

# Major issues in Finnish forest statistics since the 4th BNFSG

*Martti Aarne  
Metla (Finnish Forest Research Institute)*

In the following, four topics in Metla's forest statistics are highlighted and briefly discussed.

## **1. The "System" is the core**

An overwhelming part of our resources are tied up in permanent activities, which one might briefly refer to as the "Statistical System". It consists of components such as the following:

- i) Data collection procedures, primarily from roundwood buyers;
- ii) Forest statistical publications: Yearbook, Bulletins, Forest Finland in Brief, etc.;
- iii) Maintenance and development of on-line services (Metinfo); and
- iv) Forest taxation.

This System is working well, without major substance problems or delays.

A limited part of our resources can be allocated to new tasks or statistical routines. This year Metla has introduced three new annual bulletins: (i) Roundwood trade volumes by forest taxation system, (ii) Stumpage earnings from roundwood trade, and (iii) Forest property as an investment. A new report on fuelwood consumption in dwellings was published in August.

## **2. More focus on silvicultural works**

The statistics on silvicultural works and their costs belong to key statistical areas in Finland. At present, several processes are further increasing the demand for reliable data on silviculture, e.g.:

- (i) follow-up on the National Forest Programme 2010 and regional forest programmes;
- (ii) forest certification; and
- (iii) monitoring of the criteria and indicators for sustainable forest management.

During the past two years, Metla has actively searched for methods with which to enhance the quality of silvicultural statistics for private forests. We have paid special attention on two specific issues: cost data (both total costs and unit costs of various silvicultural measures), and volume data on non-subsidised silvicultural works. In both of these areas, the coverage and reliability of the statistics need to be improved. The method introduced by Metla is one involving collecting more data directly from local

forest management associations (there are total of 195 such associations in Finland), whose staff are definitely the best experts in their own area for reporting on the volumes and costs of silvicultural works. As a result of increased data collection, Metla has also revised the computation and reporting procedures in this statistical area. All of these reforms are also aimed at publishing the statistics two to three months earlier than before.

Statistics on silvicultural works are presented in detail in a separate document by Sinikka Västilä.

### **3. Reforms of Metinfo**

The database software and the server of the Metinfo Statistical Service were updated and upgraded in 2002. This year, the emphasis has been more on substance reforms in several sections of the service. For instance, in "Wood consumption" new data on wood fuel (chips, bark, etc.) were incorporated in the database. The section "Foreign trade" was expanded to include annual figures on foreign trade in roundwood and forest industry products. A lot of resources has also been allocated to converting price/value data in FIM into EUR.

During the spring of 2003, Metla finally found the resources with which to create a test version of "Roundwood Prices from the Baltic Sea Region" in Metla's server. Price data, mainly on a monthly basis, from five countries are incorporated in the present demo version. It is up to the 5th BNFSG Meeting to decide on potential further steps and timetables for the price project. – More info on this topic is available in a separate document.

### **4. Statistics continue to go international**

Since 1996, Metla's forest statistical experts have been seconded to the EU's Statistical Office in Luxembourg, to work on Eurostat forestry statistics. Mika Mustonen's term of contract will come to an end in January of 2004. Eurostat has submitted a request for a new expert from Finland to succeed Mika. The Ministry of Agriculture and Forestry is currently updating Finnish positions on EU forest policy. Metla has assisted in the formulation of guidelines in the area of forest statistics. Metla emphasises, i.a., the need for increased co-operation in data collection, and the harmonisation of forestry concepts and terminology.

Metla (both forest statistics and NFI) are involved in an EU consortium, coordinated by EFI, to set up a "Network of a European Forest Information Service", acronym NEFIS. The 30-month project was launched in March this year. Forest statistics will focus on the work package no. 2 dealing with metadata standards and keywords lists within various statistical themes. Our principal role will be that of statistical data provider. The main sources of information for NEFIS purposes will be the Statistical Yearbook of Forestry (where keywords are already listed) and the Finnish Forest Sector Economic Outlook.

# Baltic-Nordic Roundwood Price Statistics on the Web

*Martti Aarne and Esa Ylitalo  
Metla (Finnish Forest Research Institute)*

## 1. Introduction

The objective of the Internet-based price system is to one focal point for presenting selected and representative roundwood price series from all of the countries bordering the Baltic Sea. In its finalised form, the service is expected to provide up-to-date price information in an easily accessible and standardised format. The project is based on already existing price statistics. Therefore, its primary aim is just to make the present data available, not to improve the contents nor comparability of national price statistics. The comparability aspect is of primary importance to most users, but this would, no doubt, require further economic research.

## 2. Present state-of-the art of the project

During the spring of 2003 Metla contacted, via the BNFSG network, experts on official price statistics in the Baltic Sea Region. The objective of the exchange of correspondence was twofold:

- (1) To select, in co-operation, the most relevant and representative price series from each country to be included in the test version of the on-line price system,  
and
- (2) To compile country-specific product descriptions of national price statistics. These product descriptions are aimed at giving users the necessary background facts about price statistics, such as the methods applied and reliability, types of roundwood price information, forest ownership categories, roundwood assortments, measurement units, etc.

Based on price data and product descriptions from Estonia, Finland, Lithuania, Norway and Sweden, a test version of the "Roundwood Prices from the Baltic Sea Region" was set up on Metla's server. For practical reasons, the format of the site is the same as in Metla's Metinfo Statistical Service. The address of the demo version site is as follows:

**<http://www.metla.fi/metinfo/tilasto/roundwood/>**

The five countries involved so far were selected for the reason that monthly (or quarterly/annual) data on roadside prices are available from them. In Metla's view, the primary aim of the project in the future should be to enlarge the coverage of the system, so that the best available price data from all of the BNFSG countries would be incorporated in the system. Because of the demo character of the service, all links are not active at the moment (euro conversions or data transfer from the html-table to a spreadsheet).

### **3. Proposals and questions to the BNFSG delegates**

The first phase of the project is now completed. It is time to provide severe criticism to Metla, to draw conclusions, and perhaps to decide on the future measures. Should BNFSG go ahead with this project? If no, on which grounds? If yes, what are the next steps of the project?

We look forward to your critical comments, ideas and proposals. As a means of encouraging debate, we have grouped some of the discussion topics in the following manner:

#### **Present demo version**

- General comments on the contents and lay-out
- Are you pleased with the price series that are presented for your country? Should some series be removed; any proposals regarding additions?
- Any specific comments on product descriptions, such as:
  - Are the sub-titles relevant?
  - Are the descriptions too detailed vs. is some essential background info still missing?

#### **Possible future steps of the project**

- More participating countries: e.g. Denmark, Latvia, Norway (possibility to have monthly data), Poland, etc.? Which kind of data would be available? Comments from the floor, please.
- What is the timetable for launching the service to outside users? What kind of testing the system is still required?
- What are the principles to be applied to allow access to the on-line system? Free of charge vs. subject to a fee?
- How will the regular (monthly) updating of the system take place (data deliveries from country experts)? What should the role of Metla be; what are the tasks of national experts?
- Conversion of national currencies into euros? Is this relevant? If so, which exchange rates should be used?
- Only prices are now presented. Would it be useful to report also volumes alongside the prices? Are corresponding volume data available?
- Any practical ideas regarding graphics?
- Should some kind of price indices be developed and presented as figures?
- Should jump menus be employed, instead of present html-pages?

# Statistics on Silvicultural Works in Finland

*Sinikka Västilä*  
*Metla (Finnish Forest Research Institute)*

## 1. Background

The statistics on silvicultural (and forest improvement) works provide information on silviculture and its development in Finland. These statistics are mainly used for making plans and prognoses and in research. In recent years, the demand for information has further increased because of the need to follow-up on the implementation of the National Forest Program, regional forest programmes and forest certification.

Metla has produced the statistics on silvicultural works systematically since 1967. Even longer time series on many types of works, e.g. forest drainage, are available. The process of data collection was revised in 2002–2003 and the data concerning year 2002 are the first collected completely using the new system. In the revised collecting method, more data on private forests, including cost data, are collected from local forest management associations.

## 2. Data contents

Statistics present the amounts, unit costs, total costs and state subsidies involved in different silvicultural works. The classifications used in the statistics are types of works, region and ownership category.

The types of works are presented in the Table 1. The regions used are Forestry Centres (13 + the Province of Ahvenanmaa), which are administrative areas for non-industrial, private forestry (Figure 3, not included).

The ownership categories are:

- I Non-industrial, private, etc. forests (including individual private forest owners, collective forests, forests owned by municipalities, parishes and foundations)
- II Forests owned by forest-industry companies
- III State-owned forests

## 3. Data collection and compilation (Figure 1)

### 3.1 General

The statistics are based on total material. In principle, every forest owner is requested to deliver the same kind of data. Because of the great number of private forest holdings (over 400 000), it is impossible to get data from forest owners themselves. Therefore, these data are collected indirectly from organisations acting in the private forest sector. The main source of primary data are local forest management associations (Figure 3). On the other hand, there are only a few and quite large forest-owning state organisations and forest-industry companies, which eases the job of data collection.

The collected data are partly already refined by the data producers (forest-industry companies, the Finnish Forest and Park Service) and the rest of processing is done at Metla (silvicultural costs in private forests). Metla's role is to control and merge the data originating from different sources and to perform the calculations.

### **3.2 Forests owned by forest- industry companies and state-owned forests**

The amount and cost data (unit costs and total costs) are collected by means of Excel worksheets from forest-industry companies (four companies) and forest-owning state organisations (the Finnish Forest and Park Service, Metla, and 19 educational establishments). Metla and the educational establishments do not provide cost data because it would not be comparable with the silvicultural costs of practical forestry.

### **3.3 Non-industrial, private, etc. forests (Figure 2)**

Local forest management associations access their operational computer system (called MHY-Asiakaspalvelu) and print out three reports:

- 1) Felling plans concerning year xxxx
- 2) Silvicultural and forest improvement works concerning year xxxx
- 3) Costs of silvicultural and forest improvement works concerning year xxxx

These reports are sent mostly in electronic format to Regional Forest Owners' Unions. After checking the reports, Unions forward the reports to Forestry Centres (reports 1–2) and Metla (reports 1–3). For data security reasons, only Metla gets the cost reports. Forestry Centres complete the amount data with the works they have done (mainly forest drainage and construction of forest roads). Also information on the amounts of work done in private forests by forest-industry companies is collected from these companies and added to the statistics on non-industrial, private forestry.

In addition to the information that is output from the information systems, local forest management associations and Forestry Centres make estimates of the work done in private forests without the involvement of these organisations or forest-industry companies and without state subsidies. Forestry Centres then send the compiled amount data on silvicultural works to Forestry Development Centre Tapio and to Metla.

Metla receives the unit cost data from the local forest management associations and Forestry Centres. These cost data are based on the monetary amounts charged from forest owners when they buy silvicultural services from their local associations or from the Forestry Centres.

The data on state subsidies are collected from the information system Kemera administrated by Forestry Centres. Metla receives the compiled information from Forestry Centres.

## **4. Calculations carried out by Metla**

The amount data are already far refined when they are sent to Metla. The task of Metla is to merge the data coming from different sources and to calculate the final results by ownership category, by region and for the country as a whole.

The unit cost data produced by local forest management associations and Forestry Centres are checked and regional average units costs for the various works are calculated. The total costs are estimated as a product of the amounts and unit costs. These cost data concerning private

forests are then merged with data coming from other sources, and the final results are calculated.

## **5. Reliability**

During the past ten years the quality of cost data on private forests has been one of the biggest problems. Nowadays, most of the data are based on electronic reports output from operational computer-systems. This reduces the likelihood of data -entry errors and misinterpretations during the process. Local associations may, however, have entered amounts and costs in the system in different ways. There are also gaps in data because some associations do not deliver data at all or deliver only the amount data. This year, 24 out of 206 associations did not supply data at all. Moreover, the existing cost data can also be imperfect.

Some of the amount data from private forests are estimates (Figure 2, E1 and E2). A new survey was launched by the TTS Work Efficiency Institute this year to study how much work is actually done in non-industrial, private forests without any involvement on part of forestry organisations and without state subsidies. The survey is being carried out within the regions of three Forestry Centres.

The contents of the data may vary between ownership categories. For example, in the category "State-owned forests" cost data do not include planning, supervising nor some additional costs of work. This makes it impossible to directly compare the costs between ownership categories.

## **6. Dissemination**

Initially, statistics on silvicultural works were published only in the Statistical Yearbook of Forestry but since 1983 Metla has produced a once-a-year Forest Statistical Bulletin on this topic. The time of publishing the bulletin has varied (April–November) because of the difficulties in data collection. The data (time period 1996–) are also available over the Internet in Metla's commercial Metinfo Statistical Database.

## **7. Future development**

The most important task is to establish the new data collecting system and convince especially local forest management associations of the importance of data collecting and data checking so that in the future there will be no gaps in the data. This should be a joint effort with Regional Forest Owners' Unions and the Forestry Council of the Central Union of Agricultural Producers and Forest Owners.

TABLE 1

SILVICULTURAL AND FOREST IMPROVEMENT WORKS	Amounts,	Unit costs,	Total costs,	State subsidies
	ha	EUR/ha	EUR 1000	for private forest owners, EUR 1000
<b>Preparation of regeneration areas</b>			x	
Clearing of regeneration area	x	x	x	
Soil preparation, total	x		x	
Scarification	x	x	x	
Harrowing	x	x	x	
Mounding	x	x	x	
Ploughing	x	x	x	
Ploughing of fields	x	x	x	
Prescribed burning	x	x	x	
<b>Forest regeneration</b>			x	x
Seeding, total	x	x	x	
Seeding of pine	x			
Seeding of spruce	x			
Seeding of birch	x			
Of which seeding by machine	x			
The amount of seed used in seeding	kg			
Planting, total	x	x	x	
Planting of pine	x			
Planting of spruce	x			
Planting of birch	x			
Planting of other domestic species	x			
Planting of foreign species	x			
Of which planting by machine	x			
Of which planting on the fields, total	x			
Planting of pine on the fields	x			
Planting of spruce on the fields	x			
Planting of birch on the fields	x			
Planting of other domestic species on the fields	x			
Planting of foreign species on the fields	x			
Supplementary planting	x	x	x	
Number of seedlings used in planting and suppl. planting	number of seedlings			
Grass suppression	x	x	x	
Chemical grass suppression	x			
<b>Tending of seedling stands and improvement of young stands</b>				x
Tending of seedling stands	x	x	x	
Of which by herbicides	x			
Improvement of young stands	x	x	x	

SILVICULTURAL AND FOREST IMPROVEMENT WORKS	Amounts,	Unit costs,	Total costs,	State subsidies for private forest owners,
	ha	EUR/ha	EUR 1000	EUR 1000
<b>Pruning</b>	x	x	x	x
<b>Forest fertilisation</b>	x	x	x	x
Remedial fertilisation	x			
Increment fertilisation	x			
Of which fertilisation with ash	x			
<b>Ditch cleaning and supplementary ditching</b>	km and ha	x	x	x
<b>Construction and basic improvement of forest roads, total</b>	km			x
<b>Construction forest roads</b>	km	x	x	
Trunk roads	km			
District roads	km			
Branch roads	km			
<b>Basic improvement of forest roads</b>	km	x	x	
Trunk roads	km			
District roads	km			
Branch roads	km			
<b>Maintenance of forest roads</b>			x	
<b>Other</b>			x	
Clearing of thinning areas before fellings	x			
Preventing root rot fungi	x			
<b>FELLINGS</b>	<b>Amounts,</b>	<b>Amounts,</b>		
	<b>ha</b>	<b>m<sup>3</sup></b>		
<b>Fellings, total</b>	X	X		
<b>Intermediate fellings, total</b>	X	X		
First thinnings	X	X		
Other thinnings	X	X		
Removal of seed trees and shelterwood trees	X	X		
<b>Regeneration fellings, total</b>	X	X		
Clear fellings	X	X		
Seed tree and shelterwood fellings	X	X		
<b>Non-forestry fellings</b>	X	X		

Figure 1

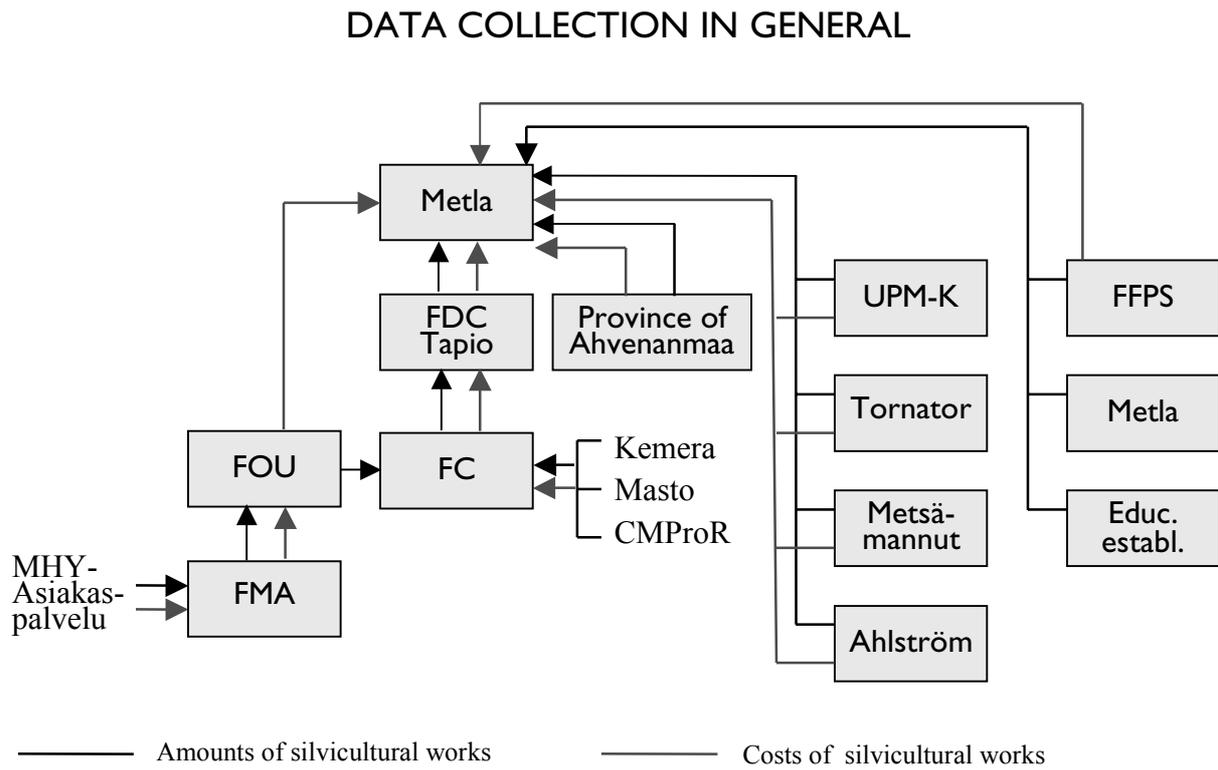
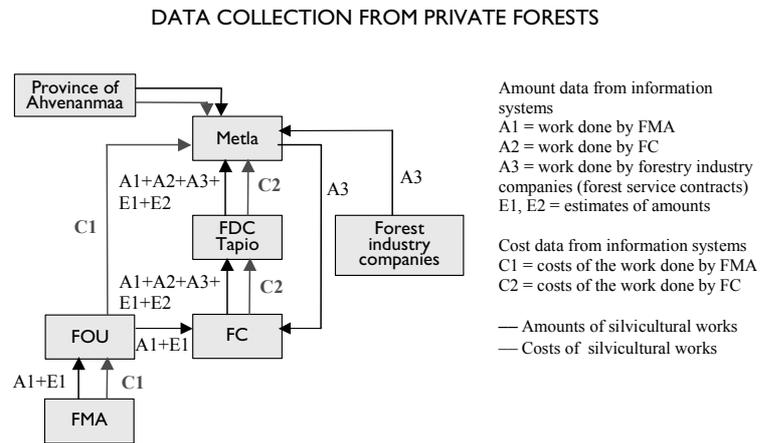


Figure 2



# Statistics on harvesting and transportation of roundwood in Finland

*Jukka Torvelainen  
Metla (Finnish Forest Research Institute)*

## 1. Background

Finland has over 300 000 non-industrial, private forest owners and approximately 600 roundwood buyers active on the roundwood market. Commercial roundwood fellings provide most of the raw material for harvesting and transportation of roundwood in Finland.

The Forest Statistics Information Service (FSIS) of Metla publishes versatile statistics on harvesting (felling and forest haulage) and transportation of roundwood.

Some of the statistics are produced by FSIS. However, the major part of the statistics on this theme are compiled by Metsäteho Oy, which is a private company providing research and development services related to wood procurement and wood production for its shareholders and other clients representing the forest industries. There are also other organisations contributing for these statistics.

## 2. Statistics on harvesting of roundwood

### 2.1 Total volumes of harvesting

Statistics on roundwood production produce information about commercial roundwood fellings and at the same time also about the volume harvested. 'Commercial roundwood' is the term used for the wood destined for industrial use or for exporting. It does not include household use nor firewood, which are excluded also from the statistics on harvesting in Finland.

Statistics on commercial roundwood removals are based on Metla's own enquiries. Metla collects data directly from roundwood buyers applying stratified sampling in which the sample size is 50 buyers for monthly statistics and 170 buyers for biannual statistics. The Finnish Forest and Park Service provides the data for state-owned forests.

Monthly preliminary *estimates of total volumes of harvested roundwood* are compiled for the whole country by:

*Roundwood assortment (e.g. pine logs, spruce logs, non-coniferous pulpwood)  
Type of sale (standing sales, delivery sales),  
Forest ownership category (non-industrial private forests, forest industry,  
Forest and Park Service).*

Final figures are published biannually by forestry centre region.

## 2.2 Detailed information on harvesting costs

Metsäteho collects annual statistics on harvesting. Unfortunately, these statistics include only about 85 % of the commercial fellings in stumpage sales, as some smaller forest-industry companies are excluded from the data. Furthermore, they do not contain delivery sales at all.

The statistics contain only the direct costs of harvesting and transportation of domestic roundwood. These costs include charges paid in motor-manual felling and fees paid to contractors for felling and forest haulage. However, fixed organisational costs are not included. These overhead costs were, on average, as high as EUR 3.31 per cubic metre harvested in 2002.

*The volume, total costs and unit costs of felling and forest haulage of roundwood in stumpage sales are compiled by:*

*Roundwood assortment*

*Cutting method (Thinnings & Regeneration fellings)*

*Felling method (Motor-manual felling & Mechanised felling)*

In 2002, the share of standing sales was about 81% of the commercial roundwood production. In standing sales, the share of mechanised fellings amounted to 96%. The degree of mechanisation in regeneration fellings was 97% and in thinnings 91%.

Some harvesting contracts merge forest haulage and felling. For this reason data on costs and volumes are compiled also for '*Harvesting to roadside*', which includes both harvesting and hauling to roadside landing. In 2002, these entrepreneurs harvested about one third of the roundwood felled in stumpage sales.

## 2.3 Unit costs of delivery sales

Metla also publishes the unit costs of harvesting in delivery sales. The unit costs of felling and forest haulage are compiled as an average for the whole country. Felling costs are compiled also by roundwood assortment.

These figures are estimates calculated for forest taxation. In calculations, the felling method is assumed to be motor-manual felling.

## 2.4 Machinery and labour used

As a part of the statistics on roundwood production, Metla also compiles statistics on *machinery (harvesters, tractors and forwarders) used and the labour force employed in harvesting.*

The statistics include forestry machines used in standing sale fellings in non-industrial private forests, as well as machines used in forests owned by the forest industries and the Finnish Forest and Park Service. The data usually apply to the situation on the last working day of the month.

Machinery and the labour force employed in delivery sales carried out or organised by forest owners are not included in the figures.

### 3. Statistics on long-distance transportation of roundwood

#### 3.1 Total volume by transportation method

Statistics on long-distance transportation of roundwood are collected from several sources. Metla publishes statistics on the transportation of roundwood (and forest industry products) *by road and rail* in Finland:

*Total volumes (transport tonnes, 1000 m.t.; transport volume, mill. tonne-km)  
Share of total freight*

Statistics Finland have compiled statistics on the Transport of Goods by Heavy Goods Vehicles in Finland since 1995. *Domestic road transport* statistics are based on a sample survey conducted by mail questionnaires in which operators are asked to fill in a travel diary for two consecutive days. All lorries registered in Finland serve as the universal population from which the sample of 8,400 vehicles is drawn. The sample is regionally systematic and covers all days of the week and the entire calendar year. The statistics include only lorries registered in Finland. Russian timber lorries loaded with imported Russian timber are a frequent sight in Finland. Usually domestic timber is carried by domestic hauliers.

Statistics on *freight transportation by rail* are compiled by The Finnish State Railways and include total volumes and tonne-kilometres carried on rail in Finland.

#### 3.2 Costs and transportation distances

Metsäteho compiles statistics on long-distance transportation of roundwood. These data include *timber from standing and delivery sales used by shareholders of Metsäteho*, and they account for about 84% of all the timber from commercial fellings in Finland. These statistics reveal the following:

*Total transportation volume by mode of transportation (road, rail, waterways)  
Mean transportation distances by mode of transportation  
Total and unit costs by mode of transportation  
Unit costs by roundwood assortment*

The transportation distances by transportation sequences are averages for the entire country. In addition to these, Metla has compiled mean transportation distances of roundwood by timber assortment for the year 1997.

In Finland, road transportation by lorry is the dominant mode of long-distance transportation of roundwood. In 2002, 81% of domestic roundwood was transported by road to mills; the average distance from stand to mill being 106 km. In the rail and water transportation sequence the average distance was almost 300 km. The average unit costs of long-distance transportation were EUR 5.88 per m<sup>3</sup>.

#### 3.3 Machinery used

As a part of statistics on roundwood production, Metla also compiles statistics on *the number of timber lorries used in long-distance transportation of domestic roundwood*.

### **3.4 Roundwood in exports and imports transportations**

Finnish Customs compile statistics on export and import transportations in Finland. Metla publishes:

*Roundwood and forest-industry products by mode of transportation*  
*Share of roundwood and forest-industry products of total transportation*

In regard to imports of roundwood, 16.2 mill. m<sup>3</sup> of roundwood and wood residues were imported to Finland in 2002. Half of this amount was imported by rail, 25% by road, and 25% by water. Wood made up about one fifth of all imports-related transportation, but in exports-related transportation its share was less than 2%.

Metla also collects data from The Finnish State Railways, Finnish Customs and The Finnish Maritime Administration *concerning imports of roundwood and wood residues by port and customs check point*. The results are published in the form of a map.

## **4. Publications**

Monthly volumes of harvesting and transportation (commercial roundwood fellings), as well as machinery and labour force employed in roundwood production are published by Metla with a statistical delay of one month.

Other statistics on harvesting and transportation of roundwood are published mainly as annual statistics in the Finnish Statistical Yearbook of Forestry with a statistical delay of 10 months.

## **5. Future development needs**

The harvesting volumes in delivery sales are received from roundwood buyers. However, we do not have updated information (since year 1999) on how these volumes are divided, e.g. between felling methods (motor manual / mechanised) and haulage equipments (forwarders / tractors / smaller vehicles). Nor do we know the share of forest owners, employed persons and contractors engaged in these works, nor the total and unit costs according to this classification.

The mean transportation distances of roundwood by timber assortment are from the year 1997. The transportation distances have believed to be quite stable because forest structure and the location of forest-industry production plants are not subject to rapid changes. However, there may have been some changes as industrial wood consumption has increased, the structure of forest-industry enterprises has changed, and the imports of roundwood to Finland have nearly doubled since the year 1997.

# Industrial Wood Consumption in Finland

*Esa Ylitalo*

*Metla (Finnish Forest Research Institute)*

## 1. Background

Statistics on wood consumption belong to the oldest national forest statistics in Finland. Together with the forest resource data from national forest inventory, they have constituted the backbone of forest statistical production since the 1920s.

At present, statistics on wood consumption are annually collected, compiled and published by Forest Statistics Information Service of Metla. In Finland, the compilation of these statistics is divided into three categories:

1. Industrial wood consumption
2. Fuelwood consumption in heating dwellings
3. Exports of wood

Of these categories, the most important one is industrial wood consumption, comprising at present more than 90 per cent of the total roundwood consumption (Fig. 1).

Additionally, Metla also launched a new statistics in 2000 under the heading '*Solid wood fuel consumption by power and heating plants*'. These statistics cover data on wood fuel, mainly wood residues (bark, sawdust, industrial chips, forest chips, etc.), consumed in energy generation in large-sized power and heating plants.

Wood consumption statistics in Finland are presented separately into roundwood and wood residues. Total wood consumption for Finland only refers to roundwood consumption. Figures for wood residues, mainly sawmill chips and sawdust consumed by pulp industries and wood fuel consumed by energy-generating industries, are presented separately (Fig. 2 and Fig. 3). This is due to wood residues consumed (secondary consumption) having been already included earlier in the consumption volumes of roundwood (primary consumption).

All the volumes are recorded over bark.

## 2. Industrial wood consumption statistics

### 2.1 Data collection

Data on industrial wood consumption (by forest industries) are annually collected by Metla from various sources (Fig. 4). Major data are received from the Finnish Forest Industries Federation (FFIF), the largest interest organisation of forest industries in Finland representing integrated industrial companies. FFIF collects data from its member companies and these data cover most large sawmills and all wood-based board and pulp and paper industries. In 2002, these data comprised 88 per cent of the total wood consumption.

Additionally, it is Metla's duty to collect data from those forest-industry companies, which do not belong to the FFIF. These companies can be further divided into two different categories:

Firstly, Metla annually collects wood consumption data from forest-industry companies consisting mainly of medium-sized sawmills (wood consumption in excess of 10 000 m<sup>3</sup>/a), including also a small number of enterprises producing wooden poles and log buildings.

Secondly, there is in Finland also a large number of small sawmills (wood consumption less than 10 000 m<sup>3</sup>/a), e.g. sawmills linked to household use, to contract sawing, and joinery or to other small-scale forest industries. Data on wood consumption by these enterprises are collected by means of a sampling technique at 5–10 year intervals. The latest study in this sector was carried out in 1998, when the number of these enterprises was estimated to be approx. 2 400 and their wood consumption amounted to 1.9 mill. m<sup>3</sup>/a (or 3 per cent of Finland's total industrial roundwood consumption). As the study is carried out periodically, the volumes are interpolated for presentation in the statistics during the in-between years.

## **2.2 Data contents**

Data on wood consumption are collected applying the classification presented below. Based on the classification, it is possible to construct different combinations of wood consumption as determined by different needs (Fig. 5):

### **2.2.1. Assortments**

The statistics are presented by the following assortments:

#### **I Roundwood (7 assortments)**

- Logs and pulpwood: pine, spruce and hardwood species (mainly birch)
- Imported chips

#### **II Wood residues (1 assortment)**

- Domestic chips and sawdust from sawmilling and plywood and veneer industries.

As stated before, the figures for wood residues are presented separately in wood consumption statistics. It should, however, be noted that the volumes for imported chips are considered to be roundwood despite the fact that this assortment regularly also includes industrial chips and other industrial wood residues in addition to roundwood chips. The reasons for this classification are (i) that it is impossible to separate imported roundwood and wood residues from each other within this commodity and (ii) that the primary consumption of this assortment takes place in Finland. So far, the volumes of this assortment have been of minor importance (in 2002 only 1.5 mill. m<sup>3</sup> or 2 per cent of the total).

## 2.2.2 Branch of industry

Consumption figures are presented for the following branches of industry:

### I Wood-products industries

- Sawmilling
  - Large sawmills (wood consumption in excess of 10 000 m<sup>3</sup>/a)
  - Small sawmills ( " " below " " )
- Plywood and veneer industries
- Particle board industry
- Fibreboard industry
- Other wood-products industries (mainly production of wooden poles and log buildings)

### II Pulp industries

- Mechanical pulp industry
- Semi-chemical pulp industry
- Chemical pulp industry

## 2.2.3 Domestic and imported roundwood

Data on consumption of both domestic and imported roundwood are collected simultaneously based on the notification submitted by forest-industry companies. It should be noted, however, that exceptionally in this case data on imported roundwood are not based on the Customs statistics.

Volumes of imported roundwood play a very important role as the raw material of Finnish forest industries. In 2002, the consumption of imported roundwood, mainly from Russia, was 16.3 mill. m<sup>3</sup> or 23 per cent of the total. The most important assortment imported was birch pulpwood, 7.6 mill. m<sup>3</sup>, this being almost 2 mill. m<sup>3</sup> more than the consumption of domestic birch pulpwood at the same time.

## 2.2.4 Region

Wood consumption data are collected by places of business (in practice, by mills and factories), which are reported by municipality. This makes it possible to publish the results by divisions into all possible regions needed (by province, by NUTS region, etc.). In Finland, these data are traditionally published by forestry centres (15 altogether), which are administrative areas for non-industrial, private forestry.

## 3. Reliability of the data

In the long run, the reliability of the statistics is validated by comparing the compatibility of wood consumption figures to the figures from the following statistics:

1. Roundwood fellings (by Metla)
2. Foreign trade of roundwood (by Customs)
3. Production of forest-industry products (by FFIF)
4. Stocks of roundwood (by FFIF)

Additionally, because the data are recorded and collected by mill, it is possible to control the wood consumption of a certain mill and take measures if unexpected changes take place.

## **4. Publishing**

Results of the previous year's wood consumption are published in Metla's Forest Statistical Bulletin normally at the beginning of May. Simultaneously with the publication of the data, the data will also be available over the Internet in Metla's commercial Metinfo Statistical Database. Later on, the data will also be published in the Finnish Statistical Yearbook of Forestry.

## **5. Future development proposals**

### **5.1 Small-diameter roundwood used for energy generation**

To date, the roundwood consumed in energy generation in power and heating plants has not been included in roundwood consumption statistics and has instead been presented separately (Fig. 3). The main reason for this, in addition to the small volumes consumed (in 2002 only 0.4 mill. m<sup>3</sup>), is lack of knowledge as to whether this assortment fulfills the measurement and quality requirements set for roundwood. The assortment consists of small-diameter stemwood from first-thinnings and tending-of-seedling-stands operations as well as of rejected logs from clear-cutting operations.

It seems now, however, that in the future the consumption of this assortment for energy generation will inevitably and significantly increase. Due to the development, problems linked to the recording of the consumption of these assortments should be addressed and an appropriate location for this assortment should be found to include it in the statistics.

### **5.2 Consumption of aspen**

The consumption of aspen (*Populus tremula*) as a raw material source for paper industry is at the moment rapidly increasing in Finland. Rough estimates show that in 2002 the consumption of aspen pulpwood was approximately 1.3 mill. m<sup>3</sup> or 10 per cent of the total hardwood pulpwood consumption. In the near future, it will probably be necessary to report consumption figures separately for aspen.

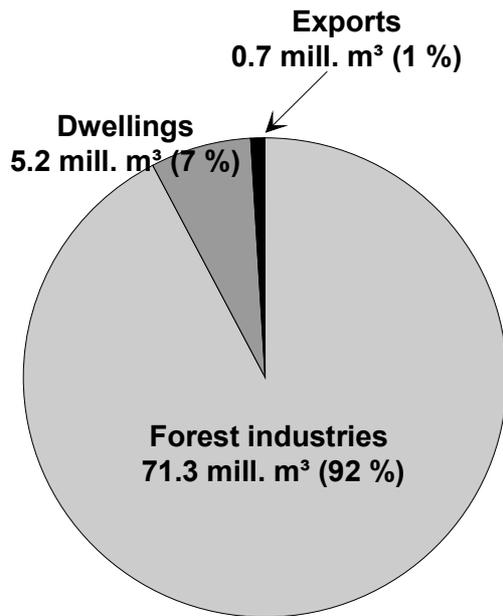


Figure 1. Roundwood consumption in Finland in 2002, by category of use (Total 77.2 mill. m<sup>3</sup>)

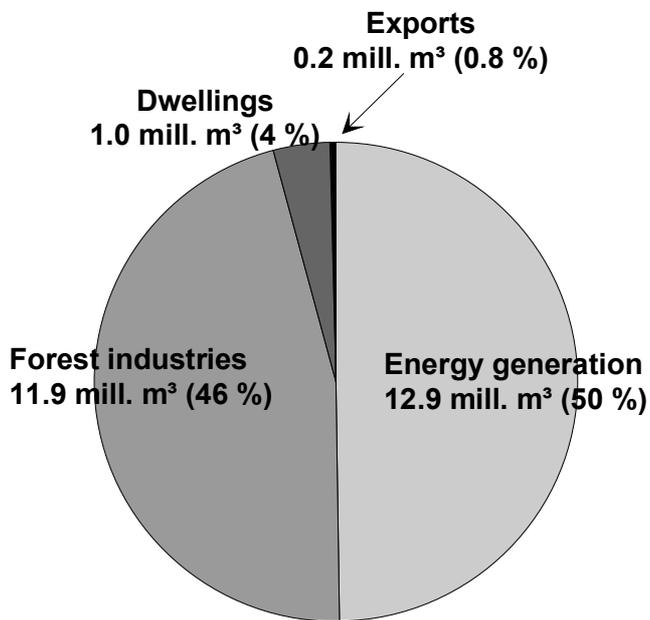


Figure 2. Consumption of wood residues in Finland in 2002, by category of use (Total 26.0 mill. m<sup>3</sup>)

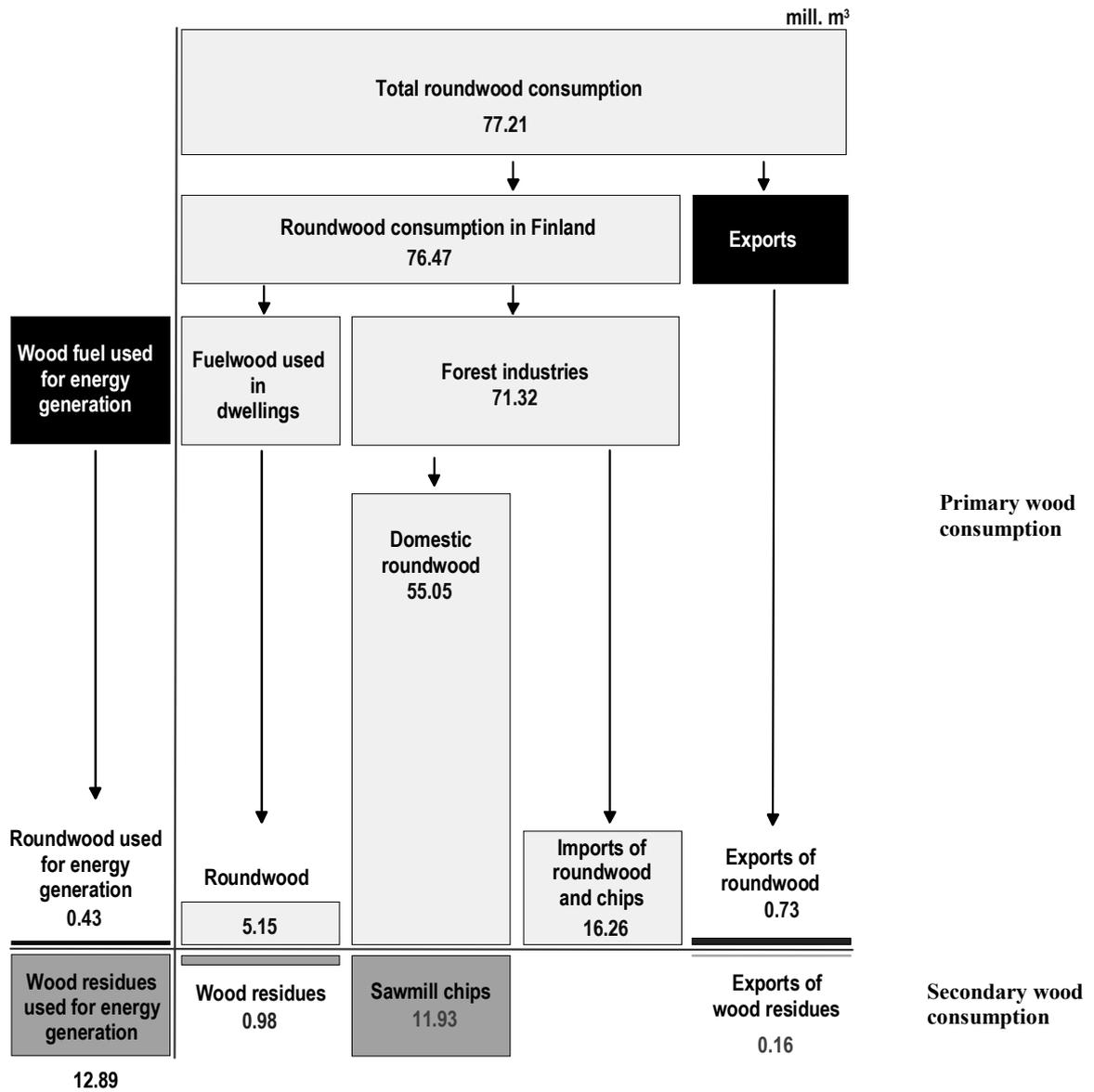
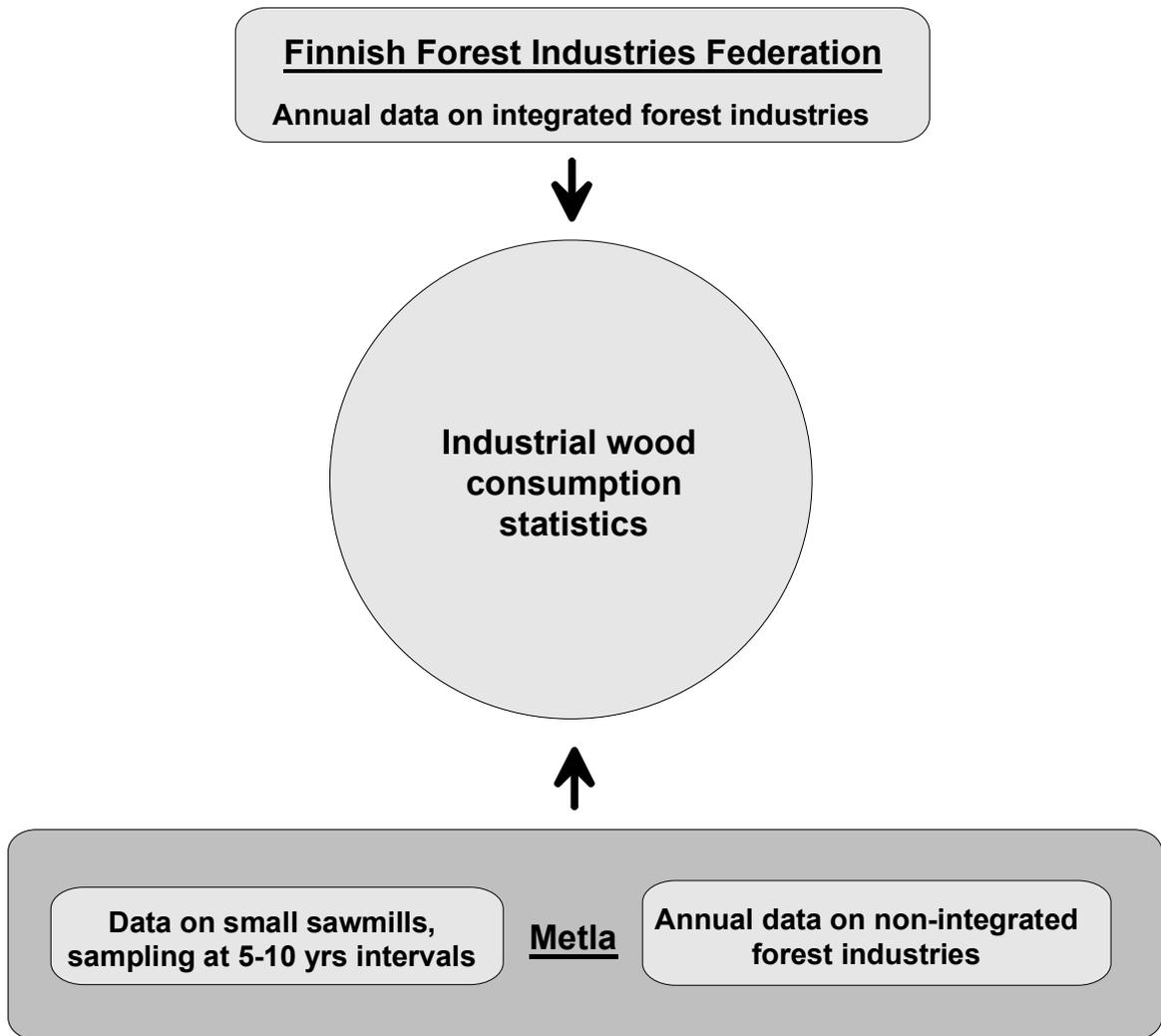
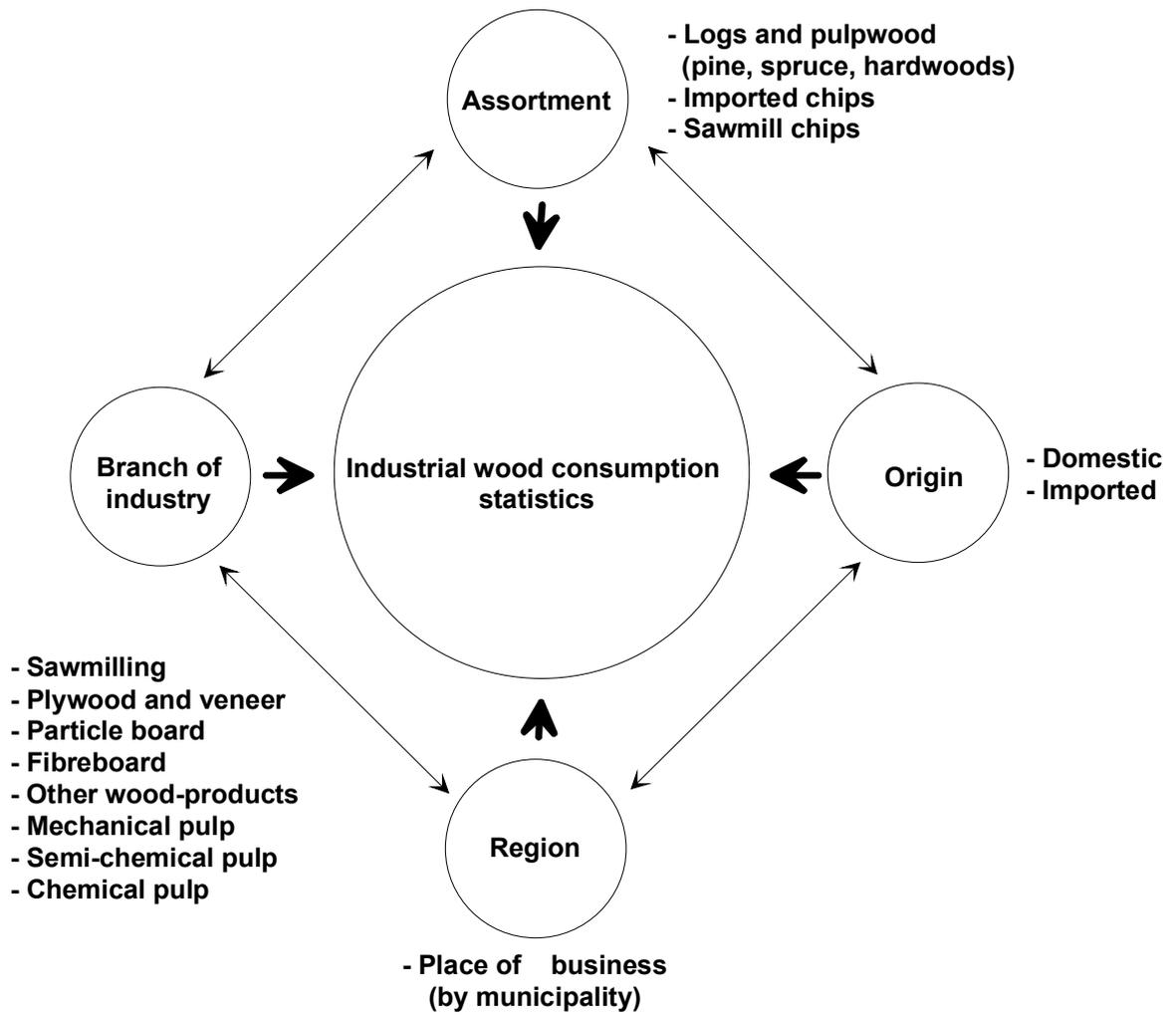


Figure 3. Wood consumption in Finland in 2002



**Figure 4. Compilation and data sources of industrial wood consumption statistics**



**Figure 5. Data contents of industrial wood consumption statistics**