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Summary of Findings on Removals Statistics 2022-2023

Note by the ECE/FAO Team of Specialists on Forest Products and Wood Energy Statistics and its Ad Hoc Task Group on Removals Statistics

Published as received.

Summary

This document was prepared by the ECE/FAO Team of Specialists (ToS) on Forest Products and Wood Energy Statistics and its Ad Hoc Task Group on Removals Statistics. It provides an update on the activities and findings of the Ad Hoc Task Group during 2022 and 2023 and presents activities proposed by the team.

The Committee and the Commission are invited to take note of the activities, findings and points for consideration, and to provide guidance on the proposed activities.

I. Introduction

1. This document was prepared by the ECE/FAO Team of Specialists (ToS) on Forest Products and Wood Energy Statistics.
2. At its first meeting in April 2022, The ToS created an ad hoc group to conduct a **“Review of statistics regarding removals to share information, identify gaps and inconsistencies in definitions and methodologies”** (hereafter: the “Ad Hoc Task Group on Removals”). The Ad Hoc Task Group on Removals is open to all members of the ToS and acts under the oversight of the ToS, as defined in the [Report](#) of the first meeting of the ToS.
3. At its forty-fourth session in 2023, the Joint ECE/FAO Working Party on Forest Statistics, Economics and Management [welcomed](#) the proposal of the Ad Hoc Task Group on Removals to develop a summary of findings for the 2023 session of COFFI.
4. This document informs delegates about the work and preliminary findings of this Ad Hoc Task Group.

II. Background

5. The United Nations Economic Commission for Europe and the Food and Agriculture Organization of the United Nations collect forest products statistics annually via the Joint Forest Sector Questionnaire (JFSQ), which is also used by Eurostat and the International Timber Organization (ITTO). These four organizations jointly comprise the Intersecretariat Working Group on Forest Sector Statistics, which manages the JFSQ. An essential part of the JFSQ is to collect data on wood removals statistics, which are not only used for reporting, but also to check reported forest product trade and production using an industrial roundwood balance table that is incorporated into the JFSQ.
6. Two tasks for the Ad Hoc Task Group on Removals were agreed at the first meeting of the Team of Specialists on Forest Products and Wood Energy Statistics:
 - (a) Develop a survey to identify and better understand differences in removals statistics between member states. For instance, to better understand what is counted and what is excluded from removals statistics in national replies to the Joint Forest Sector Questionnaire.
 - (b) Compare the data collection methodologies used by member States.

III. Summary of Activities

7. The Ad Hoc Task Group on Removals has held two virtual meetings and various team interactions through e-mail requests for feedback.
8. A survey on removals statistics was prepared and sent to the members of the ad hoc task group on 23rd September 2022, with a deadline on 14th October for replies. During this first round, answers from six countries (Czechia, France, Germany, Poland, Portugal, Serbia) were collected.
9. After this initial validation, in November 2022 the Secretariat shared the survey with other members of the Team of Specialists on Forest Products and Wood Energy Statistics and with national correspondents of the JFSQ, in collaboration with Eurostat. The survey was accompanied by an information note prepared by the Secretariat.
10. The survey was successful with a total of 25 replies collected (Azerbaijan, Bulgaria, Canada, Cyprus, Czechia, Finland, France, Germany, Hungary, Iceland, Latvia, Luxembourg, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Serbia, Slovenia, Spain, Sweden, Ukraine, United Kingdom, United States). One country did not give consent to releasing its detailed answers.

11. Preliminary results of the survey were presented in March 2023 at the meeting of the Eurostat Expert Group on Forestry Statistics, in May 2023 at the annual Meeting of the ToS on Forest Products and Wood-Energy Statistics, at the May 2023 Meeting of the ToS on Monitoring Sustainable Forest Management and, at the 44th session of the joint ECE/FAO Working Party on Forest Statistics, Economics and Management in June 2023.
12. The Team of Specialists [informed](#) the ECE/FAO Joint Working Party on Forest Statistics, Economics and Management of its work and potential activities at its forty-fourth session in 2023.

IV. Summary of Findings

A. Survey structure

13. The survey included 34 main questions, with the global objectives of: 1) providing a better understanding of differences in removal statistics and 2) comparing methodologies on how data are collected in the member states of the UNECE region. The questions were aggregated and structured thematically as follows:
 - (a) Respondent identification (questions 1 to 3);
 - (b) Definitions (questions 4 to 7);
 - (c) Distinction between removals and fellings and the ratio between them (questions 8 to 10);
 - (d) Removals specifications, comprising: what is included in wood removals statistics and their assessment by: ownership categories; tree species; diameter; own-account consumption by forest owners; the sources of information; types of assortments, and data quality (questions 11 to 19);
 - (e) Forest owners survey (questions 20 to 25);
 - (f) National Forest Inventory (NFI) use (questions 26 to 28);
 - (g) Survey among timber processing stakeholders or their associations (questions 29-31);
 - (h) Conversion factors (questions 32-33);
 - (i) Additional methods on wood removals evaluation (Question 34).

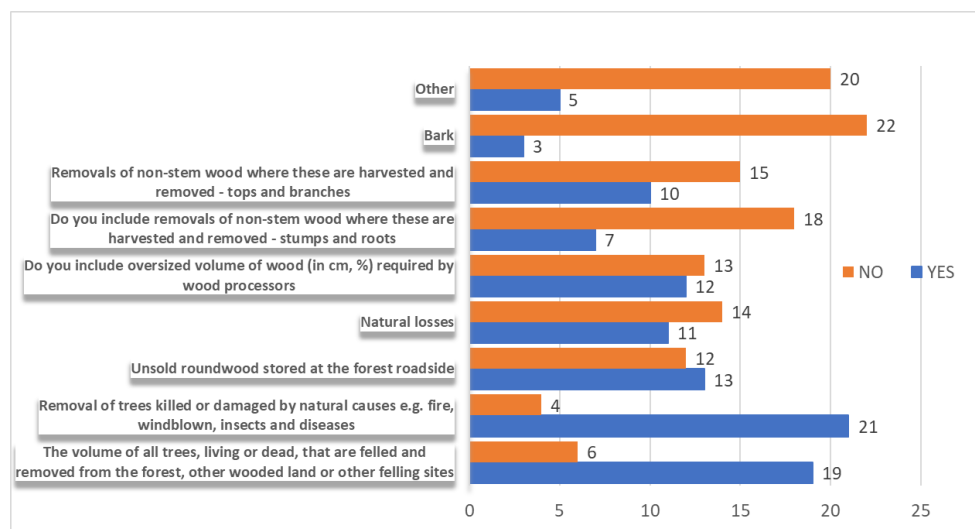
B. Preliminary findings

14. Comprehensive analyses of the replies offered by member States highlighted the diversified approaches in the collection of removals data between the countries that answered the survey, with:
 - (a) Over half of responding countries (13) currently use the JFSQ definition, and account the wood from other wooded land (15) in removals reporting; nearly all reporting in cubic meters (22, with two countries indicating both cubic meters and tonnes);
 - (b) Over half of responding countries (14) do not distinguish wood removals from fellings;
 - (c) The components included in removals reporting varies between the responding countries (Figure 1). «Removal of trees killed or damaged by natural causes e.g. fire, windblow, insects and diseases» (20)¹ and «The volume of all trees, living or dead, that are felled and removed from the forest, other wooded land or other

¹ Multiple replies are possible

falling sites» (18). Other materials are also included in some cases, though in a minor proportion. This includes: unsold roundwood stored at the forest roadside (12); natural losses (10); oversized volume of wood (in cm, %) required by wood-processors (12); removals of non-stem wood where these are harvested and removed - stumps and roots (7); removals of non-stem wood where these are harvested and removed - tops and branches (3) and; bark(5);

Figure 1
What is included in removals statistics?



- (d) The assessment of removals is done by ownership categories (16 countries), while own-account consumption (self-consumption) by forest owners in removals statistics is being considered in 10 countries;
- (e) The assessment of removals by tree species group is done in 24 countries, and while 16 of them detail the tree species, more than half of the countries (12) do not use a minimum diameter to assess wood removals;
- (f) The main sources of information on wood removals are¹ surveys (16) and administrative data (11), but only two and three countries, respectively, consider these methods to have the highest quality classification (best). The NFI was considered a high-quality source by only four countries, although though seven countries indicate that the NFI is a data source for removals statistics;
- (g) A majority of the countries (20) do not use a statistical survey among forest owners, whilst half of them (13) do a survey among wood-processing stakeholders or their associations to compile wood-removals statistics;
- (h) The countries that report surveying timber processing stakeholders, indicate that the survey includes¹: sawmills (11 countries), pellets manufacturers (10 countries), wood-based panels industries (13 countries), pulp industries (9 countries), residential sector (7 countries) and in power and/or heat plants (9 countries);

C. Preliminary analysis of results

- 15. Five countries indicate that they use surveys of forest owners as a method when compiling removals statistics and 10 of them (40%) report using forest owners' own-account consumption. This might introduce an inconsistency in reported removals statistics;
- 16. The NFI is considered a sound source to estimate growing stock volumes, yet is not being consistently used within the removals data compilation (in fact it is not used by many countries). The main reason seems to be that the frequency of data from NFIs does not match the annual JFSQ cycle.

D. Key Outstanding Questions

17. The large majority of the countries include materials which are consistent with the JFSQ definition in wood removals statistics; even so, the integration of bark and other materials, indicated respectively, by three and five countries, could be further investigated.
18. More detailed description of the methods that are used for the collection of particular assortment data could be useful for the clarification of future results.

E. Activities Proposed by the Team of Specialists

19. The ToS proposes developing profiles of national approaches, based on the findings reported herein as well as through additional data collection. Together, these may help facilitate the comparability of removals statistics among countries.
20. Furthermore, the ToS proposes to develop a technical proposal on improving the comparability of JFSQ data.

F. Points for consideration

21. Provide feedback on the findings of the survey on wood removals in the ECE region.
22. Suggest how to use the collected data.
23. Provide guidance on the proposed activities by the Team of Specialists (see E.).
24. Provide support to the ToS and Secretariat, including potentially providing in-kind and financial support to the implementation of the proposed activities (see E.).

Annex

I. Main Results of the Survey on Removals Statistics

A. Definitions

Figure A1:
What national definition² do you use for reported removals (Q4)?

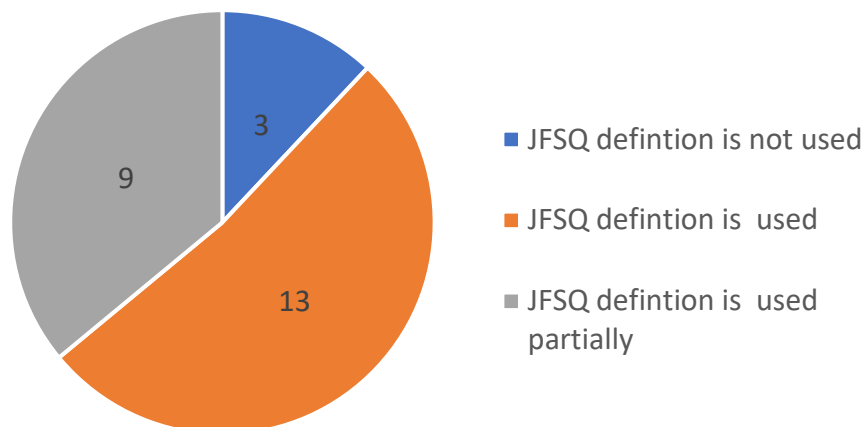


Table A1
What national definition do you use for reported removals (Q6)?

<i>Removals reporting unit</i>	<i>Number of countries</i>
Cubic meters: (m ³)	9
Cubic meters over bark (m ³ o.b.)	5
Cubic meters under bark (m ³ u.b.)	5
m ³ o.b.; tonnes	1
board feet (International 1/4inch and scribner), cubic feet, green	1
tons, pieces (poles, posts)	1
m ³ - non-coniferous over bark (o.b.), coniferous under bark (u.b.)	1
m ³ ; tonnes	1
no information	2
Total	25

² **Definition of Removals in the JFSQ:** The volume of all trees, living or dead, that are felled and removed from the forest, other wooded land or other felling sites. It includes unsold roundwood stored at the forest roadside. It includes natural losses that are recovered (i.e. harvested), removals during the year of wood felled during an earlier period, removals of non-stem wood such as stumps and branches (where these are harvested) and removal of trees killed or damaged by natural causes (i.e. natural losses), e.g. fire, windblown, insects and diseases. Please note that this includes removals from all sources within the country including public, private, and informal sources. It excludes bark and other non-woody biomass and any wood that is not removed, e.g. stumps, branches and tree tops (where these are not harvested) and felling residues (harvesting waste). It is reported in cubic metres solid volume underbark (i.e. excluding bark).

B. Removals versus fellings

Figure A2

Is wood from other wooded land or other felling sites included in the reported total wood removals (Q7)?

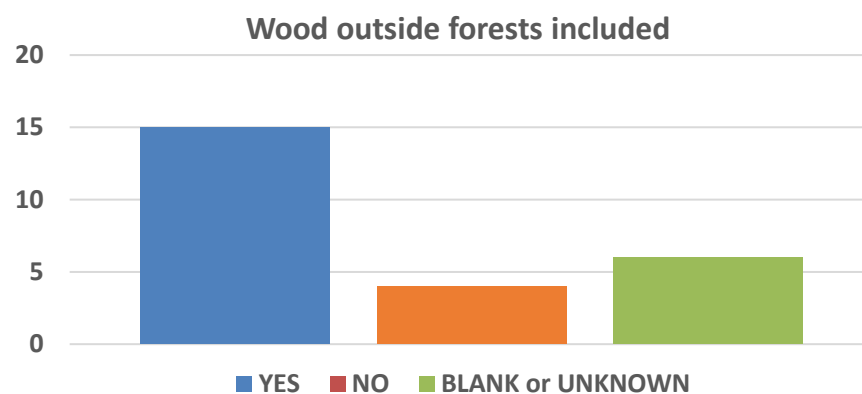


Figure A3

Do you distinguish wood removals and fellings at the national level (Q8)?

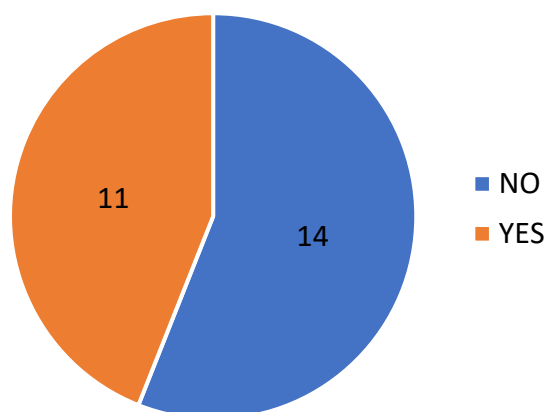


Table A2

What is the latest available removals/fellings ratio in your country (Q10)?

Country	Removals / Fellings Ratio
Bulgaria	83,9 % (2021)
Czechia	89 % (period 2011-2020)
Germany	93,2 % (2021)
Latvia	97,6 % (2021)
Portugal	Fellings corresponds to removals plus 17 % in coniferous and 4 % in broadleaves
Slovenia	91,2 % (2021 - JFSQ removals under bark) 93,6 % (2021 - national "Slovenian net" reporting)
Sweden	95,50%

B. Removals specifications

Figure A4

What is included in wood removals statistics in your country (Q11)?

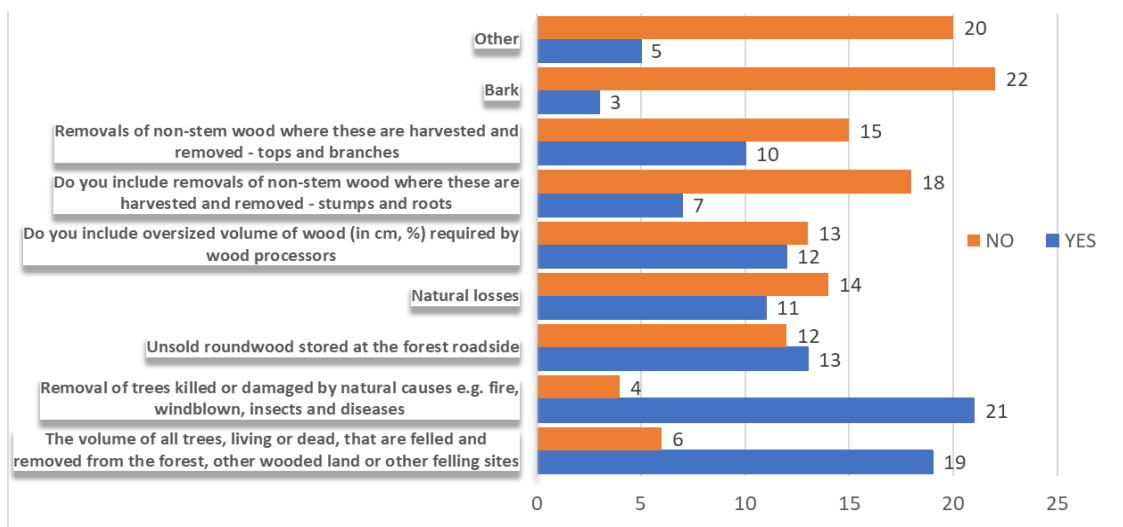


Figure A5

Do you assess removals by ownership categories (Q12)?

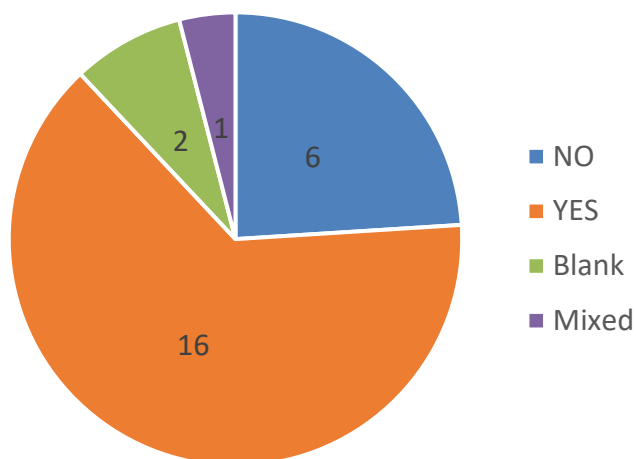


Figure A6

Do you assess removals by tree species group (coniferous vs non-coniferous)? (Q13)

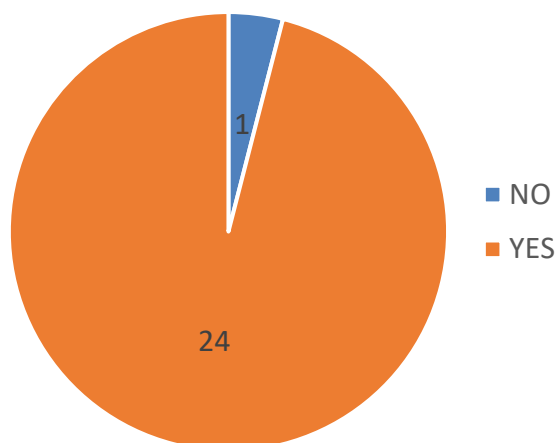


Figure A7
Do you assess removals by tree species? (Q14)

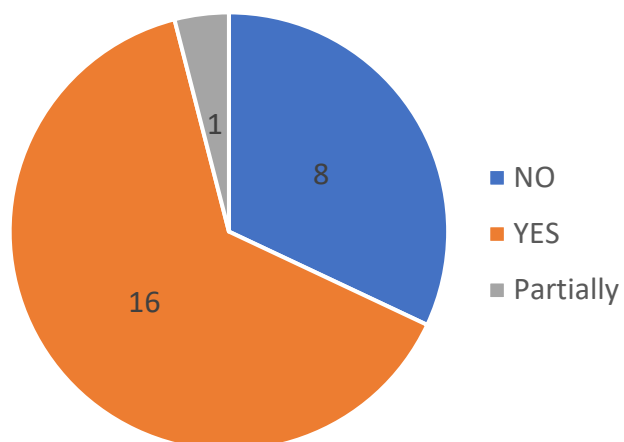


Figure A8
Do you use minimum diameter, minimum top-diameter or minimum top-branch diameter? (Q15)

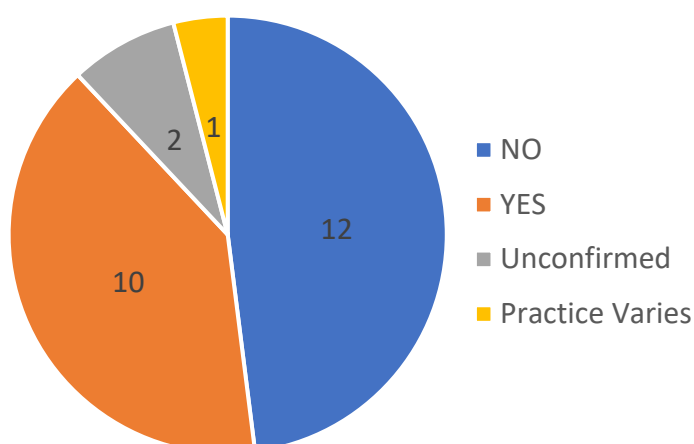
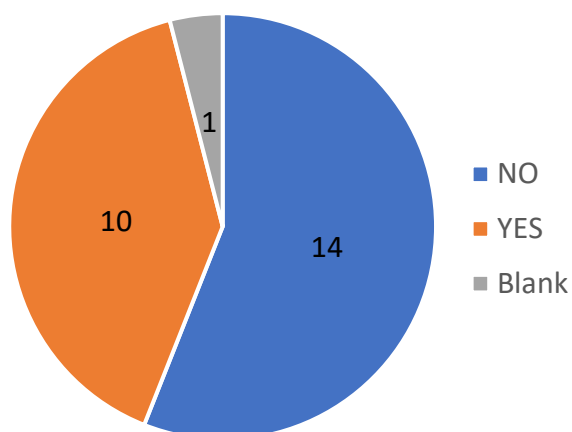


Figure A9
Do you assess own-account consumption³ of forest owners? (Q16)



³ This refers to own-felled wood which was not sold, but used for own consumption.

Figure A10
What are the main sources of information on wood removals (multiple replies are possible)? (Q17)

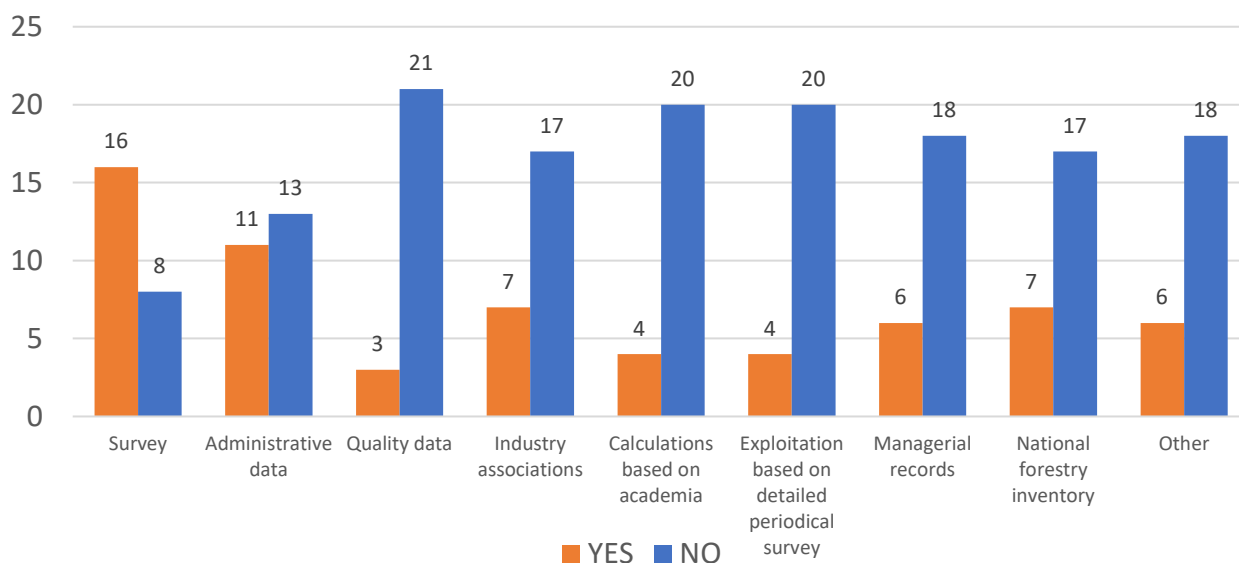


Figure A11
How do you assess the source data quality (1 = best, 5 = poor)? (Q18)

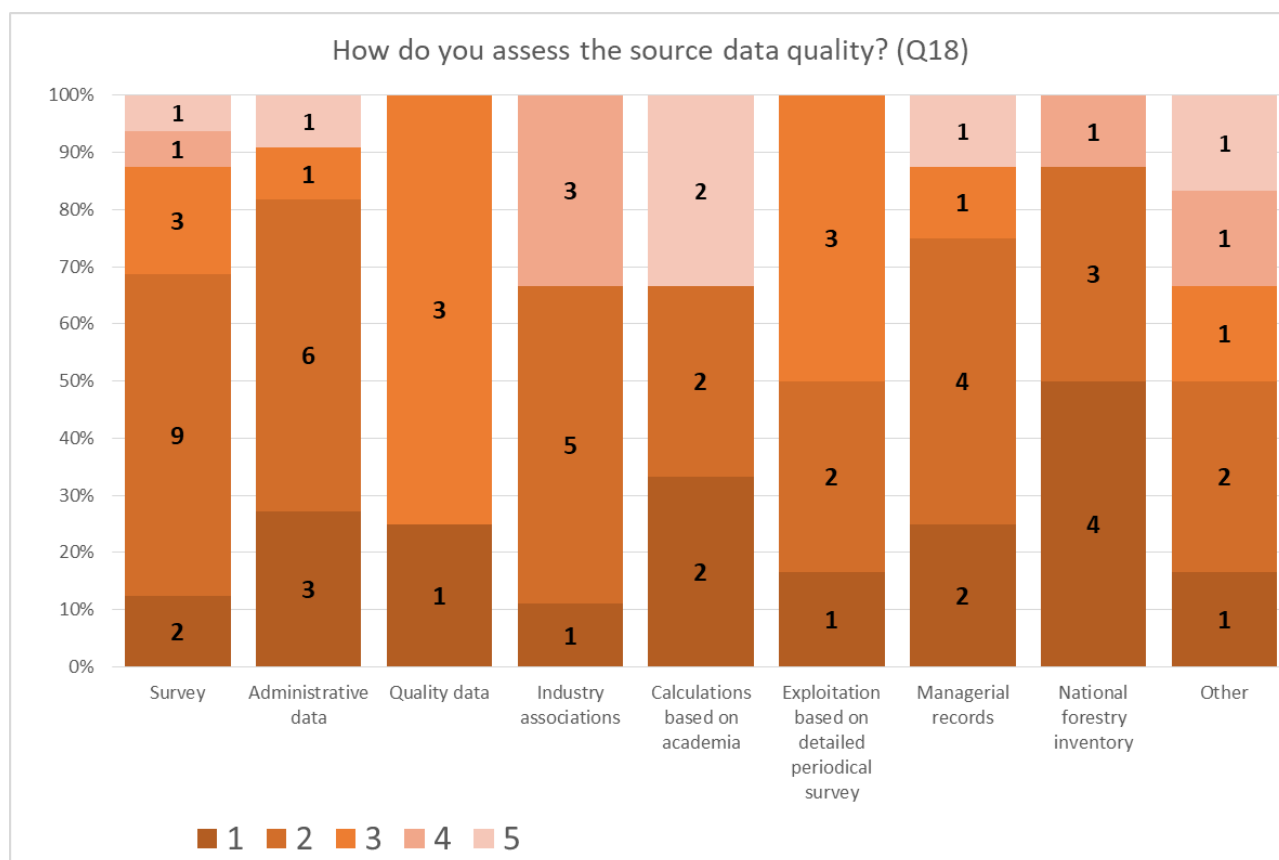
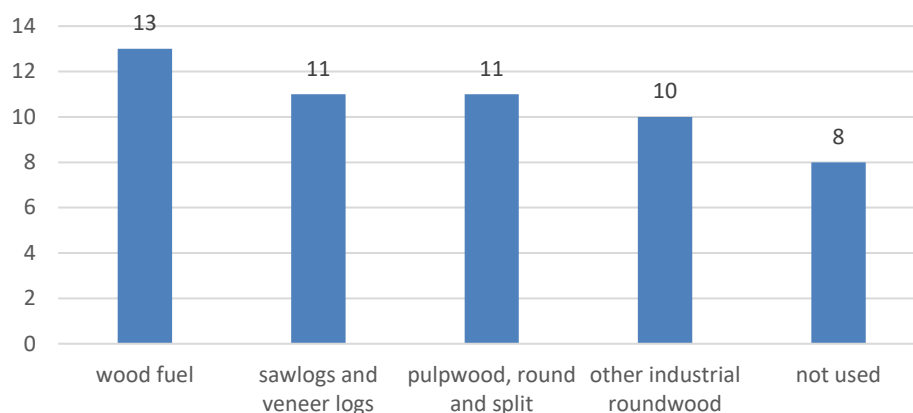


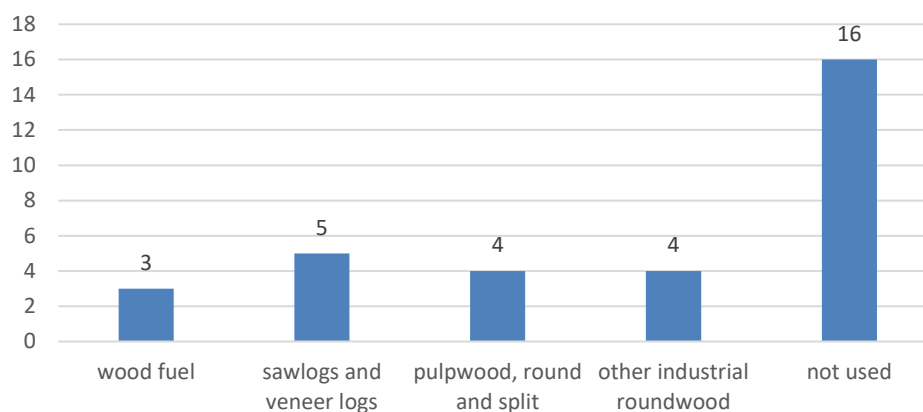
Figure A12

Which sources of information are used for particular assortments (multiple replies possible)? (Q19)

i. Use of surveys



ii. Use of administrative data



C. Forest owners survey

Figure A13

Do you use a statistical survey of forest owners? (Q20)

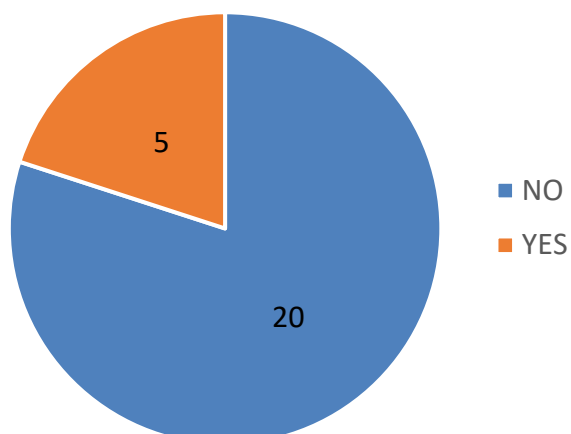


Table A3
Country replies to select questions on surveys of forest owners

	<i>Germany</i>	<i>United States</i>	<i>Slovenia</i>	<i>Ukraine</i>	<i>Czechia</i>
<i>If yes, are all forest owner categories covered by the survey? (Q21)</i>	YES	YES	YES	YES	NO Forest owners with forest area < 200 ha.
<i>What percentage share of national forest area is covered by the survey? (Q22)</i>	Statistical survey among forest owners to fill JFSQ-sheet "EU2 Removals". Survey is not used for the reporting of JQ1 19% of forest area is covered by the survey, the high share is achieved as a lot of the state forest companies are reporting.	It's a national survey, all lands			0,77
<i>What percentage share of wood removals volume is covered by the survey? (Q23)</i>	About 20%.	Based on national survey	Direct comparison is not possible due to different measurement units of quantities (gross/net cubic meters).		72% - 80%
<i>Is fuelwood production part of the survey or is it calculated? (Q24)</i>	The survey is not used for JQ1 reporting (Removals calculation). In wood fuel, specific household and industry surveys conducted every two or three years. For years between surveys, (small) models are used.	Part form survey. Residential fuelwood calculated based on household surveys energy consumption used.	Fuelwood production is assessed from other survey among households; the research sample is 6.000-7.000 private households in Slovenia.	The accounting of fuel wood is envisaged the state statistical observation	Fuelwood is part of the survey, but the figures from the survey are then recalculated on the whole forest area.
<i>What is the calculation used to derive country-level figures from the survey? (Q25)</i>	Forest owners surveys are not used for removals calculation.	National coverage. Survey based on permanent plots	It depends on the type of assortments. The data from survey among forest owners serve as aids for calculations but are not used directly. Final data are calculated in a complex way combining several partial data sources and additional expert's estimations.	Additional estimates are not made within the framework of the state statistical observation	Reported figures from the questionnaire are recalculated on the whole forest area, according to regions and forest ownership categories. For each forest owners' category in the region, removals intensity per hectare (removals/forest area) is derived which is then applied on the rest of the forest area of a particular forest owners' category.

D. National Forest Inventory

Figure A14

Do you use a National Forest Inventory (NFI) for wood removals reporting? (Q26)

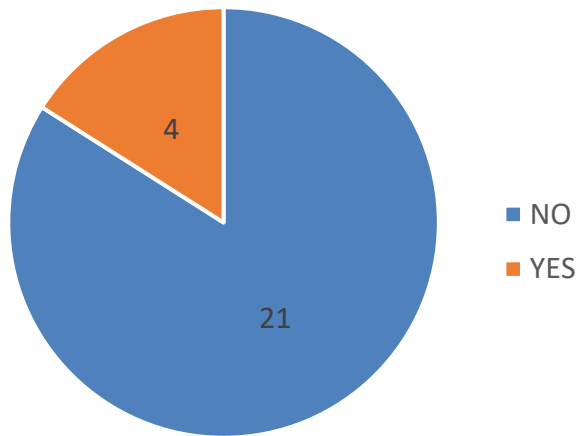


Table A4
Country replies to selected questions on the use of data from National Forest Inventories

	<i>Germany</i>	<i>United States</i>	<i>Netherlands</i>	<i>Latvia</i>
<i>If yes, how do you assess wood removals from NFI? Do you apply correction factors? (Q27)</i>	Use data from NFI to validate annual specific calculations of fellings and removals.	Use along with survey of primary mills	Wood removals are derived from the NFI by making use of permanent sample plots. All trees on the sample plots are registered during its first assessment. At the second assessment it is possible to record any trees that are removed from the plots. (in short): The information on tree removal on the permanent plots is currently used to estimate removal chances of trees in certain tree species/diameter classes. These removal chances are used to estimate the removals on the total forest area. The volume derived is including the top part of the tree. To get to the actual removals a factor is used to exclude the volume of the top. It is estimated that in general this factor is 5%.	The main criteria for removals in National forest monitoring (inventory): 1) Felled and removed; 2) Removed removals of damaged by natural causes (i.e. natural losses), e.g. fire, windblown, insects and diseases.
<i>If yes, how do you assess share of assortments? What is included in fuelwood? (Q28)</i>	For calculation the assortments, use-specific information is used (e.g. how many sawlogs have been used in sawmills). NFI-data is not used.	From survey of primary mills. Fuelwood part of survey as well. Residential firewood from other sources	The assortments are derived from an annual survey that is undertaken at the Dutch roundwood processing industries and roundwood exporters. In the survey roundwood processors are asked which volume they processed that came from the Dutch forest. The exported are asked which volume of roundwood they exported originating from the Dutch forest and to split this volume over the required assortments. Form this data the shares of the assortments within the total removals is estimated. The long-term average of these shares is used to determine the volumes of sawlogs, veneer logs and pulpwood. Fuelwood removals are derived from two different sources.	The determination of sawlogs veneer logs, pulpwood and fuelwood is not based of National forest monitoring (inventory) data. The data of sawlogs, veneer logs and, pulpwood are represented by national statistic of production data- Prodcum. Fuelwood as a part of removals that the main purposes of using such as cooking, heating or power production is estimated in national energy balance.

E. Survey of timber processing stakeholders

Figure A15

Do you use a survey among timber processing stakeholders or their associations? (Q29)

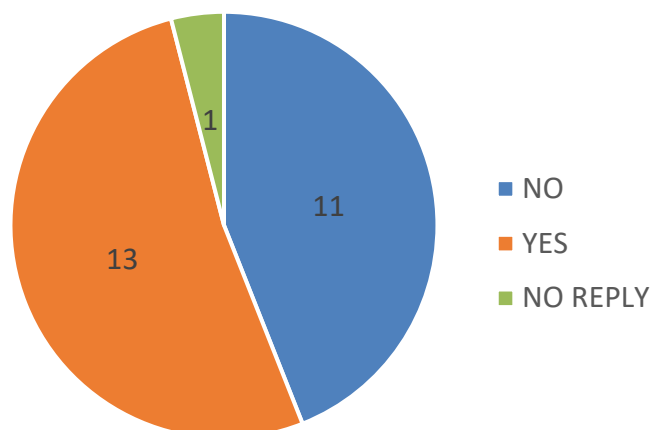


Figure A16

Which stakeholders are covered by the survey? (Q30)

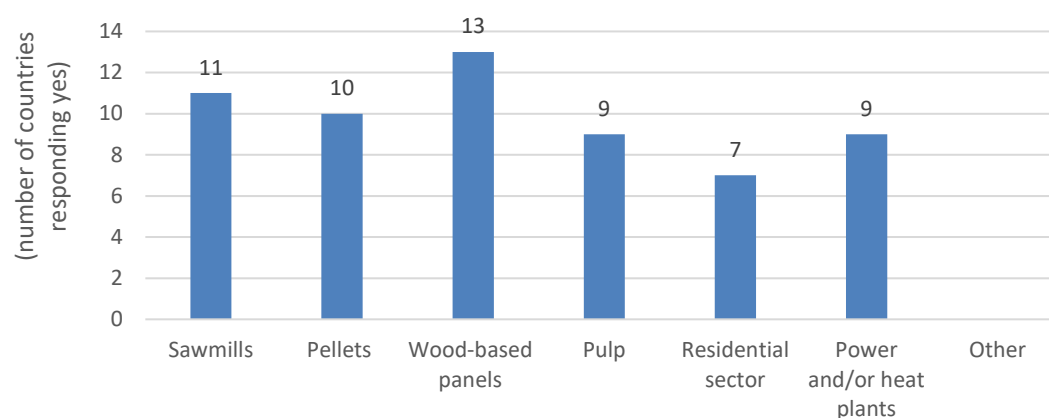


Table A5

What percentage share of stakeholders is covered by the survey inside these sectors? (Q31)

Country	Sawmills	Pellets	Wood-based panels	Pulp	Residential sector	Power and/or heat plants	Other
France	100%						
Germany	80%		70%	100%			
Hungary							
Latvia			20%	20%			
Netherlands	100%	100%	100%			90%	
Portugal	50%	40%	90%	90%	90%		
Serbia	70%	90%	90%		60%	90%	70%
Slovenia	90%	90%	100%	100%	30%		
Sweden	100%	100%	100%	100%	100%	100%	
Ukraine							
United States	100%	100%	100%	100%	100%	100%	100%

F. Conversion factors

Table A6
 Country replies to selected questions on conversion factors

Country	What conversion factors are used? (Q32)	What is the calculation used to derive country-level figures? (Q33)
France	over to under bark, tonnes to m3 for wood energy and any other wood industry	
Germany	<p>If no reply from all market actors, imputation algorithm or other tools to estimate the parent population are used.</p> <p>In the residential sector we are using a household survey. About 10,000 households are filling the questionnaire. Hence, the percentage share of this survey is not applicable here as it is far below 10%. Also, for power/heat plants, we are using a sample survey.</p> <p>Conversion factors: We are using many different conversion factors (from our data base). It would be too much to provide this information here, so I leave this for the moment.</p>	
Hungary	<p>For converting weight to volume (on JQ2 and extraEU sheets) we apply:</p> <ul style="list-style-type: none"> - 625 kg/m³ for coniferous wood fuel and for wood chips and particles; - 750 kg/m³ for non-coniferous wood fuel; - 690 kg/m³ for non-coniferous sawnwood. 	We have census data.
Latvia	Comparison with production data.	Involved companies are surveyed.
Poland	If necessary, we convert from weight to m3	
Portugal	<p>Factors are only required on the conversion of sawn wood into round sawnwood. The factors used are: coniferous 2; non-coniferous 1.6-1.92.</p> <p>The other products are supplied as round production by the organizations.</p>	
Serbia	UNECE/FAO conversion factors	
Slovenia	<p>Coniferous: over bark (1.11); under bark (0.90)</p> <p>Non-coniferous: over bark (1.06); under bark (0.94)</p>	It depends on the type of assortments. Final data are calculated in a complex way combining several partial data sources and additional experts' estimations.
Sweden	<p>From sawmills, board industries and pulp industries, roundwood consumption is collected in cubic metre solid volume excl. bark. Thus, no conversion figures are used here.</p> <p>The Swedish Energy Agency is conducting a study on the production, import and export of unprocessed wood fuels. The survey covers both the commercial production and the non-commercial. Data on wood chips production are collected from wood fuel producers. The tasks are divided into different assortments and different categories of raw materials. The removal statistics are based on wood chips production generated by domestic roundwood. The wood fuel data is in the unit GWh. Energy value is in 2.04 MWh/cubic metre solid volume incl. bark. A conversion factor for cubic metre solid volume excl. bark/cubic metre solid volume incl. bark is used for conversion to cubic metre solid volume excl. bark. The production of split firewood is derived by the Swedish Energy Agency from annual surveys to the residential sector where data is collected on its use. This information is also reported by the Swedish Energy Agency in GWh. The energy value is 2.25 MWh/cubic metre solid volume incl. bark and the conversion factor to cubic metre solid volume excl. bark is the same as previous mentioned survey.</p>	These surveys together give the total domestic annual consumption of round wood in the unit cubic metre solid volume excl. bark. This data is corrected with import and export statistics from Statistics Sweden and inventory change statistics from the Swedish Forest Agency. The result is the annual removal.
Ukraine	To reflect the removal of wood, the coefficients of conversion are not used	The aggregated data on forestry activity, industry, foreign trade in goods are used
United Kingdom	We have a set of standard conversion factors that are used to convert between green tonnes, under bark, over bark felled and over bark standing.	Not quite sure what this question is asking for. Data collection covers multiple surveys and data requests to trade associations.
United States	For measurement units (board feet to green tons, etc.) For residue production based on mill type	