

THE DEVELOPMENT OF FORESTRY STATISTICS IN THE BALTIC AND NORDIC STATES

Proceedings of the International Conference and Expert Panel Meeting
held in Joensuu, Finland 10-12 February 1997

Edited by Brita Pajari

EFI Proceedings No. 24, 1999



European Forest Institute



Ministry of Agriculture and
Forestry of Finland

EFI Proceedings No. 24
The Development of Forestry Statistics in the Baltic and Nordic States
Edited by Brita Pajari

Layout: Minna Korhonen

Publisher: European Forest Institute

Series Editors: Ian Hunter, Editor-in-Chief
Minna Korhonen, Technical Editor
Brita Pajari, Seminar Co-ordinator

Editorial Office: European Forest Institute
Torikatu 34
FIN-80100 Joensuu, Finland

Phone: +358 13 252 020
Fax: +358 13 124 393
Email: publications@efi.fi
WWW: <http://www.efi.fi/>

Disclaimer: The papers in this book comprise the proceedings of the event mentioned on the cover and title page. They reflect the authors' opinions and do not necessarily correspond to those of the European Forest Institute. EFI Proceedings are usually not externally reviewed or receive only a limited review.

© European Forest Institute 1999

ISSN 1457-0610 (online)
ISBN 952-9844-41-7

TABLE OF CONTENTS

	Foreword	5
	Executive summary	7
<i>Lin et al.</i>	The Comparability of Baltic and Nordic Forestry Statistics – A Pilot Study ...	9
<i>E. Ylitalo</i>	Forestry Statistics in the Baltic Countries: Current Situation and Future Needs	37
<i>E. Kosenkranius</i>	Estonian Forestry Statistics	43
<i>A. Japina</i>	Baltic-Nordic Forest Statistics Development Project: Tasks to be Solved	47
<i>G. Leliuga</i>	Forest Statistics in Lithuania	55
<i>E. Pepke</i>	Forest and Forest Products Statistics in the Baltic Countries: an UN-ECE and FAO Perspective	59
<i>M. Aarne</i>	International Forestry Statistics: Current Situation and Future Prospects	69
<i>S. A. Svensson</i>	Co-operation of the Nordic and Baltic Countries in Forest Statistics: Needs and Strategies	75
<i>K. E. Fjulsrud</i>	International Forest Research Co-operation: Options for the Baltic and Nordic Countries	79
<i>M. Nygren</i>	NOVABA University Network	85
	Concluding Remarks	89
	Programme	91
	List of participants	95
	EFI Proceedings	97

FOREWORD

The availability of harmonised forestry statistics has become more important not only because statistics provide essential information for the development of forestry sector but also because they are the basis for adapting and justifying international agreements.

In the Baltic countries, the transition process and also the plans of applying the EU membership have caused new needs for developing statistics. To describe the current state of forestry statistics in the Baltic countries, three feasibility studies were carried out in 1995 and 1996 by the Finnish Forest Research Institute, financed by the Nordic Council of Ministers and the Ministry of Agriculture and Forestry in Finland.

To clarify the possibilities on how to proceed with the work the Ministry of Agriculture and Forestry in Finland and the European Forest Institute arranged in June 1996 a seminar entitled 'The development of forestry statistics in the Baltic states' where 11 experts representing organisations responsible for their national forest statistics in the Baltic and Nordic states were invited.

The seminar concluded that there are concrete and pragmatic needs to develop and harmonise the forest statistics both in the Nordic and Baltic countries, and that the work should be initiated as soon as possible to be able to meet the international standards of statistics in the near future.

Based on the conclusions of the seminar the development activities were started at two levels:

- 1) General level strategies for forestry statistics development in the Baltic and Nordic states were established in order to guarantee the compatibility between the countries, and
- 2) Specific level projects were started in Latvia and Estonia within clear priority areas. Lithuanian projects were to be discussed later in detail.

As a follow-up the Ministry of Agriculture and Forestry in Finland and the European Forest Institute arranged an **Expert Panel Meeting** on 10-11 February 1997, and a **Conference** on 11-12 February 1997, entitled '**The Development of Forestry Statistics in the Baltic and Nordic States**'. Both events took place at the European Forest Institute in Joensuu, Finland.

The aims of the meetings were to discuss the common problems and to agree upon the common target to develop the forest statistics. The specific aims of the Expert Panel Meeting were to discuss the on-going development projects in Estonia and Latvia and to define the future needs both nationally and internationally.

The events were attended by the representatives from Food and Agriculture Organisation of the United Nations (FAO), Statistical Office of the European Communities (Eurostat), Nordic Council of Ministers, Ministry of Agriculture and

Forestry in Finland, and the experts from Estonia, Latvia, Lithuania, Denmark, Finland, Norway and Sweden.

We would like to acknowledge the participants of the Expert Panel Meeting and the Conference, and the authors of the papers in these proceedings. Your contributions have been very valuable in the process of developing forest statistics. We would also like to thank all the people who provided support for the preparation of these proceedings, especially Ms. Minna Korhonen from EFI.

November 1999

*Brita Pajari
Researcher
European Forest Institute*

*Risto Päivinen
Deputy Director
European Forest Institute*

EXECUTIVE SUMMARY

The papers in these proceedings are based on the presentations of both the Expert Panel Meeting and the Conference on 'The Development of Forestry Statistics in the Baltic and Nordic States'. The articles describe the methods and the problems in collecting and compiling forestry statistical information, as well as the current networking of the research and education.

The first article gives an insight of the availability of national forestry statistics and their background information in the Baltic and Nordic states, i.e. terminology, definitions, etc. The next four articles provide an overview of the methods of collecting and compiling forestry statistics, as well as the problems found in the Baltic countries. Mr. Ed Pepke from FAO and Mr. Martti Aarne from Statistical Office of the European Communities (Eurostat) enlighten the future demands and prospects for statistics on the international level, and Mr. Sven Svensson draws general conclusions of forestry statistics in the Baltic and Nordic countries both on the national and international level, and of the possible co-operation. The last two articles concentrate on the research and educational co-operation between and within the Baltic and Nordic states.

The purpose of forestry statistics is to provide information for different users, e.g. decision makers and researchers. The importance of accurate and also comparable statistics has increased because of the globalisation of socio-economics and demand for international agreements. However, forestry statistics are mainly used for the national purposes, though the international needs have begun to give some pressure for countries to provide internationally comparable information.

Because of the importance of forestry sector, forestry statistics have long traditions in Finland, Norway and Sweden. On the other hand, the transition process has caused new demands for statistics in Estonia, Latvia and Lithuania. As a result, there is a need to develop the statistics to better meet the international standards both in the Baltic and Nordic countries.

Generally, forestry statistics in the Baltic and Nordic countries can be considered fairly harmonised. However, according to Lin et al. there are differences in the definitions and data collection methods of the base attributes of statistics. If the base attribute and nomenclature are not harmonised, the attributes that are assessed based on these attributes are not harmonised either. Also, when the definition used in the national level differs from the international one, it would be important to illustrate how the international definitions have been adapted when providing information for the international statistics.

The most problematic areas in forestry statistics in the Baltic countries are considered to be:

1. compiling forestry data from private forests,
2. wood trade and prices,

3. foreign trade of roundwood and forest industries products, and
4. lacking a proper control mechanism to ensure the truthfulness of the data.

The Baltic countries have already a number of strategies to solve the problems. However, because the pressure to quickly achieve the goals is high, there is a need for intensive co-operation. The most urgent projects for developing the statistics are listed in the concluding remarks of the Expert Panel Meeting.

The co-operation in the developing work of forestry statistics can also be thought more globally. The work can and should be supported by the co-operation of the forest research and education. Co-operation on different levels, such as between researchers, organisations or countries, is strongly supported to improve the quality of research, create synergy and avoid double work. Networks are created according to the existing need. In the educational sector, the NOVABA co-operation scheme is a very good example of such a network. There was a clear need for coordinated co-operation between the Baltic and Nordic institutions of higher education. According to the conclusions of the Conference co-operation within Nordic countries and between Nordic and Baltic countries can be successfully achieved only by increasing close co-operation between the institutions.

THE COMPARABILITY OF BALTIC AND NORDIC FORESTRY STATISTICS – A PILOT STUDY

Chijien Lin, Brita Pajari and Risto Päivinen

European Forest Institute

1. INTRODUCTION

In 1995 and 1996, the Finnish Forest Research Institute carried out feasibility studies for the development of Baltic forestry statistics (Ylitalo 1999). The Finnish Ministry of Agriculture and Forestry and the European Forest Institute organised an expert meeting entitled “The Development of Forestry Statistics in the Baltic States” in February 1996. The outcomes of the feasibility studies and the forestry statistic experts from Nordic and Baltic countries in that meeting concluded that the development and harmonisation of the forest statistics in the Nordic and Baltic countries are needed and that the co-operation between the countries is essential for the process. It was agreed by the participants of the expert meeting that a survey of the meta-information, i.e., terminology, definitions, methods, and reference years, on Nordic and Baltic forestry statistics was needed and that the participants will supply the requested information as accurate as possible.

This paper is based the survey carried out by Pajari (1998) in preparation of the expert panel meeting and conference on “The Development of the Forestry Statistics in the Baltic and Nordic States’ that was held at the European Forest Institute in January 1997. The purpose of the survey was to collect the meta-information on forestry statistics in the Nordic and Baltic countries in order to study the comparability of the forestry statistics in those countries and to form a view on to what extent the data are harmonised. The preliminary results of the survey were given during the meeting (Päivinen and Pajari 1997); more detailed analysis results are summarised and discussed in this paper.

2. METHODOLOGY

2.1 Terminology

The following terms are used throughout this paper:

Attribute is defined as “term used to name a feature assessed or derived”, for example, diameter and volume.

Attribute/nomenclature is used to describe an attribute that is further classified or divided by nomenclature.

Category is a group of attributes under a common theme such as “Land use”.

Common definition refers to the internationally accepted definitions that are published by United Nations, such as FAO yearbooks, and other international organisations.

Comparability is defined as “The quality of being comparable and to mark or point out the similarities and differences”.

Harmonisation is defined as “the action or process of harmonising reaching harmony or agreement”.

Meta-information is defined as the ‘information about information’. In this paper, meta-information is ‘the information about the forestry statistics in Nordic and Baltic countries’ and, particularly, it refers to terminology, definitions, methods, and reference years, on Nordic and Baltic forestry statistics.

Nomenclature is being used to classify or divide attributes for assessing more detailed information.

Definitions are available for attribute, nomenclature or a combination of both, i.e., attribute/nomenclature and the relationship is illustrated in Figure 1. The attribute definitions are usually the basis of attribute/nomenclatures. Note that the classification of attributes and nomenclatures follows that in the national and international forestry statistical yearbooks and that “category” is used to group the attributes for illustration purposes.

2.2 Questionnaire survey

Questionnaire survey was used to collect the meta-information on forestry statistics. The questionnaire was sent to country correspondents in Denmark, Estonia, Finland, Latvia, Lithuania, Norway and Sweden. The questionnaire consisted of 25 tables in which each country correspondent filled in reference year and a combination of data collection method codes. The data collection codes included ‘AP’ for aerial photography, ‘F’ for field survey, ‘Q’ for questionnaire, ‘M’ for Map, ‘D’ for Derived, ‘0’ for information not available, ‘-’ for not assessed in the country, ‘RS’ for remote sensing, ‘X’ for other, and ‘E’ for data available in electronic form.

The questionnaire contained a total of 745 attribute/nomenclatures that were selected from national and international forestry statistical yearbooks. The goal was to cover

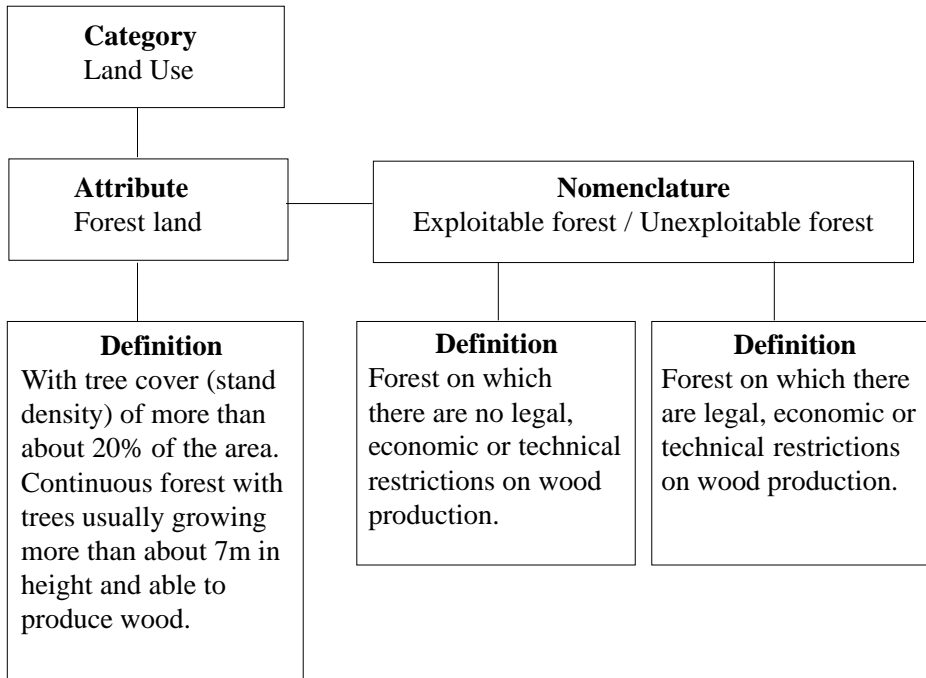


Figure 1. The relationships between category, attribute, nomenclature, and definitions.

most commonly available forest statistics in the Nordic and Baltic regions. Correspondents were asked to modify the questionnaire, e.g., redefine or create new attributes, in case the given attributes or nomenclature was not applicable.

A set of common definitions was compiled from the Forest Resource Assessment 1990 (United Nations 1992), Standard International Trade Classification (SITC) Revision 3 (United Nations 1985), and Harmonised Commodity Description and Coding System (HS) (The International Customs Journal 1996), with some exceptions (Appendix 2). The common definitions were supplied to the correspondents together with the questionnaire. The correspondents were asked to provide the definitions when the common definitions were not used or were not similar to that used in their country.

3. RESULTS

The 745 attribute/nomenclatures were aggregated into 57 attributes for analysis purposes (Table 1). The purpose of the analysis is to provide a broad view of the comparability of forestry statistics in the Baltic and Nordic countries. Therefore, the grouping of the attribute/nomenclatures was found useful and appropriate. The attributes, definition used, i.e., common or country definition, and notes to the attributes that are provided by the correspondents are listed in Appendix 1.

Figure 2 illustrates the number of attributes that are assessed in different countries. Generally speaking, Nordic and Baltic forestry statistics, except Denmark, covered near equal amount of attributes and most of the attributes follow the common definitions. Finland and Sweden covered most of the attributes in their forestry statistics. In Norway and Sweden, attributes related to the ‘timber assortment’ or ‘consumption’ were mostly missing or not assessed.

Only 8 attributes had replies from all 7 countries (Table 2). Among them, common definitions applied to 3 attributes and 5 attributes had 2 or more definitions used among the countries. A total of 24 attributes were assessed in 6 countries; most of the attributes were not assessed in Denmark and a few in Baltic countries. Among the 24 attributes, more than half were related to forest products and trade categories. Common definitions were applied to 19 attributes and 5 attributes had more than 1 definitions used in the replied countries (Table 3).

Forest land, other wooded land, ownership classes, tree species mixture, symptoms of forest damages, and occurrence of damaging agents were the attributes and nomenclatures to be combined with other attributes or nomenclatures. Providing that these attributes and nomenclatures were not harmonised (Table 4), the attributes that were assessed on the basis of those would not be harmonised either. As an example, ‘forest area’ was the base attribute for ‘ownership classes’ which was combined with ‘Growing stock’; although all the countries used the common definition for ‘Growing stock volume by ownership classes’, the statistics could not be considered as harmonised given that there were 3 different ‘forest land’ and 4 different ‘ownership classes’ definitions used in the regions.

Figure 3 shows the methods that were used to collect forestry statistics. In principle, field survey and maps were used to collect forest resource data while questionnaire was used to collect information on consumption and trade of forest products. However, there was no consistent pattern of assessment methods that were used in Baltic and Nordic countries.

The result indicated that a harmonised definition might apply to an attribute but the methods that were used to collect the data may affect the data quality and reliability. The main argument is that the original data could be collected by using stand inventory for forest management planning purposes, which would result in high quality data, or the data could simply be estimated by forest landowners. Using the previous example, ‘Growing stock volumes by ownership classes’ had the same definition in all countries but it was assessed by questionnaire in Denmark and Lithuania, by field survey in Estonia, Latvia, Finland, Norway, and Sweden. It would be necessary to know the data collection methods in Denmark and Lithuania in order to evaluate the comparability of the attribute.

4. DISCUSSION

From the main findings of the survey, the attributes of the forestry statistics in the Baltic and Nordic countries are fairly comparable and harmonised. The problems arose from the differences in the definitions and data collection methods of the base attributes and

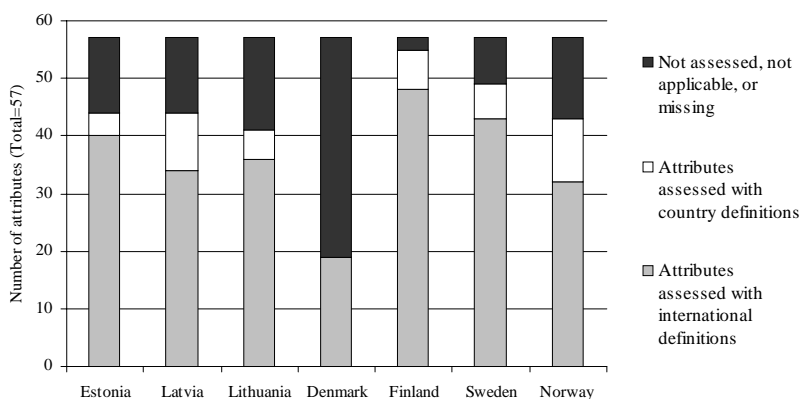


Figure 2. The number of attributes assessed and types of definitions by countries.

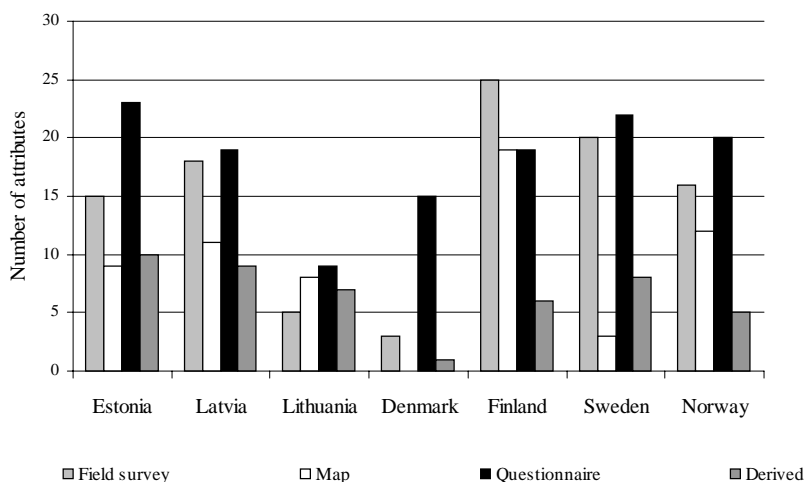


Figure 3. Methods used to collect forestry data by countries (note that more than one method can be applied to the same attribute).

Table 1. Aggregation of the attribute/nomenclatures.

Category	Number of attributes	Number of attribute/nomenclatures
Land Use	10	48
Growing stock and Increment	7	98
Forest structure	7	71
Forest damage	4	20
Roundwood assortment	10	364
Forest products production and consumption	8	68
Forest product exports	11	76
Total	57	745

Table 2. Attributes that are used in all Baltic and Nordic countries.

Attribute group	Common definitions	Same definition (other than common definition)
Gross annual increment	ALL	
Growing stock volumes by ownership classes	ALL	
Prices by timber assortments	ALL	
Forest land	EE, LT, DK	FI, NO, SE
Ownership classes	EE, LT, DK, FI	
Area of forest holdings by size classes	EE, LV, LT, DK, FI, SE	
Number of forest holdings by size classes	EE, LV, LT, DK, FI, SE	
Symptoms of forest damages	LV, DK	EE, LT, FI, SE, NO

EE = Estonia, LV = Latvia, LT = Lithuania, DK = Denmark, FI = Finland, NO = Norway, SE = Sweden.

Table 3. Attributes that had more than 1 definition used in 6 countries.

Attribute	Number of definitions applied
Tree species mixture	4
Felling type by ownership classes	4
Occurrence of damaging agents	2
Growing stock volumes by tree species	2
Commercial roundwood fellings by roundwood assortments	2
Production of sawnwood	2

Table 4. Attributes that had the most inconsistent definitions among the 57 assessed attributes.

Attribute	Number of country replied	Number of definitions applied to the attribute
Forest land	7	3
Other wooded land	5	3
Tree species mixture	6	4
Ownership classes	7	4
Felling type by ownership classes	6	4
Symptoms of forest damages	7	2
Occurrence of damaging agents	6	2

nomenclatures, i.e., forest land, other wooded land, ownership classes, tree species mixture, and forest damage symptoms and agents. These attributes and nomenclature are the basis for assessing and presenting other forest resources attributes, which require more harmonised definitions and methods to collect the data.

The completeness of the assessed attributes needs attention in the harmonisation of forestry statistics in the regions. As showed in Figure 1, the number of attributes is not consistent. Nordic countries, except Denmark, covered more attributes than the Baltic countries. Furthermore, the attributes which were not assessed or missing are unevenly distributed among the countries, thus decreased the comparability of the statistics. Päivinen (1997) suggested that an investigation could be carried out to estimate how much work and resources are needed for different degree of completeness in the forestry statistics. In other words, what are the costs and required modifications of the forest inventory systems if 10, 20, or all attributes would be assessed and harmonised.

Another issue is the equivalence of the country attribute definitions compared to the international definitions. Forest land is defined as ‘land has the potential capacity to produce a mean annual increment of at least 1 m³/ha stemwood ...’ (See country notes on Table 1 in Appendix 1) in Finland, Norway, and Sweden. However, the main criteria of “forest land” in the UN-ECE/FAO Forest Resources Assessment 1990 and 2000 is that land should be covered by tree vegetation of crown coverage at least 20% and 10%, respectively (See Lin 1998 for more detailed comparison). It is an important and essential task for Nordic and Baltic countries, as well as all other countries, to illustrate how the common definitions has been adapted while the reported statistics was assessed by using country definitions.

Due to a considerable variation, the survey results on “years when data are available” were not presented in the paper. Nevertheless, the interval between the years when data were available was not consistent and the same attributes could be assessed in different years by using different inventory methods or definitions. It is evident that the reference years might not be consistent due to the different forest inventory cycles and methods. Also, the transition process has affected the continuity in the Baltic countries. However, the benefits of having comparable reference years for forestry statistics cross the regions would be the increased consistency and decreased bias in the assessment of changes.

Few disadvantages, which should be taken into account in the future, were found from the methodology used during the data collection and compilation processes:

1. The questionnaire could have been made more self-explanatory than it was.
2. It would be very useful if the correspondents would provide the country definitions for all attributes, although it would increase the extra workload to the correspondent dramatically.
3. Some existing information was missing. For instance, forest damage information was missing from some countries but the information is available from United Nations’ air-pollution monitoring programme (United Nations 1998).
4. The questionnaire was not sent to all the agencies that collect and compile forest statistics within a country. It would be very useful to have a comprehensive list of agencies dealing with forest statistics in each country for future information enquiry.

The current work has compiled the information on what statistics have been collected by what methods. An extension of this study is to collect the detailed information on the existing forest inventory systems in Baltic countries, which can be similar to that carried out in the EFICS study (European Commission 1998) for the Nordic countries. It would be useful to systematically analyse the information gathered in this survey together with the information on existing forest inventory systems as the basis for further discussions on harmonising Nordic and Baltic forestry statistics.

5. CONCLUSION

Nordic and Baltic countries are in the temperate and boreal zones where most of the high growing stock forests are situated in Europe. Since 1990s, the multiple functions of the forest resources have become increasingly important for environmental issues, economic development and social needs (Lund 1998). Increased trade within and between the regions also calls for harmonised production, import, and export statistics. It is necessary to have comparable forestry statistics at the international level in the Nordic and Baltic regions, which has been recognised also in the previous feasibility studies and meetings.

Information needs are the driving force for data collection. National forestry statistics are collected to meet the information needs, such as forest management planning and monitoring, at the national and sub-national level. The information needs for the Pan-European criteria and indicators for sustainable forest management (Liaison Unit in Lisbon 1998) would require comparable forestry statistics at the Pan-European level. It would be the main task for the Nordic and Baltic forestry statistics working group to come out with a proposal so that the forestry statistics collected in the regions could meet the information needs at all levels.

Acknowledgements

The authors would like to thank Erik Kosenkranius, Economics and Information Centre, Estonia; Peter Munk Plum, Ministry of Environment and The National Forest and Nature Agency, Denmark; Eero Mikkola, Aarre Peltola, Elina Mäki-Simola, Yrjö Sevola, and Sinikka Västilä, Finnish Forest Research Institute, Finland; Lâsma Abolina, Zina Bârbale, Jânis Bisenieks, Andris Burgelis, Antra Japina, Inesis Konrâds, Aija Meijere, Stanislavs Sarsuns, Arnis Treimanis, and Aiva Vasiïevska, Latvia State Forest Service, Latvia; Giedrius Leliuga, Forestry Economy Centre MEC, Lithuania; Astri Klovstad, Statistics Norway; Stein Tomter, Norwegian Institute of Land Inventory, Norway; Sven A. Svensson, Swedish National Board of Forestry, Sweden; and all those involved, for their enormous support and contribution.

References

- European Commission 1998. Study on European Forestry Information and Communication System - Reports on Forestry Inventory and Survey Systems, Volume I and II. Office for Official Publications of the European Communities, Luxembourg.
- The International Customs Journal 1996. European Union, Number 14, 18th edition, I.C.T.B. Printing Department, January 1996.
- Liaison Unit in Lisbon 1998. General Declaration and Resolutions Adopted, Ministry of Agriculture, Rural Development and Fisheries of Portugal. Third Ministerial Conference on the Protection of Forests in Europe, Lisbon, Portugal. 64 p.
- Lund, H. G. 1998. A Comparison of Multipurpose Resource Inventories (MRIs) Throughout the World. EFI Working Paper 14. European Forest Institute, Joensuu, Finland.
- Lin, C. 1998. Farm forestry in the EU – Definitions and statistics. Proceeding of the MOSEFA workshop B: Sampling schemes for monitoring the socio-economics of farm forestry, Trento, Italy, April 19-22 1998. EFI Proceedings 28. European Forest Institute, Joensuu, Finland. Pp. 9-23
- Pajari, B. 1997. Questionnaire for the Survey of Meta-information on Nordic and Baltic Forestry Statistics, European Forest Institute, Joensuu Finland
- Päivinen, R. and Pajari, P. 1997. Preliminary results of the Survey of Meta-information on Nordic and Baltic Forestry Statistics, Unpublished report, European Forest Institute, Joensuu, Finland.
- Päivinen, R. 1997. Improved forestry information for Europe through EFICS. Paper presented in the Eurostat forestry statistics meeting, 21-22, July 1997, Luxembourg.
- United Nations 1985. Standard International Trade Classification Revision 3. Statistical Papers, Series M No. 34/Rev.3. United Nations, New York.
- United Nations 1992. The Forest Resources of the Temperate Zones: the UN-ECE/FAO 1990 Forest Resource Assessment. Volume 1 – General Forest Resource Information. ECE/TM/62. United Nations, New York.
- United Nations 1998. Forest conditions in Europe – Results of the 1997 crown condition survey. Technical report. Geneva and Brussels. 118 p + annex.
- Ylitalo, E. 1999. Forestry statistics in the Baltic countries: current situation and future needs. In: Pajari, B. (ed.) The Development of Forestry Statistics in the Baltic and Nordic States. EFI Proceedings 24. European Forest Institute. Joensuu, Finland.

APPENDIX 1. CLASSIFICATION OF ATTRIBUTES, DEFINITIONS USED, AND COUNTRY NOTES

Land use

Attribute Group	Baltic				Nordic		
	EE	LV	LT	DK	FI	NO	SE
Forest land (Table 1.)	c	2	c	c	1	1	1
Nature protection areas (Table 1.)	c	c	c	-	c	c	c
Total land area (Table 1.)	-	c	c	c	c	c	c
Other wooded land (Table 1.)	c	2	c	-	-	1	1
Total area (Table 1.)	-	c	c	-	c	c	c
Other unexploitable forest (Table 1.)	c	-	-	-	-	-	-
Scrub land (Table 1.)	-	-	-	-	c	-	-
Ownership classes (Table 2.)	c	1	c	c	c	2	3
Area of forest holdings by size classes (Table 3.)	c	c	c	c	c	1	c
Number of forest holdings by size classes (Table 3.)	c	c	c	c	c	1	c

c: according to the common definition.

1,2,3: indicate definition different to the common definition. If two or more countries have the same number they also have the same definition.

-: not assessed, not applicable, or missing.

Table #. refers to the table numbers in the questionnaire.

EE = Estonia, LV = Latvia, LT = Lithuania, DK = Denmark, FI = Finland, NO = Norway, SE = Sweden.

Finland

Table 1: Forest land - has the potential capacity to produce a mean annual increment of at least 1 m³/ha stemwood, over bark given an optimum tree species mixture, growing stock volume and prescribed rotations. *Scrub land* - has the potential capacity to produce a mean annual increment of at least 0.1 m³/ha but less than 1.0 m³/ha given an optimum tree species mix. Forest land and Scrub land combined are called *forested land*. *Waste land*, if not naturally treeless, is not given an optimum tree species mix, and it is not able to produce annually more than 0.1 m³/ha.

Table 2: ownership:

- private: farm forest owners, jointly owned forest, ownership not shared, such as heirs, other private forest owners
- companies = forest industries: forest companies, other companies
- state: Finnish Forest and Park service, other areas owned by the state
- others: municipalities, churches, and other communities.

Table 3: Area of private forest holdings can be obtained.

Latvia

Table 1: Forest land & other wooded land have own definitions by the STATE FOREST SERVICE but there exists also forest land definition according to the given nomenclature (FAO) (=>forest) which is used by the STATE LAND SERVICE. Forest land = rural or urban land covered by forest or land which is not covered but is prescribed for forest growing in compliance with the State Land Cadastre. Forest land – the land covered by forest (in terms of density, the trees take up at least 30% of the area), the land where it is intended to cultivate forest as well as the land under forest roads, rides, small openings, forest ditches, all making a part of the forest. Other wooded land – the land possessing some features of forest but actually other than forest. It includes overflowing open spaces, sandy areas, lands covered by heather and brushwood (area covered by trees but not forming a forest stand).

Table 2: Constant changes in forest ownership due to the privatisation. Others – users or private forest owners who have only users rights, agricultural enterprises' forests and other forests belonging to other legal or juridical persons.

Norway

Table 1: Forest land – land suitable for forest production, not used for other purposes, and with the potential capacity to produce mean annual increment greater than 1 m³/ha/year. Other wooded land = land where the potential capacity to produce mean annual increment is greater than 0.1 m³/ha/year and less than 1 m³/ha/year. Productive forest area – Forest land which averages a yearly production capacity of at least 1 m³ wood per hectare throughout a normal rotation cycle, provided that the species of tree is suited for the local growing conditions. It is the productive capability of the land which provides the basis for this definition, regardless of the present production level. The boundary for productive forest is located at different altitudes in different parts of the country. In general, the boundary (measured in elevation above sea level) is determined by the following conditions:

- Latitude – the boundary for productive forest drops in altitude as one moves north.
- Distance from the ocean – the boundary for productive forest rises with increasing distance from the ocean.
- Topography – evenly sloping terrain will cause a higher boundary for productive forest, while an isolated peak may be bare even though the top is fairly low.
- Local climate – which may, for example, be unfavourable due to the direction in which the land slopes, cold air streams from glaciers, human intervention, etc.

Bogs below the productive forest line are bog areas below the boundary of productive forest which are neither agricultural areas, productive forest, nor building areas. Bare area below the productive forest line is all areas below the boundary of productive forest which are not agricultural areas, productive forest, bogs, or areas of permanent roads, farmyards (except garden plots), rock piles, rubbish heaps, open ditches and canals, gravel pits etc. Wooded area above the productive forest line is forest covered

areas above the boundary for productive forest that have low productive capacity (less than 1.0 m³/hectare/year), but where trees nonetheless grow so dense that they give the appearance of a forest. The trees must be trunk-formed and potentially be able to reach a height of at least 5 metres. Bare mountain, bogs etc. are all other areas above the boundary of productive forest except agricultural land, wooded land, areas of permanent roads, farmyards, rock piles, rubbish heaps, open ditches and canals, gravel pits etc. and water.

Table 2a: Include properties with at least 0.5 hectares of agricultural area and/or 2.5 hectares of productive forest area.

Table 2: Ownership classes: private, local government, common forests not owned by central government, central government (state)

Table 3: Private forest holdings – include individual owners, properties of persons deceased, co-operative ownership, joint companies, institutions, foundations etc. and joint stock companies. Include properties with at least 2.5 hectares of productive forest area.

Sweden

Table 1: Forest land – land suitable for forest production, not used for other purposes, and with an average production higher than 1 m³ /hectare/year during a period of 100 years. The minimum area of forest land is 0.25 ha.

Table 2: Ownership classes: state (state owned forests), other public (forests owned by the church, municipalities, public foundations or other public institutions), companies (forests owned by limited companies whether private or public, like AssiDomän, SCA, Stora etc.), private citizens (forests owned by other private owners than limited companies, such as farmers, manors or other private citizens).

Growing stock and increment

Attribute Group	<u>Baltic</u>				<u>Nordic</u>		
	EE	LV	LT	DK	FI	NO	SE
Felling type							
by ownership classes (Table 4.)	c	1	c	-	c	2	3
Growing stock volumes							
by ownership classes (Table 5.)	c	c	c	c	c	c	c
Growing stock volumes							
by tree species (Table 5.)	-	1	c	c	c	c	c
Gross annual increment (Table 6.)	c	c	c	c	c	c	c
Net annual increment (Table 6.)	c	-	c	-	c	-	c
Annual drain (Table 6.)	c	-	-	c	c	-	c
Annual felling (Table 6.)	c	c	-	c	c	-	c

c: according to the common definition.

1,2,3: indicate definition different to the common definition. If 2 or more countries have the same number they also have the same definition.

-: not assessed, not applicable, or missing.

Table #. refers to the table numbers in the questionnaire.

EE = Estonia, LV = Latvia, LT = Lithuania, DK = Denmark, FI = Finland, NO = Norway, SE = Sweden.

Finland

Table 4: In the ownership category: non-industrial forest owners can't be separated subclasses private and others.

Latvia

Table 4: The given classification is not applicable to Latvian conditions. Latvia has its own detailed classification for final felling and intermediate felling

Table 5: The volume removed in cleaning (pre-commercial thinnings) is not estimated. In the case of transfer of ownership of forest land the area is evaluated in field measurement.

Norway

Table 4: Norway has the knowledge of felling type but not by ownership classes

Sweden

Table 5: Data available for different land use classes according to Swedish definitions.

Table 6: Net Annual Increment, Annual Fellings, Annual Drain: min dbh 4 cm, Gross Annual Increment: min dbh 0 cm. Data available for land use classes according to Swedish definitions.

Forest structure

Attribute Group	Baltic			Nordic			SE
	EE	LV	LT	DK	FI	NO	
Origin of forests (Table 7.)	-	1	c	-	c	c	c
Tree species mixture (Table 8.)	1	1	1	-	c	2	3
Forest land by dominant tree species (Table 9.)	c	c	-	c	c	c	c
Forest land by age classes (Table 10.)	c	c	-	c	c	c	c
Timber assortments (Table 11.)	c	-	-	-	c	1	-
dbh-classes (Table 12.)	-	c	-	-	c	c	c
dbh-classes by tree species (Table 12.)	-	c	-	-	c	c	c

c: according to the common definition.

1,2,3: numbers indicate definition different to the common definition. If 2 or more countries have the same number they also have the same definition.

-: not assessed, not applicable, or missing.

Table #. refers to the table numbers in the questionnaire.

EE = Estonia, LV = Latvia, LT = Lithuania, DK = Denmark, FI = Finland, NO = Norway, SE = Sweden.

Finland

Table 8: Pure stand greater than 95%, some tree species. Mixture 75-95%

Latvia

Table 7: Plantation forests are forest growing for small size assortments for energy and other specific needs.

Table 8: Pure stand greater than 90%, some tree species. Mixture 75-90%, mixed less than 75%

Lithuania

Table 8: Pure stand greater than 90%, some tree species. Mixture 75-90%, mixed less than 75%

Norway

Table 7: Regeneration type is assessed only in the development class II (regeneration areas and young forest). Development class or cutting class: indicates a stand's stage of development by regarding age in relation to site quality. In the current system the following definitions are used:

- development class I (forest under regeneration),
- II (regeneration areas and young forest),
- III (young thinning stands),
- IV (advanced thinning stands),
- V (mature forest)

Table 8: Pure stand greater than 70%, mixed less than or equal to 70%,

Table 11: Norway cannot apply the timber assortment information. Instead it uses:

- for coniferous trees: especially good quality, normal quality, small proportion (less than 50%) suitable for sawing
- for broadleaved trees: normal quality, subnormal quality (not possible to get one 3 m log of pulpwood)

Sweden

Table 7: Sweden assess data on origin of forests in thicket stage.

Table 8: Swedish NFI is based on basal area. Species composition is assessed when the stand height is greater than or equal to 7 m. Species composition is less relevant in stands with less average height. Limits: Pure stand greater than 85%, some tree species. Mixture 75-85%

Forest damage

Attribute Group	Baltic			Nordic			
	EE	LV	LT	DK	FI	NO	SE
Symptoms of forest damages (Table 13.)	1	c	1	c	1	1	1
Occurrence of damaging agents (Table 14.)	1	c	1	-	1	c	c
Burnt area (Table 15.)	c	c	-	c	c	c	c
Number of forest fires (Table 15.)	c	c	-	c	c	c	c

c: according to the common definition.

1: indicate definition different to the common definition. If 2 or more countries have the same number they also have the same definition.

-: not assessed, not applicable, or missing.

Table #. refers to the table numbers in the questionnaire.

EE = Estonia, LV = Latvia, LT = Lithuania, DK = Denmark, FI = Finland, NO = Norway, SE = Sweden.

Finland

Table 13, 14: Forest damages were first time systematically monitored in 8th national forest inventory which was carried out in 1986-1994.

Table 15: There are data of forest fires since the year 1868 but timeseries is not continuous.

Estonia

Game statistics on a) how much is killed in the hunting and b) the number existing in the forest.

Latvia

Table 14 & 15: The data is collected very widely on these subjects.

Norway

Table 13, 14: Dead trees – trees not suitable for utilisation. Information has been collected since 1932, but a detailed survey but a detailed survey has not been made until 1994. Data on top-dieback damages was recorded from the inventory cycle completed in 1956 (available in electronic form since 1964). 1988 was the first year of the forest condition or forest vitality survey, and this survey included the parameters discoloration and defoliation. The nomenclature applied is somewhat different. Stand damage which is assumed to reduce volume, number of trees or increment more than 10% is recorded. Dead trees, top-dieback damages, discoloration and defoliation are recorded at tree level, not at the stand level.

Sweden

Table 13, 14: Forest damages are assessed by number of trees or volume (stems) not by area.

Table 15: Data available from 1995 according to EU regulations.

Roundwood assortment

Attribute Group	Baltic			Nordic			SE
	EE	LV	LT	DK	FI	NO	
Roundwood purchases (Table 16.)	c	-	c	c	c	c	c
Roundwood purchases by timber assortments & by owners (Table 16.)	c	-	-	c	c	1	-
Prices by timber assortments (Table 17.)	c	c	c	c	c	c	c
Prices by timber assortments & by owners (Table 17.)	c	-	c	-	c	1	-
Commercial roundwood fellings by roundwood assortments (Table 18.)	c	c	c	-	1	c	c
Commercial roundwood fellings by owners (Table 19.)	c	1	-	c	c	-	-
Removals by roundwood assortments (Table 20.)	c	c	c	-	1	-	c
Removals by roundwood assortments & by owners (Table 20.)	c	-	-	-	1	-	-
Stocks by roundwood assortments (industry) (Table 21.)	-	-	-	-	1	-	c
Stocks by tree species (Table 21.)	-	-	-	-	c	-	-

c: according to the common definition.

1: indicate definition different to the common definition. If 2 or more countries have the same number they also have the same definition.

-: not assessed, not applicable, or missing.

Table #. refers to the table numbers in the questionnaire.

EE = Estonia, LV = Latvia, LT = Lithuania, DK = Denmark, FI = Finland, NO = Norway, SE = Sweden.

Roundwood assortment summarised by the authors

1. Roundwood purchases
 - Lithuania: stumpage & delivery sales totals
 - Other countries have more details
2. Prices
 - Denmark: only coniferous logs and pulpwood
 - Other countries have more details
3. Roundwood fellings: Norway has information only of logs

4. Roundwood fellings / ownership: all have all
5. Removals: all have all
6. Roundwood stocks: Finnish data available only by 1995
7. In general, requirements for roundwood assortments used affect the comparability of the variables.

Estonia

Table 17: auction price
 special contracts for local people
 units of selling is forest (metsikkö)
 no data by tree species

Finland

Table 16, 17: The Finnish Forest Industries Federation delivers data to Finnish Forest Research Institute.

Table 18: Logs, coniferous is mainly birch.

Table 20: Removals (with bark) includes commercial roundwood fellings and household timber that is mainly used for fuelwood.

Table 21: All data available until the year 1995.

Latvia

Table 17: It is possible to get average stumpage price for fuelwood and all other assortments except fuelwood in total. Stumpage prices are given for growing tree and depend on tree species diameter and length. There is an information on average auction price for one m³ of growing tree in Lats for the main cut and intermediate cut starting from the year.

Lithuania

Tables 11, 16, 20: Nearly all of the information is based (specially fellings and removals) on tree species and cutting type (i.e., thinnings and clear cuttings).

Table 16: all data about stumpage sales are expressed by cutting types (i.e., thinnings and clear cuttings) and by tree species.

Practically all information is from state (difficulties with receiving information from private forests).

Table 18: In general the information is not assessed in the country. However, it is calculated from final felling figures deriving the percentage of the assortments distribution (taking as basic fellings in the state forests)

Norway

Table 16, 17: Delivery sales include stumpage sales. Removals – only volume of trees exported out of the forest is included. Statistics Norway produce statistics on

roundwood cut for sale and industrial production annually. These statistics cover quantity (cubic metres wood inside bark) and gross value of all timber for sale in the country. Data are given by species (spruce, pine or broad-leaved) for assortments (coniferous: special timber, first class saw logs, second class saw logs, other saw logs, unsorted saw logs and pulpwood, pulpwood, other roundwood, firewood. Broad-leaved: special timber and sawlogs, pulpwood, firewood), seller group (private and municipalities, Central government, common forest not owned by the Central government) and buyer group (sawmills and wood industries, mechanical and chemical pulp industries, fibre and particle board industries, other buyers). Also three dimensional tables can be presented. The enumeration period was earlier the working year (1 August – 31 July), but will from 1996 be the calendar year.

Sweden

Table 21. Stock at forest industry terminal and roadside. Logs: once a year, i.e., 31 December. Used for assessment of annual removals. Pulpwood: quarterly, market indicator and used for the assessment of annual removals.

Forest products production and consumption

Attribute group	Baltic			Nordic			
	EE	LV	LT	DK	FI	NO	SE
Production of Sawnwood (Table 23.)	c	c	1	-	c	c	c
Production of Wood-based panels (Table 23.)	c	c	c	-	c	c	c
Production of Pulp+recycled paper & paperboard (Table 23.)	c	-	c	-	c	c	c
Production of Paper & paperboard (Table 23.)	c	-	c	-	c	c	c
Production of Roundwood (Table 23.)	-	c	1	-	c	c	c
Total consumption by tree species (Table 22.)	-	c	c	-	c	-	c
Consumption of domestic roundwood by tree species (Table 22.)	-	c	c	-	c	-	c
Consumption of imported wood by tree species (Table 22.)	-	c	c	-	c	-	c

c: according to the common definition.

1: indicate definition different to the common definition. If 2 or more countries have the same number they also have the same definition.

-: not assessed, not applicable, or missing.

Table #. refers to the table numbers in the questionnaire.

EE = Estonia, LV = Latvia, LT = Lithuania, DK = Denmark, FI = Finland, NO = Norway, SE = Sweden.

Finland

Table 22: Exports of roundwood by treespecies are found until 1994.

Latvia

Table 22: Data accessed in FAO questionnaire.

Sweden

Table 22: Customs data, intrastat.

Forest product exports

Attribute group	Baltic			Nordic			SE
	EE	LV	LT	DK	FI	NO	
Exports of roundwood by tree species (Table 22.)	1	1	c	-	c	-	c
Exports of Sawnwood in quantity (Table 24.)	c	c	c	-	c	c	c
Exports of Pulp+recycled paper & paperboard in quantity (Table 24.)	c	c	c	-	c	c	c
Exports of Paper & paperboard in quantity (Table 24.)	c	c	c	-	c	c	c
Exports of Roundwood in quantity (Table 24.)	c	c	c	-	c	c	c
Exports of Wood-based panels in quantity (Table 24.)	c	c	c	-	c	c	c
Exports of Sawnwood in value (Table 25.)	c	c	c	-	c	c	c
Exports of Pulp+recycled paper & paperboard in value (Table 25.)	c	c	c	-	c	c	c
Exports of Paper & paperboard in value (Table 25.)	c	c	c	-	c	c	c
Exports of Roundwood in value (Table 25.)	c	c	c	-	c	c	c
Exports of Wood-based panels in value (Table 25.)	c	1	c	-	c	c	c

c: according to the common definition.

1: indicate definition different to the common definition. If 2 or more countries have the same number they also have the same definition.

-: not assessed, not applicable, or missing.

Table #. refers to the table numbers in the questionnaire.

EE = Estonia, LV = Latvia, LT = Lithuania, DK = Denmark, FI = Finland, NO = Norway, SE = Sweden.

Latvia

Table 23: Data accessed in FAO questionnaire.

Table 24: Data are recorded from the reports of timber measurers.

Table 25: Value of roundwood, sawnwood, wood based panels is accessed in bulletins issued by State Statistic Bureau of Latvia. Veneer sheets and plywood are calculated together in one group. Data on pulp and paper product exports are accessed from pulp and paper producers reports. Its possible to obtain this information from the corresponding association.

Lithuania

Table 24, 25: Official Customs Department information from EU nomenclature.

APPENDIX 2. COMMON DEFINITIONS

Standard international trade classification (SITC), Rev. 3 code numbers are included after the terms. After the SITC code, the equivalent Harmonised commodity description and coding system (HS) codes are included if any.

Artificial regeneration

Renewal of a tree crop by direct seeding (sowing), or by planting seedlings or cuttings. (UN-ECE/FAO).

Charcoal (245.02)

The figures for trade in charcoal are given in weight. (FAO).

Chemical wood pulp (251.3 - 251.06) (HS47.02 - 47.04)

Sulphate (kraft) and soda and sulphite wood pulp, except dissolving grades, bleached, semi-bleached and unbleached. Where details are available, statistics for the following components are given: dissolving grades (251.3 / HS47.02), soda or sulphate (251.4, 241.5 / HS47.03), sulphite (251.6 / HS47.04). (FAO).

Chips + Particles (246.1)

Wood chips and particles. Wood that has been deliberately reduced to small pieces from wood in the rough or from industrial residues, suitable for pulping, for particle board and fibreboard production, for fuel wood or for other purposes. (FAO).

Clearcut

Entire growing stock is removed in a single felling. (Shepherd, K.R. 1986. Plantation Silviculture. Martinus Nijhoff Publishers. 322p).

Coniferous

All woods derived from trees classified botanically as Gymnospermae. These are generally referred to as softwoods. (FAO).

Drain

Total drain = Cutting removal + natural drain + unrecovered fellings. (FAO).

Exploitable forest

Forest on which there are no legal, economic or technical restrictions on wood production. It includes areas where, although there are no such restrictions, harvesting is not currently taking place, for example, areas included in long-term utilisation plans or intentions. (UN-ECE/FAO)

Exports

All quantities of domestic origin or manufacture shipped out of the country. As indicated under 'imports', re-exports may be included. 'In-transit' shipments are excluded. Values are normally f.o.b. (FAO).

Fellings

Volume, measured to the same specifications as standing volume, i.e. diameters down to a stated minimum diameter, of all trees, living or dead, felled during given period, whether or not removed from forest or other felling site. Includes silvicultural and pre-commercial thinnings and cleanings left in the forest. (UN-ECE/FAO).

Fibreboard (634.5)

A panel manufactured from fibres of wood or other ligno-cellulosic materials with the primary bond deriving from the felting of the fibres and their inherent adhesive properties. Bonding materials and/or additives may be added. Fibreboard is usually flat-pressed but may be moulded. Non-compressed includes insulating board with a density of not more than 0.40 g/cm³. Compressed includes hardboard with a density greater than 0.40 g/cm³. (Similar products made from pieces of wood, wood flour or other ligno-cellulosic material with added binders are excluded – as are, for example, boards of gypsum or other mineral material.)

Forest land

With tree cover (stand density) of more than about 20% of the area. Continuous forest with trees usually growing more than about 7m in height and able to produce wood. This includes both closed forest formulations where trees of various storeys and undergrowth cover a high proportion of the ground and open forest formulations with a continuous grass layer in which tree synusia cover at least 10% of the ground. (UN-ECE/FAO)

Fuel wood (245.01)

Wood in the rough (from trunks and branches of trees) to be used as fuel for purposes such as cooking, heating or power production. (FAO).

Growing stock

The living part of the standing volume. (UN-ECE/FAO).

Gross increment

Average volume of increment over given period of all trees (all diameters, down to a stated minimum diameter). Also included is the recruitment (ingrowth) of small trees when they reach the minimum diameter. (UN-ECE/FAO).

Imports

Products for domestic consumption or processing shipped into the country. 'In-transit' shipments are excluded; in certain instances, imports for re-export may be included. Values are normally c.i.f. (FAO).

Industrial roundwood (246/247)

These commodity aggregates include all industrial wood in the rough (sawlogs and veneerlogs, pulpwood and other industrial roundwood) and, in case of trade, chips and particles and wood residues.

Mechanical wood pulp (251.2, HS47.01)

Wood pulp obtained by grinding or milling coniferous or non-coniferous rounds, quarters, billets, etc. into fibres, or through refining coniferous or non-coniferous chips. Also called groundwood pulp and refiner pulp. It may be bleached or unbleached. This aggregate excludes exploded and defibrated pulp, and includes chemi-mechanical and thermo-mechanical pulp. (FAO).

Mixed forest / stand

A stand or forest consisting of two or more tree species which influence significantly the stand ecology. (WWF, IUFRO).

Natural forests

A subset of forests composed of tree species known to be indigenous to the area. (FAO).

Natural regeneration

Renewal by natural seeding (self-sown seed), sprouting, suckering or layering. (Silviculture Terminology - Introduction, Silviculture Terminology - September 1993. SAF Silviculture working Group Newsletter (D-2). October 1993. Society of American Foresters).

Nature protection area (FAO).

All protected areas combine natural areas in five World Conservation Union, formerly the International Union for Conservation of Nature and Natural Resources (IUCN), management categories (areas at least 1000 hectares).

Totally protected areas are maintained in a natural state and are closed to extractive uses. They encompass the following three management categories:

Category I. Scientific reserves and strict nature reserves possess outstanding, representative ecosystems. Public access is generally limited, with only scientific research and educational use permitted.

Category II. National parks and provincial parks are relatively large areas of national or international significance not materially altered by humans. Visitors may use them for recreation and study.

Category III. Natural monuments and natural landmarks contain unique geological formations, special animals or plants, or unusual habitats.

Partially protected areas are areas that may be managed for specific uses, such as recreation or tourism, or areas that provide optimum conditions for certain species or communities of wildlife.

Some extractive use within these areas is allowed. They encompass two management categories:

Category IV. Managed nature reserves and wildlife sanctuaries are protected for specific purposes, such as conservation of a significant plant or animal species.

Category V. Protected landscapes and sea-scapes may be entirely natural or may include cultural landscapes (e.g. scenically attractive agricultural areas).

Net increment

Gross increment less natural losses over given period. (FAO).

Newsprint (641.1)

Uncoated paper, unsized (or only slightly sized), containing at least 60 % mechanical wood pulp (percentage of fibrous content), usually weighing not less than 40 g/m² and generally not more than 60 g/m², of the type used mainly for the printing of newspapers. (FAO).

Non-coniferous

All wood derived from trees classified botanically as Angiospermae. These are generally referred to as broadleaves or hardwoods. (FAO).

Other paper and paperboard (641)

Includes construction paper and paperboard, household and sanitary paper, special thin paper, wrapping and packaging paper and paperboard, and other paper and paperboard not elsewhere specified. Where detail is available, statistics for following categories are given: household + sanitary paper (641.63), wrapping and packaging paper and paperboard (641), other paper and paperboard (not elsewhere specified) (641). (FAO).

Other wooded land

Land which has some forestry characteristics but is not forest as defined above. It includes: open woodland and shrub and brushland, whether or not used for pasture or range. It excludes land occupied by 'Trees outside the forest'. (UN-ECE/FAO).

Ownership

Forest industries: Forest industries, including state-owned companies.

State: Other than state owned companies.

Non-industrial forest owners: Private (individuals, families) / Other (Towns, villages, communities, parishes, foundations etc.)

Paper and paperboard (641)

The following commodities are included in this aggregate: newsprint, printing and writing paper, other paper and paperboard. (FAO).

Particle board (634.2)

A sheet material manufactured from small pieces of wood or other ligno-cellulosic materials (e.g. chips, flakes, splinters, strands, shreds, shives, etc.) agglomerated by use of an organic binder together with one or more of the following agents: heat, pressure, humidity, a catalyst, etc. (Flaxboard is included. Wood wool and other particle boards, with inorganic binders, are excluded.)

Plantation forests (FAO)

- a) Forests established artificially by afforestation on lands which previously did not carry forest within living memory.
- b) Forests established artificially by reforestation of land which carried forest before and involving the replacement of the indigenous species by a new and essentially different species or genetic variety.

Plywood (634.3/4)

Plywood, veneer plywood, core plywood, including veneered wood, blockboard, laminboard and battenboard. Other plywood, such as cellular board and composite plywood. Veneer plywood is plywood manufactured by bonding together more than two veneer sheets. The grain of alternate veneer sheets is crossed, generally at right angles. Core plywood is plywood whose core (i.e. central layer, generally thicker than the other piles) is solid and consists of narrow boards, blocks or strips of wood placed side by side, which may or may not be glued together. (This term includes veneered wood in sheets or panels in which a thin veneer of wood is affixed to a base, usually of inferior wood, gluing under pressure.) Cellular board is plywood with the core or certain layers made of material other than solid wood or veneers. (FAO).

Printing and writing paper (634.2/3)

Paper, except newsprint, suitable for printing and business purposes, writing, sketching, drawing, etc. made from a variety of pulp blends and with various finishes. Included are such papers as those used for books and magazines, wallpaper base stock, box lining and covering, calculator paper, rotonews, duplicating, tablet or block, label, lithograph, banknote, tabulating, card stock, bible or imitation bible, stationery, manifold, onionskin, typewriter, poster, etc. (FAO).

Production

The total production of primary products is reported, even though a portion may immediately be consumed in the production of another commodity (e.g. wood pulp, which may immediately be converted into as part of a continuous process). An exception is made in the case of veneer production, which excludes veneer sheets used for plywood production within the country. (FAO).

Pulp

Figures are given in weight (air-dry = 10% moisture).

Pulpwood

Wood in the rough other than logs - for pulp, particle board or fibreboard. Pulpwood may be barked or unbarked and may be in the form of roundwood or splitwood; it may include the equivalent of wood chips made directly from roundwood. (FAO).

Pure stand

A stand which consists at least of 90% (volume share of dominant tree species) of one dominant tree species. (WWF).

Regeneration method

The renewal of a tree crop, either by natural or artificial means. (Stokes, Ashmore, Rawlins, Sirois. 1989. Glossary of terms used in timber harvesting and forest engineering. General Technical Report. SO-73. New Orleans, LA:U.S. Department of Agriculture, Forest Service, Southern Forest Experiment Station).

Removals

Fellings less unrecovered fellings. (UN-ECE/FAO). Volume of cutting removal under bark. (FAO).

Roundwood (245/246/247)

Figures are given in solid volume of roundwood (or roundwood equivalent) without bark. Wood in the rough. Wood in its natural state as felled or otherwise harvested, with or without bark, round, split, roughly squared or in other form (e.g. roots, stumps, burls, etc.). It may also be impregnated (e.g. telegraph poles) or roughly shaped or pointed. It comprises all wood obtained from removals, i.e. the quantities removed from forests and from trees outside the forest, including wood recovered from natural, felling and logging losses during the period - calendar year or forest year. Commodities included are sawlogs and veneer logs, pulpwood, other industrial roundwood (including pitprops) and fuel wood. The statistics include recorded volumes, as well as estimated unrecorded volumes as indicated in the notes. Statistics for trade include, as well as roundwood from removals, the estimated roundwood equivalent of chips and particles, wood residues and charcoal. (FAO).

Sawlogs + veneer logs

These commodity aggregates include sawlogs and veneer logs and logs for sleepers. Logs whether or not roughly squared, to be sawn (or chipped) lengthwise for the manufacture of sawnwood or railway sleepers (ties). Shingle bolts and stave bolts are included. Logs for production of veneer, mainly by peeling or slicing. Match billets are included, as are special growth (burls, roots, etc.) used for veneers. (FAO).

Sawnwood (248)

Sawnwood, including sleepers, unplaned, planed, grooved, tongued, etc. sawn lengthwise or produced by profile-chipping process (e.g. planks, beams, joists, boards,

rafters, scantlings, laths, boxboards, 'lumber', etc.) and planed wood, which may also be finger-jointed, tongued or grooved, chamfered, rabbeted, V-jointed, beaded, etc. Wood flooring is excluded. With few exceptions, sawnwood exceeds 5 mm in thickness. (FAO).

Scrub, shrub and brushland

Land with scrub, shrub or stunted trees where the main woody elements are shrubs (usually more than 50 cm and less than 7m in height), covering more than about 20% of the area, not primarily used for agricultural purposes, such as grazing of domestic animals. 'Trees outside the forest' are excluded. (UN-ECE/FAO)

Seed tree method

The entire stand is removed in a final cutting except for selected single seed trees or seed trees in small groups to provide the seed for reproduction. (Shepherd, K.R. 1986. *Plantation Silviculture*. Martinus Nijhoff Publishers. 322 p.)

Semi-chemical wood pulp (251.91 / HS47.05)

Wood pulp, chemi-mechanical and semi-chemical. Wood pulp obtained by subjecting coniferous or non-coniferous wood to a series of mechanical and chemical treatments, none of which alone is sufficient to make the fibres separate readily. According to the order and importance of the treatment, such pulp is variously named: semi-chemical, chemi-groundwood, chemi-mechanical, etc. It may be bleached or unbleached. (FAO).

Shelterwood method

The mature trees are removed in a series of cuttings, enabling a new crop to establish under the partial shelter of the old trees from which the seed for regeneration is obtained. The regeneration may also be done artificially. (Shepherd, K.R. 1986. *Plantation Silviculture*. Martinus Nijhoff Publishers. 322p.)

Thinning

A felling made in a stand at any time between establishment and the initiation of a regeneration cutting or clear cutting. The purposes of a thinning are to recover volume that would normally be lost, to improve growth and form of trees selected for the crop trees, to maintain a particular density, or to maximise financial returns over the life of the stand. (Recommended changes in silvicultural terminology. 1989. The Silviculture Instructors's Subgroup, Silviculture Working Group (D2) SAF).

Unexploitable forest

Forest and other wooded land on which there are legal, economic or technical restrictions on wood production. It includes (a) forest and other wooded land with severe legal restrictions on wood production, e.g. national parks, nature reserves and other protected area such as those of special scientific, historical or cultural interest; (b) forest and other wooded land where physical productivity is too low or harvesting and transportation costs to the nearest market are too high warrant wood harvesting, apart from occasional possible cuttings for autoconsumption. (UN-ECE/FAO).

Unrecovered fellings

Fellings residuals, which are left in the forest after felling and not salvaged. Excludes parts of the tree left *in situ* after felling, e.g. stumps and roots, and parts of the felled tree not recorded in the volume of fellings. (FAO).

Veneer sheets (634.1)

Thin sheets of wood of uniform thickness, rotary cut, sliced or sawn, for use in plywood, laminated construction, furniture, veneer containers, etc. In production, the quantity given excludes veneer sheets used for plywood production within the country. (FAO).

Volume

Volume over bark of free bole (from stump or buttresses to crown point or first main branch) of all living trees of all species more than 10 cm diameter at breast height (or above buttresses if these are higher). (FAO).

Wood based panels (634)

The aggregate includes the following commodities: veneer sheets, plywood, laminated and fibreboard, compressed or non-compressed. (FAO).

Wood pulp (251)

The following commodities are included in this aggregate: mechanical, semi-chemical, chemical and dissolving wood pulp. (FAO).

Wood residues (246.2)

Miscellaneous wood residues. Wood residues that have not been reduced to small pieces. They consist principally of industrial residues, e.g. sawmill rejects, slabs, edgings and trimmings, veneer log cores, veneer rejects, sawdust, bark (excluding briquettes), residues from carpentry and joinery production, etc. (FAO).

FORESTRY STATISTICS IN THE BALTIC COUNTRIES: CURRENT SITUATION AND FUTURE NEEDS

Esa Ylitalo

Finnish Forest Research Institute
Finland

INTRODUCTION

The Baltic-Nordic forestry statistics project was originally launched in 1995 by carrying out feasibility studies in each Baltic country. These studies were carried out by the Finnish Forest Research Institute on its own in order to describe the current state of affairs of forestry statistics in these countries and to define, on a preliminary level, the steps necessary to improve the standard of these statistics. The most recent of these studies was carried out in March 1996 in Lithuania.

As a result of these studies, three reports, one for each Baltic country, were produced, and it was on these that the next stage of the project, a 'Seminar on the Development of Forestry Statistics in the Baltic states', was based. The seminar took place in June 1996 in Joensuu.

The aim of the seminar was to clarify the current situation of this project and to achieve consensus among the Baltic countries and the Nordic countries on how to proceed with further development of the work.

With respect to further development, it was concluded in the course of the seminar that the activities of this project will continue at two different levels:

1. what may be referred to as *general-level strategies* aim at harmonising the said countries' forestry statistics to make them comparable, and
2. what may be referred to as *specific-level projects*, which were launched in Latvia and Estonia in fields of clear priority in forestry statistics.

Lithuania was unfortunately not able to participate in the seminar, but Lithuanian colleagues expressed their keen interest in joining this project later on.

We have now reached the third stage, and perhaps the most important stage of the project by now, the Expert Panel Meeting, with the purpose of determine the real future of this project.

SPECIFIC LEVEL PROJECTS IN ESTONIA AND LATVIA FOR 1996

The goal of the specific-level projects in Estonia and Latvia was, according to the conclusions made during the Joensuu seminar, to carry out a background study focusing on the most urgent and important areas to be taken into account in this development work, as defined by the Baltic counterparts.

The most important areas of forest statistics may in both countries be broadly generalised and summarised as follows:

- Foreign trade in roundwood and forest-industry products
- Forestry statistics on removals of commercial roundwood
- National price statistics on commercial roundwood
- National statistics on domestic roundwood utilisation and forest industries' production.

It is very easy to see that these priority areas of forestry statistics all belong together, and these, together with the forest resource data, may be defined using the term 'Wood budget' to define the relationships between the yield and utilisation of timber.

The tasks in these priority areas were, with an eye to the present meeting, to:

1. summarise the current situation, the needs and the possibilities for development work in the areas mentioned
2. complete a detailed plan for the implementation of development work in these areas
3. prepare a report on these matters to be discussed in the course of this meeting

The results of these tasks are presented in the report 'Preliminary Plan for the Specific Level Projects in Latvia and Estonia', delivered to the participants of the Expert Panel Meeting and Conference.

RESULTS

The results of the observations according to the Preliminary Plan-report can be expressed from the following points of view including all the priority areas and foremost problems in both countries as follows:

1. A method for collecting and compiling forestry statistical data already exists
2. A new appropriate method for compiling forestry statistics has to be created
3. There are great differences among the statistics on state-owned forests and the statistics on the continually increasing number and area of non-industrial, private forest holdings.

A method for collecting and compiling forestry statistical data already exists

This is normally the case when statistics are compiled by national central statistical bodies, e.g. Central Statistical Bureau and National Board of Customs, concerning, in the first case, such areas as foreign trade in roundwood and forest-industry products, and statistics on domestic roundwood utilisation as well as forest-industries production.

It is easy to claim that the current compilation system will by no means be changed and, especially in the case of foreign trade, neither is it possible. The organisations mentioned are official governmental state units and responsible for their tasks by statutory regulation.

However, despite good efforts and quality work carried out, the prevailing circumstances are such that it is very difficult for these authorities to collect the data accurately enough even with the support of statutory regulations, and this was clearly proved in the report. Thus it is clear that the existing methods in this respect need to be further improved to ensure the veracity of the data.

Suggestions for development activities in this field of forestry statistics will, however, mean entry into areas, which are totally the domain of these central statistical bodies. Within this project the possibilities to influence the activity of these bodies may be very limited.

Thus it is concluded that the development in this respect needs a lot of co-operation among the various organisations and different interest groups involved. It is very favourable to establish a national working party in each Baltic country on a very authoritative level for forestry statistics for mapping the key areas to be developed and for defining the method for carrying out this work, by co-operation.

An appropriate method for collecting and compiling forestry statistics is non-existent and thus needs to be created.

This is normally the case when compiling national price statistics and national statistics on removals of commercial roundwood, which, I believe, are of the utmost importance in this development work.

I can with certainty say that all the matters associated with technical development can be solved, and by this I mean the activities connected to methods such as collection, compilation, saving, retrieving, and publishing of the data.

However, the most difficult problem at the moment is how to obtain accurate data. As has been pointed out earlier, the prevailing circumstances make it very difficult even for government authorities to collect data even with the support of statutory regulations.

This problem arises especially in cases where data are collected from commercial enterprises, such as wood purchasers, wood-users, as well as non-industrial, private forest owners, which in most cases are the only possible and reasonable sources of the corresponding data.

Hence, it can in several cases be claimed that extremely high risks will be involved in launching a new data collection and compilation system. There will be difficulties in creating a workable forest statistics system until the relevant legislation, organisation,

and other control measures over these matters are improved. With time, this will be achieved, but most probably we shall initially have to be satisfied with gradual, step-by-step development.

To improve the situation, it is necessary for the collector of the said to be granted official status as an information collecting unit, and as I see it, in these areas of statistics must be an entirely new, separate forestry statistics unit.

Before launching the data collection system proper in these areas of forestry statistics, it will be necessary to conduct a separate study aimed at finding out how the timber trade, for example, works in practice in state-owned forestry and in non-industrial, private forestry, and what the possibilities are of compiling corresponding forestry statistics.

There are great differences between the statistics on state-owned forestry and on the statistics on the constantly increasing number of non-industrial, private forest holdings.

State forestry organisations compile forest statistics, more or less, on the forests under their management. Under the current situation, it seems that the data from non-industrial, private forests are constantly deteriorating. These forests are gradually shifting away from the all-inclusive control of state forest organisations due to the restitution process. The own organisations run by these non-industrial, private forest owners are not yet developed enough to be utilised in data collection.

The importance of the information concerning this forest owner group, which is growing in size, cannot be underestimated: the total area under the non-industrial, private forest ownership is estimated to amount to ca. 40-50% of the total forest area in both countries.

The difference in this respect can easily be seen in Estonia, for example, where the development and accuracy of forestry statistics on state-owned forestry is improving greatly, partially due to the boost given by the extensive Estonian Forestry Development Programme, but concurrently with this it is becoming more and more difficult to obtain accurate data on a regular basis on non-industrial, private forestry. Thus, especially in this respect, this Baltic-Nordic forestry statistics project can be greatly utilised in improving the availability of data from private forestry.

FUTURE NEEDS

The future needs include:

- Adequate funding to carry out this very long-term work. As stated earlier, for sufficient accuracy to be achieved, the development work will take years, depending also on the possible changes in the forest policies, and in the general methods applied in forest management.

- At the national level in the Baltic countries, a strong and active project organisation and project management must be created in order to ensure the implementation and progress of the forestry statistics project. In Estonia it is, however, reasonable to merge this project entirely with the ongoing Forestry Development Programme.
- National working parties for forestry statistics have to be appointed to ensure the development work in all necessary areas of forestry statistics when these tasks are separated to be the domain of different organisations.
- A new national forestry statistics unit has to be established, and it should be granted an official position as an information collecting organ, especially in Latvia, but also for collecting data on non-industrial, private forestry in Estonia
- A rational division of the development work among the participating countries must be carried out. To date, almost all the work has been carried out by the European Forest Institute and Finnish Forest Research Institute in Finland.
- We must also promote co-operation among the Baltic countries. We must remember that Lithuania, for example, has at the moment a very state-of-the-art system for recording the price and felling volume information, and this can also be utilised.
- Remembering this project was originally launched in 1995, we must immediately start the implementation of development work on the priority areas studied.

CONCLUSIONS

As becomes readily apparent, accurate and versatile forest statistics are needed for many important purposes. In addition to recording the data for economical point of view of forestry statistics, the data are also very important for reasons such as environmental issues, e.g. knowing the backgrounds and possibilities for sustainable forest management, not to forget the origin of the timber with respect to eco-labelling and forest certification, all of which data can be obtained from well-functioning forestry statistics. Additionally, it is also highly necessary to meet the future demands of the data requirements of the European Union.

The reports on the situation in the Baltic states can be obtained from the author.

Erik Kosenkranius

Economics and Information Centre of Forestry
Estonia

INTRODUCTION

To know how different forest functions are fulfilled and how effectively, towards sustainability, the forests are managed, we need statistical information which describes dynamics of our forests and the forestry-related economy. That information includes not only statistics about the area of forests, increment and removals of wood or production volume of wood industry, but also characteristics which describe the quality of our forests and the level of our forest management system. For example, such characteristics can be biodiversity indices, ownership information, wood price statistics, etc. To secure the veracity and comparability of our statistics we should implement different data control mechanisms and focus data collection to same object from time to time. Otherwise we are not able to improve our statistics and analyse changes in our forests and forest economy. Moreover, incorrect or partly correct statistics can be an extremely dangerous tool in the hands of politicians, economists or environmentalists, and can lead to the wrong utilisation and allocation of different resources.

THE DEVELOPMENT OF ESTONIAN FORESTRY STATISTICS

The development process of collecting, analysing and publishing statistical data has been interrupted several times during this century. Two wars, the period of Soviet occupation and the re-establishment of independence have influenced the veracity and succession of data. Some statistical information has been secret and probably on purpose published incorrectly, some data have been lost and in some cases core of statistics have been changed. For example, the area of the forest has been changed not only due to the growth and felling but also due to the changes in the area of Estonian Republic.

Inventory of Estonian forests started in the 1920s and has continued until the present time. A lot of new information has been initiated to be collected during the last decades.

In 1995, Estonian Forestry Development Program was started to work out national forest policy. In this context also problems with forestry information (statistics) were discussed. The priorities and problem areas were defined and vision for future development was presented.

PROBLEM AREAS

According to the feasibility studies carried out by the Finnish Forest Research Institute, the most problematic areas appear to be common to all Baltic countries. According to the studies the problem areas are:

1. compiling forestry data from private forests
2. wood trade and prices
3. foreign trade of roundwood and forest industries products
4. Lacking a proper control mechanism to ensure the truthfulness of the data

Presently the *quality and availability of wood price and foreign trade* statistics have improved. Estonian Statistical Board is now able to issue foreign trade statistics every month and Economics and Information Centre is collecting and publishing trade and price statistics (in connection with State forests sale) almost every month. In both cases one month delay must be accepted. Also wood industry production characteristics are published in industry quartile reports (the last one was printed in January 1997 for the period of July-September 1996).

The implementation of special wood measurements standards is one important part of improving forestry statistics. Same measurement methods should be employed everywhere at the national level. If it is not possible or sensible to use the standard, the variation from standard must be stated and transformation possibilities (link with standard measurements) should be described.

The Economics and Information Centre has started together with Estonian Forestry Program and Estonian Agricultural University to elaborate measurement standards for pulpwood and sawlogs. Also sawnwood standard was considered to be developed (probably on the same basis as the Scandinavian Saw Industry Blue Book). However, due to insufficient financing this project has temporally been postponed. The output of these two projects will form the standard accepted by the Forest Department and the standard measurement guidelines for the customs, the police, the Statistical Board and the national wood industry.

At the end of 1996, Forest Department and Statistical Board discussed a change in the system of collecting data about private forests. Until now, the state forest districts have been responsible for this. If the private forest owners and state foresters are competitors in the free market in the future, the present system will be unacceptable for both parts.

The Economics and Information Centre have made proposals to improve the collection of wood utilisation statistics. These statistics are extremely important for

economical analysis and for controlling the reliability of other forestry statistics, like the statistics on removals and international trade (export-import). The main idea was to start collecting more detailed data about the utilisation of wood for special purposes and to analyse how much industry output corresponds with input. The proposal was accepted by Statistical Board only partly because of the lack of financing and the problems connected with collecting data from a wood industry which is more or less in a monopoly position.

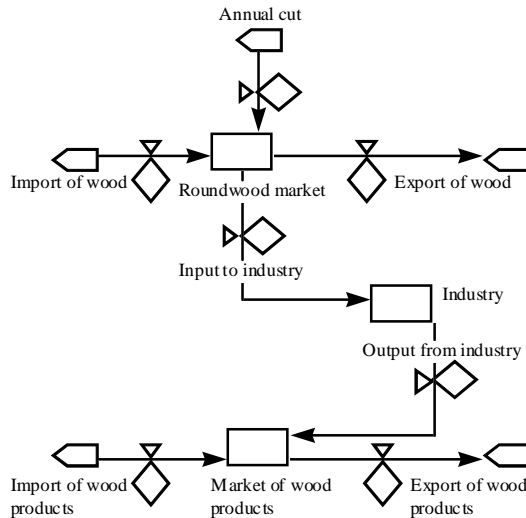


Figure 1. Schematic presentation of estimating national wood budget and possibilities to control reliability of different data. Roundwood market and market of wood products consist also individual consumers (farmers) who use wood for their own heating purposes.

FUTURE ACTION PLAN AND IMPLEMENTATION ARRANGEMENTS

According to the Development Plan for Estonian Forestry Sector 1997-2001 the key in developing the present information system will be the increase of the quality of primary data. The objectives are: 1) to ensure that the basic data on the Estonian forest sector is reliable and available for decision-makers in public institutions and various interest groups, 2) to satisfy the international data needs regarding the Estonian forest sector, and 3) to rise public awareness on forestry.

The main strategy will be to focus on improving and controlling the reliability of presently collected data, and to improve the timetable of their availability. Priority development areas have assumed to be 1) *the assessment of environmental sustainability of forest management including the status of biodiversity* and 2) *the improvement of information management at the national level* including export and import of forest-based products, and roundwood removals, especially in the private forests.

The process of improving forestry statistics requires coordination at the national and international levels. In order to satisfy the above-mentioned objectives, the national and international needs should be taken into account. The national coordination group would be responsible for the practical implementation, and the international group for working group function as a consulting unit. National and international groups would define the targets and strategy and mediate different needs for the national coordination group.

The proposal from the Economics and Information Centre is to:

1. organise the national coordination group in each country,
2. establish international coordination group in Finland (co-ordinated by the Finnish Forest Research Institute or the European Forest Institute),
3. draw up detailed budget and timetable for each different unit according to the level of financing, and
4. appoint the chief coordinator and manager for this project.

BALTIC-NORDIC FOREST STATISTICS DEVELOPMENT PROJECT: TASKS TO BE SOLVED

Antra Japina

Latvia State Forest Service
Latvia

BACKGROUND

The European Forest Institute has launched a very important project of harmonising forest statistics in the Nordic and the Baltic countries.

Forests occupy a considerable part of the land area both in the Nordic and in the Baltic countries. The forest cover percentage is the lowest in Denmark (10.5%) and the highest in Finland (65.9%) (excluding Iceland, where the forest-covered area is only 0.01%). The average forest cover percent in the Nordic and Baltic countries, including Iceland, is 34%. In 1993 the annual cut was the lowest in Denmark at 1.7 mill. m³ under bark, and the highest in Sweden – 50.8 mill. m³ (Table 1, Figure 1).

In the Nordic and Baltic countries forest is one of the main sources of domestic raw material for manufacturing forest products and energy, by both mechanical and chemical processing. In Latvia, the forest sector accounts for 10% of the GDP, and the forest products make up 1/4 of the export income: 20.3% in 1994, 26.4% in 1995, and 24.3% in 1996 (from January to October). It can be said that the situation is very similar in the other Baltic countries.

In addition to the similarities in the growing conditions and forestry practices, there are also considerable differences. For example, 78% of the forests in Norway and Sweden, and 98% of those in Finland grow in the boreal coniferous forest zone. The forests in Estonia and Latvia belong to a transitional zone from coniferous to mixed forests, while those in Lithuania are predominately mixed forests with broadleaved deciduous species.

There is cooperation in the forestry sector between the Nordic and Baltic countries. The European system of forest monitoring, which now also covers the Baltic countries, provides comparable data on forest health (International Co-operative Programme on Assessment and Monitoring of Air Pollution effects on Forests and Forest Conditions in Europe).

However, the methods of data collection and treatment used successfully in the Nordic countries cannot be applied directly in the Baltic countries. Besides the level of economic development, other special characteristics of the Baltic countries should be

taken into account while applying the European system of forest monitoring; for instance, cultural differences: for a Nordic company it would be absurd to conceal the figures of production and turnover, and to evade taxes, but in Latvia this is a common practice. There are a number of reasons for this, such as inconsistencies and constant changes in the legal system, drawbacks in the taxation system, the procedure for settlements, lack of working capital and low-interest credits, Soviet-style thinking, etc.

Consequently, the tables of statistical data have to be developed bearing in mind the differences in the forest management methods and other characteristics of the forestry sector in each country. European Forest Institute has mostly adapted the FAO demands in the development of forestry statistics tables, but also the demands of the European Community must be considered. Constructing flexible and easy-to-apply tables for the description of the situation in the forestry sector of the respective countries has turned out to be one of the major tasks in the current Baltic-Nordic Forest Statistics Project. We are thankful to the European Forest Institute for starting this labour-consuming work. I think that harmonising forestry statistics is a difficult task, but now the work is proceeding. I wish EFI good luck with their work. We are looking forward to the future cooperation.

Table 1. Actual annual removals (solid volume under bark; mill. m³).

Total

	1991	1992	1993	1994
Estonia	3	2.1	2.4	3.6
Latvia	4.5	4	4.8	5.7
Lithuania	2.6	2.7	2.2	2.5
Denmark	1.7			
Norway	10.6	10	10.2	9.2
Finland	34.6	39.7	41.9	48.4
Sweden	51.4	52.7	50.8	

Share of Coniferous

	1991	1992	1993	1994
Estonia		1.1	1.3	2
Latvia	2.6	2.3	2.3	3.3
Lithuania				
Denmark	0.4			
Norway	4.9	4.3	4.7	4.2
Finland	13.5	16	17.4	22
Sweden	22.4	24.3	25	

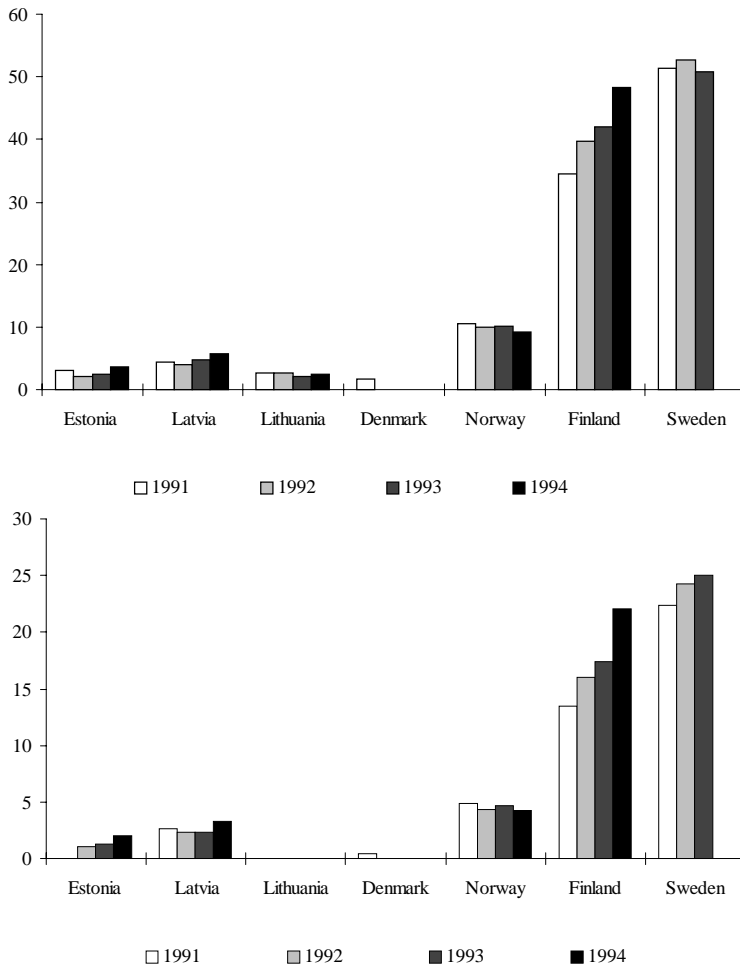


Figure 1. Actual annual removals, solid volume under bark; mill. m³ (total on the upper and the share of coniferous timber on the lower chart).

COMMENTS ON FORESTRY STATISTICS DEVELOPMENT PROJECT OF LATVIA

I would like to thank Mr. Esa Ylitalo and other members of the Finnish Forest Research Institute (FFRI) for the opportunity of visiting the Institute at the end of 1996. We were introduced very thoroughly to the work done by the FFRI on forest statistics. We also visited the Regional Forest Owners Association in Nurmijärvi, the Enso Gutzeit wood procurement organisation and Forestry Development Centre Tapio. The materials of the study tour were translated into Latvian and sent to our forestry sector associations and

educational establishments. Though we have now an idea of the function of the Finnish forest statistics system, we would still be interested in receiving more information and know-how on collecting, processing and analysing the forestry sector data.

MR ESA YLITALO'S VISIT TO LATVIA IN NOVEMBER 1996

In Latvia, Esa Ylitalo visited the Central Statistical Bureau of Latvia (CSBL), the Forest Owners' Association, Latvia Association of Wood Processing Entrepreneurs, Association of Wood harvesting organisations, Association of paper producers, the Customs Department, and one of the biggest logging companies 'Silva', a Latvian-Finnish joint venture limited company.

The meetings with the representatives of the associations were useful for the whole group. We appreciate the opportunity to discuss possible cooperation in forestry statistics, especially price statistics: The associations could supply information on the current prices to the State Forest Service (SFS) Information Unit. The data, accordingly treated on the monthly basis, could be returned to the associations. Due to the interest in the timber market statistics, we intend to collect the statistics using the Internet and the media (press) and send the data to the associations on a regular basis (quarterly).

The statistics on industrial production in Latvia are collected by the CBSL. However, the production data are not linked to the export data, which is a major drawback. Thus, the Statistics Bulletin N 12, 1996 shows that the country has produced in 11 months (1996) 318.7 thousand m³ of sawnwood, while the export figure for the same period is 1.320 thousand m³ with an insignificant amount of import.

The CSBL explains this discrepancy as follows:

1. The balance sheet of the enterprise does not show costs for the production of sawn goods separately, unless it is the main field of activity of the enterprise.
2. The farmers often have sawmilling facilities which are not identified separately in the reports, instead this type of business is included in the agricultural production.
3. Only those enterprises which have 50 or more employees must report to CSB on a monthly basis.

In 1997 Central Statistics Bureau started to use Statistical Classification of Economic Activities – NACE (used in the European Community) to determine the business activities of enterprises. However, this classification alone will not solve the problem. To improve the situation with sawmilling statistics, CBSL intends to launch in 1998 a foreign expert supported programme 'Follow-up on Sawn Goods Production' within PHARE.

SOME SFS COMMENTS ON THE INACCURACY OF THE DATA OF TIMBER REMOVALS ON THE ASSORTMENT BASES, IMPORT AND EXPORT OF THE TIMBER

The figures for export are believed to be precise, because of the double-checking of the timber amounts going to export, and because the data presented by state timber graders does not differ (if it does, then not significantly) from the data calculated by Central Statistics Bureau of Latvia. On the contrary, the figures of import and the actual volume of timber on an assortment basis recovered in logging operations leave room for doubt: e.g. when we estimate the required raw material input to produce the volume of sawnwood recorded as export, the total volume of removals must be significantly higher or the figure of actual import is higher. However, there is no evidence to back these findings up.

FUTURE WORK IN THE PROJECT

There is an idea of establishing the Latvian Forest Statistics Information centre or reorganising the information division.

The first step is to set up the National Forest Statistics Council, including the representatives of the SFS, trade associations, CSBL, educational establishments. During the work on the Nordic-Baltic Statistics Project, this Council will function as the Task Force for the project.

The project "The Development of Forestry Statistics in Latvia" needs technical assistance for:

- 1) identifying the legal status of Information centre (Information division): will it be an independent authority, or within the system of SFS, etc.;
- 2) financing model;
- 3) updating the computer systems, i.e. purchasing of the 'Oracle' software. The existing database 'Meza fonds' ('Forest Resources'), which operates on Fox Pro basis, has become inadequate, especially regarding software protection and updating of the existing data. 'Oracle' software is believed to meet the current demands.
- 4) training 10 persons:
 - 2 dealing with private forests;
 - 4 dealing with international forest products price statistics and market information;
 - 5 dealing with the data on forest resources (1 interpreter is included);
- 5) some specific needs :
 - developing a questionnaire for collecting price information from the companies concerning roundwood and timber products prices;
 - developing a standard contract to be concluded between the SFS (Information centre) and the association (company) on provisions concerning data collection and their confidentiality.

COLLECTION AND PROCESSING OF FORESTRY DATA

Forestry data are collected and processed in Latvia by the State Forest Service and the State Forest Inventory Institute of the Republic of Latvia. Their work is subdivided as follows:

State Forest Service (SFS)

The Forestry Department compiles and summarises the data submitted by the Regional Forest Districts. The data are used for internal needs as well as for presentation to the Central Statistical Bureau of Latvia (CSBL), covering the following:

Data (in brackets: frequency of presentation):

- a) Forest resources in state-owned forests given out for logging (quarterly)
- b) Actual volume of timber logged in state-owned forests and forests of other ownership categories (management year)
- c) Forest regeneration (current data)
- d) Forest fires (current data, management year)
- e) Violation of forest laws and regulations (management year)
- f) Forest pest and disease control (management year)
- g) Compiling tables for the Annual Forest Statistics Bulletin (management year)

The Division of Timber Processing (frequency of presentation):

Analysis by using the database on the timber processing enterprises and their production capacities, the regional distribution of enterprises, resource availability, number of people employed, development prospects (monthly, quarterly, yearly)

The Division of Information (frequency of presentation):

- a) Compiling and disseminating international price statistics on roundwood and mechanically and chemically obtained timber products by using the Internet, news media (quarterly, yearly)
- b) Issuing together with the Press Secretary of the *Monthly News Bulletin* (monthly)
- c) Activities jointly with the Forestry Department for summing up the data and making the *Annual Forest Statistics Bulletin* (yearly, the data for the previous year summarised by April 1 of the current year)

The State Forest Inventory Institute

The Division of Information (frequency of presentation):

- a) Tabulating data analysis on the forest resource and the distribution between ownership categories (quarterly, yearly)
- b) In cooperation with the trade associations in the sector, compiling statistics on the

roundwood consumption and prices in the country on a company level; price statistics on the domestic market (quarterly, yearly)

- c) Data compilation for the *Annual Forest Statistics Bulletin* jointly with the Division of Information and the Forestry Department of the State Forest Service (yearly, for the previous year until April 1 of the current year)

The State Timber Measurement Service:

Summarising the reports of the Timber Quality Graders as to the volumes of export and prices in line with the Commodity Group NR. 44 “Wood and Wood Products”, including export prices, data analysis, building curves.

Note: In compliance with the Law on State Statistics, CSBL provides methodological guidance for making statistical reports.

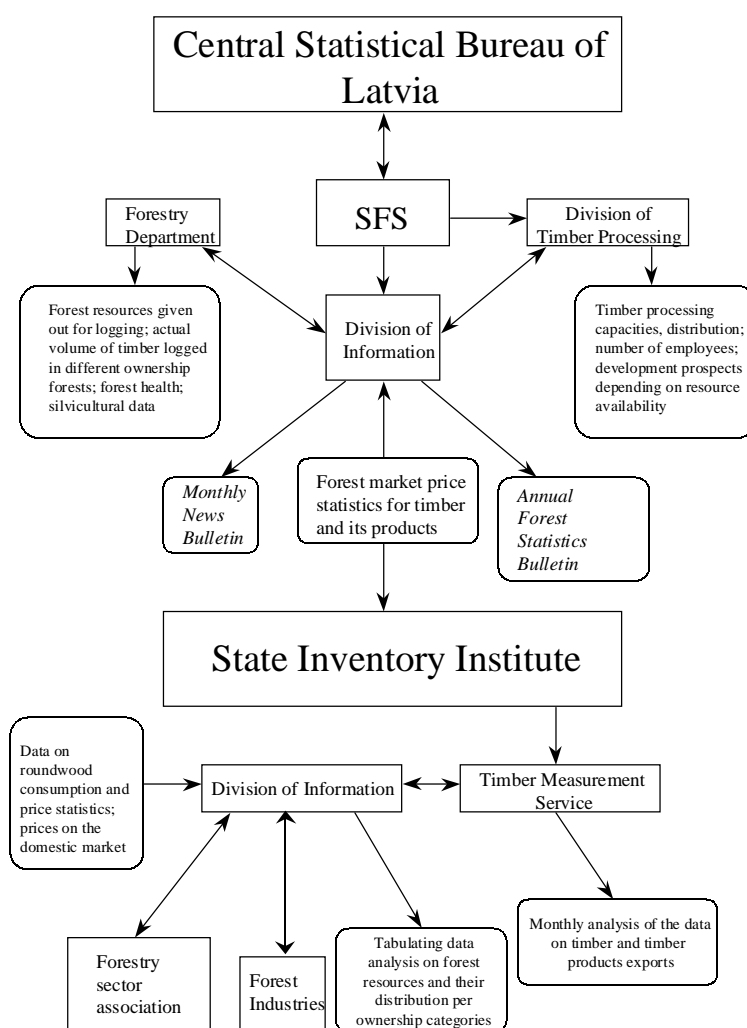


Figure 2. Organisation of Latvian forestry authorities and their duties.

FOREST STATISTICS IN LITHUANIA

Giedrius Leliuga

Centre of Forest Economics (MEC)
Lithuania

GENERAL INFORMATION

The forests in Lithuania cover 1.9 million hectares, or 30% from the total land area. As in other Baltic countries, the restitution process (returning the forests to former forest owners) of forest land is in progress. Compared with Latvia and Estonia, the forest land area owned by the private forest owners is evaluated to be the smallest in the Baltic countries in the future, i.e. 30-35 %.

The annual cut in Lithuania has been 3-4 mill. m³ annually. The large amount of windthrows and subsequent insect damage during the last few years have increased the removals to 5-6 mill. m³. The annual volume increment makes it possible to increase the fellings to over 5 mill. m³ in the future.

All forests in Lithuania are subordinated by the newly established Ministry of Agriculture and Forestry (the former Ministry of Forestry was combined with the Ministry of Agriculture in 1997). For the joint management of state forests with Department of Forestry, the General Forest Enterprise (General Directorate) was established in 1997. The 43 state forest enterprises are responsible for the management of state forests in the districts.

For the co-ordination of private forests the unit of Private Forests has been established within the Ministry, as well as the Private Forest Consultation group. Private forest owners are making efforts to join the Private Forest Owners association, but at the moment this organisation is quite weak and its role not significant.

Organisations responsible for Forest Statistics are:

- Ministry of Agriculture and Forestry, the Department of Forestry: reforestation and forest protection, forest tree breeding and seed production, forest damage and damage prevention;
- General Forest Enterprise: wildlife protection and hunting, harvesting and transport;
- Forest Inventory and management Institute – forest management and use;
- Centre of Forest Economics (MEC) – forest economics.

STATE OF FOREST STATISTICS

Lithuania joined the project of the Baltic-Nordic Forestry Statistics later than other Baltic countries. The feasibility study on the current forestry statistical systems in Lithuania was carried out by Finnish Forest Research Institute (Mr. Esa Ylitalo) in 1996. Unfortunately Lithuanian representatives were unable to participate in the first seminar in Joensuu. The most problematic aspects in Lithuanian forest statistics are similar with Latvia and Estonia:

- information on Forest statistics from private forests;
- recording foreign trade in roundwood and forestry industry products;
- wood industry products and consumption of roundwood.

Forest statistics from private forests

Unlike collecting and compiling statistical information on the state forests, the private forests have been difficult to access. At present there are no reliable methods for collecting information from private forests. Especially statistics covering silviculture and forest management activities, the roundwood trade, removals and their distribution by assortments in private forests are very incomplete.

The only way of getting the information from private forests is the data from cutting permissions given by state foresters (each private forest owner needs a permission before cuttings), but the information is very incomplete and very general in nature.

It is very important on the national level that the system of collecting the relevant data on all forest owners would be taken into account and developed.

Recording of foreign trade in roundwood and forest industry products

The information on foreign trade is compiled by the Central Statistical Bureau of Lithuania. The big improvement in official statistics was made after the introduction of the EU commodity classification in 1995. For example, the export of sawnwood to Germany (the biggest Lithuanian sawnwood importing country) was 243.8 thousand m³ during the first half of 1996 according Lithuanian statistics. The corresponding German statistical data is 244.8 m³, the discrepancy being only 0.5%.

Naturally mistakes in filling the of customs declarations are possible (more often showing less value and sometimes missing codes) but in general the statistics is reliable.

Checking the roundwood export data helps to regulate licenses. Each company exporting roundwood has to buy licence and each quarter of the year they have to report exported assortments, quantities, and value. If the company does not deliver the required data, the state authorities can cancel the licence. This system helps to keep the figures of roundwood export very detailed.

To check the data on the wood-based panels' export is easy by contacting the exporting companies. This wood industry is concentrated in few factories.

The situation is more complicated with sawnwood foreign trade control, because there are hundreds of producers, middlemen, and exporters. The only way to check the reliability of the data is the information from importing countries' statistical figures, and the comparison of quantity and value relation.

The data on transit via Lithuania is not mixed with the export and import figures because it is registered as a separate customs procedure.

Wood industry products and consumption of roundwood

The most problematic task is to evaluate the consumption of raw material in the sawmilling industry, where more than 60% of roundwood is consumed. It is possible to calculate the roundwood consumption by a derived method of evaluating the roundwood supply from state forests (the volumes from private forests can be predicted), export and import.

The data on wood-based panels consumption and production is easier to collect because of the big industry concentration in few factories.

We believe that Lithuania has a realistic possibility to participate in the General project together with Latvia and Estonia.

FOREST AND FOREST PRODUCTS STATISTICS IN THE BALTIC COUNTRIES: AN UN-ECE AND FAO PERSPECTIVE

Ed Pepke

UN-ECE/FAO
Switzerland

INTRODUCTION

This paper presents two international organizations' perspectives on forest and forest products statistics in countries in transition to market economies (CITs), with emphasis on the Baltic Countries. The paper examines the needs for statistics, associated problems and possible actions to resolve those problems.

During this period of transition, the countries have a multitude of urgent social and economic needs. Despite these other predominant concerns, tremendous progress has been made in the forest and forest industries sector, including the associated statistical services. These gains are due to strong forest and forest products tradition and experience in CITs and the important role this sector plays in CITs economies and in the fulfillment of social needs.

The ECE and FAO appreciate not only the efforts, but also the significant progress in reestablishing and reorganizing CITs' statistical departments. ECE and FAO have responsibilities with CITs, for example the follow-up of Helsinki Resolution H3 on assistance to CITs from the most recent Ministerial Conference on the Protection of Forests in Europe. We welcome the maintenance of strong working relationships with our organizations and we sincerely appreciate the support of the Nordic Council of Ministers in promotion of the development of forestry statistics in the Baltic and Nordic states. Furthermore the sponsorship of the Ministry of Agriculture and Forestry of Finland as well as their Nordic counterparts, has resulted in valuable work presented here by the Finnish Forest Research Institute, the Swedish National Board of Forestry, the Danish National Forest and Nature Agency, and other Nordic agencies with their Baltic counterparts, which produced important assessments for each Baltic Country. Equally notable is the technical assistance of the European Forest Institute in this project, in addition to being the host of the June, 1996 seminar and our current Expert Panel Meeting and Conference.

WHY COLLECT FOREST AND FOREST PRODUCTS STATISTICS?

The primary reason to collect forest and forest products statistics is for use within the countries by governments, institutions, universities, trade associations and private companies in the sector. Governments use these databases to produce analyses of forest growth and removals and forest products production, consumption and trade. With these analyses they have a firm base for establishing policies and regulations in the forest and forest industries sector for the short-, medium- and long-term. Policies must be scientifically based to enable establishing allowable cuts limits for sustainable forest management, fair trade regulations, production incentives for forest industry development, etc.

The list of policy needs is long, as the Baltic countries are experiencing, but with a sound statistical basis, policies which are established today will be better than those made in a vacuum. Two examples from each side of the forest and forest industries sector follow.

1. *Measurement of sustainable forest management.* As a follow-up to the UNCED Rio, countries are voluntarily monitoring their progress towards sustainable forest management (SFM). A number of international processes have been launched which put into effect the forest principles adopted at the Rio Summit, of which the Helsinki Ministerial Conference on the Protection of Forests in Europe, is most relevant to this meeting of Nordic and Baltic Ministers and experts. Helsinki Resolutions HI, “General guidelines for the sustainable management of forests in Europe” and H2, “General guidelines for the conservation of biodiversity of European forests” have resulted in a set of 6 criteria and 27 quantitative indicators for SFM. The monitoring of SFM through these indicators will in turn require rigorous statistical information, some of which is traditionally gathered and reported, but also some which will have to be developed by all European countries.

2. *Privatization of forest industries.* During this period of transition, former government-owned factories and companies are being privatized. Successful, continued forest products industry development necessitates that both old and new companies benefit from a positive business environment. Only through monitoring of growth of production and trade, once again through effective statistical collection, compilation, analysis and dissemination, will the Baltic Countries’ governments be able to truly know if their programs, policies and legislation are having the desired effects on the growth of this key industry segment.

The UN Economic Commission for Europe’s Timber Section has been collecting statistics about forests and forest products from member countries (currently 55 in North America, Europe and the former USSR) since its creation after the Second World War. These statistics become the core of the TIMBER and Forest Resources Assessment (FRA) and forest fire databases and are transmitted to FAO for incorporation in FAO’s worldwide databases. The Timber Section’s databases are used in preparation of the *ECE and FAO Timber Bulletin*, “Forest products statistics,” “Forest fire statistics” and the “Forest products annual market review” as well as the *ECE and FAO Forest Resources Assessment*. FAO’s forest products database is printed in the *FAO Forest Products Yearbook* and the same statistics are available on the World Wide Web under FAO’s website.

Both organizations use the databases for a multitude of analyses. For example, the recently published *European Timber Trends Study* used statistics from the TIMBER and FRA databases for its analysis of the current and past trends; in conjunction with predictive models, it made forecasts for Europe's forests and forest products into the year 2020. Only with a solid basis, in this case the databases with annual statistics since 1964, could accurate forecasts be made.

Many other public and private groups and individuals use individual countries statistics and the ECE and FAO databases. Large and small private consulting companies, university researchers, and forestry and forest products institutions and associations regularly use the *FAO Yearbook* or the *ECE/FAO Timber Bulletin* as their basic source of information for conducting market analyses, forest analyses and other sectoral studies. These sources give individual country statistics and are also aggregated into regions, like North America, a group of countries like "developing countries" or the whole world. However the accuracy of the total depends entirely on the accuracy of the individual parts, and thus, for countries in transition to market economies, the development of accurate and effective statistical coverage is essential.

WHAT ARE THE COMMON PROBLEMS IN STATISTICAL COLLECTION AND ANALYSIS IN CITs?

Loss of capacity to collect statistics. During the transition process, statistics which were traditionally collected at a central location, for example in Moscow, have been decentralized if not altogether abandoned. Newly independent countries have made admirable progress in restructuring their statistical capabilities, during a time when acute social and economic problems exist. It is partially through the generous sponsorship and assistance and cooperation of some western countries and institutions, in our case the Nordic Countries, that such rapid progress in rebuilding of capacities has taken place in the Baltic Countries.

Still it is traditionally difficult to justify expenses on gathering of information for its own sake. Justification must be on solid economical reasons, such as economic development or taxation. Within the forest and forest industries sector we realize the value of current forest inventories and up-to-date statistics on forest industries for policy, planning and regulatory processes.

Lack of alternative sources of statistics. In some countries when official statistics are unavailable, FAO and ECE use the second best sources, for example trade association statistics and trade publication statistics. We realize the potential limitations of these sources, specifically comprehensiveness, accuracy, timeliness, reliability, repeatability, etc. However, sometimes association-generated statistics are also used by western governments and sometimes become "official" statistics. We also realize that industry-wide trade associations are being started in many CITs and they too will need time to build their membership. An association has to build its members' confidence in supplying and distributing their production, trade, labour, cost and other statistics. Often new private owners of forests and forest industries distrust governments and

associations. Slowly these networks will be established and restored, possibly through models such as exist in the Nordic countries.

Lack of familiarity of new administrations with international commodity statistics and requirements for formatting of national information to harmonize with international statistics. Understandably, new forest and forest products statisticians often are not familiar with international statistical requirements. ECE and FAO statistics are usually aggregations of a country's national statistics, but sometimes mechanisms are not in place to have comprehensive collection, or even valid sampling. Valid sampling requires accurate estimations of the population, and in the case of countries in transition, with their forest and forest products sector in transition, an estimation of the population of for example, sawmills, might be difficult.

The wealth of experience in collecting and processing of national statistics and aggregating and harmonizing these statistics for international organizations is being passed from the Nordic to the Baltic Countries. Once again through opportunities like this workshop, the Baltic Countries will have the opportunity to meet with representatives of international organizations.

Limited adaption of statistics to market economy conditions. We have seen rapid development of collection of certain forest products export trade statistics in some CITS. Obviously these statistics are crucial for control, tariffs and taxes of forest products exports. But difficulties exist in collecting other statistics, for example production of low value forest products like wood residues. This is natural and we expect that over time successively sophisticated systems of statistics collection will be implemented in CITS.

Limited access to modem computer hardware and internationally compatible software for statistical purposes. As many of the statisticians in CITS are learning, the processing of forest products statistics is greatly facilitated through adequate computer hardware and accompanying software. It is not necessary to have the newest or most powerful computers, but they should be set-up to be compatible with other systems. We anticipate increased electronic data transfer, by Internet e-mail, and it would be realistic for all forest and forest products statistical offices to eventually be able to correspond and transfer statistics.

Inadequately trained manpower. The statisticians need to have training in the collection, processing and dissemination of statistical information for internal and international use. There are two means of accomplishing this training. First, statisticians need formal education in basic statistical procedures and principals. Secondly, these must be adapted to the forest and forest industries sector. The former and some of the second can be accomplished in university level education. However the complete adaptation of statistical principals to our sector is best accomplished through on-the-job experience and reinforced through special workshops and training opportunities with western countries and international organizations.

FAO initiated a series of regional training workshops, thus far in Asia, Africa and Latin America, for focal points who deal with international statistics in their countries. These workshops have proved highly successful in raising familiarity with appropriate data formats, use of electronic data processing technologies and in promoting statistical networking within regions. The International Tropical Timber Organization (ITTO) has

since been organizing similar training workshops to build statistical gathering and processing infrastructure in developing countries. Again the established cooperation between the Baltic and Nordic Countries appears to be the best solution. Similar opportunities to cooperate with international agencies like ECE and FAO in the other CITs could be beneficial.

Loss of continuity in data series. One attribute of ECE's and FAO's international forest and forest products databases is their continuity over time. For example the TIMBER forest products database contains statistics since 1964. When former countries like Czechoslovakia and Yugoslavia divided into multiple countries, the result for us was an understandable and unavoidable interruption in statistical series. However it was unexpected that the sum of the parts would not equal the sum of the whole! In other words, we anticipated that for example the post 1992 data series for the Czech Republic and the Slovak Republic would still be comparable to the former Czechoslovakia - however they are not in every product.

Protection of privacy. Some countries, including some western European countries, refuse to supply production and trade statistics for industries in which there is only one producer. Their reason is to protect the confidentiality of the company. We in turn are faced with the problem of knowing that a sole producer exists, for which we sometimes have unofficial statistics, and wondering how to show this, at least in the European totals.

Repetitive annual data. With worrisome regularity some annual production or trade statistics for some countries (both western and CITs) have to be repeated by ECE and FAO for lack of new information. While it can happen that there is no change in a statistic over time, we become concerned about the accuracy of such statistics. We do realize that without official reports that estimations are sometimes necessary. Sometimes the dilemma for us, when official data are missing, is whether to continue to repeat a statistic year-after-year, knowing that we may be introducing errors in order to appear to have complete coverage and in order to calculate totals for Europe.

Technical and communicators constraints. The necessity for modern computer hardware and software was mentioned above, but in some CITs the needs are more basic and include telephone and fax and associated communications infrastructure. It is encouraging that more and more of our communications with CITs are being facilitated by e-mail.

WHAT ARE THE SPECIFIC PROBLEMS THAT ECE/FAO HAS EXPERIENCED WITH BALTIC COUNTRY STATISTICS?

It is important to reiterate that on the whole ECE and FAO are very satisfied with the cooperation and the progress that has been made in the forest and forest industries sector, including statistical services, by the Baltic Countries. The following "problems" are seen as temporary situations which already have, or which will soon resolve themselves.

Lack of response. One of our most frustrating experiences is the lack of response to ECE/FAO/Eurostat questionnaires. For example we had regularly been receiving well

completed responses from one country until last year and then we did not receive a response to either our questionnaire or follow-up faxes. Upon calling we learned that our traditional statistical contact was on vacation and fortunately a co-worker was able to supply us with a partial response with important major commodities in time for the Forest Products Annual Market Review.

Incomplete responses. We encourage complete responses to our biannual questionnaires, but we understand the difficulties involved for CITs and thus, we are satisfied to receive the current information available. We realize that this can necessitate some estimations for data which are not immediately available by the deadline for responses. However we consider that statisticians within the Baltic states are in the best position to make such estimations, that is, in a much better position than us in Rome or Geneva!

Statistical inconsistencies. Due to the transition process, specifically privatization, some former state-owned companies which regularly reported their production and other statistics, ceased to report. In one instance this led to incomplete reporting of a country's production of coniferous sawnwood. Perhaps this would not have been obvious to us in Geneva, but it resulted in the country's exports being greater than the sum of production and imports! The situation was resolved by contacting the country involved and requesting an estimation of all the country's coniferous sawnwood production, state-owned plus private. Again, we understand the difficulties in reporting at this time and we appreciate the progress the Baltic states have made.

Compatibility with standard international definitions. The Forest Resource Assessment has agreed upon common international definitions in order to facilitate comparisons between countries and to enable calculation of regional and world totals. We assume that through processes like the present Baltic-Nordic expert group work, that the Baltic Countries' statistics will be harmonized.

WHAT ACTIONS ARE REQUIRED TO IMPROVE THE CITs COLLECTION AND PROCESSING OF FOREST AND FOREST PRODUCTS STATISTICS?

Advise on appropriate reorganization of statistical services. Primarily governments, but also new trade associations, need to receive advice at this time in order to set-up their country's statistical services in an efficient and effective manner, compatible with relevant international systems. As mentioned above, FAO and ITTO have sponsored workshops for developing tropical countries, and we wonder if something similar would be valuable for CITs?

Identify manpower needs. Realizing that efficient statistical services cannot be immediately established, it could be helpful to prepare plans for stages of development. For example, part of the plan would be to identify the initial minimum number of technicians and statisticians necessary to collect basic forest statistics and the initial minimum number of statisticians to collect and process forest products statistics. It would also be valuable to identify successive developmental stages leading to a fully functional forest and forest industries statistical service. These descriptions should

include the number of people (statisticians, technicians and clerks) needed, as well as the training and experience required to advance to the next stage.

Adapt current statistics to international needs. Obviously the first priority of statistical services is to meet national requirements, but next the coordination and reporting to international organizations must be implemented. The international organizations are aware of the burden of CITs in establishing and conducting their statistical services. In order to reduce reporting requirements for all countries, the FAO and ECE have joined together with EUROSTAT and ITTO to issue joint questionnaires with common standard definitions and questions. We anticipate that this will improve the response rate by minimizing the burden of receiving and responding to multiple questionnaires.

Identify training requirements. Though meetings such as the Expert Panel Meeting and through the assistance from organizations and western countries, the needs for training statisticians and technicians are being identified. Use of successful models, for example the Nordic countries' statistical services, the successive levels of training requirements can be identified for statisticians and field, i.e. in-forest, technicians. Once identified these training requirements could be circulated to other CITs for their consideration for applicability in their particular circumstances.

Provide training. Following identification of training requirements, the next question of course is how to provide that training. Formal education, workshops, professional exchanges and experiences abroad are all possibilities which acquire adequate financial resources. As the organization responsible for Helsinki Resolution H3 monitoring and reporting, the Timber Section in Geneva has evidence of the generosity of western governments in providing assistance to CITs. One goal of H3 is to coordinate and improve the efficiency of assistance and technology transfer to CITs. Perhaps a project for consideration of the UN-ECE Timber Committee's Team of Specialists on CITs would be to investigate interest in conducting training workshops and professional exchanges on forest and forest products statistics.

Obtain essential hardware and software and train users. As indicated in the needs assessment above, access to modern hardware and software are critical to effectively collect and process statistical information. Simultaneously, users must be trained to use these tools. Efficient software use requires sound knowledge about the programs, their capabilities and their use. Often this training is most efficient in a formal instructional setting, rather than through users manuals, which may be in non-native languages.

CONCLUSION

The Baltic countries have made great strides in their forest and forest products sectors in the last six years, as have other CITs. The growth in Baltic forest products exports (and imports) distinctly show the need for forest and forest products statistics and can be shown because those statistical capabilities have been developed (Table 1, Figure 1).

Understandably some problems exist during the transition period in collecting, processing and disseminating statistical information. However due to positive working

relationships that the Baltic Countries have with the Nordic countries, ECE and FAO, we are confident that their statistical information services will overcome present obstacles. We look forward to continued close working relationships with both the Baltic and Nordic countries.

Acknowledgements

The author appreciates the assistance in preparing this paper from his colleagues in the Timber Section, Mssrs. Kit Prins and Alex Korotkov, and in the FAO Forestry Planning and Statistics Branch, Mssrs. Mafa Chipeta and Felice Padovani.

References

UN-ECE and FAO. 1996. European timber trends and prospects: into the 21st century. Geneva Timber and Study Papers. ECE/TIM/SP/11.

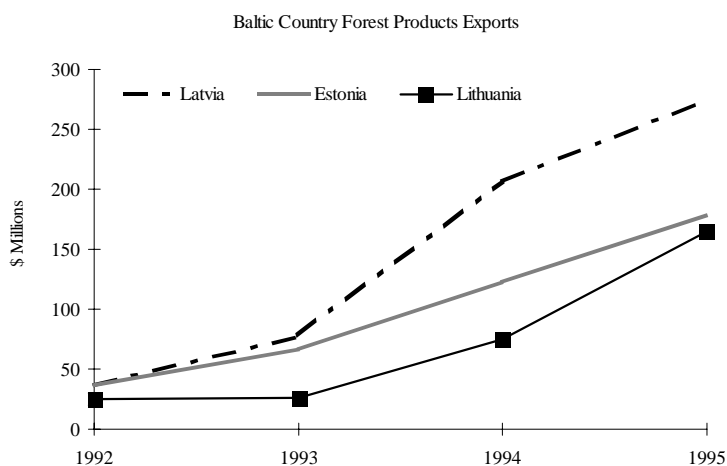
Note that FAO's forest products statistics are available on the World Wide Web at <http://apps.fao.org/cgi-bin/nph-db.pl?subset=forestry>

APPENDIX 1.

Table 1. Baltic countries forest products trade value as a percent of total merchandise trade, in %.

		1992	1993	1994	1995*
Estonia	Exports	9.3	8.0	9.5	10.4
	Imports	0.3	1.3	1.7	2.0
Latvia	Exports	4.5	8.5	21.0	21.1
	Imports	0.1	2.7	3.3	5.8
Lithuania	Exports	3.0	1.5	3.9	6.3
	Imports	0.1	0.4	1.3	2.1

* 1995 data are provisional because the estimations for total merchandise trade, and for the same reason 1996 data are not available.



Source: FAO and ECE

Figure 1. Baltic countries' forest products exports in 1992-1995.

INTERNATIONAL FORESTRY STATISTICS: CURRENT SITUATION AND FUTURE PROSPECTS

Martti Aarne

Eurostat
Luxembourg

1. INTRODUCTION

First, I would like to thank the European Forest Institute and the Finnish Ministry of Agriculture and Forestry for the opportunity to attend this meeting and to present the views of the Statistical Office of the European Communities (abbr. Eurostat) on the development of forestry statistics.

Eurostat, located in Luxembourg – the green heart of Europe, as it is called – is one of the Directorates General of the European Commission. Our mission is to provide the EU with high-quality statistical information service. This statement can be interpreted to incorporate two dimensions: First, the objective is to compile statistics to constitute a firm basis to Commission policies in different sectors, and second, we aim at assisting Member States when they are planning their activities at the national level.

As to forestry statistics, Eurostat has the closest ties and co-operation with DGVI (Agriculture) and DGIII (Industry). I want to emphasise, however, that in this meeting I will represent the views of Eurostat only; I do not speak for the whole Commission.

Eurostat of course mainly focuses on statistics covering the 15 Member States. As reference data, we often collect information on EFTA countries, as well as on Switzerland, the USA, Canada and Japan, *inter alia*. One of the activities to prepare for the probable enlargement of the Community – the activity for which Eurostat is specifically responsible – is to collect basic statistics from CEEC countries, including the Baltic states. My colleagues in agricultural statistics have already started this work, and I do hope that basic forestry statistics can also be included in forthcoming Eurostat publications.

Eurostat is currently consulting CEEC countries and also co-financing various development projects with the aim of improving their systems to meet the requirements of the European Statistical System. These joint projects are in most cases initiated by Eurostat. This particular Baltic-Nordic project is an excellent example of another approach; that is, a project launched at a national level. This project deserves the full support of Eurostat, and I do not see any reason, in principle, why the project could not be financially supported by the Commission.

It is a prevailing view within the Commission – not just my opinion – that Nordic statistics are of the highest quality of present Community forestry statistics. My conclusion of this is that if Nordic principles can at least to some extent be applied in the development of forestry statistics in the Baltic states, the resulting statistics will no doubt meet the requirements of the EU.

2. STARTING POINTS TO COMMUNITY FORESTRY STATISTICS

There is no common Community policy on forests. The Treaty of Rome, even after Maastricht, does not provide for or include such a policy. Cork is included in the Treaty, not wood. So, the principle of subsidiarity is applied, indicating that forest policies within the Community are at the competence of individual Member States. The Commission needs and the Eurostat activities are linked with the implementation of the Commission policies within different areas, especially CAP, regional and environmental policies, and rural development.

The most important underlying factor guiding the practical work on forestry statistics is the Council regulation No 1615/89 establishing a European Forestry Information and Communication System (EFICS). In late 1980s, the Commission felt that the data concerning the forestry sector were insufficient, incomparable and covering only a part of the information necessary for the implementation of Community policies. The objectives of EFICS were defined as follows: “to collect, coordinate, standardise and process data concerning the forestry sector and its development”. In 1994, the implementation period of the EFICS system was extended till the end of 1997 (Council Regulation No 400/94).

The statistical component of EFICS can be divided into three parts: first, statistics on forest resources, as understood in the broadest sense (traditional inventory data, as well as statistics on non-wood goods and benefits of forests, and the statistics describing the contributions of forests to sustainable development and biodiversity); second, statistics on removals and production of forest industry products, foreign trade in these products, and so-called supply balance sheets based on them; and third, characteristics of forest holdings: e.g. their number, ownership and management status, prices, incomes from roundwood selling, etc.

One should also pay attention to the status of forestry statistics in the overall strategy of Eurostat. Forestry statistics are not among the priority areas. No permanent full-time staff are allocated on this field, so continuity is weak. Therefore the present Eurostat activities are on a rather modest level. We are more or less in a consolidation stage, trying to update and complete present time series which end in 1991. Only after that come the development needs and the possible new information requirements to data suppliers. The present Eurostat requirements are reasonable, and do not incur a significant amount of extra work for Member States.

3. PRESENT ACTIVITIES AND THE STATE-OF-ART OF COMMUNITY FORESTRY STATISTICS

Eurostat's forestry statistics are based on mailed enquiries to Member States. There is no Community legal basis for the compilation of these statistics, so "gentlemen's agreement" is the method applied. We work in close collaboration with other international organisations responsible for the production of forestry statistics, especially the FAO and ECE. In 1994, the Intersecretariat Working Group on Forest Statistics (IWG) was established to act as an informal body among the organisations concerned with collecting and disseminating information on the forestry sector. The present members of the IWG are the FAO, ECE, ITTO, OECD, EU/DGVI and Eurostat.

The IWG has adopted two basic objectives: first, no piece of information should be requested twice from the same country by different international organisations, and second, there should be the same value for the same transaction in all international data sets. The main achievement so far is the joint annual forest products questionnaire, where data on removals, production and foreign trade are requested. The joint questionnaire includes a few questions solely for the purposes of Eurostat: we ask for information on removals by roundwood assortment and by forest ownership category, and the division of trade figures into external and internal trade of EUR15.

Thus the development of removal and foreign trade statistics also in the Baltic and Nordic states is in the interest of the EU. As we have heard in this meeting, these statistics are among the priorities of the Baltic-Nordic project. At present, for many EU countries removal figures are partly missing or they are rough estimates. Relatively complete and up-to-date information is available for public forests, whereas for private forests such information is in many cases lacking.

The most recent Eurostat publication on forestry statistics was edited in 1995, covering the years 1985 to 1991. The figures for 1994-95 have been collected through a joint questionnaire. As the country figures for 1992-93 are still missing, Eurostat will distribute a separate questionnaire concerning these years to the Member States and EFTA countries in the near future. This process will not require excessive work from data suppliers, as we intend to utilise the data which already have been delivered to the ECE and, as far as foreign trade is concerned, we will extract figures from the Eurostat's Comext database containing statistics on the Community's external and internal trade. Therefore a major part of the tables will be pre-filled, and only the validation by the respondents of these figures will be needed.

Based on the two questionnaires described above, the new forestry statistical report covering the years 1992-95 will be published in 1997. The contents of this report will follow, probably with a few new tables, the principles outlined in the previous volume. The present report comprises eight main chapters: area resources and population, forest structures, roundwood production, supply balance sheets for roundwood, intra EUR15 trade in roundwood, supply balance sheets for forest-industry products, consumption of pulpwood and forest fires. These are the forest statistical areas of greatest interest to Eurostat at the moment and also in the near future. In my opinion, these are the areas on which development efforts in the Baltic-Nordic project should be concentrated.

One of our present activities is to organise the next meeting of the Eurostat Working Party on Forestry Statistics, preliminarily scheduled for July 1997. The EU Member States and EFTA countries will participate, and I would like to invite the representatives of the Baltic states to attend the forthcoming meeting as observers.

4. FUTURE PERSPECTIVES OF COMMUNITY FORESTRY STATISTICS

Bearing in mind the limited resources allocated for forestry statistics within the EU, the list of future activities cannot be too ambitious. Eurostat will certainly continue the collaboration in data collection with the FAO and ECE through joint questionnaires with the aim of reporting basic Community forestry statistics on an annual basis. We also need to intensify the dialogue between the Commission and the Member States by arranging Working Party meetings more regularly than before, perhaps once a year.

In the framework of EFICS, there are two separate projects highly actual at the moment. The study on forest inventory methods, co-ordinated in an excellent manner by the European Forest Institute, aimed at analysing in detail the statistical sources on forestry resources in the Member States and drawing up proposals for obtaining mutually compatible and comparable data. The Consortium delivered its final report to the Commission at the end of January 1997. It is primarily the task of DGVI to draw final conclusions on how to proceed with EFICS. DGVI has not reacted by the time of this conference, nor has the final report been discussed at the EU Standing Forestry Committee.

However, I will try to cover here some topics of special interest to Eurostat in our everyday, practical forestry statistical work. There is an urgent need to draw up guidelines for the harmonisation of the most important forestry attributes, these being forest area, its change (increase/decrease) and tree species composition. The present definitions differ from country to country, making figures inconsistent and not comparable. Even the definitions applied by various international organisations differ from each other (e.g. forest area, Eurostat vs. FAO/ECE).

Therefore concrete measures to start the harmonisation process are required as soon as possible. As this would no doubt bring about significant additional costs to countries involved, the Commission might consider co-financing the costs of harmonisation in Member States, provided that the following conditions are met:

1. Member States agree to introduce harmonised definitions and to adapt their present statistics accordingly, and
2. Member States engage themselves to use these uniform definitions also in the future.

If this approach proves to be successful, the harmonisation could at a later stage be extended to comprise other attributes, such as standing volume, and protective and conservation areas. As to the collection of data on these harmonised attributes, there are several alternatives. Introducing a set of harmonised attributes at the EU level in present national inventories may be the most feasible and realistic option to proceed.

The European Community has committed itself to promoting the principles of sustainable management of European forests and the conservation of their biodiversity. Out of the six criteria adopted in the Helsinki process, the criteria number 4 and 5 (biological diversity and the protective functions of forests) are especially the areas where additional information is needed. Eurostat feels that EFICS could be elaborated in such a way that the system could in the future act as a central focal point to deliver information on sustainable forestry and biodiversity.

As to the coverage of the EFICS system, the first and foremost priority is the thematic coverage within the EU region. The extension of EFICS to EFTA countries or countries in transition should be considered at a later stage. At present EFICS could represent a valuable reference to countries outside the EU, as they develop their statistical systems.

Another EFICS study, launched by DGVI in February 1997, aims at investigating the use of remote sensing data and geographical information systems for obtaining some of the forest characteristics. The utility of these techniques will be verified in the fields of change detection and of the structural diversity of forests.

5. EUROSTAT IN BRIEF



Starting points

- * No common forest policy; subsidiarity
- * Primary needs: CAP, regional and environmental policies, rural development
- * European Forest Information and Communication System (EFICS):
 - Objectives:* "to collect, coordinate, standardise and process data concerning the forestry sector and its development"
 - Deadline:* end of 1997
 - Statistical components of EFICS:*
 - forest resources
 - forest products and related industries
 - forest ownership: structure and exploitation
- * Eurostat's priorities

Present activities and the state-of-art of Community forestry statistics

- * Cooperation with the FAO and ECE in data collection
 - Inter-Secretariat Working Group on Forest Statistics
 - Joint FAO/ECE/Eurostat Timber Bulletin Questionnaire for 1994-95
- * Separate Eurostat questionnaire for 1992-93
 - Mostly pre-filled, validation by national correspondents
- * Compilation of the report "Eurostat forestry statistics 1992-95"
- * Compilation of the Eurostat methodology report on forestry statistics
- * Eurostat Working Party on Forestry Statistics, July 1997, in Luxembourg

Contents of "Eurostat Forestry Statistics 1985-1991"

1. Area resources and resident population
2. Forest structures
3. Wood production
4. Raw wood supply balance sheets
5. Intra EUR15 trade in raw wood
6. Supply balance sheets for the major wood products
7. Consumption of pulpwood by types of industrial products
8. Forest fires

Future perspectives of Community forest statistics

- * Joint TB questionnaires annually to Member States and EFTA countries
- * Annual forestry statistical reports, annual Working Parties
- * The EFICS study on forest inventory methods
 - Harmonisation of the most important forestry attributes
 - Thematic coverage: environment-related attributes, indicators of sustainable forestry
 - Geographical coverage
- * Contribution to the EFICS study on the use of remote sensing for monitoring forest areas

CO-OPERATION OF THE NORDIC AND BALTIC COUNTRIES IN FOREST STATISTICS: NEEDS AND STRATEGIES

Sven A. Svensson

National Board of Forestry
Sweden

INTRODUCTION

The purpose of statistics in general is to provide basic data for decision-making. In this context, I give the term decision-making a very wide interpretation. It can be characterised by key words such as control, follow-up, monitoring, evaluation, planning and development of policies and strategies. Users of the statistics can be grouped as follows:

1. Governments, public local and national authorities, international organisations and processes
2. Industry which includes traders, consultants etc.
3. General public which includes NGOs

An additional purpose of statistics is to provide data for research which sometimes is directly associated with decision-making but generally not.

Statistics are produced by many companies, organisations and authorities. I here restrict the discussion to what we in Sweden call “official statistics”, that is, statistics which are published by public authorities and organisations, either national or international.

The cost of producing statistics can be considered an investment. Just as investments in general, it should be profitable in the sense that it should lead to better decision-making. This means that we should not produce more statistics of a higher quality than necessary. What do I mean by necessary? One criteria is that every extra amount of money invested in increased volume and quality of statistics should not exceed the benefits from better decision-making. However, we must also consider that investments in statistics have to compete with other investments, or with a perhaps better word, expenditures. So, even if the first criteria is fulfilled, the lack of money may restrict the quantitative and qualitative improvement of the statistics.

It is easily understood that to assess the profitability of investments in statistics in quantitative terms is extremely difficult. There are too many users and we know too

little about them; how they use the statistics and what is the benefit for them. I know of one limited attempt that has been made in the field of forestry in Sweden: research has been carried out involving a cost benefit analysis of forest inventory. The effect of better and of course more expensive data on forest compartments on the economic outcome of the forest management was studied.

Even if it is not possible to assess the profitability of investments in statistics, we, as producers of statistics, must always have point of view on things when we are discussing a change of the contents, volume or quality of the statistics. One important basis for such a discussion are the production costs. These costs should include the cost of the data suppliers in, e.g. a questionnaire. Generally, administrative registers offer a very cheap way of producing statistics, while investigations, i.e. questionnaires, surveys and inventories, are expensive. Field inventories such as forest inventories are often extremely expensive.

I am convinced that most of the decision-making is made from a local or national perspective. This means that the statistical system of each country has to be designed mainly to meet the local and national needs. Moreover, it must be adapted to the legislation, administrative systems, policies, traditions, etc. of the particular country. However, because of increased international integration and dependencies, statistics that meet international needs are increasingly important. The EU, the globalisation of business and industry, and international agreements are the main elements of the increased integration and dependencies.

FOREST STATISTICS

Up to this point, I have talked about statistics in general, but forest statistics are no exception in this context. One clear conclusion is that forest statistics should mainly satisfy national needs, however, the international needs are important as well.

It is natural that the forest statistics are more developed in a country which is strongly dependent on the forest sector than in a country where the sector is less important. Also the absolute size of the sector is decisive, saying that a large country with a small sector in relative terms can afford to have more developed forest statistics than a small country with the same conditions.

Because the forest statistics system of a country is designed to meet mainly local and national needs, it is seldom well adapted to meet the international needs. However, with increasing international needs, some kind of harmonisation of definitions and methods for data collection is necessary. It is relatively easy and cheap to achieve harmonisation for statistics that are new on the national level, or when a country for national reasons has to revise its forest statistics, partly or completely. It is more difficult and also more expensive to harmonise statistics that have been produced for a long time in the country.

Three different ways of harmonisation can be distinguished:

1. Change of definitions and/or methods of data collection.
2. Collection of auxiliary data.
3. Use of simple conversion factors etc.

The first way is the most expensive. It also has the serious drawback that long time series are broken which restricts the use of the statistics, not the least in monitoring and forest research. The second one is less expensive. The third one, use of conversion factors, is cheap, but the quality of the result is strongly influenced by the accuracy of the conversion factors. Often this accuracy is low and it is costly to improve it.

THE FOREST STATISTICS SITUATION IN NORDIC AND BALTIC COUNTRIES

Finland, Norway and Sweden have a long tradition of forest statistics production. If I dare to rank these countries with respect to how developed their statistics are, I place Finland first, Sweden second and Norway third. I admit that my ranking is rather subjective and can be questioned. However, the ranking is not surprising when looking at the importance of the forest sector in each country. These three countries are probably among those countries in the world which have the most developed forest statistics. I know little about the forest statistics in Denmark but for obvious reasons one might expect them to be less developed than in the other Nordic countries.

There is, in the Nordic countries as well as in the rest of the world, an urgent need to develop the forest environment statistics. Until now, little progress has been achieved, not because of lack of ambitions but rather because of the complexity of the problems involved and the lack of knowledge.

The Baltic countries have recently achieved their independence and are going through a transition in their economic and governing system. This has great influence on the forest sector and the forest statistics. New needs of statistics have appeared. It is also necessary to revise existing statistics with respect to contents, volume including periodicity, definitions, and methods of data collection. This revising process is ongoing and we have during this meeting been informed about the successful progress up to now. The revision must take into account the opportunities of international harmonisation because such harmonisation is now quite cheap to achieve. This issue was also emphasised earlier in this meeting by Dr. Päävinen. But, and I emphasise that, it is essentially local and national needs that should be satisfied.

THE INTERNATIONAL NEEDS

I said previously that the need for international forest statistics is increasing. In what contexts does this need occur? The EU is important but its significance should not be overestimated. The EU has no common forest policy and it is unlikely that it will establish such a policy in the foreseeable future. Furthermore, the EU will probably expand considerably during the next 5-10 years. The Baltic countries have expressed their interests in becoming members.

Even if production, trade and business in the forest sector in Europe is concentrated to the EU member countries, the non-member countries, particularly Russia and Norway, are important.

I see little need for common and specific forest statistics for the Nordic-Baltic region. The necessary harmonisation would be rather costly, particularly for the Nordic countries which have well established systems. The benefits of better decision-making are probably limited. Furthermore, such a harmonisation can create problems for the harmonisation on a higher level, for example, on the European level. A large trade in a region is one motive for common statistics. However, trade patterns for particularly wood raw material often change considerably over time. It is e.g. possible that the Baltic countries will process their smallwood in domestic industries in the future. This will cause significant change of the trade pattern.

On the global level, the agreements at the Rio Conference and the subsequent process are of special interest. Moreover, this process might be further strengthened through a forest convention. This issue was discussed at the IPF meeting in New York in 1997. The trend towards increased involvement of large forest companies in the forest sector in the third world is also important. This globalisation of the forest sector calls for good statistics on mainly forest environment, supply, demand and potentials.

Concerning the needs for international forest statistics, my conclusion is the following: We should rather have the European and the global perspective than the Nordic-Baltic and EU perspective. This conclusion strongly affects the harmonisation work. It is evident that I consider the FRA 2000 being extremely important. Having the European and global perspective, I am convinced that EU and the Nordic-Baltic countries can play an important role in the necessary harmonisation work.

COOPERATION BETWEEN THE NORDIC AND BALTIC COUNTRIES

Bearing in mind my reasoning and conclusions, what kind of cooperation in the field of forestry statistics between the Nordic and Baltic countries is desirable?

I support the idea of establishing a permanent panel of experts. This panel could be a forum for the exchange of knowledge, experiences and ideas. It can also provide an opportunity to discuss issues with relevance for statistics under process in e.g. the EU, ECE, FAO and IPF. Also harmonisation issues can be discussed. This is of great value particularly because the natural conditions, the forest management etc. are similar in all countries. Finally, it can initiate, support and work for the coordination of research and development work concerning forest statistics. The result of such work can be applied in both national and international statistics. In this respect, I am specifically thinking of forest environment statistics.

The panel of experts has so far not involved representatives of the National Forest Inventories. The NFIs are presently cooperating on a Nordic basis in an inventory group together with inventory researchers. However, they are the producers of essential forest statistics. It must be discussed whether they should be invited to participate in the panel.

Parallel to the panel of experts, development projects in the Baltic countries can be launched. The necessary funding can be found in national, Nordic, EU or international institutions.

INTERNATIONAL FOREST RESEARCH CO-OPERATION: OPTIONS FOR THE BALTIC AND NORDIC COUNTRIES

Knut Einar Fjulsrud

Norwegian Forest Research Institute
Norway

INTRODUCTION

After a 10-year absence from the international forest statistics environment, it is nice to be present here today and meet so many good old colleagues. Even if there are obvious links between official statistics production and research, I will today deal with forest research mainly in its own right.

WHY BALTIC-NORDIC COOPERATION?

In June 1561, Swedish troops landed in Tallinn, invited by the burghers of the town and the knights of Estonia. Soon this led to series of wars between Sweden and virtually all of its neighbours (Sunberg et al. 1994). Everybody with knowledge of the European history knows that this event has influenced on other processes and relations between European nations.

My reason for referring to this episode and its implications is that it clearly shows that the histories of the countries represented in this meeting have been closely linked through centuries. In other words; it should not be necessary to take up time to argue too much about the reasons for the cooperation between the Baltic and Nordic countries. However, it remains to be found out how we should cooperate most effectively.

THE DEVELOPMENT OF INTERNATIONAL RESEARCH COOPERATION IN GENERAL

Today enormous resources are engaged in organising research networks on the individual and on the institutional levels. This is done to facilitate research cooperation across existing borders between disciplines, institutions and countries. The underlying idea is to improve the quality and relevance of research, to create a basis for synergy

and to avoid double work. Or if expressed more directly: more research and better quality for the same amount of money.

Contact between researchers has a long tradition, and has been supported strongly by their home institutions. In the eldest – more “academic” – networks, the individual “researcher-to-researcher” relationship dominated. Researchers communicated through exchanging letters and manuscripts, and they visited each other for formal and informal reasons. Partly as a result of this, more formal networks were built up successively and the research institutions got more and more involved. This approach is still valuable for improving the quality and – to some extent – the relevance of research, but it does not meet all the needs of our time.

This way of cooperation, or communication, was not depending on a strong financial basis. The structure of research funding was generally less complex than today. In spite of limited resources institutions were more autonomous and could set up their own priorities without being criticised by the political authorities. The politicians and the public were convinced that they could trust universities and a relatively small (research) institute sector.

Today governments all over the world seem to deal with universities and research institutions more or less the same way as they relate to institutions in other sectors of society. Research funding has become much more complex. Clever colleagues say: “Research funding has become a science in itself”. On the other hand, the political involvement *must also be seen in the light of the fact that a lot of research work is financed and carried out to meet the needs of different sectors in society*. Research is an important tool in economic and social development. It is my impression that this also is the most important driving force in governments’ active attitude towards international research cooperation.

SOME DOMINANT FOREST RESEARCH COOPERATION NETWORKS

Building up cooperation networks is a job. When you have job to do, you usually look for support. I believe that *existing organisations* are the best supporters, but they have got different advantages. I have few comments for some of the existing organisations in this respect:

IUFRO

IUFRO has – for many years – been an important forest research network. It is the union of the forest research institutions themselves. That surely has its advantages, but it is a drawback when it comes to project building and project financing. The involvement of governments is too weak. In such a vital organisation as IUFRO this aspect is of course already on the internal agenda. IUFRO will nevertheless be important (a) as a forum where researchers from different countries will meet and (b) as an experienced supporter for research institutions which are struggling to develop.

The European Union

The European Union has had a significant effect on research cooperation in Europe in recent years, not only for the member states. Non-member countries in Europe are in different ways invited to participate, depending on formal relationship to the union and union policies.

European Forest Institute

The European Forest Institute has, during a short period of time, placed itself on the research cooperation map in an impressive and refreshing way. This institute has fully taken the consequence of the fact that it is important for researchers not only to meet, but also to work together in different projects. EFI has also seen the importance of skill in “the science of research funding”.

I am convinced that EFI's skill will prove to be valuable for any country planning to develop its forest research and its network.

NATO

The North Atlantic Treaty Organisation (NATO) plays a role in financing research-related activities between member countries and countries in Central and Eastern Europe with economies in transition. NATO provides infrastructure and networking grants (information technology) to improve communication between researchers. My own institution, the Norwegian Forest Research Institute, is involved in two such projects together with a faculty at one of the universities in Moscow.

As not all Nordic countries are NATO members, NATO plays no significant role in Nordic forest research cooperation. However, I believe that bilateral projects between a Baltic country and a Nordic NATO member country could be an option.

Nordic Forest Research Cooperation Committee (SNS)

Objectives of SNS

The objectives and key areas of SNS appear in SNS' strategy plan covering the period 1994-1997. SNS also has a set of articles. The objectives of SNS are to

- 1) Improve the Nordic cooperation between research institutes.
- 2) Initiate and coordinate research projects with a Nordic profile.
- 3) Allocate project funds.
- 4) Improve the possibilities of the Nordic countries to participate in international projects, especially in the EU-context.
- 5) Act as advisory body for The Nordic Council of Ministers.

The key areas of SNS are

- 1) Sustainable and multiple-use forest management.
- 2) Ecophysiology and gene ecology.
- 3) Regeneration and establishment of forest.
- 4) Wood production and utilisation of wood resources.

Structure of SNS

Today, SNS is an institution that is supervised by the Nordic Council of Ministers. SNS has a board with 10 members. Each of the member countries is represented by two members in SNS.

SNS' activities

The main activities of SNS are:

- 1) Initiating and funding research projects.
- 2) Arranging and funding network activities.
- 3) Information activities.
- 4) Improving the possibilities of researchers to participate in EU-activities.

SNS supports cooperation with researchers from the Baltic Sea region.

Financing of SNS' activities

SNS is funded by the Nordic Council of Ministers. SNS has an annual budget of approximately 5.5 million DKK (equals about 5 % of the total Norwegian forest research budget). About 4.3 millions are used for funding research projects, and about 0.7 million for network activities etc.

To be accepted as an SNS-project, a project plan has to have high national priority in at least three Nordic countries. High national priority means that the project is also directly financed by the participating countries. Only about 20% of the total costs of the projects are paid with SNS money; the rest comes from the participating countries.

THE BASIS FOR COOPERATION

The need for cooperation between the Nordic countries arises from the similarity of the forests and forestry. Through cooperation within forest research, a more effective use of results and educational resources as well as exchange of information are aimed at.

HOW SHOULD NORDIC-BALTIC RESEARCH COOPERATION BE ORGANISED?

In my opinion SNS has proven to be a very suitable way of cooperating internally between Nordic countries. SNS has also taken initiatives for further international cooperation. This is especially valuable for small, relatively equal countries like the Nordic countries and – I would guess – the Baltic countries.

I do not know the Baltic region well enough to say that the SNS would be the best model for organising the internal Baltic forest research cooperation, but I would recommend that it would be looked into. If a similar model is chosen, it will certainly make joint Baltic-Nordic cooperation very easy. I have learned that a Baltic Joint Committee is built up and that it cooperates with SNS' agricultural "sister-committee", the Nordic Joint Committee for Agricultural Research (NKJ). Whether the Baltic countries prefer to add forest research into this committee or establish a separate committee for forest research, is for the Baltic countries to decide. I can see no obstacles for future cooperation within these alternative forums.

CLOSING REMARK

Finally I would like to stress that the views presented concerning forestry statistics expert meeting 1) *national needs should be the driving force* and at the same time 2) *we should act with a wide international perspective* are among the basic guidelines for forest research as well.

References

Sundberg, U., Lindegren, J., Odum, T., and Doherty, S. 1994. Forest EMERGY Basis for the Swedish Power in the 17th Century. Scandinavian Journal of Forest Research, Supplement No. 1.

Markku Nygren

University of Helsinki, Faculty of Agriculture and Forestry
Finland

BACKGROUND

After the Baltic countries regained their independence, the Nordic agricultural universities established direct cooperation with the corresponding universities in these countries. The activities consisted at first mainly of mutual visits with the purpose of establishing contacts between the universities. Later more professional cooperation was initiated with, e.g. donations of laboratory and computer equipment, offering scholarships for Baltic students to study in the Nordic universities, and also course activities and joint research projects.

The activities performed earlier have mainly been bilateral between universities, without any efforts to cooperate between the Nordic or the Baltic countries. Neither has any comprehensive approach been taken to develop subjects with prioritised needs in the field of higher education and academic research in the field of agriculture, forestry and veterinary sciences.

There is a clearly defined need for a coordinated cooperation between the institutions of higher education in the sectors of agriculture, forestry and veterinary sciences in the Nordic and the Baltic countries.

The initiative to a mutual, coordinated program for cooperation was taken at the meeting of the rectors from the Nordic agricultural universities in November 1993. The NOVABA cooperation scheme was cordially approved in the meeting of the Rectors from both Nordic and Baltic Agricultural Universities in Kaunas, Lithuania in November 1995.

AIM OF THE PROGRAMME

The aim of the program is to establish a more systematic and coordinated cooperation to benefit both the Nordic and Baltic countries. Coordination will lead to a more efficient use of both intellectual and financial resources. The main purpose is to

establish a well functioning cooperation between the Nordic and Baltic agricultural universities. By this cooperation, the universities will attempt to ensure the development of the food production, rural areas, environmental protection and a sustainable use of the natural resources in the Baltic countries. The program will identify the scientific fields for cooperation and give Nordic “added-value” in supporting the competence within the Baltic agricultural universities. The emphasis of the cooperation will be at providing assistance for the development of the competence of the teaching, research and research extension at the universities.

PROGRAMME STRUCTURE

NOVABA cooperation program is directly linked to the activities of the Nordic Forestry, Veterinary and Agricultural University – NOVA as one of its priority areas.

The Steering Committee for the program is responsible for the detailed planning and execution of the activities. The Chairman of the Steering Committee is Professor Lars Sjöflot (NLH, Norway) and the Committee has seven members representing each Nordic and Baltic counterpart (see Fig. 1.). A part-time program coordinator, Dr. Markku Nygren (HU, Finland) is responsible for the implementation of the activities and he also serves as a secretary of the Steering Committee.

One of the basic ideas of the cooperation project has been the establishment of the so-called Nordic Offices at the Baltic agricultural universities. These have been founded from the beginning of 1996 in connection to the international units at the corresponding universities (see item 7.). This is done to ensure the fluent and efficient connection with the other international activities at the respective universities. The joint meetings of the Rectors from Nordic and Baltic agricultural universities serve as the representative assembly for the cooperation.

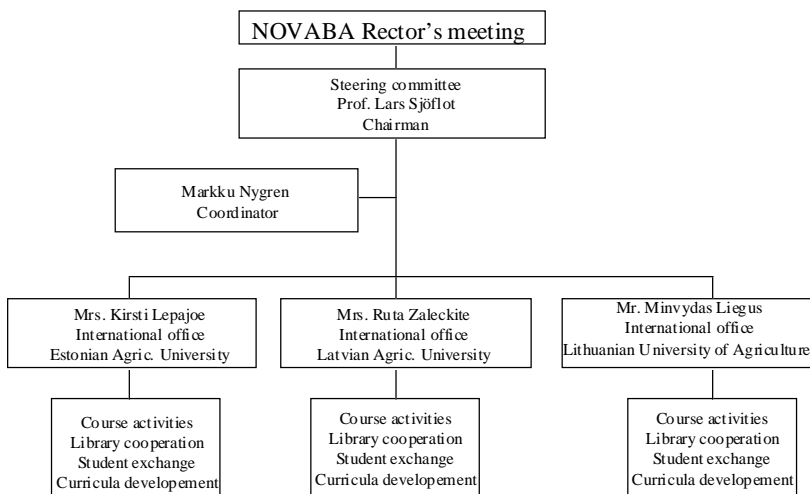


Figure 1. Organisation of the NOVABA network.

PROGRAMME ACTIVITIES

The key areas of the program activities are to:

- arrange research courses (M.Sc./ Ph.D. level),
- participate in curriculum development,
- promote the initiation of joint research projects,
- enhance the change of information and the use of library services, and
- participate in planning and implementation of M.Sc. programs for the fields prioritised in the cooperation.

From the beginning of 1996, the operational network is ready and the first research courses will be held in May 1996. Total number of research courses given in 1996 was six.

FINANCING

Part of the costs are covered by the Nordic Council of Ministers. The Nordic agricultural universities will finance a part of the activities with their own funding, and will also apply for funding from national sources, such as ministries and development funds. The Baltic agricultural universities will participate in the costs for the activities by covering the costs for the education localities etc.

EXPECTED RESULTS

With this program, we expect to be able to strengthen the competence within the Baltic agricultural universities, so that these can meet the demand of experts in the future in the scientific fields concerned. The program will provide support for the development of the competence of the new generation of teachers and researchers at the universities. In the long run, the knowledge available in the Baltic countries will be emphasised and used in the same way as the Nordic knowledge to mutually contribute to the development of the given areas. In this way, the Baltic universities can be connected in a natural way to the direct cooperation with the Nordic countries.

List of addresses to contact

Chairman of NOVABA Steering Committee

Lars Sjöflot
Agricultural University of Norway
Noragric, NLH
Postboks 5001
N-1432 Ås, Norway
tel. +47 64 94 87 60; fax. +47 64 94 07 60
email: lars.sjoflot@noragric.nlh.no

Members of NOVABA Steering Committee

Jørgen Fris Jensen
The Royal Veterinary and Agricultural
University, KVL
Dept. of Animal Science and Animal Health
Bulowsvej 13
DK 1870 Frederiksberg C, Denmark
tel. +45 35 28 30 81; fax. +45 35 28 30 42
email: jfj@kvl.dk

Rainis Cedrins
SLU Kontakt
Box 7034
S-750 07 Uppsala, Sverige
tel. +46 18 671 798; fax. +46 18 671 980
email: rainis.cedrins@kontakt.slti.se

NOVABA Contact persons

Estonia:

Kersti Lepajoe
Estonian Agricultural University
Department of International and Public Affairs
Kreutzwaldi 64
Tartu, Estonia
tel. +372 7 422 862; fax. +372 7 422 862

Latvia:

Ruta Zaleckite
Latvia University of Agriculture
Study Department
2 Liela iela, Jelgava, LV - 3001
Latvia
tel. +371-30-22 634; fax. +371-30-27 238
email: novaba@md.cs.llu.lv

Lithuania

Minvydas Liegus
LZUA, International Department
4324 Kaunas-Akademija
Lithuania
tel. +370-7-296 398; fax. +370-7-296 531
email: kontak@nora.lzua.lt

Toomas Tael

Estonian Agricultural University, EAU
Department of International and Public Affairs
Kreutzwaldi 64
EE-2400 Tartu, Estonia
tel. +372-7-422 862, fax. +372-7-422 862

Henn Tuherm

Latvia University of Agriculture, LUA
2 Liela iela, Jelgava, LV - 3001
Latvia
tel. +371-30-29 184; fax. +371-30-27 238
email: novaba@md.cs.llu.lv

Antanas Maziliauskas

Lithuanian University of Agriculture, LZUA
4324 Kaunas-Akademija
Lithuania
tel. +370-7- 296 398; fax. +370-7-296 531
email: kontakt@nora.lzua.lt

Markku Nygren

University of Helsinki, HU

NOVABA Coordinator

Markku Nygren
Faculty of Agriculture and Forestry
PO Box 27 (Vilkkki)
00014 University of Helsinki, Finland
tel. +358-9-708 5717; fax. +358-9-708 5575
email: markku.nygren@helsinki.fi

CONCLUDING REMARKS

Concluding Remarks of the Conference on The Development of Forestry Statistics in the Baltic and Nordic States 11-12 February, 1997 Joensuu, Finland

Having dealt with the topics concerned all of which have an impact on the structures of the forest sector and are to be used as means to develop aspects of sustainable development, the conference concludes the following:

Forestry Statistics

Forestry statistics including their environmental aspects are essential elements for the development of the forest sector. In the Baltic countries, as a part of general forestry development programme the feasibility phase of the development of forest statistics programme has been carried out so far. The planning of the continuation of the activities to be taken are described as in the concluding remarks of 'The Interim Baltic-Nordic Expert Panel on Forest Statistics'. It is recommended that the plans will be applied to as great an extent as possible and that cooperation will continue both in the multi- and bilateral basis and means. Primarily it is the national needs that should be met, but there is also an increasing need for better statistics on the European and global level. The opportunities of harmonised new statistics should be initialised particularly in the field of forest environment. The continuation plans by 'The Interim Baltic-Nordic Expert Panel on Forest Statistics' should be supported by organising forestry research and education in such a way that they have an impact on the development of forestry statistics.

Forest Research

The cooperation can successfully occur between the Baltic and Nordic countries by using the prevailing institutions and cooperation. The future cooperation should more extensively be coordinated through e.g. the Nordic Council of Ministers and its bodies dealing with forest research and adjacent areas to the Nordic countries as well as the European Forest Institute and its network. Recognising the limited sources, funding should mainly come from national sources, EU funds or international sources. Attempts will be made to develop joint programmes and projects in the framework of the research and development funding of the European Union. The cooperation will be coordinated by a team of specialists to be established. The participation to the group is open to all the participating countries and the mandate and terms of reference should be designed in the near future.

Education in the Forest Sector

The cooperation between the Baltic and Nordic countries can occur successfully by using the prevailing institutions and bodies. The future cooperation can occur bilaterally, or multilaterally in the framework of the Nordic Council of Ministers or the European Union, for example. A special emphasis will be given to the work under the umbrella of the NOVABA network. It is recommended that the conclusions and recommendations of the Baltic-Nordic seminar in Tartu 18-20.3.1996 (Annex 2) should be applied regarding the priorities in the development of education in the forest sector. The educational activities should also take into account the needs in the development of forestry statistics.

Concluding Remarks of the Interim Baltic-Nordic Expert Panel on Forest Statistics 10-11 February, 1997 Joensuu, Finland

For the basis of the future co-operation the expert panel meeting concludes that the general aims are to:

1. analyse the possibilities to better meet the forest statistics needs on the European level, and
2. establish a permanent expert panel.

Identified Projects:

- Harmonising forest resources data in the Baltic and Nordic countries
- Latvian Forest Information Centre
- Statistics for private forests in Baltic countries
- Development of wood consumption and trade statistics
- Baltic-Nordic wood price statistics
- Evaluation of forest sector in national economy in Lithuania
- Forest statistics yearbook for Lithuania
- Establishment and development of national forest statistics councils
- Information needs assessment for forest statistics
- International forest products marketing information system – start with price website
- Model for co-operation in capacity building in other parts of Europe

PROGRAMME

Monday 10 February **Expert Panel Meeting**

9.00 Opening the Expert Panel Meeting
Dr. Risto Päävinen, Deputy director, European Forest Institute

Session 1. The Proceeding of the Project ‘the Development of the Forestry Statistics in the Baltic and Nordic States’

9.15 General Level Strategies and the International Situation
Dr. Risto Päävinen, Deputy director, European Forest Institute

10.35 Specific Level Projects: Estonia
Mr. Erik Kosenkranius, Economics and Information Centre, Estonia
Comments by a Nordic collaborator: *Mr. Esa Ylitalo, Finnish Forest Research Institute*

11.30 Specific Level Projects: Latvia
Comments by a Nordic collaborator: *Mr. Sven A. Svensson, Swedish National Board of Forestry*

12.30 The State of Forest Statistics in Lithuania

14.00 International Forest Statistics
Dr. Ed Pepke, UN-ECE/FAO
Mr. Martti Aarne, Eurostat

15.00 Workshop on the Future Needs in Developing the Forestry Statistics;
Research, Education, International Level Development, Funding
I: Country level
II: Baltic and Nordic countries
III: Europe

Tuesday 11 February

Expert Panel Meeting continues

9.00 Plenary Session: Continuation of the Development Work

Ministerial Conference

Chairman: Dr. Ian Hunter, Director, European Forest Institute

14.20 Opening the Ministerial Conference
Minister of Agriculture and Forestry Kalevi Hemilä, Finland

Session 1. Compilation of Statistics in the Baltic and Nordic countries

14.30 Synthesis of the work of the Expert Panel
Dr. Risto Päivinen, Deputy director, European Forest Institute

14.40 The Current Situation and The Future Needs of Forestry Statistics in the Baltic countries
Nordic collaborator: *Mr. Esa Ylitalo, Finnish Forest Research Institute*
Comments by Baltic Countries

15.25 Co-operation between Nordic and Baltic countries in the field of forestry statistics - Needs and strategies
Nordic collaborator: *Mr. Sven A. Svensson, Swedish National Board of Forestry*
Comments by Nordic Countries

16.30 The Current Situation and the Future Prospects of International Forest Statistics
Dr. Ed Pepke, UN-ECE/FAO
Mr. Martti Aarne, Eurostat

17.10 Discussion

17.45 Recommendations and Further Actions

Session 2. Development of Forest Research in the Baltic Countries in the co-operation with the Nordic institutions

18.00 Co-operation between the Baltic and Nordic institutes and experts in the framework of the Nordic Council of Ministers and especially SNS
Director Knut Einar Fjulsrud, Norwegian Forest Research Institute

18.20 Nordic experiences of application for funding to forest research within the EU system.
Dr. Ylva Tilander, Adviser in the Nordic Council of Ministers

18.40 Discussion and Conclusions

Session 3. Development of Forest Education in the Baltic Countries in the co-operation with the Nordic countries

19.00 Activities organised by the Nordic Council of Ministers in the field of forestry education
Dr. Ylva Tilander, Adviser in the Nordic Council of Ministers

19.20 Activities provided by and through the NOVABA university network
Dr. Markku Nygren, Novaba-Coordinator

19.40 Discussion and Conclusions

20.00 Recommendations and Further Actions

Wednesday 12, February: Excursion in North-Karelia

LIST OF PARTICIPANTS

The Development of Forestry Statistics in the Baltic and Nordic States Expert Panel Meeting , Joensuu 10 - 11 February 1997 and Conference, Joensuu 11 -12 February 1997

Mr. Martti Aarne
Eurostat
Unit F-1, JMO B4/73
Rue Alcide de Gasperi
2920 Luxemburg-Kirchberg
Luxemburg
Tel. +352 4301 37313
Fax. +352 4301 37317
Email martti.aarne@eurostat.cec.be

Ms. Gunta Aizpure
Ministry of Agriculture
Forest Department
Republic sq. 2
1891 Riga, Latvia
Tel. +371 7 213 677
Fax. +371 7 211 176
Email Gunta@vmd.gov.lv

Mr. Pekka Alhojärvi*
Ministry of Agriculture and Forestry of Finland
Current contact: World Bank
1818 H. Street, NW
Washington, D.C. 20433, USA
Tel. +1 202 458 7433
Fax. +1 202 614 0697
Email palhojarvi@worldbank.org

Mr. Jan Heino*
Ministry of Agriculture and Forestry
Department of Forestry
P.O. Box 232
00171 Helsinki, Finland
Tel. +358 9 160 3350
Fax. +358 9 160 2280
Email jan.heino@mmm.fi

Dr. Ian Hunter*
European Forest Institute
Torikatu 34
80100 Joensuu, Finland
Tel. +358 13 252 0212
Fax. +358 13 124 393
Email ian.hunter@efi.fi

Dr. K. Hobbestad
NIJOS
P.O. Box 115
1430 Ås, Norway
Tel. +47 64 949700
Fax. +47 64 949786
Email kaare.hobbestad@nijos.nlh.no

Mr. Knut Huse*
Norwegian Forest Extension Service Institute
Honne
2820 Biri, Norway
Tel. +47 611 85 211
Fax. +47 611 85 048
Email kjh@skogkurs.no

Ms. Antra Japina
Latvia State Forest Service
13 Janvara iela 15
1932 Riga, Latvia
Tel. +371 722 5737
Fax. +371 782 0377
Email klaus@lsfs.gov.lv

Mr. Erik Kosenkranius
State Forest Management Center
Viljandi mnt. 18 B
11216 Tallinn, Estonia
Tel. +372 6 281 518
Fax. +372 6 281 510
Email erik@riigimets.ee

* attended only the conference

Mr. Aleksander Leemet*
Ministry of Environment
Toompuiestee 24
0100 Tallinn, Estonia
Tel. +372 2 455 851
Fax. +372 2 453 826

Mr. Giedrius Leliuga
Forestry Economy Centre MEC
P.O.Box 2370
2006 Vilnius, Lithuania
Tel. +370 2 232 936
Fax. +370 2 232 937
Email mec@post.omnitel.net

Ms. Aija Meijere
Latvia State Institute of Forest Inventory
Rigas Iela 113
2169 Salaspils, Latvia
Tel. +371 942 200
Fax. +371 942 388
Email aijam@salvmi.com.lv

Mr. Eero Mikkola *
Finnish Forest Research Institute
Forest Statistics Information Service
Unioninkatu 40 A
00170 Helsinki, Finland
Tel. +358 9 857 051
Fax. +358 9 8570 5717
Email eero.mikkola@metla.fi

Dr. Markku Nygren
University of Helsinki
Faculty of Agriculture and Forestry
P.O. Box 27 (Viikki)
00014 University of Helsinki, Finland
Tel. +358 9 708 5717
Fax. +358 9 708 5575
Email markku.nygren@helsinki.fi

Ms. Brita Pajari
European Forest Institute
Torikatu 34
80100 Joensuu, Finland
Tel. +358 13 252 0223
Fax. +358 13 124 393
Email pajari@efi.fi

Dr. Risto Päivinen
European Forest Institute
Torikatu 34 80100 Joensuu, Finland
Tel. +358 13 252 0213
Fax. +358 13 124 393
Email risto.paivinen@efi.fi

Dr. Edward K. Pepke
FAO
Palais de Nations 390
1211 Geneve 10, Switzerland
Tel. +41 22 917 2872
Fax. +41 22 917 0041
Email ed.pepke@unece.org

Mr. Anders Portin
Ministry of Agriculture and Forestry
Department of Forestry
P.O. Box 232
00171 Helsinki, Finland
Tel. +358 9 160 2418
Fax. +358 9 160 2430
Email anders.portin@mmm.fi

Dr. Ola Sallnäs*
Swedish University of Agricultural Sciences
Southern Swedish Forest Research Center
Box 49
23053 Alnarp, Sweden
Tel. +46 40 415 181
Fax. +46 40 462 325
Email ola.sallnas@ess.slu.se

Dr. Sven A. Svensson
National Board of Forestry
Skogsstyrelsen
55183 Jönköping, Sweden
Tel. +46 36 155 655
Fax. +46 36 166 170
Email sven.a.svensson@svo.se

Dr. Ylva Tilander
Nordic Council of Ministers
Store Strandstraede 18
1255 Copenhagen K, Denmark
Tel. +45 33 960 256
Fax. +45 33 932 047
Email yti@nmr.dk

Mr. Esa Ylitalo
Finnish Forest Research Institute
Forest Statistics Information Service
Unioninkatu 40A
00170 Helsinki, Finland
Tel. +358 9 857 05 372
Fax. +358 9 857 05 717
Email esa.ylitalo@metla.fi

Mr. Henrik Zeltner
Ministry of Environment and Energy
National Forest and Nature Agency
Haraldsgade 53
2100 Copenhagen, Denmark
Tel. +45 3947 2000
Fax. +45 3927 9899
Email hze@sns.dk

* attended only the conference

Proceedings are collections of papers presented at seminars, conferences or workshops organised or co-organised by EFI. Proceedings are usually not externally reviewed or they receive only a limited review. EFI Proceedings are available from the European Forest Institute. EFI's research results are also published in three other publication series: Research Reports, Working Papers and Discussion Papers.

- No 1. Integrating Environmental Values into Forest Planning. 25 EUR.
Pentti Hyttinen and Anu Williams (eds). European Forest Institute, Joensuu, Finland, 1994. ISBN 952-9844-05-0. 62 p.
- No 2. Forest Policy Analysis – Methodological and Empirical Aspects. 25 EUR.
Birger Solberg and Päivi Pelli (eds). European Forest Institute, Joensuu, Finland, 1995. ISBN 952-9844-09-3. 278 p.
- No 3. Environmental Impacts of Forestry and Forest Industry. 25 EUR.
Birger Solberg and Leena Roihuvuo (eds). Proceedings of an International Seminar, Joensuu, Finland, 5-8 September 1994. ISBN 952-9844-10-7. 112 p.
- No 4. Multiple Use and Environmental Values in Forest Planning. 25 EUR.
Pentti Hyttinen, Anu Kähkönen and Päivi Pelli (eds). Proceedings of an International Summer School, Tohmajärvi, Finland 5-10 June 1995.
ISBN 952-9844-11-5. 290 p.
- No 5. Large-Scale Forestry Scenario Models: Experiences and Requirements. 25 EUR.
Risto Päivinen, Leena Roihuvuo and Markku Siitonen (eds). Proceedings of an International Seminar and Summer School, Joensuu, Finland, 15-22 June 1995. ISBN 952-9844-13-1. 318 p.
- No 6. Assessment of Biodiversity for Improved Forest Management. 25 EUR.
Peter Bachmann, Kullervo Kuusela and Janne Uuttera (eds). Proceedings of an International Workshop, Koli, Finland, 12-17 June 1995.
ISBN 952-9844-14-X. 192 p.
- No 7. New Thrusts in Forest Inventory. 25 EUR.
Risto Päivinen, Jerry Vanclay and Saija Miina (eds). Proceedings of the Subject Group S4.02-00 'Forest Resource Inventory and Monitoring' and Subject Group S4.12-00 'Remote Sensing Technology'. IUFRO XX World Congress, Tampere, Finland, 6-12 August 1995. ISBN 952-9844-15-8. 292 p.
- No 8. Life-Cycle Analysis – a Challenge for Forestry and Forest Industry.
(out of print).

- No 9. Regional Development Based on Forest Resources – Theories and Practices. 25 EUR. Pentti Hyttinen, Ari Mononen and Päivi Pelli (eds). Proceedings of the International Seminar, Joensuu, Finland 14-15 December 1995. ISBN 952-9844-20-4. 265 p.
- No 10. Internet Applications and Electronic Information Resources in Forestry and Environmental Sciences. 25 EUR. Hannu Saarenmaa and Alois Kempf (eds.). Proceedings of the International Workshop, Joensuu, Finland, 1-5 August 1995. ISBN 952-9844-23-9. 152 p.
- No 11. Forest Industries Towards the Third Millennium – Economic and Environmental Challenges. 25 EUR. Birger Solberg, Matti Palo and Pentti Hyttinen (eds.). Proceedings of the International Seminar Joensuu, Finland, 18-19 March 1996. ISBN 952-9844-24-7. 88 p.
- No 12. Review on Forest Policy Issues and Policy Processes. 25 EUR. Ilpo Tikkanen, Peter Glück and Birger Solberg (eds.). Proceedings of the International Summer School on Forest Policy Analysis, Joensuu, Finland, 2-8 June 1996. ISBN 952-9844-26-3 168p.
- No 13. Integrating Environmental Values into Forest Planning – Baltic and Nordic Perspectives. 25 EUR. Pentti Hyttinen and Artur Nilson (eds.). Proceedings of the Nordic-Baltic Research Course, Rääpina, Estonia, 27 June-2 July 1996. ISBN 952-9844-27-1. 247 p.
- No 14. Conflict Management and Public Participation in Land Management. 25 EUR. Birger Solberg and Saija Miina (eds.) Proceedings of the International Conference, Joensuu, Finland, 17-19 June. 339 p.
- No 15. Forestry in the Context of Rural Development: Future Research Needs. 25 EUR. Peter Glück and Gerhard Weiss (eds.). Proceedings of the COST seminar 'Forestry in the Context of Rural Development', Vienna, Austria, 15-17 April 1996. ISBN 952-9844-30-1. 173 p. (out of print).
- No 16. Research in Forest Reserves and Natural Forests in European Countries. 35 EUR. Jari Parviainen, Declan Little, Marie Doyle, Aileen O'Sullivan, Minna Kettunen and Minna Korhonen (eds.). Country Reports for the COST Action E4: Forest Reserves Research Network. ISBN 952-9844-31-X. 304 p.
- No 17. Demand and Supply Analyses of Roundwood and Forest Products Markets in Europe – Overview of Present Studies. 25 EUR. B. Solberg and A. Moiseyev (eds.). Proceedings of the 1st Workshop, of the EU Concerted Action Project AIR3-CT942288, Helsinki, Finland, 3-5 November 1995. ISBN 952-9844-33-6. 418 p.
- No 18. (Also: Kluwer Forestry Sciences No. 51)
Assessment of Biodiversity for Improved Forest Planning.
P. Bachmann, M. Köhl and R. Päivinen (eds.). Proceedings of the Monte Verità Conference on Assessment of Biodiversity for Improved Forest Planning, Switzerland, 7-11 October 1996. ISBN 0-7923-4872-9. 421 p. Available from the publisher: Kluwer Academic Publishers, P.O. Box 322, 3300 AH Dordrecht, The Netherlands. (No. 18 not available from EFI).

- No 19. Forest Scenario Modelling for Ecosystem Management at Landscape Level. 25 EUR.
G.J. Nabuurs, T. Nuutinen, H. Bartelink and M. Korhonen (eds.). Proceedings of the International Seminar and Summer School, Wageningen, the Netherlands, 26 June-3 July 1997. ISBN 952-9844-40-9. 382 p.
- No 20. Cost Accountancy in European Farm Forest Enterprises. 25 EUR.
P. Hyttinen and T. Kallio (eds.). Proceedings of the MOSEFA Concerted Action Project Workshop, Zeist, the Netherlands, 28-31 August 1997.
ISBN 952-9844-48-4. 146 p.
- No 21. Forest Policy in the Countries with Economies in Transition – Ready for the European Union? 25 EUR.
P. Glück, I. Kupka and I. Tikkanen (eds.). Proceedings of the International Conference, Czech University of Agriculture, Prague, Czech Republic, 21-23 August 1997. ISBN 952-9844-42-5. 172 p.
- No 22. Future Forest Policies in Europe – Balancing Economics and Ecological Demands. 25 EUR.
I. Tikkanen and B. Pajari (eds.). Proceedings of the International Conference, Joensuu, Finland, 15-18 June, 1997. ISBN:952-9844-45-X. 436 p.
- No 23. Sustainable Development of Non-wood Goods and Benefits from Boreal and Cold Temperate Forests. 25 EUR.
G. Lund, B. Pajari and M. Korhonen (eds.). Proceedings of the International Workshop, Joensuu, Finland, 18-22 January 1998. ISBN 952-9844-46-8.
- No 24. The Development of Forestry Statistics in the Baltic and Nordic States.
B. Pajari (ed.) Proceedings of the International Conference and Expert Panel Meeting held in Joensuu, Finland 10-12 February 1997. ISBN 952-9844-48-4. Available only in electronic format at EFI's website (<http://www.efi.fi/>)
- No 25. Potential Markets for Certified Forest Products in Europe. 75 EUR.
B. Pajari, T. Peck and E. Rametsteiner (eds.). Proceedings of the Shared Cost Project FAIR-CT95-766. ISBN: 952-9844-52-2. 352 p.
- No 26. Analyzing Structural Changes in Roundwood and Forest Products Markets in Europe: Empirical Studies and Research Priorities. 25 EUR.
B. Solberg and A. Moiseyev (eds.). Proceedings of Concerted Action Project AIR3-CT942288. ISBN 952-9844-44-1. 162 p.
- No 27. Causes and Consequences of Accelerating Tree Growth in Europe. 35 EUR.
T. Karjalainen, H. Spiecker and O. Laroussinie (eds.) Proceedings of the International Seminar held in Nancy, France 14-16 May 1998. ISBN: 952-9844-53-0.
- No 28. Sampling Schemes for Monitoring the Socio-economics of Farm Forestry. 25 EUR.
P. Hyttinen and T. Kallio (eds.). Proceedings of the MOSEFA Workshop B, Trento, Italy, 19-22 April 1998. ISBN 952-9844-56-5. 220 p.

- No 29. Research Approaches to Support Non-Wood Forest Products Sector Development: Case of Arkhangelsk Region, Russia. 35 EUR.
A. Niskanen and N. Demidova (eds.). Proceedings of the International Seminar, Arkhangelsk, Russia, 18-21 September 1998. ISBN 952-9844-65-4.
- No 30. Formulation and Implementation of National Forest Programmes.
Peter Glück, Gerhard Oesten, Heiner Schanz, Karl-Reinhard Volz (eds.)
Proceedings of the International Seminar Held in Freiburg, Germany 18-20 May 1998.
Volume I: Theoretical aspects. ISBN 952-9844-63-8. 296 p.
Volume II: State of the Art in Europe. ISBN 952-9844-67-0. 308 p.

I would like to order the following EFI Publications

Research Report number(s) _____ copies
 Working Paper number(s) _____ copies
 Proceedings number(s) _____ copies
 Discussion Paper number(s) _____ copies
Total _____ EUR

Bank charges (app. 10 EUR) and postage will be added to the total. For orders with the payment instruction 'credit card' or 'cash on delivery' (COD), bank costs are not charged. Payments by cheque are not accepted. Please note that prices may be subject to change.

Name _____
 Organisation _____
 Address _____
 Postcode _____ Country _____

I wish to pay by credit card (VISA / MASTERCARD / EUROCARD / AMERICAN EXPRESS)

Card Number _____ Expiry Date _____

I wish to pay with cash on delivery (COD). Payments by cheque are not accepted.

I wish to pay by bank transfer. Please invoice me.

Signature _____

Please return to:

European Forest Institute
 Torikatu 34
 FIN-80100 Joensuu

Fax: +358 13 124 393
 Email: publications@efi.fi

For further information please contact:

European Forest Institute
Torikatu 34
FIN-80100 Joensuu

Phone: +358 13 252 020
Fax: +358 13 124 393
Email: publications@efi.fi
WWW: <http://www.efi.fi/>
