume
Capacity					

12 Distribution of terminal capacity by transport journey category in relation to the location of customers' heat-only and combined heat and power (CHP) plants, in percent (%)

In the absence of precise information, please provide your best estimate.

Distance category	Percent, %
0 km (storage capacity is located in the immediate vicinity of the plant)	
0.1-24.9 km	
25-74.9 km	
75-99.9 km	
100-149.9 km	
150 – 199.9 km	
Over 200 km	

13 Provide the amount of wood fuels in terminals in autumn 2023, i.e. at the beginning of the heating season 2023-2024

Report the stock of wood fuels at terminals in autumn 2023, i.e. at the beginning of the heating season 2023-2024. Please also provide details on the stock of forest chips and energy wood assortments. In the absence of precise data, please provide your best estimate.

	Storage volume of wood fuels	Storage volume of forest chips and energy wood assortments	Unit of measurement
Volume			

14 Additional information