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**THE INFORMATION AND TRAINING NEEDS  
OF PRIVATE FOREST OWNERS IN ESTONIA**

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**ABSTRACT:** This study describes the forestry-related information and training needs of Estonian private forest owners. It also describes preferred information channels for various forest-related issues. The data was collected by mail survey in the autumn of 2001. The final sample consisted of 818 forest owners, of whom 71% (584) responded. The results show that in general, forest owners need relatively much information and training on forestry issues. Most strongly the respondent forest owners need information and training about legal matters, forest diseases and pest control, and economic matters. In legal matters, personal guidance is the most preferred information channel. Instead, in forest diseases and pest control and for economic matters the respondents consider courses organised for forest owners as the most preferable information channel. So far, written information has generally been the most often-used source of information about forest-related matters among respondents. It is seen the most suitable form for providing information about several forestry issues also in the future. Approximately one third of the respondents consider it possible to pay something for forestry-related information and training services.

*Key words:* Estonia, private forest owners, information needs related to forestry, training

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**TIIVISTELMÄ:** Tämä tutkimus selvittää virolaisten yksityismetsänomistajien metsätalouteen liittyviä tieto- ja koulutustarpeita ja millaisia kanavia pitkin tietoa ja koulutusta halutaan saada. Tutkimuksessa selvitetään myös metsänomistajien näkemyksiä ja asenteita metsänomistukseen ja metsätalouteen. Aineisto kerättiin postikyselynä syksyllä 2001. Lopullisen otoksen muodosti 818 metsänomistajaa joista kyselyyn vastasi 71 % (584). Tulokset osoittavat, että yleisesti ottaen metsänomistajat katsovat tarvitsevansa tietoa ja koulutusta metsäasioissa melko runsaasti. Eniten tieto- ja koulutustarvetta on metsiin liittyvissä oikeuskysymyksissä (lainsäädäntö), metsätuhoista ja taloudellisista asioista. Oikeudellisista asioista metsänomistajat haluavat tietoa mieluiten henkilökohtaisena neuvontana. Sen sijaan metsäsairauksista, tuholaiten torjunnasta ja taloudellisista asioista metsänomistajat haluavat mieluiten saada tietoa osallistumalla kursseille. Toistaiseksi yleisimmin käytetty tietokanava metsäasioissa ovat kuitenkin olleet kirjalliset lähteet ja varsin monien tietotarpeiden kohdalla nämä katsottiin jatkossakin sopivimmaksi tiedontarjonnan muodoksi. Noin kolmannes vastaajista arvioi olevansa periaatteessa valmis maksamaan ainakin jotakin metsänomistajille tarjottavista tieto- ja koulutuspalveluista.

*Avainsanat:* Viro, yksityismetsänomistajat, metsätalouteen liittyvät tietotarpeet, koulutus

## FOREWORD

The collapse of the former Soviet Union, and the remarkable change in the society and in the economic system thereafter in the Baltic States has also influenced in forestry. One of the most remarkable impacts is the land reform that re-establishes the private forestry. The reform is estimated to result in the establishment of about 100 000 new private forest estates in Estonia. It is clear that this change requires developing in information and training services provided for the new forest owners. Information and training are considered as one of the key tools to secure economic and ecological sustainability in the private forestry.

Baltic 21 process is a co-operation programme for enhancing sustainable development in the Baltic States. In May 1996, the prime ministers representing the governments of Denmark, Estonia, Finland, Germany, Iceland, Latvia, Lithuania, Norway, Poland, Poland, Russia and Sweden declared their ambition for a sustainable development in the Baltic Sea Region. Later the same year Baltic 21 program – an Agenda 21 for the Baltic Sea Region – was launched by the Ministers of Environment. The Agenda was adopted by the Foreign Ministers at the meeting of the Council of the Baltic Sea States in June 1998.

The project for developing information and training services for private forest owners was planned to be a co-operation between German, Estonian and Finnish partners. An investigation of the information and training needs of the Estonian private forest owners was the first phase of this project. The study was carried out by PTT. The implementation of the whole project is still in late 2002 unclear, due to the lack of resources.

This report consists of two parts: Part I presents an overview of the Estonian forest sector. Part II reports the findings of the survey study. Those readers who are only interested in the information needs of the forest owners may well start reading directly from Part II. Part I is written mainly by Mr. Kaimre from the Estonian Agricultural University in Tartu. Of Part II, Mr. Järvinen has written mainly chapters 4 and 6. Mr. Järvinen and Ms. Toivonen have written chapters 2-3 and 5 together. This study was part-financed by the Finnish Ministry of Agriculture and Forestry, for which the institute presents its sincere thanks.

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## PART I: OVERVIEW ON ESTONIAN FOREST SECTOR

### 1. INTRODUCTION TO THE ESTONIAN FOREST SECTOR

#### 1.1. THE ROLE OF THE FOREST SECTOR IN THE ESTONIAN ECONOMY

The Statistical Office of Estonia collects and processes information about forestry (including silviculture and logging), the wood processing industry (as a part of processing industries), the paper and pulp industry and the furniture industry. These four branches are considered in Table 1 as parts of the Estonian forest sector.

*Table 1. Contribution of the forest sector (%) to GDP in 1993-2000 at current prices.*

Branch	Year	1993	1994	1995	1996	1997	1998	1999	2000
Forestry		1.3%	1.7%	2.1%	2.1%	2.4%	2.5%	2.7%	2.5%
Wood processing industry (excluding furniture industry)		1.0%	1.2%	1.3%	1.5%	1.8%	1.9%	2.1%	2.2%
Paper and pulp industry		0%	0.1%	0.2%	0.2%	0.3%	0.3%	0.3%	0.4%
Furniture industry		1.1%	1.3%	1.1%	1.2%	1.5%	1.3%	1.3%	1.5%
<b>Forest sector total</b>		<b>3.4%</b>	<b>4.3%</b>	<b>4.7%</b>	<b>5.0%</b>	<b>6.0%</b>	<b>6.0%</b>	<b>6.4%</b>	<b>6.6%</b>

Source: Statistical Office of Estonia (2001)

As can be observed from Table 1, the contribution of the forest sector to the Estonian economy, unlike in most present EU countries, increased considerably during the 1990s. In 1997, the forestry sector grew more than the other sectors in Estonia. Silviculture and timber processing are activities mostly utilising domestic resources. Thus, their role is more important than is suggested by their share of GDP. The forest sector creates jobs in reconstruction, logistics, telecommunications and other sectors. In 2001, econometric analysis was carried out in order to investigate the influence of some forestry activities on economic indicators (Kaimre, 2001). The study revealed that between 1994-1999:

- Usage of 1 m<sup>3</sup> timber accounted for 379 EEK of GDP.
- 123 EEK of tax revenues were generated from the felling and sale of 1m<sup>3</sup> of timber.
- Felling and processing of 1 m<sup>3</sup> of timber generated 1099 EEK of export revenues.

The most interesting result was the significant income gained from timber export. Considerable criticism has been presented during recent years concerning whether more value should be added to wood by further processing it in Estonia. The rather high export revenue per cubic metre of timber reflects the increasing export of more processed timber products instead of logs. The role of forestry in regional development is also

important in Estonia. For agricultural producers the income generated by forests is important in co-financing investments.

During the transition period, very few new jobs have been created in the countryside. Logging and wood processing enterprises are the ones providing employment in rural areas. The increase in jobs in wood processing industries during the transition period has been considerable (Table 2).

**Table 2.** *The dynamics of employment (1000 employees) in the Estonian forestry and wood processing industries.*

	1990	1995	1996	1997	1998	1999	2000
Forestry	11.6	7.5	7.6	8.8	8.8	9.6	10.5
Wood processing industries	5.5	19.6	18.9	21.4	21.5	20.0	21.8

Source: Statistical Office of Estonia (2001)

After the sharp decrease in agricultural production and the decline in jobs in forestry, many employees moved to work into wood processing enterprises. In the wood industry, the number of jobs is expected to continue to grow because of the development of further processing. The latter has been seen as a key factor in maintaining the competitiveness of enterprises.

## 1.2. FOREIGN TRADE OF ESTONIA

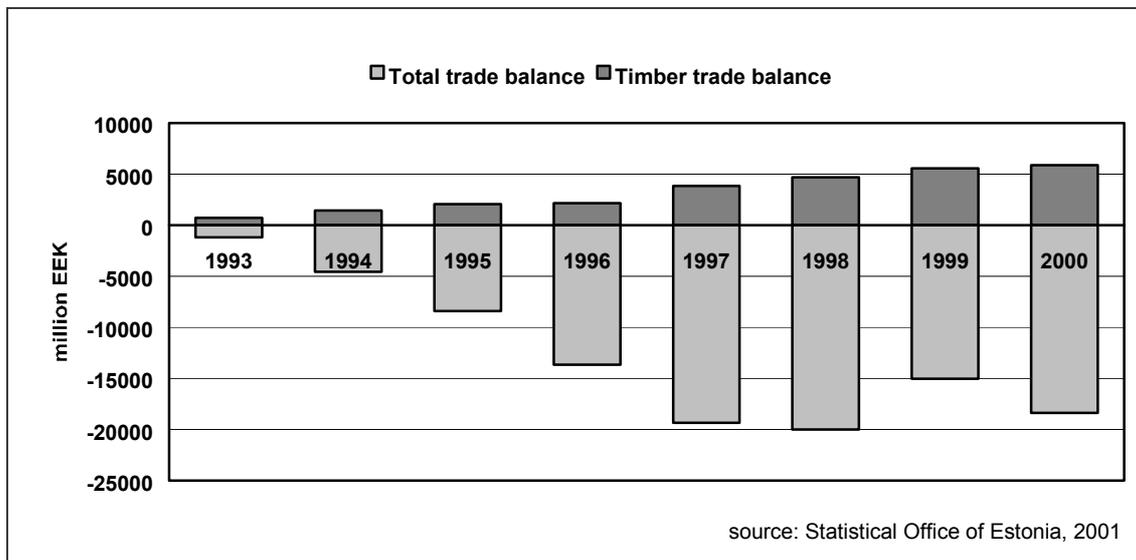
Timber and timber products play an important role in the compensation of the trade deficit. In 2000, the share of timber and timber products in exports and imports, respectively, was 13.4% and 1.8% (see Table 3). The positive balance of timber trade could even be the most important benefit provided by the forest sector in the Estonian economy (see also Figure 1).

**Table 3.** *Estonian foreign trade and timber trade at current prices in 1993-2000.*

Year	Estonian total foreign trade (million EEK)			Estonian timber trade (million EEK)				
	Total ex-ports	Total im-ports	Trade balance	Export	%, from total ex-ports	Import (million EEK)	%, from total im-ports	Timber trade balance
1993	10635.5	11830.3	<b>-1194.8</b>	800.4	7.5%	91.1	0.8%	<b>709.3</b>
1994	16927.3	21484.8	<b>-4557.5</b>	1730.0	10.2%	299.8	1.4%	<b>1430.2</b>
1995	19042.6	27441.1	<b>-8398.5</b>	2474.9	13.0%	425	1.5%	<b>2049.9</b>
1996	21283.4	34936.0	<b>-13652.6</b>	2663.4	12.5%	508.6	1.5%	<b>2154.8</b>
1997	29585.7	48929.8	<b>-19344.1</b>	4600.2	15.5%	755.7	1.5%	<b>3844.5</b>
1998	35232.2	55220.7	<b>-19988.5</b>	5663.1	16.1%	985.3	1.8%	<b>4677.8</b>
1999	35408.9	50452.1	<b>-15043.2</b>	6619.5	18.7%	1050.8	2.1%	<b>5568.7</b>
2000	53877.3	72245.7	<b>-18368.4</b>	7200.2	13.4%	1333.1	1.8%	<b>5867.1</b>

Source: Statistical Office of Estonia (2001)

**Figure 1.** *Estonian total trade balance and timber trade balance at current prices in 1993-2000.*



### 1.3. PRODUCTION OF ESTONIAN FOREST INDUSTRY

In the 1990s, essential development took place in the production volumes of the mechanical forest industry and in the technology used by enterprises. Industrial capacity has grown to the extent where it is facing the problem of procuring suitable raw materials from the domestic market.

Most of the forest industry enterprises were privatised between the years 1993–1995. Unfortunately, few of the new owners succeeded in reorganising their enterprises to be competitive enough under the new conditions. Enterprises established at the beginning and in the middle of the last decade by private capital were more successful than the older ones. In the first half of the 1990s, the production volume of the forest sector was lower than at the end of the 1980s; since 1995, however, the trend has changed again. Table 4 presents the volume of production in the forest industry.

**Table 4.** *Manufacturing of wood, pulp and paper products in 1980-2000.*

Production	1980	1985	1990	1995	1996	1997	1998	1999	2000	2001*
Sawn timber, 1000 m <sup>3</sup>	637.0	668.0	500.0	363.8	511.4	728.5	923.7	1200.	1436.	1436.
Plywood, 1000 m <sup>3</sup>	30.3	32.0	23.0	11.2	18.1	19.5	19.9	17.3	18.4	29.4
Fibreboard, mill. m <sup>2</sup>	3.8	13.4	19.5	11.0	15.1	16.7	17.7	17.0	17.7	18.0
Particle board, 1000 m <sup>3</sup>	100.2	103.7	135.5	154.7	143.0	179.4	176.6	147.8	175.8	189.8
Pulp, 1000 t	86.5	104.1	68.4	6.7	20.7	35.5	44.1	49.5	54.4	51.6
Paper, 1000 t	93.1	90.3	77.3	5.9	19.5	34.6	42.6	47.9	52.4	52.4**
Paperboard, 1000 t	4.9	4.2	4.8	0.4	0.9	0.8	0.6	0.4	1.9	1.9**

Sources: Statistical Office of Estonia (2001)  
\* FAO 2002  
\*\* Estimates

#### 1.4. TIMBER RESOURCES AND USE OF TIMBER

According to a statistical forest inventory carried out in 2001 by the Estonian Forest Survey Centre, the total area of forest is 2.25 million ha, which accounts for 52% of the land area. The growing stock volume was estimated to be 411 million m<sup>3</sup> and the increment 11.6 million m<sup>3</sup> per year. These figures from 2001 are higher than those presented two years earlier (Table 5), which clearly shows that the volume of forest resources is increasing.

##### Multiple use of forests

The fact that forests provide many goods and services has been recognised in Estonia for decades. In the 1920s, a special protected forests management regime was implemented in state forests. Every-man's right has been considered a norm in Estonian forestry for decades. On the other hand, private forest owners still have the right to prevent access to their forests if they like.

It is stated in Estonian Forest Policy (Estonian Forestry Development Program, 1997) that at least 4% of the forests have to be protected. According to the information presented in the draft of the Estonian Forestry Development Programme (Centre of Forest Protection and Silviculture, 2001<sup>1</sup>), at present 5.2% of forest area is under protection. During the Estonian Forest Conservation Areas Network project, 37 821 ha of potential forest conservation areas were identified. The practice of contracts has been implemented between state and the forest owners in order to protect key biotopes. Altogether, 64 contracts covering 1997 ha of forests were signed at the beginning of 2002. Discussion about the appropriate share of protected and forest is still going on. Nature conservationists are emphasising the need to increase the share of protected forests to at least 10%.

By Paavo Kaimre

**Table 5.** *Forest resources of Estonia in 1999.*

<b>Forest and other wooded land, 1000 ha</b>	<b>2143.1</b>	
<b>Stands, 1000 ha</b>	<b>2059.0</b>	<b>100%</b>
Pine	793.6	38.5%
Spruce	453.1	22.0%
Birch	600.8	29.2%
Aspen	50.6	2.5%
Black alder	34.4	1.7%
Grey alder	107.9	5.2%
Other	18.6	0.9%
<b>Reserve of stands, million m<sup>3</sup>s</b>	<b>352.7</b>	<b>100%</b>
Pine	139.5	39.6%
Spruce	82.1	23.3%
Birch	96.1	27.2%
Aspen	11.2	3.2%
Black alder	5.8	1.6%
Grey alder	15.5	4.4%
Other	2.5	0.7%
Average volume per hectare, m <sup>3</sup>	171.3m <sup>3</sup> /ha	
Percentage of territory covered by forest	47.4%	
Source: Estonian Forest Survey Centre (2001)		

Awareness of the multi-functionality of forests seems to be rather high, which was confirmed by an empirical research carried out in Põlva county in 2001, where forest owners' opinions about the importance of forest functions were studied (Oisalu, 2001). Forest owners were asked to give ratings from 0 to 5 (0= not at all important, 5= very important). The results showed that the most important issues for the respondents were different natural products (see Table 6).

**Table 6.** *The objectives of forest owners concerning the multiple use of forestry.*

<b>Forest function</b>	<b>Average credit</b>
Nature products (berries etc.)	3.17
Leisure	3.13
Landscape	3.07
Timber	2.99
Employment	2.22
Science	1.81
Defence	1.87

Unfortunately, reliable data concerning the volumes of timber used for different purposes is missing. Nevertheless, some efforts have been made to estimate the volume of timber use within the forest sector. In autumn 2000, the Institute of the Forest Industry interviewed wood processing enterprises to obtain an overview of the kinds of assortments used in production. The results of the survey are presented in Table 7.

**Table 7.** *Use of different log assortments by enterprises.*

Assortment	Share %
Spruce logs	45.7
Spruce logs less than 18 cm (under bark)	13.3
Pine logs	13.2
Pine logs less than 18 cm (under bark)	18.3
Birch logs	8.3
Aspen logs	0.5
Alder logs	0.3
Other assortments	0.4
Total	100
Source: Institute of Forest Industry (2000)	

Spruce has an unexpectedly large share in timber use of enterprises (see Table 7). The reason might be the good quality of spruce (e.g. compared to pine) and hence the better competitiveness of production in the foreign market. The higher price of spruce logs compared with pine in the Estonian timber market is a result of the interaction between supply and demand, and also because softwood processing is technologically easier than in the case of deciduous timber. While beginning their activities, saw mills at first concentrated on softwood processing. Therefore, the demand for spruce and pine is much higher than the demand for aspen and alder in relation to available resources (potential supply, see Table 5).

The dynamics of felling volumes are presented in Table 8. During the period 1993-2000, the total felling volume has been increased by 2.6-fold, While the volume of regeneration fellings has been increased even more, by 4.2-fold.

**Table 8.** *Felling volumes in Estonia.*

Year	Felling volumes (1000 m <sup>3</sup> )		
	Regeneration fellings	Other fellings	Total
1993	1073.7	1365.5	2439.2
1994	1797.5	1822.9	3620.4
1995	1697.4	2122.1	3819.5
1996	2171.2	1857.4	4028.6
1997	3307.7	2197.0	5504.7
1998	3640.6	2420.4	6061.0
1999	4449.0	2255.0	6704.0
2000	4462.1	1977.1	6439.2
Source: Statistical Office of Estonia (2001)			

## 1.5. STATE OF THE ART IN ESTONIAN FORESTRY

### LEGAL FRAME

#### FOREST ACT

The second Forest Act, approved by the Parliament in the transition period, is already valid in Estonia. The contemporary Forest Act came into force on 9 January 1999. The new Forest Act was already under preparation before the restoration of Estonia. In October 1987, the first draft of the new concept of forestry was completed, containing several principles later fixed in the Forest Act (1998). The concept itself was approved in December 1988, attracting extensive public discussion.

The quick and often unexpected changes in the political and economic situation were characteristic of Estonia between the years 1989–1992. In 1992–1993, several administrations were actively engaged in drafting the new Forest Act. Reading of the bill in the Parliament (*Riigikogu*) was carried out under the pressure and attention of different interest groups (the Ministry of Agriculture, private forest owners). The most important controversial issues were:

- The guidance of forestry (administrations) and
- State control over private forests.

The Forest Act was declared on October 20 1993. The replacing of the Forest Act became topical because the importance and share of privately owned forests had increased since 1993. The number of juridical problems connected with the management of privately owned forests had increased, too. The new concept of separating the management of state owned forests and forestry supervision was established in the mid-1990s. It became important to follow the principles dominating in Europe (e.g. conservation of biodiversity, sustainable development). The new act directs the balanced development of forest as a living environment and management object.

#### FOREST TAXATION

Forest owners are obliged to pay land tax, which is based on the taxation value of land and on the tax rate. At present, the taxation value depends on the administrative location of the estate. The income tax rate is 26% when selling timber at stumpage. The net income tax is used for enterprises and entrepreneurs; for individuals the gross income tax is used. If timber is sold in delivery conditions, in addition to income tax, the social secure tax of 33% has to be paid from the net or gross income.

The present financial regulation has been criticised because it favours the harvesting of valuable timber and the realisation of forest property instead of maintaining long-term management objectives. After a change of owner, forest estates are often harvested too intensively. The present taxation system does not take into account the most specific feature of silviculture – a long production period.

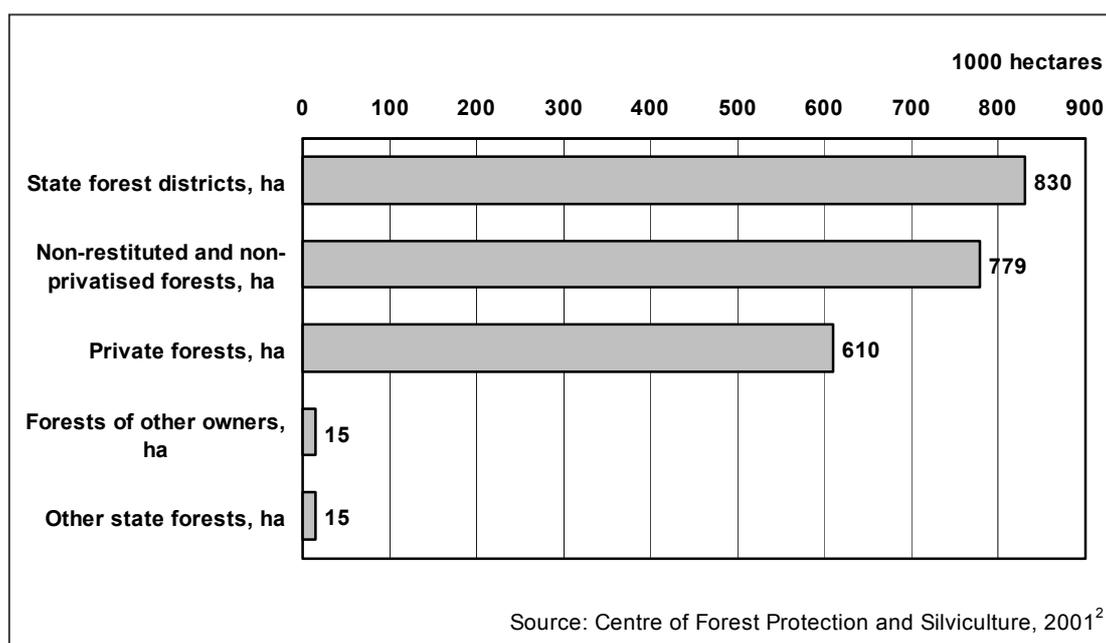
**THE LAND REFORM AND THE STRUCTURE OF FOREST OWNERSHIP**

According to data registered by the Estonian Land Board, 51 777 estates with a forest area of 542 763 ha were registered in Estonia on 1 January 2001 (Centre of Forest Protection and Silviculture, 2001<sup>2</sup>). The division of forest area according to the type of forest ownership in November 2001 is presented in Figure 2.

The ownership structure of the Estonian forest is continuously changing due to the continuing land reform process. In the land reform, the forest estates that belonged to private persons before the expropriation in 1940 will be returned from the state to the previous owners or their descendants.

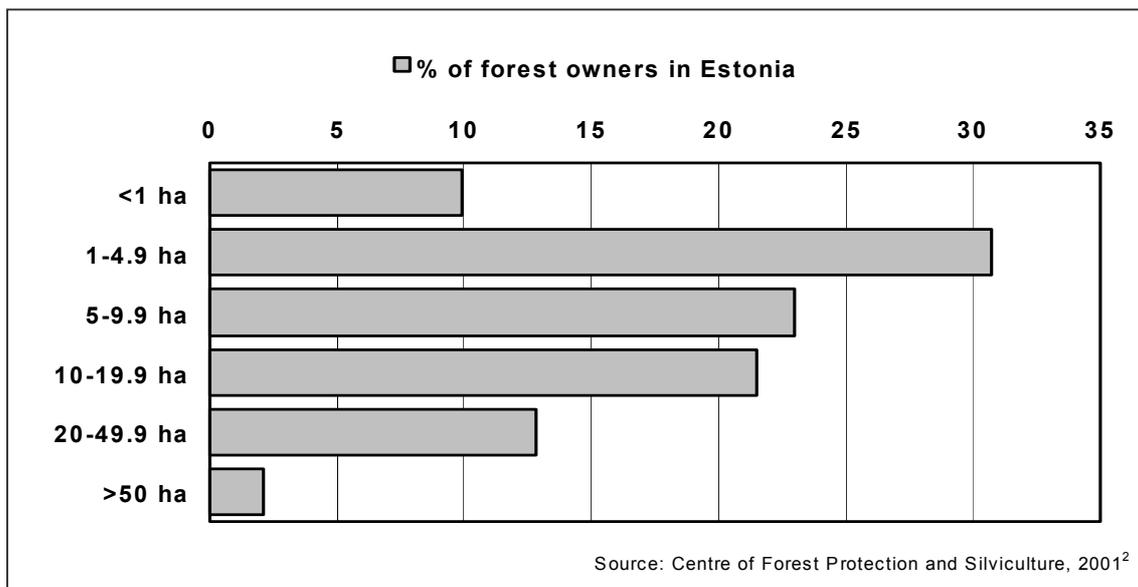
Restoration can take place either through restitution or privatisation. In the restitution process, the forest estates are returned free of charge to the previous owners. In privatisation, forest estates are sold by auction from the state to the private persons. If the previous owners cannot be found and hence the forest estates cannot be returned, they are finally sold by auction.

*Figure 2. Distribution of forest area according to type of forest ownership (in November 2001).*



The State Forest Management Centre is responsible for the management of 830 000 ha of state-owned forests. The process of restitution and privatisation continues. Therefore, the distribution of forest by ownership is changing, as was already mentioned. From the standpoint of forest management, the fact that 35% of forests are without an owner to take responsibility for the property is harmful. The average size of a private forest estate is only 10.5 ha in Estonia. More than 40% of owners have less than 5 hectares of forest (Figure 3).

**Figure 3.** Division of forest owners according to forest estate area.



**Forest Certification – Current Debate and Situation in Estonia**

The debate about the appropriate criteria for the certification of Estonian forestry is still going on. Forest industry enterprises seem to prefer the PEFC (Pan-European Forest Certification) criteria. In addition, some forest owners' associations support the PEFC scheme. In late 2001, the management of state-owned forests was evaluated by an organisation called NEPCon according to the Rainforest Alliance SmartWood programme. The FSC (Forest Stewardship Council) criteria were used. In February 2002, State Forest Management Centre (SFMC) received a certificate, which proves that it provides wood products from well-managed sources. Forest management practices of SFMC adheres environmental and socio-economic standards in accordance with the principles and criteria of the Forest Stewardship Council (FSC). The management of some privately owned forest estates has also been certified. For example, Mr. Lembit Laks received the certificate in September 2000, which verifies that the management of his 400 ha of forests fulfils the FSC criteria.

*By Paavo Kaimre*

## 1.6. PREVIOUS STUDIES IN ESTONIAN PRIVATE FORESTRY

A few studies have so far investigated Estonian private forest owners and their forestry related opinions and information needs. These include Karppinen's (1996) survey study that deals with private forest owners' opinions on Estonian forestry and their own forest ownership, and provides an overview on the structure and demographic background of

private forest owners. Karppinen's study also analysed forest owners' information needs<sup>1</sup>.

Karppinen's results indicate that the main objective of forest ownership was the provision of timber. The most important information needs of forest owners in 1996 were legal issues and silvicultural problems. The forest owners saw that the most severe problems in Estonian forestry at that time were health of their forests. The sample for the survey was gathered using systematic sampling procedure from the forestry plan register in the Estonian Forest Survey Centre and from communes from forestland restitution applications. The data included responses of 301 private forest owners in six provinces (Järvamaa, Läänemaa, Lääne-Virumaa, Hiiumaa, Saaremaa and Võrumaa). The total forest owner population at that time was 80000 from which the sample was selected. Karppinen did not analyse the possible differences in opinions and information needs between forest owners having different demographic background.

In early 2001, the Ministry of the Environment of Estonia ordered a new survey to enlighten the information needs of private forest owners (The need for advising and the strategy for extension services in forestry, 2001). This was grounded due to the fast change of the ownership structure in Estonia. The Centre of Forest Protection and Silviculture implemented the study. The study also collected a lot of demographic background information about private forest owners. However, that information was not utilized in the analysis phase, i.e., comparisons between respondent groups regarding their opinions or information needs were not made. Neither the study analysed forest owners' willingness to pay for information and training services.

The study shows that the most important information needs of private forest owners are silvicultural issues and legal and economical issues. The most preferred information channel is printed information. If the study of the Centre of Forest Protection and Silviculture (2001<sup>2</sup>) and Karppinen are compared, one may note that the main differences between forest owners' opinions and information needs are in economical aspects. These issues are currently more important for the forest owners than few years ago. The results of this study are compared, where applicable, with the results of the studies of Karppinen 1996, the Centre of Forest Protection and Silviculture 2001<sup>2</sup>, and official statistics.

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<sup>1</sup> Development Centre Tapio has also conducted studies concerning private forestry in Estonia (For instance Assessment of forest owners' associations (1996), Institutional arrangements in private forestry (1996) and Development of commercial forest extension services in Estonia (1996 in Finnish)).

#### **Forest owners' organisations in Estonia**

The Estonian Private Forest Union (Eesti Erametsaliit) is an umbrella organisation unifying 25 local forest owners' organisations. The activity of the Union is based on the principles of democracy and sustainable development. It has many goals: to promote joint activities of forest owners, to exchange information between member organisations, and to represent members in different institutions. Extension services and advising are important. The union also promotes co-operation with sister-organisations in other countries.

The foundation of Võru County established the Private Forest Centre (Erametsakeskus) in co-operation with the EU Phare programme. The Private Forest Centre deals with advisory and extension services. In addition to the head-office in Tallinn, consultants are employed to carry out regional work. The Private Forest Centre has published booklets and books that are directed at helping forest owners in decision-making. Juridical advising is a field in which the Private Forest Centre has also taken an initiative.

*By Paavo Kaimre*

## **PART II: INFORMATION AND TRAINING NEEDS OF THE ESTONIAN PRIVATE FOREST OWNERS**

### **2. PURPOSE AND IMPLEMENTATION OF THE STUDY**

#### **2.1. PURPOSE OF THE STUDY**

The structure of forest ownership in Estonia is continuously changing due to the ongoing land reform process. Therefore, there are many forest owners who have very little or no knowledge of forestry related issues. *The purpose of this survey study is to determine the information and training needs of Estonian forest owners, as a group and within various different owner groups.* This study thus provides additional information to the earlier studies by providing a detailed analysis on different forest owner groups' opinions and information needs.

This study answers the following detailed research questions:

- What are the objectives of Estonian private forest owners for their forest ownership?
- What type of forestry-related information and training do Estonian forest owners need?
- Which information channels do Estonian forest owners prefer when receiving forestry-related information and training?
- How does the demographic and forest-related background of Estonian forest owners affect their information and training needs?

The information produced by this study is useful when developing information and training services for Estonian forest owners: The study helps to evaluate which information is most strongly needed among the forest owners, and to identify forest owner groups that need different kinds of information. The results also help in identifying the best working channels and forms for information and training needs, when the preferences of forest owners are used as the criteria.

#### **2.2. IMPLEMENTATION OF THE STUDY**

This empirical study is a survey among the Estonian private forest owners. The empirical data was collected during the fall 2001, and a structured questionnaire was used in the data collection. The study was conducted through the following steps (see also Chapter 3, **Data and methods**):

1. First, background information related to Estonian forestry were studied by utilizing secondary materials, such as statistics and earlier studies on private forestry in Estonia (see Footnotes 2 and 3)
2. Second, the Finnish researchers made a journey to Estonia in order to become familiar with the state of the art in Estonian forestry and particularly private forestry. Experts on Estonian forestry were also interviewed during the journey (Mr. Jouko Tavaila 15 August 2001, Mr Paavo Kaimre 16 August 2001, Mr Toomas Krevald 17 August 2001, Mr Jaanus Aun 17 August 2001 and Mr Toomas Lemming 5 September 2001).
3. Third, the first draft of the questionnaire was designed. The basic theoretical frame of the study is taken from the behavioural sciences and includes that the demographic and forestry related background, and education and experiences of forest owners influence on their forestry related opinions and information needs. Survey studies on Finnish forest owners were used as background information for preparing the questionnaire<sup>2</sup>. Earlier studies of forest owners' information and training needs in Estonia were also utilised as background information in this phase<sup>3</sup>.
4. Forestry student Ermo Palm from the University of Helsinki translated the questionnaire into Estonian.
5. The questionnaire was tested: Forestry student Margus Poolakese from the Estonian Agriculture University conducted 17 telephone interviews in Estonia between 16 September – 30 September 2001. After this, the questionnaire was somewhat revised. For instance some aspects were added concerning the objectives for forest ownership and problems related to Estonian private forestry. The final questionnaire is in Appendix 1.
6. *Primary data was collected during 12 November – 30 November 2001 by sending a five-page questionnaire to 844 forest owners (see Appendix 1). This sample comprised the forest owners that were in the address registers of Erametsakeskus (Private Forest Centre) and Eesti Erametsaliit (Estonian Private Forest Union). The data was gathered and coded by AS Emor (Estonian subsidiary of Suomen Gallup Group Ltd.).*
7. *From the original sample of 844 forest owners were removed 26 forest owners due to the reason that they were no more forest owners. Thus, the final sample of this study is 818 forest owners. Only one questionnaire was inadequately filled and was therefore excluded from the data. Due to small number of empty questionnaires, the loss analysis was not implemented.*
8. The final data included 583 acceptable responses that make a response rate of 71%. The data was analysed statistically during the spring of 2002 using statistical software package Statistica.
9. The final report was written during the summer and fall 2002.

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<sup>2</sup> See questionnaires in Knaapila 1989, Korkeaniemi 1991

<sup>3</sup> See Karppinen 1996 and Centre of Forest Protection and Silviculture 2001<sup>2</sup>.

### 3. DATA AND METHODS

#### 3.1. DATA OF THE STUDY

The population of the study consists of all Estonian forest owners (51 777 on 1 January 2001<sup>4</sup>). The original sample of the study comprised the forest owners from the address registers of Erametsakeskus (Private Forest Centre) and Eesti Erametsaliit (Estonian Private Forest Union)<sup>5</sup>, totally 844 owners. These owners are presumably more active and thus better aware in forestry-related matters than average forest owners in Estonia. This was expected to improve the validity of the answers.

A five-page questionnaire (see Appendix 1) with an introductory letter explaining the purpose of the study was mailed to 844 private forest owners. The introductory letter also included an answering model. A pre-paid envelope was included for the free return of the questionnaire. Among the respondents were drawn a clearing saw.

Those persons who did not return the questionnaire by the first deadline received a reminder with a fresh questionnaire and return envelope. The validity and reliability of the study was improved by testing the questionnaire in Estonia before the actual mailing (see Chapter 2.2 for details).

In total 584 forest owners returned their questionnaires by the final deadline. Thus, the response rate at this stage was 69%. Out of the 260 forest owners that did not return the completed questionnaire, 26 informed that they could not participate in the survey. The most common reason was that the forest had been sold (17 persons). In addition, some of the addresses (7) obtained were no longer valid and two forest owners were dead. One forest owner refused to fill the questionnaire and one forest owner returned an empty questionnaire. *The 17 persons that were no longer forest owners and the 9 persons that were not reached were reduced from the actual sample. Thus, the final actual sample of the study is 818 forest owners, and the response rate is 71%.*

The data, i.e., the demographic and forestry related background characteristics of the respondent forest owners are described in detail in Chapter 4.1. Regarding most of these background characteristics, the respondent forest owners seem to represent Estonian forest owners quite well. There was one significant difference, however: The respondent forest owners have clearly larger forest estates (35,4 ha) than Estonian owners on aver-

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<sup>4</sup> Centre of Forest Protection and Silviculture 2001<sup>2</sup>

<sup>5</sup> The sample of this study does not accurately represent the population of Estonian private forest owners. This might bias the results.

age (10,5 ha). The situation is probably because the address registers used in this study included those forest owners who have voluntarily given their contact information to the Private Forest Centre and the Estonian Private Forest Union. Based on this, these forest owners are probably more active than average Estonian forest owners, and general activity in forestry is probably linked with owning larger than average forest estates. This has to be taken into consideration when interpreting results.

*Overall, the fairly high response rate improves the reliability of the results.* The results of the mail survey were compared with the results of the telephone interviews but no statistically significant differences were detected. The comparisons were made, however, only for questions where mean tests could be used. This checking also indicates that the results can be considered quite reliable. However, there are some reservations to be stipulated, since the respondents of this study differ from the majority of the Estonian private forest owners regarding the forest estate size. In addition, there are always certain risks in a mail survey. The results may, for instance, be sensitive to the formulation and settlement of the questions. The results of this study are discussed with other studies<sup>6</sup> in the Chapter 5.3, beginning on page 48.

### 3.2. METHODS OF ANALYSIS

Mainly distributions and means were used to describe the general structure of private forestry and forest owners, as well as information needs and information channel preferences on the level of individual variables. Multivariate methods, i.e., factor analysis was utilised in studying the wider dimensions of information needs. The maximum likelihood method was chosen as the factoring method, and the solutions were Varimax normalised rotated. This enables the clearest possible perception of the differences between the factors. An eigenvalue of at least 1.0 was used as the minimum limit for including a factor in the solution. Variables with loadings of 0.4 or higher were accepted in the interpretations of the factors. The minimum communality value of 0.2 was used in deciding whether a variable was to be excluded from the analysis. Factor scores were reclassified into factor score variables. These new variables were cross-tabulated and the comparisons between respondent groups were studied using the  $\chi^2$ -test.

The differences between forest owner groups were studied based on the following characteristics: Age, sex, education, vocation, area of forest estate, duration of forest ownership, distance to the forest estate, place of residence, share of forestry-related income, form of forest ownership. The actual specification of different forest owner groups is explained in the Results chapter, excluding the location (place of living) that is described below. The differences were analysed based on cross-tabulation, and statistically

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<sup>6</sup> See Centre of Forest Protection and Silviculture 2001<sup>2</sup> and Karppinen 1996

significant differences between the groups that were measured by  $\chi^2$ -test. Only those differences that have a risk under 5% for misinterpretation (rejecting the null hypothesis) are considered as significant and are reported in the Results chapter. The statistical analyses performed are illustrated in detail in Table 9<sup>7</sup>.

For the geographical comparisons, the respondents were divided into four areas according to their province of residence using the postal code of their addresses as a classifying factor. The areas are shown with different grey scales in Figure 4 (Table 14 on Page 20 shows how the provinces were divided into four areas). In addition, the urban forest owners living in Tallinn and Tartu were compared with the forest owners living in areas that are more rural.

**Figure 4.** *The four regions of Estonia that are used in this study for geographical comparisons.*



<sup>7</sup> Analysis of the primary data was conducted using the STATISTICA 5.1 statistical software package.

**Table 9.** *Methods of analysis used in this study.*

QUE ST.	AREA OF ANALYSIS	METHODS OF ANALYSIS
1.	Year of birth	Means, distributions
2.	Gender	Distributions
3.1.	Professional education	Distributions
3.2.	Forestry-related education	Distributions
3.3.	Vocational status	Distributions
4.	Area of forest estate in hectares	Mean, distributions
5.	Acquisition of forest estate	Distributions, means
6.	Distance to the forest estate	Means, distributions
7.	Share of the forest incomes from the total incomes	Means, distributions
8.	Forestry tools and safety equipment	Distributions
9.	Form of ownership	Distributions
10.	Objectives for forest ownership	Means, distributions,
11.	Implementation of forest working	Distributions
12.	Selling of round wood	Distribution, means
13.	Problems in Estonian forestry	Means, distributions,
14.	Need for forestry-related information and training	Means, distributions, factor analysis, cross tabulation of Factor scores by background variables
15.	Information sources used for forestry-related issues	(age, sex, education, vocation, area of forest estate, duration of forest ownership, distance to the forest estate, place of residence, share of forestry-related income, form of forest ownership)
16.	Willingness to pay for information and training related to forestry	Distributions, cross tabulation by background variables (see point 14)
17.	Willingness to pay for various information and training providers	Distributions, cross tabulation by background variables (see point 14)
18.	Information and training in forestry-related issues	Distributions, cross tabulation by background variables (see point 14)
19.	Membership of forest owner organisation	Distributions, cross tabulation by background variables (see point 14)

## 4. RESULTS OF THE STUDY

### 4.1. ESTONIAN PRIVATE FOREST OWNERS AND THEIR FOREST ESTATES

#### 4.1.1. Demographic factors

##### GENDER

About 76% of the respondents were male and 24% were female. In mid-1990s, 73% of forest owners were male (Karppinen, 1996). The recent study conducted by the Centre of Forest Protection and Silviculture (2001<sup>2</sup>) shows that 61% of forest owners are male and 39% female. Thus, it seems that the share of female forest owners has increased in Estonia during the latter part of 1990s. It also seems that a slightly larger share of respondents of this survey data may be male, and smaller share female respectively, than among all forest owners in Estonia.

##### AGE

The mean age of the respondents was 52 years. The youngest respondent was 20 years and the oldest 87 years old. For being able to analyse the impact of age on information needs, the respondents were classified into six age classes: under 19 years, 20-29 years, 30-49 years, 50-64 years, 65-74 years and over 75 years. The distribution of the respondents in these classes is presented in Table 10, which also shows the actual age structure of the Estonian forest owners.

The mean age of the Estonian forest owners is 55 years (Centre of Forest Protection and Silviculture 2001<sup>2</sup>). Thus, the respondents of this study were on average slightly younger than Estonian forest owners as a whole. The distribution of the age structure confirms this finding: there is fewer forest owners in the oldest age class of this study than in the actual age distribution of the Estonian forest owners.

*Table 10. Distribution of respondent forest owners according to age.*

Age Class	<19	20-29	30-49	50-64	65-74	>75	In Total
<b>Number of forest owners in this study</b>	0	32	241	193	100	18	584
<b>Proportion in this study, %</b>	0	5.5	41.3	33.0	17.1	3.1	100
<b>Number of forest owners in Estonia*</b>	57	1398	16915	18657	8928	5822	51777
<b>Proportion of all forest owners, %</b>	0.1	2.7	32.7	36.0	17.2	11.2	100

\*Source: Centre of Forest Protection and Silviculture (2001<sup>2</sup>)

## PROFESSIONAL EDUCATION

The professional educational level of the respondents is summarised in Table 11. Most of the respondents have at least a college level education. *In comparison with the recent study of the Centre of Forest Protection and Silviculture (2001<sup>2</sup>) the respondents of this study have higher level of professional education.*

**Table 11.** Professional education of the respondent forest owners.

Professional education	Respondents in this study		Respondents in the study of the Centre of Forest Protection and Silviculture (2001 <sup>2</sup> )	
	%	n	%	n
Comprehensive school	12.2	71	33	359
College-level	53.9	315	49	533
University degree	33.9	198	18	195
<b>TOTAL</b>	<b>100</b>	<b>584</b>	<b>100</b>	<b>1087</b>

## FORESTRY-RELATED EDUCATION

The distribution of the respondents according to forestry-related education is shown in Table 12. Most of the respondents had no forestry-related education.

**Table 12.** The forestry-related education of the respondent forest owners.

Forestry-related education	Distribution of respondents in this study	
	%	n
No forestry-related education	60.6	354
Participation in forestry course	9.2	54
Forestry training in connection with agricultural training	17.2	100
Forestry degree	13.0	76
<b>TOTAL</b>	<b>100</b>	<b>584</b>

## VOCATION

The distribution of respondents according to vocational status is summarised in Table 13. The largest vocational groups in the study were wage earners, pensioners and farmers. *In the study of Centre of Forest Protection and Silviculture (2001<sup>2</sup>) farmer forest owners were not distinguished from entrepreneur forest owners, as farmers were classified as entrepreneurs. In that study, the proportion of pensioner forest owners is much greater than in this study.*

**Table 13.** *The vocations of the respondent forest owners.*

Vocation	Respondents in this study		Respondents in study by Centre of Forest Protection and Silviculture (2001 <sup>2</sup> )	
	%	n	%	n
Wage-earner	37.4	218	37	402
Farmer	18.4	107	-	-
Entrepreneur	15.4	90	16	174
Pensioner	20.4	119	39	424
Currently unemployed	4.8	28	5	54
Other	3.6	21	3	33
<b>TOTAL</b>	<b>100</b>	<b>584</b>	<b>100</b>	<b>1087</b>

#### PLACE OF RESIDENCE

The distribution of the respondents according to place of permanent residence is summarised in Table 14. The respondents were divided into four different geographical groups according to the postal code of their place of residence (see map of Estonia in Figure 4). Most of the respondents lived in a rural area, while approximately 16% of the respondents lived in the largest cities of Tallinn and Tartu. *The distribution of the respondents' place of residence cannot be compared with other studies.*

**Table 14.** *Distribution of respondents' place of residence.*

City or Province	Distribution of respondents in this study	
	%	n
Tallinn, Harjumaa, Järvamaa, Raplania	31.1	181
Ida-Virumaa, Lääne-Virumaa, Jõgevamaa	17.6	103
Tartu, Põlvamaa, Viljandimaa, Valgamaa, Võrumaa, Tartumaa	33.4	195
Pärnumaa, Hiiumaa, Saaremaa, Läänemaa	17.9	105
<b>TOTAL</b>	<b>100</b>	<b>584</b>

Area	Distribution of respondents in this study	
	%	n
City (Tallinn and Tartu)	16.6	97
Rural area	83.4	487
<b>TOTAL</b>	<b>100</b>	<b>584</b>

## FORESTRY-RELATED INCOMES AS PROPORTION OF TOTAL INCOMES

Most forest owners are not economically dependent on their forests: More than half, i.e., 54% of forest owners had not acquired any actual income from forests so far (at the moment of the survey collection in the fall 2001)<sup>8</sup>. *The distribution of the respondents' proportion of forest-related income cannot be compared with other studies.*

The proportion of forest-related income was classified into six classes: 0%, 0.1-5%, 5.1-10%, 10.1-20%, 20.1-40% and over 40% of total income. The distribution of respondents' forest-related income is shown in Table 15.

**Table 15.** *The forest-related incomes as a proportion of total income.*

Forest-related income as a proportion of total income (%)	Distribution of respondents in this study	
	%	n
0	54.2	316
0.1-5	12.2	71
5.1-10	8.6	50
10.1-20	8.6	50
20.1-40	7.5	44
>40	8.9	53
<b>TOTAL</b>	<b>100</b>	<b>584</b>
Mean forest-related income was 10.9%		

### 4.1.2. Information about estates

#### THE SIZE OF THE ESTATES

The average forest estate size in this study was 35.4 ha and the median forest area was 15 ha. The variation of the forest areas between respondents was large: the smallest forest estates were under 1 hectares, and the largest about 6000 hectares of woodland. The mean size of the forest estate in this study is significantly larger than on average in Estonia. The forest estates were classified according to size into six groups: less than 1 ha, 1-4.9 ha, 5-9.9 ha, 10-19.9 ha, 20-49.9 ha and over 50 ha. Size-frequency distributions are summarised in Table 16. The distribution of all Estonian forest owners according to forest area is also shown.

<sup>8</sup> However, the respondents consider the provision of household timber (firewood and construction timber) the most important objective for forest ownership (see Table 21 on Page 24). This has certainly some economical importance.

**Table 16.** *Distribution of forest estates of the respondents according to size.*

Forest area of the estate (ha)	Respondents in this study		All Estonian forest owners*	
	%	n	%	n
Under 1	2.1	12	9.9	5126
1-4.9	15.2	89	30.7	15896
5-9.9	16.6	97	23	11909
10-19.9	23.8	139	21.5	11132
20-49.9	32.0	187	12.8	6627
>50	10.3	60	2.1	1087
<b>TOTAL</b>	<b>100</b>	<b>584</b>	<b>100</b>	<b>51777</b>
<b>Mean size of forest area (ha)</b>	<b>35.4</b>		<b>10.5</b>	

\* Centre of Forest Protection and Silviculture (2001<sup>2</sup>)

### MANNER BY WHICH THE FOREST ESTATE HAS BEEN ACQUIRED

Table 17 summarises how the respondents have acquired their forest estates. The sum total percentage exceeds 100 because the forest owners could have acquired estates in more than one way. Most of the respondents had received their estates through the return of land, *both in this study and in the study of the Centre of Forest Protection and Silviculture, (2001<sup>2</sup>)*<sup>9</sup>.

**Table 17.** *Acquisition of forest estates.*

	Respondents in this study		Respondents in the study of the Centre of Forest Protection and Silviculture 2001 <sup>2*</sup>	
	%	n	%	n
Through inheritance	32.5	190	33	358
By buying from the relatives	4.3	25	12	130
By buying from the open markets	12.2	71	-	-
Through land reform	33.6	196	11	119
Returned	47.8	279	52	564

\*In the study of the Centre of Forest Protection and Silviculture (2001<sup>2</sup>) the acquaintance by buying was treated as one manner to acquire a forest estate.

### DISTANCE TO THE FOREST ESTATE

The distance between respondent's place of residence and their forest estate is summarised in Table 18. Most of the respondents in this study lived very close to their forest estate, while one respondent was 300 km from his forest estate. The average and median distance to the forest estate in this study was about 27 km and 3.5 km, respectively. *The distribution of the respondents according to distance to their forest estates in this study*

<sup>9</sup> Different acquisition manners are explained in Chapter 1.5

is largely similar to the results of the study of the Centre of Forest Protection and Silviculture (2001<sup>2</sup>).

**Table 18.** Distance between forest owners' place of residence and forest estate.

Distance to the forest estate (km)	Distribution of the respondents in this study		Distribution of the respondents in the study of the Centre of Forest Protection and Silviculture (2001 <sup>2</sup> )*	
	%	n	%	n
< 0.5	26.0	152	-	-
0.6-5.0	29.8	174	52	565
5.1-50.0	28.4	166	34	370
> 50.1	15.8	92	14	152
<b>TOTAL</b>	<b>100</b>	<b>584</b>	<b>100</b>	<b>1087</b>

Average and median distance to the forest estate in this study is 26.9 km and 3.5 km, respectively  
 \* The distance was classified in the study of the Centre of Forest Protection and Silviculture (2001<sup>2</sup>): 0-5 km, 5.1-50 km and over 50 kilometres

#### FORM OF FOREST OWNERSHIP

The distribution of respondents according to the form of ownership of their forest estates is summarised in Table 19. In total, 98.7% of the forest estates studied here are owned by the respondent alone, jointly with a spouse or owned by heirs. Thus, the majority of the estates are family forest estates; the remaining estates are combines. The distribution of form of forest ownership in Estonia cannot be compared with other studies.

**Table 19.** The respondent forest owners according to the form of forest ownership.

Form of ownership of estate	Distribution of respondents in this study	
	%	n
Owns estate alone	61.3	358
Owns estate with spouse	24.7	144
Estate owned by heirs	12.7	74
Estate is a person-, farm- or real estate combine	0.5	3
Not mentioned	0.8	5
<b>TOTAL</b>	<b>100</b>	<b>584</b>

The distribution of duration of forest ownership is summarised in Table 20. More than a half of the respondents have owned forest for less than five years, both in this study and in the study of the Centre of Forest Protection and Silviculture (2001<sup>2</sup>).

**Table 20.** *The duration of forest ownership in 2001.*

Forest ownership started	Respondents in this study		Respondents in the study of the Centre of Forest Protection and Silviculture (2001 <sup>2</sup> )	
	%	n	%	n
Before year 2000	50.0	292	51	554
Year 1995 and before	37.7	220	40	435
After year 2000	12.3	72	9	98
<b>TOTAL</b>	<b>100</b>	<b>584</b>	<b>100</b>	<b>1087</b>

#### 4.1.3. *Forest owners' opinions and activity related to forestry*

##### OBJECTIVES FOR FOREST OWNERSHIP

Objectives for forest ownership are usually an important factor in explaining the past, and in estimating the future forestry-related behaviour. The ownership objectives were identified in this study by asking the respondents to rate the importance of ten given objectives using a Likert-scale of one to five (see Ques. 10, in Appendix 1). The questions covered economic, ecological and social objectives (Table 21).

**Table 21.** *Objectives for forest ownership among respondent forest owners.*

Objective	Very Important		Not at all Important			Mean	n
	1	2	3	4	5		
% of respondents							
Household timber (firewood and construction timber)	39.7	39.5	14.2	4.2	2.4	<b>1.9</b>	577
Economic security	32.7	36.9	23.7	4.9	1.8	<b>2.1</b>	569
Conservation of forest nature and landscape	22.4	40.9	27.1	6.3	3.3	<b>2.3</b>	558
Emotional and traditional values of forest ownership	18.5	34.6	28.1	10.5	8.3	<b>2.6</b>	563
Job opportunities	15.0	29.2	34.9	15.4	5.5	<b>2.7</b>	559
Recreational use	11.0	29.1	36.0	16.1	7.8	<b>2.8</b>	564
Incomes from timber sales	11.5	26.6	36.3	16.1	9.4	<b>2.9</b>	564
Investment opportunity	9.3	32.3	30.1	17.7	10.6	<b>2.9</b>	548
Secondary forest products (berries, mushrooms, game)	9.0	24.9	36.1	20.1	9.9	<b>3.0</b>	567
Pasturage	2.9	6.5	9.6	25.6	55.4	<b>4.2</b>	552

*1= very important, 2= important, 3= moderately important, 4= not very important, 5= not at all important*

All the listed objectives except pasturage were considered to be of at least some importance, but economic objectives are the most important among the respondent forest owners. Economic security provided by forests was emphasised as more important than incomes from selling timber. This is quite understandable when remembering that only every second forest owner has ever sold timber on commercial markets. It should be noted that clearly non-economic values, i.e., conservation of forest nature and landscape was considered among the most important objectives. Overall, the forest owners seem

to value several objectives as important or quite important at the same time, similarly with private forest owners in Finland.

The objectives for forest ownership seem to have remained quite unchanged during the last few years. The value of household timber has remained on the top of forest ownership objectives in Estonia already for quite some time: The importance of household timber was appreciated high among the forest owners already in 1996. In addition, the non-economic values, i.e., landscape value was considered important at that time (Karppinen 1996).

**SILVICULTURAL MEASURES**

Most of the respondents have conducted at least some silvicultural measures on their estates, most commonly thinning (Table 22). In addition, the proportion of respondents who have intentions to perform forest works on their estates in the near future is rather large. On the other hand, the majority of the respondents did not express their intentions concerning silvicultural measures.

*Table 22. Implementation of silvicultural measures in respondents' forests.*

Forest work:	Performed, % of the respondents				Will be done during the next two years, % of the respondents			
	No	Yes		No answer	No	Yes		No answer
		By own work	By outsider			By own work	By outsider	
Regeneration and planting	39.6	39.7	2.9	19.3	17.3	54.3	5.1	25.0
Sapling stand thinning	37.5	37.0	4.6	22.3	21.6	43.8	5.3	31.0
Thinning	13.7	66.1	11.0	12.7	4.3	59.4	12.3	27.2
Final cutting	39.4	26.5	13.9	22.9	31.2	24.7	10.1	36.0
Drainage and ditching work	56.3	13.2	7.5	24.1	41.8	14.9	8.9	35.8
Forest road construction	54.3	16.4	5.0	25.5	43.0	15.8	4.6	37.8

**FORESTRY TOOLS AND SAFETY EQUIPMENT**

Most of the respondent forest owners had a chain saw (Table 23), but a minority of the respondents had safety equipment. This information cannot be found from earlier studies and thus no comparisons can be made. *However, it is likely that this result can not be well generalised over all Estonian forest owners: The respondents of this study have larger forest estates than Estonian forest owners in general, and this may be reflected particularly in ownership of forestry tools and activity in forest work.*

**Table 23.** Availability of forestry tools and safety equipment.

Forestry tool	Yes		No		Total	
	%	n	%	n	%	n
Chain saw	<b>81.7</b>	<b>477</b>	18.3	107	100	584
Clearing saw	28.8	168	<b>71.2</b>	<b>416</b>	100	584
Tractor and forwarding equipment	36.0	210	<b>64.0</b>	<b>374</b>	100	584
Safety helmet (including hearing and eye protection)	39.4	230	<b>60.6</b>	<b>354</b>	100	584
Safety clothing (including safety boots)	20.9	122	<b>79.1</b>	<b>462</b>	100	584
Grip tong	43.8	256	<b>56.2</b>	<b>328</b>	100	584
Measuring tape	<b>68.7</b>	<b>401</b>	31.3	183	100	584

#### SALES OF ROUND WOOD

Round wood sale is fairly new and rare activity for most Estonian forest owners. Approximately half of the respondents had sold round wood at least once during their forest ownership, with a mean sales volume of around 75 m<sup>3</sup>. The proportion of respondents selling round wood has increased year by year, however (Table 24). By November 2001, 15% of the respondents had sold timber during that year. As one may expect, the forest owners with a greater forest area (>20 ha) sold round wood more commonly than the owners of smaller forest estates.

**Table 24.** The proportion of respondents who had sold timber between 1996-2001.

Year	Yes		No		Total	
	%	n	%	n	%	n
1996	6.7	39	93.3	545	100	584
1997	12.5	73	87.5	511	100	584
1998	15.4	90	84.6	494	100	584
1999	20.2	118	79.8	466	100	584
2000	21.1	123	78.8	461	100	584
2001	15.2	89	74.8	495	100	584
In total	48.1	281	51.9	303	100	584
The mean volume of a round wood sale was 75 m <sup>3</sup>						

#### 4.2. PERCEIVED PROBLEMS IN PRIVATE FORESTRY

The respondents were asked to evaluate how problematic they consider various issues regarding private forestry in Estonia. The evaluation was made using a five-class Likert scale (Ques. 13 in Appendix 1).

Based on mean values, the five most severe problems in Estonian private forestry are illegal logging<sup>10</sup>, scarce investment capital of forest owners, taxation<sup>11</sup>, a lack of tradition in private forestry, and the fact that many forest owners live apart from their forest estates (Table 25). Overall, lack of knowledge and proper legal frame for forestry were considered severe problems: The next most severe problems included lack of knowledge on forestry and wood trade, lack of control of the forestry act and the slow implementation of the land-reform process. Matters related with actual physical forestry, such as low profitability of thinning or infrastructure, are also perceived problematic, but these are not the main problems in Estonian private forestry.

**Table 25.** *Problems related to Estonian forestry.*

Forest-related issue:	Very Problematic		Not at all Problematic			Mean	n
	1	2	3	4	5		
	% of respondents						
Illegal logging	59.3	24.5	8.5	5.0	2.7	<b>1.7</b>	563
Forest owners have insufficient investment capital	49.0	30.2	13.9	4.9	2.0	<b>1.8</b>	547
Taxation (e.g. sales at delivered price vs. standing stumpage sale, taxation of enterprises vs. private persons)	39.6	34.5	17.0	6.3	2.6	<b>2.0</b>	540
Lack of tradition in private forest ownership	28.1	39.9	21.2	6.6	4.2	<b>2.2</b>	548
Forest owners live apart from their forests	30.3	31.2	20.6	10.0	7.9	<b>2.3</b>	558
Lack of forestry-related knowledge (e.g. silviculture, forest management, wood trade)	21.0	33.9	29.5	9.2	6.4	<b>2.5</b>	552
Implementation of forest legislation in Estonia (e.g. poor control of Forestry Act)	18.7	31.6	35.2	10.2	4.3	<b>2.5</b>	529
The thinning of young forests is unprofitable	22.7	33.8	24.0	11.4	8.1	<b>2.5</b>	542
Land reform is still in progress	28.0	25.6	23.3	13.2	9.9	<b>2.5</b>	546
Lack of forest insurance	19.3	32.3	30.7	12.5	5.2	<b>2.5</b>	535
Forestry and agriculture are managed by different ministries	19.0	19.9	31.5	17.7	11.9	<b>2.8</b>	537
Lack of a timber measurement system	15.9	23.6	32.7	16.5	11.3	<b>2.8</b>	533
Weak domestic wood processing industry	18.6	22.9	28.9	19.4	10.2	<b>2.8</b>	537
Lack of information and training	10.6	23.6	40.6	17.8	7.4	<b>2.9</b>	539
Lack of forest infrastructure (roads, ditches)	15.4	22.2	29.6	20.3	12.5	<b>2.9</b>	537
Lack of tradition in round wood trade	8.3	29.8	36.1	14.8	11.0	<b>2.9</b>	527
Undeveloped standards in round wood trade	8.7	25.9	36.3	18.8	10.3	<b>3.0</b>	532
Lack of machine or work force	15.1	15.3	28.5	22.1	19.0	<b>3.1</b>	543
Lack of saplings and plants	11.1	20.5	32.4	23.5	12.5	<b>3.1</b>	550
Lack of demonstration areas	4.4	13.4	40.8	28.2	13.2	<b>3.3</b>	522
Lack of information about round wood markets	8.7	16.8	28.4	25.1	21.0	<b>3.3</b>	542

(1= very problematic, 2= problematic, 3= moderately problematic, 4= not very problematic, 5= not at all problematic)

The five least problematic issues, but still moderately problematic matters, include: availability of information about round wood markets, lack of demonstration areas, lack

<sup>10</sup> Illegal logging means that round wood is stolen from the forests

<sup>11</sup> Forest taxation is explained in Chapter 1.5

of saplings and plants, lack of machinery and workforce, and undeveloped standards in round wood trade.

#### **4.3. FORESTRY-RELATED INFORMATION AND TRAINING**

##### **4.3.1. Information needs**

The information needs of Estonian forest owners were clarified by asking how much information and training they need on various forestry-related issues. A five-step Likert-scale was employed when measuring how important it is for the forest owners to receive additional information about various issues. Table 26 illustrates the results, and shows the top-three issues that the forest owners need more information:

- 1. Legal matters,**
- 2. Forest diseases and pest control and**
- 3. Economic matters**

Estonian private forest owners would need particularly much information about legal and economic matters. Market-related issues are important, but the strongest information needs concern round wood markets, whereas information is needed only moderately much on forest industry products markets. Issues related with forest management are considered important. These comprise forest diseases and pest control as the most important issue, but also forest management in general, regeneration and planning the site before harvesting. Clearly more information is also needed on environmental issues including forest certification.

Forest owners consider that they need information only somewhat on the actual forest work: Particularly safety, but also efficiency and planning related with working in the forest are considered among the least important information areas.

**Table 26.** Forestry-related information and training needs of the respondent forest owners.

Forest related issue:	Very Much					Not At all		Mean	n
	1	2	3	4	5	% of respondents			
Legal matters (e.g. in acquiring logging permission)	48.2	32.7	13.0	4.6	1.5			<b>1.8</b>	545
Forest diseases and pest control	49.5	30.9	13.9	4.1	1.6			<b>1.8</b>	560
Economic matters, investment options, taxation etc.	45.1	32.2	16.4	4.3	2.0			<b>1.9</b>	543
Quality requirements of timber	35.5	34.6	19.4	7.1	3.4			<b>2.1</b>	552
Forest management	35.8	28.7	19.9	8.7	6.9			<b>2.2</b>	553
Co-operation between forest owners	29.5	35.0	26.2	6.8	2.5			<b>2.2</b>	546
Regeneration (tree specie selection, soil cultivation)	29.6	34.7	21.4	7.1	7.2			<b>2.3</b>	551
Environmental issues (incl. certification)	26.2	34.2	28.0	7.9	3.7			<b>2.3</b>	535
Round wood markets: prices and timber buyers	32.7	24.0	24.7	12.4	6.2			<b>2.4</b>	547
Measurement of timber	21.0	28.5	26.8	15.5	8.2			<b>2.6</b>	548
Planning the site (e.g. forwarding roads, ditching)	21.4	23.2	29.5	14.7	11.2			<b>2.7</b>	543
Methods and standards in wood trade	18.8	26.9	29.4	17.0	7.9			<b>2.7</b>	531
Efficient working methods	14.5	25.5	34.2	16.9	8.9			<b>2.8</b>	538
Use of safety equipment	18.2	18.2	37.0	18.9	7.7			<b>2.8</b>	548
Planning the cutting and thinning (e.g. tree selection)	21.7	22.3	20.4	18.8	16.8			<b>2.9</b>	554
Forest industry markets	13.0	22.6	35.6	19.5	9.3			<b>2.9</b>	539
Service of working equipment	11.5	23.1	32.6	20.0	12.8			<b>3.0</b>	540
Safe working practices	10.6	17.4	37.3	23.5	11.2			<b>3.1</b>	536

(1= very much, 2= much, 3= moderately, 4= not very much, 5= not at all)

Forestry related information needs were further analysed by producing a five-factor solution from the original 18 variables. The resulting dimensions are described in Table 27. The five-factor solution explains 53% of the total variance in the set of the 18 variables.

Factor I has the highest loadings on the safe working practices, efficient working methods, use of safety equipment and servicing of working equipment. All these characteristics are related to working in the forests. Thus, Factor I is named as *working practices* factor. Factor II includes measurement and quality requirements of timber. Both variables can be considered as reflecting the quality and value of timber; thus, Factor II can be named the *quality and value of timber* factor. Factor III has the highest loadings on planning the site and the harvests, forest management, regeneration and forest diseases. Factor III is interpreted as describing *forest management* in a wide sense.

Factor IV comprises legal and economic matters that were the most important information and training areas together with forest diseases and pest control. This dimension is simply labelled as *legal and economic matters* factor.

Factor V has the highest loadings on the round wood and forest industry markets, methods and standards in the wood trade, co-operation between forest owners and environmental issues. The connection between these issues is not very clear, and thus Factor V is named as *markets, co-operation and environment* factor.

**Table 27.** *Dimensions of forestry related information and training needs according to factor analysis. (Maximum likelihood solution with Varimax rotation)*

	Factor I "Working practices"	Factor II "Quality and value of timber"	Factor III "Forest manage- ment"	Factor IV "Legal and economic matters"	Factor V "Markets, co- operation and envi- ronment"	Com- munal- ity
Planning the site (e.g. forward- ing roads, ditching)	0.2079	0.1293	<b>0.5643</b>	0.0775	0.1376	0.3775
Planning the cuttings and thin- ning (e.g. tree selection)	0.1010	0.1380	<b>0.6767</b>	0.0536	-0.0952	0.4102
Forest management	0.1572	0.1365	<b>0.6715</b>	0.1102	0.0132	0.4173
Regeneration (tree specie selection, soil cultivation)	0.1638	0.0405	<b>0.5924</b>	0.0293	0.1553	0.3398
Forest diseases and pest con- trol	0.1635	0.0968	<b>0.4767</b>	0.1511	0.2302	0.3537
Safe working practices	<b>0.7452</b>	0.0651	0.2867	0.0995	0.1446	0.5921
Efficient working methods	<b>0.4934</b>	0.1078	0.1837	0.1305	0.3315	0.3918
Use of safety equipment	<b>0.8500</b>	0.1378	0.2356	0.1132	0.0888	0.6297
Service of working equipment	<b>0.5225</b>	0.2113	0.1581	0.0583	0.2296	0.3789
Measurement of timber	0.2120	<b>0.6966</b>	0.3415	0.1097	0.0901	0.5059
Guiding the quality require- ments of timber	0.2156	<b>0.6355</b>	0.2788	0.2473	0.1632	0.5430
Legal matters (e.g. in procuring logging permission)	0.1466	0.2096	0.1614	<b>0.6049</b>	0.2058	0.4371
Economic matters, investment options, taxation etc.	0.1197	0.1482	0.1287	<b>0.8189</b>	0.2669	0.4812
Round wood markets: prices and timber buyers	0.0468	0.4470	0.0571	0.2817	<b>0.4558</b>	0.4725
Forest industry markets	0.1651	0.1877	0.0141	0.0998	<b>0.7456</b>	0.5158
Methods and standards in wood trade	0.1512	0.4164	-0.0622	0.1447	<b>0.6567</b>	0.5379
Co-operation between forest owners	0.1304	-0.0449	0.1486	0.1407	<b>0.5921</b>	0.3344
Environmental issues (incl. certification)	0.2181	0.0160	0.2272	0.1945	<b>0.4932</b>	0.3713
Eigenvalue	2.170	1.511	2.320	1.366	2.234	9.600
Total variance	12.1%	8.4%	12.9%	7.6%	12.4%	53.4%

#### 4.3.2. Information needs among different forest owner groups

The divergences in the forest owners' information and training needs were analysed on the basis of forest owners demographic and forestry related background, and the five information areas or dimensions (factors) described in the previous chapter (see Table

27). Table 28 contains these information dimensions and shows how forest owners differ in their information needs with regard to different background. Only the detected statistically significant differences are shown in Table 28. In practice, the forest owner groups were analysed by first calculating mean factor scores for each forest owner group, and then the similarity/divergence between the group mean values were compared using t-test.

In this analysis, the dimension of information and training needs is divided into columns marked with “-” or “+”. Those forest owner groups that need information significantly more than the other classes are marked with “+”. Similarly, those forest owner groups that emphasise information significantly less than the corresponding other groups are marked with “-” sign.

While interpreting the results in Table 28, it is to be kept in mind that the indicated differences between background variables in information and training needs are only relative – not absolute: The forest owner groups indicated with “+”/ “-” emphasise the information dimension in question relatively more/less than the corresponding other group(s), and this difference is statistically significant. The result does not indicate that for example the owners included in the “+” group would consider the given information and training dimension as the most important one.

**Table 28.** *Divergences in information and training needs between forest owners that have different demographic or forestry backgrounds.*

	Factor I "Working practices"		Factor II "Quality and value of timber"		Factor III "Forest management and diseases"		Factor IV "Legal and economic matters"		Factor V "Markets, co-operation and environment"			
	-	+	-	+	-	+	-	+	-	+		
Professional education	Academic education	Comprehensive school education	No difference		No difference		No difference		Academic education			
Forestry-related education	No difference				Academic forestry education	No forestry related education			No difference		No difference	
Duration of forest ownership					Start in 1996 or later							
Forest area of estate					<20 ha	>20 ha						
Distance to the forest estate					<5 km	>5 km						
p-value < 0.05												

No differences between respondent groups were detected in information and training needs concerning the quality and value of timber and legal and economic matters: Information about these issues are needed equally strongly among all kinds of forest owners.

Information needs on the three other dimensions were emphasised somewhat differently between different owner groups: 1) Those forest owners who only have a comprehensive school education need information about forest working methods more than forest owners with higher education, particularly academic education. 2) Information about forest management and forest diseases are needed most strongly among forest owners without any forestry-related education, that have less than 20 hectares forest land, live apart from their forest estates and have been forest owners five years or less. 3) Forest owners having academic education need somewhat less information about the combined markets, co-operation and environment dimension than forest owners with lower education.

The differences in information and training needs between different forest owner groups were further analysed using factor scores. The factor scores were reclassified into three groups (1,2,3) in a way that each group is approximately equally large. Respondents who have the greatest need for information about each dimension (factor) are assigned a value of 1 (factor scores  $<-0.4$ ). Instead, respondents who least need information about the same dimension are given a value of 3 (factor scores  $>0.4$ ) while those being in the middle receive value 2 (factor scores  $-0.4 - 0.4$ ). These new variables were then cross-tabulated with the background variables, and differences between owner groups were tested using  $\chi^2$ -test.

As the earlier analysis, also this analysis showed that legal and economic matters are equally important information and training issues for all respondent groups. Instead, some statistically significant differences were detected regarding the other information dimensions. These are shown in following tables (Table 29-Table 33).

The differences between background variables in information and training needs concerning working methods (Factor I, see Factor analysis in Table 27, on Page 30) are illustrated in Table 29. The results of the cross-tabulation show that forest owners who have completed comprehensive school education and who live rather close to their estates need relatively more information and training about working practices. However, forest owners who have a university degree, live apart from their estates ( $>50.1$  km) and obtain a relatively large share of their income from the forest need relatively less information and training about working practices.

**Table 29.** *The differences between background variables in information and training needs regarding working practices.*

BACKGROUND CHARACTERISTICS OF THE RESPONDENT FOREST OWNERS	Working practices, (Factor I, see Table 27 on Page 30)				n
	2= Moderately	3= Little			
<b>Professional education:</b> % of the respondents, p-value 0.012					
Comprehensive school	41	34	25	100	44
College-level	34	37	29	100	267
University degree	24	33	43	100	163
<b>Distance to the forest estate:</b> % of the respondents, p-value 0.042					
< 0.5 km	40	29	31	100	127
0.6-5 km	32	39	29	100	141
5.1-50 km	26	39	35	100	141
>50.1 km	22	32	46	100	65
<b>Place of residence:</b> % of the respondents, p-value 0.050					
City (Tallinn and Tartu)	21	46	33	100	72
Rural area	33	34	33	100	402
<b>Proportion of forest related income</b> % of the respondents, p-value 0.015					
0%	34	32	34	100	238
0.1-5%	28	39	33	100	64
5.1-10%	32	43	25	100	44
10.1-20%	10	60	30	100	42
20.1-40%	36	31	33	100	39
>40%	34	24	42	100	47
<b>All forest owners</b>	31	35	34	100	474

Distance to the forest estate was the only background variable for which differences were detected in information and training needs concerning the quality and value of timber (Factor II, see Factor analysis in Table 27, on Page 30).

**Table 30.** *The differences between background variables in information and training needs regarding quality and value of timber.*

BACKGROUND CHARACTERISTICS OF THE RESPONDENT FOREST OWNERS	Quality and value of timber, (Factor II, see Table 27 on Page 30)				n
	1= A lot	2= Moderately	3= Little	In total	
<b>Distance to the forest estate:</b> % of the respondents, p-value 0.050					
< 0.5 km	35	42	23	100	127
0.6-5 km	33	28	29	100	141
5.1-50 km	41	26	33	100	141
>50.1 km	35	31	34	100	65
<b>All forest owners</b>	36	32	32	100	474

As for information concerning the quality and value of timber, the results indicate that the distance between forest owners place of residence and the forest estate would have an impact on information needs. Anyhow, the result remains quite vague and no clear difference between the forest owner groups is difficult to observe (see Table 30).

A few statistically significant differences between various forest owner groups were detected concerning information needs about forest management and forest diseases (Factor III, see Factor analysis in Table 27, Page 30). Quite naturally, forest owners who have a forestry degree need less information about forest management and forest diseases than owners with less or no forestry related education. Also taking shorter courses in forestry reduces information needs a little if compared with owners that have no forestry-related education at all.

It is very natural that the period of forest ownership has an impact on information needs: The shorter the period of forest ownership, the more the owner needs information about forest management and forest diseases, and vice versa. Moreover, forest owners who currently generate very little or no income from their forests need relatively more information and training about forest management and forest diseases than those forest owners who receive at least some incomes from forests and vice versa.

Vocational status has an impact on information and training needs concerning forest management and forest diseases: Farmers need relatively less information and training on forest management and forest diseases than forest owners having some other vocation. In addition, those forest owners who live apart from their estates need relatively more information about forest management and forest diseases than forest owners living close to their forests. These two observations may be connected because farmers probably live close to their forests more commonly than other forest owners.

**Table 31.** *The differences between background variables in information and training needs regarding forest management and forest diseases.*

BACKGROUND CHARACTERISTICS OF THE RESPONDENT FOREST OWNERS	Forest management and forest diseases, (Factor III, see Table 27 on Page 30)				
	1= A lot	2= Moderately	3= Little	In total	n
<b>Forestry related education:</b> % of the respondents, p-value 0.000					
No forestry-related education	45	34	21	100	277
Participation in forestry course	32	34	34	100	47
Forestry training in connection with agricultural training	42	34	24	100	84
Forestry degree	9	26	65	100	66
<b>Vocational status:</b> % of the respondents, p-value 0.030					
Wage-earner	43	30	27	100	178
Farmer	25	41	34	100	95
Entrepreneur	41	25	24	100	81
Pensioner	37	38	25	100	79
Currently unemployed	39	31	30	100	23
Other	65	30	5	100	17
<b>Starting point of forest ownership:</b> % of the respondents, p-value 0.006					
Between 1996-2000	42	33	25	100	243
Year 1995 and before	29	35	36	100	167
After year 2000	52	30	18	100	64
<b>Distance to the forest estate:</b> % of the respondents, p-value 0.019					
< 0.5 km	32	32	36	100	127
0.6-5 km	31	37	32	100	141
5.1-50 km	45	33	22	100	141
>50.1 km	51	28	21	100	65
<b>Proportion of forest-related income</b> % of the respondents, p-value 0.000					
0%	48	30	22	100	238
0.1-5%	41	36	23	100	64
5.1-10%	23	34	43	100	44
10.1-20%	26	45	29	100	42
20.1-40%	23	41	36	100	39
>40%	26	26	48	100	47
<b>All forest owners</b>	<b>38</b>	<b>33</b>	<b>29</b>	<b>100</b>	<b>474</b>

Considerable differences between respondent groups were found in information needs for markets, environment and co-operation between forest owners (Factor V, see Factor analysis in Table 27 on Page 30). Table 32 shows that 30-64-year-old forest owners, i.e. persons being active in the working life, need information and training on these issues more than younger and older forest owners. Instead, forest owners who have academic education need less information about this issue than other forest owners.

Quite interestingly, it seems that forestry education increases the need for information about markets, co-operation and environment while it reduced information needs about

forest management. This study did not analyse the reasons for this, but perhaps forestry related education in Estonia does not cover market- and environmental issues very comprehensively.

**Table 32.** *The differences between background variables in information and training needs regarding markets and co-operation between forest owners.*

BACKGROUND CHARACTERISTICS OF THE RESPONDENT FOREST OWNERS	Markets and co-operation between forest owners, (Factor V, see Table 27 on Page 30)				
	1= A lot	2= Moderately	3= Little	In total	n
<b>Age:</b>	<b>% of the respondents, p-value 0.011</b>				
20-29	14	32	54	100	28
30-49	34	40	26	100	210
50-64	38	33	29	100	159
65-74	23	37	40	100	67
>75	10	60	30	100	10
<b>Professional education:</b>	<b>% of the respondents, p-value 0.050</b>				
Comprehensive school	34	32	34	100	44
College –level	35	39	26	100	267
University degree	26	35	39	100	163
<b>Forestry-related education:</b>	<b>% of the respondents, p-value 0.016</b>				
No forestry-related education	29	34	37	100	277
Participation in forestry course	47	38	15	100	47
Forestry training in connection with agricultural training	29	44	27	100	84
Forestry degree	38	39	23	100	66
<i>Table continues as Table 34</i>					

Forest owners who have largest forest estates (>20 ha) need more information and training about markets and co-operation between forest owners than forest owners with smaller forest estates. The place of residence also seems to have an impact on the forest owners' information needs: Forest owners living in Tallinn, Harjumaa, Järvamaa, Raplamaa, Pärnumaa, Hiiumaa, Saaremaa, and Läänemaa, i.e., in northern and western parts of Estonia need relatively more information in this field than forest owners living in other parts of Estonia. The above-mentioned regions each have coastline whereas the rest of the provinces do not have coastline. However, it is not clear why markets, environment and co-operation seem to be a more important issue in these regions than in the inland regions.

**Table 33.** Table 32 continues:

BACKGROUND CHARACTERISTICS OF THE RESPONDENT FOREST OWNERS	Markets and co-operation between forest owners, (Factor V, see Table 27 on Page 30)				
	1= A lot	2= Moderately	3= Little	In total	n
<b>Forest area of the respondent: % of the respondents, p-value 0.003</b>					
Under 1 ha	29	14	57	100	7
1-4.9 ha	16	46	38	100	69
5-9.9 ha	34	33	33	100	73
10-19.9 ha	27	33	40	100	115
20-49.9 ha	39	39	22	100	156
>50 ha	43	37	20	100	54
<b>Province or city of the respondent: % of the respondents, p-value 0.050</b>					
Tallinn, Harjumaa, Järvamaa, Raplania	37	34	29	100	154
Ida-Virumaa, Lääne-Virumaa, Jõgevamaa	31	39	30	100	85
Tartu, Pölvamaa, Viljandimaa, Valgamaa, Võrumaa, Tartumaa	23	42	35	100	148
Pärnumaa Hiiumaa, Saaremaa, Lääne-maa	40	33	27	100	87
<b>Proportion of forest related income % of the respondents, p-value 0.005</b>					
0%	29	32	39	100	238
0.1-5%	30	47	23	100	64
5.1-10%	48	30	22	100	44
10.1-20%	26	55	19	100	42
20.1-40%	33	46	21	100	39
>40%	43	32	25	100	47
<b>All respondents</b>	<b>32</b>	<b>37</b>	<b>31</b>	<b>100</b>	<b>474</b>

Furthermore, the forest owners who are economically at least somewhat dependent on forests need more information and training about markets, environment and co-operation than those forest owners who do not receive any incomes from their forests. This result must be considered quite expected.

#### 4.3.3. Sources for forestry related information

The respondents were asked how much they have used various information sources in searching for information about forestry-related issues (often / sometimes / never). Table 34 summarises the results.

**Table 34.** *The use of various information sources in searching for information about forestry-related issues.*

Information source:	Often	Sometimes	Never	In Total (%)	n
	% of respondents				
Journals and periodicals	46.3	51.8	1.9	100	568
Own experience	43.3	48.3	8.4	100	545
Literature	38.2	53.8	8.0	100	552
Forest experts	21.1	51.4	27.5	100	541
Relatives and acquaintances	20.3	55.7	24.0	100	546
Timber procurers	15.6	46.7	37.7	100	539
Mass media (television, internet, radio)	13.2	69.6	17.2	100	552
Local forest authorities	12.4	50.2	37.4	100	538
Meetings organised for forest owners	8.3	45.5	46.2	100	543
Associations for forest owners	5.0	21.9	73.1	100	538
Co-operatives of forest owners	3.2	16.3	80.5	100	527
Environmental organisations	2.8	36.6	60.6	100	538

Forest owners use most commonly journals and periodicals in searching for information about forestry. In addition, forest owners rely on literature quite often. Environmental organisations, co-operatives of forest owners and associations of forest owners have been the most rarely used information sources.

The result probably reflects the availability of various information sources; such sources are most commonly used that are most easily available. For example, the number of forest owners' organisations or environmental organisations is quite small in Estonia and this may be one reason why these sources have been used only by a minority of forest owners.

#### **4.3.4. Willingness to pay for forestry related information and training**

Forest owners were also asked about their willingness to pay for forestry-related information and training by using a discrete scale yes / no / cannot answer. Table 35 also shows statistically significant differences between respondent groups.

**Table 35.** *The respondents' willingness to pay for forestry-related information and training.*

	Yes	No	Cannot answer	In Total	n
	% of respondents			(%)	
<b>All respondents</b>	<b>33</b>	<b>13</b>	<b>54</b>	<b>100</b>	<b>584</b>
<b>Gender</b>	<b>% of the respondents, p-value 0.005</b>				
Male	37	11	52	100	445
Female	22	16	62	100	139
<b>Professional education</b>	<b>% of the respondents, p-value 0.000</b>				
Comprehensive school	6	27	67	100	71
College level	35	11	54	100	315
University degree	39	10	51	100	198
<b>Forestry related education</b>	<b>% of the respondents, p-value 0.001</b>				
No forestry-related education	25	14	61	100	354
Participation in forestry course	45	9	46	100	54
Forestry training in connection with agricultural training	43	10	47	100	100
Forestry degree	45	11	44	100	76
<b>Forest area of the respondent</b>	<b>% of the respondents, p-value 0.003</b>				
Under 1 ha	33	17	50	100	12
1-4.9 ha	26	19	55	100	89
5-9.9 ha	25	13	62	100	97
10-19.9 ha	27	13	60	100	139
20-49.9 ha	36	10	54	100	187
>50 ha	57	7	36	100	60
<b>Proportion of forest related income</b>	<b>% of the respondents, p-value 0.000</b>				
0%	28	16	56	100	317
0.1-5%	15	13	72	100	71
5.1-10%	36	8	56	100	50
10.1-20%	36	8	56	100	50
20.1-40%	61	5	34	100	44
>40%	54	8	38	100	52

One third of the respondent forest owners assumed that in principle, they would be willing to pay for forestry-related information and training. However, 54 % of the respondents could not make up their opinion on this issue, i.e., there is quite strong unconsciousness about the issue.

It is worth noting that the question does not indicate that how much the forest owners are willing to pay for forestry-related information and training. In practice, the cost and type of information and training probably have an important impact on the willingness to pay. In the study of Karppinen (1996) 61% of the respondents assumed to be willing to pay for the extension services, so the willingness to pay seems to have decreased somewhat.

Anyhow, male forest owners seem to be more willing to pay for forestry-related information and training than females. In addition, forest owners with university degree, and forest owners with a forestry degree are generally more willing to pay for forestry-related information and training than forest owners without academic or forestry related degrees.

The size of the forest estate and the proportion of the forestry-related income seem to have an impact on the willingness to pay for forestry-related information and training, too. Forest owners who have the largest forest areas and receive quite a significant share of their annual incomes from forests are more willing to pay than forest owners.

It seems that Estonian forest owners would prefer either a private information and training provider or a forest-owners’ organisation for supplying the chargeable information services (see Table 36).

**Table 36.** *The preferred chargeable information and training providers.*

	<b>Best provider</b>	<b>Second best provider</b>	<b>Third best provider</b>	<b>In Total (%)</b>	<b>n</b>
	<b>% of respondents</b>				
Private information and training provider	50.5	34.0	15.5	100	491
Co-operation owned by private forest owners	43.9	39.2	16.9	100	474
Public information and training provider	9.3	24.3	66.4	100	490

**4.3.5. The preferred information channels**

Forest owners were asked which information channel they prefer in providing information and training about various forestry-related issues. They were asked to select the best of the given three alternatives: courses organised for forest owners, printed and AV information, and personal guidance. In Table 37, the preferred information channels for various forestry-related issues have been highlighted in grey.

**Table 37.** *The preferred channels for forestry-related information and training.*

Forestry related information issue	Information channel			In Total (%)	n
	Courses organised for forest owners	Printed and AV information	Personal guidance		
	% of respondents				
Forest diseases and pest control	<b>44.3</b>	32.5	23.2	100	535
Forest management	<b>41.6</b>	30.4	28.0	100	529
Regeneration (tree specie selection, soil cultivation)	<b>39.1</b>	37.4	23.5	100	532
Economic matters, investment options, taxation etc.	<b>36.9</b>	31.7	31.4	100	537
Use of safety equipment	30.7	<b>64.9</b>	4.4	100	522
Safe working practices	30.3	<b>64.3</b>	5.4	100	521
Timber markets and trade	27.5	<b>60.2</b>	12.3	100	527
Efficient working methods	33.5	<b>59.7</b>	6.8	100	519
Environmental issues (incl. certification)	35.4	<b>56.0</b>	8.6	100	520
Servicing of working equipment	32.5	<b>51.9</b>	15.6	100	520
Quality requirements of timber	36.8	<b>51.7</b>	11.5	100	530
Measurement of timber	36.1	<b>46.2</b>	17.7	100	526
Planning the site (e.g. forwarding roads, ditching)	28.1	<b>36.9</b>	35.0	100	526
Planning the cutting and thinning (e.g. tree selection)	23.8	26.1	<b>50.1</b>	100	529
Legal matters (e.g. in procuring logging permission)	31.7	31.7	<b>36.6</b>	100	530

In general, Estonian forest owners seem to prefer printed and audiovisual information. However, it should be noted that regarding legal and economic matters, forest diseases, and pest control, issues where the information needs are the strongest, courses and personal guidance are the most preferred channels. Also planning the harvests and forest regeneration are issues where forest owners would prefer having interactive and personal advice. Overall, it seems that the stronger the information need is, the more personal advice is preferred.

#### **4.3.6. Membership in forest owners' organisations**

The forest owners were asked about their membership of forest owners' organisations. If they belonged to such an organisation, they were additionally asked for the name of the organisation. Table 38 presents the statistically significant differences between respondent groups regarding this issue.

**Table 38.** *Private forest owners' membership in owner organisations in Estonia, 2001.*

	Yes	No	In Total (%)	n
	% of respondents			
<b>All respondents</b>	<b>12</b>	<b>88</b>	<b>100</b>	<b>584</b>
<b>Professional education:</b>	<b>% of the respondents, p-value 0.035</b>			
Comprehensive school	3	97	100	71
College level	13	87	100	315
University degree	14	86	100	198
<b>Forestry related education:</b>	<b>% of the respondents, p-value 0.029</b>			
No forestry-related education	10	90	100	354
Participation in forestry course	24	76	100	54
Forestry training in connection with agricultural training	13	87	100	100
Forestry degree	12	88	100	76
<b>Forest area of the respondent:</b>	<b>% of the respondents, p-value 0.002</b>			
Under 1 ha	0	100	100	12
1-4.9 ha	7	9	100	89
5-9.9 ha	11	89	100	97
10-19.9 ha	12	88	100	139
20-49.9 ha	11	89	100	187
>50 ha	28	72	100	60

Only a minor proportion (12%) of the respondent forest owners belonged to some forest owners' organisation. Forest owners who have participated in forestry courses or own relatively large forest estates are more often members of owner organisations than the other forest owners. In other words, activity in forestry related matters or economic importance of forestry are linked with activity also in forest owners' co-operation.

## 5. SUMMARY AND DISCUSSION

### 5.1. PURPOSE AND IMPLEMENTATION OF THE STUDY

The structure of forest ownership in Estonia is continuously changing. Due to the land reform process the number of privately owned forest holdings may approach 100 000, and thus the number of individual persons owning forest may grow even larger than this. The share of privately owned forest is expected to increase to close to 60% in Estonia, which will account for 1-1.2 million hectares of forestland.

Most of the new private forest owners have little or no experience in forestry. Therefore, there is a clear need to provide forestry-related information and training for the new owners. The results of this study are aimed to be use in developing these services. Thus, the primary purpose of this study was to describe Estonian private forest owners' information and training needs related to forestry. This study also described the structure of Estonian private forest owners and their objectives related to forest ownership.

The primary data were collected through a mail survey in October 2001. A five-page questionnaire was sent to 844 private forest owners from the address registers of the Private Forest Centre (Erametsakeskus) and the Estonian Private Forest Union (Eesti Erametsaliit). The validity and the reliability of the data and results are discussed in Chapters 2.1. and 5. In total, 584 owners returned an acceptable questionnaire. In addition, 17 persons responded informing that they were no longer forest owners, seven owners were not reached at all and two respondents were dead. The final response rate is thus 71%, when calculated using the corrected sample of 818 forest owners. In the analysis of the primary data, means, distributions, factor analysis, factor score coefficients and cross-tabulation were used.

### 5.2. MAIN RESULTS OF THE STUDY

The respondents of this study quite accurately represent the population of Estonian forest owners, despite the size of the forest estate. The average duration of forest ownership in this study was approximately 4 years that is similar to that of Estonian forest owners as a whole. In addition, the respondents of this study had mainly acquired their forest holdings through returning, which is the most common method among all Estonian forest owners. The distance between the respondents' place of residence and their forest estate is also similar to that of Estonian private forest owners as a whole. Most of the forest owners live closer than 5 km from their forest estates<sup>12</sup>.

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<sup>12</sup> See Centre of Forest Protection...2001<sup>2</sup>. The data of this study was collected using the systematic sampling procedure and thus more accurately represents the whole population of Estonian private forest owners.

However, the respondents of this study differed from average Estonian private forest owners in certain issues. As mentioned above, *the average size of the respondents' forest estates was significantly larger than that of all Estonian forest owners (35.4 ha versus 10.5 ha)*. The proportion of female respondents was smaller in this study than what is their actual proportion (24% versus 39%). The respondents of this study were also a little younger (average age 52 years) than Estonian forest owners on average are (55 years).

The results show that *the procurement of household timber, both firewood and construction timber, and economic security were the most important forest ownership objectives*. Nature conservation and landscape values were also emphasised quite strongly.

Only one in ten of the respondents of this study belonged to a forest owners' organisation. The degree of organisation is even clearly lower among Estonian owners as a whole. Approximately every other forest owner had made a timber sale on commercial markets at least once during their forest ownership. The average quantity of a sale was 75 m<sup>3</sup>.

*Overall, forest owners need most strongly information about legal and economic matters related to forestry, and forest diseases and pest control. Around 80% of forest owners need very much or much information in these matters.* Forest management and round wood markets as well as environmental issues are also among the most important information needs. The main findings regarding forestry-related information needs are summarised in Table 39.

**Table 39.** *Private forest owners' information and training needs in Estonia.*

<b>Forest related issue:</b>	<b>% of the respondents who need very much or much information and training</b>	<b>The most preferred information channel</b>
Legal matters (e.g. in procuring logging permission)	82	<b>Personal guidance</b>
Forest diseases and pest control	80	<b>Courses for forest owners</b>
Economic matters, investment options, taxation etc.	77	<b>Courses for forest owners</b>
Quality requirements of timber	70	<b>Courses for forest owners</b>
Forest management	65	<b>Courses for forest owners</b>
Regeneration (tree species selection, soil cultivation)	64	<b>Courses for forest owners</b>
Environmental issues (incl. certification)	60	<b>Printed and AV information</b>
Round wood markets: prices and timber buyers	57	<b>Printed and AV information</b>
Measurement of timber	50	<b>Printed and AV information</b>
Methods and standards in wood trade	46	<b>Printed and AV information</b>
Planning the site (e.g. forwarding roads, ditching)	45	<b>Printed and AV information</b>
Planning the cutting and thinning (e.g. tree selection)	44	<b>Personal guidance</b>
Efficient working methods	40	<b>Printed and AV information</b>
Use of safety equipment	36	<b>Printed and AV information</b>
Forest industry markets	36	<b>Printed and AV information</b>
Servicing of working equipment	35	<b>Printed and AV information</b>
Safe working practices	28	<b>Printed and AV information</b>

Forest owners mostly prefer having information through printed or audiovisual channels (Table 37 on Page 42). Printed information has been the most often used channel (see Table 34, on Page 39). *However, personal guidance and courses are the most preferred channels in those issues where the respondents need information most strongly.* In other words, the forest owners find personal contacts and the possibility to communicate interactively quite necessary when the issue is regarded as very important, such as legal and economic questions.

*Every third of the respondent forest owners (33%) estimated that they would be willing to pay something for forestry-related information/training services.* Most forest owners however had difficulty to make up their mind regarding this matter.

The above-listed detailed information issues were condensed by factor analysis into five more broad "information areas" or dimensions (based on their importance ratings): *1. Working practices, 2. Quality and value of timber, 3. Forest management, 4. Legal and economic matters and 5. Markets, environment and co-operation between forest owners.* Table 40 shows those forest owner groups that most strongly need information/training regarding each information dimension.

The very basic demographic characteristics of forest owners, gender and age, seem to have quite few linkages with information needs. Instead, the general and forestry related

education level, size of the forest estates and thus forest related incomes are related to information and training needs. As well, it matters whether the forest owner lives at the forest estate or very close to it, or whether the owner lives far away from his/her forests. Quite expectedly, the duration of forest ownership period is also linked with the information needs.

The level of owners' forestry related education is related to information needs in two ways: Owners with some forestry level education need more information about markets, environment and co-operation issues than other owners. Instead, owners with some forestry education need less information about forest management than owners without forest education. Incomes from forests seem to have similar relationship with these information needs: Owners who receive at least some incomes from forests need more information about markets, environment and co-operation than forest owners with no or very small incomes. However, the latter ones need more information about forest management.

The distance between forests and forest owner's place of living are also quite clearly related to information needs: Owners living very close to their forests are more interested to get information about forest working practices than owners living away from their forests. Instead, owners living apart from their forests need more information about timber quality issues and forest management than owners living close to forest estates.

**Table 40.** *The broad information and training dimensions, and forest owner groups needing most strongly information and training about each area.*

Forest related information and training need dimensions (see also Table 27, on Page 30)	Respondent groups needing most strongly information in the dimension:
<b>1. Working practices:</b> "Rural forest owners, particularly owners living very close to their forest estates "	<b>Forest owners that</b> <ul style="list-style-type: none"> <li>• Have <u>comprehensive school</u> education</li> <li>• Live <u>&lt; 0.5 km</u> from their forest estates, i.e. very close to the forest</li> <li>• Live in <u>rural areas</u></li> </ul>
<b>2. Quality and value of timber:</b>	<b>Forest owners that</b> <ul style="list-style-type: none"> <li>• Live <u>&gt; 5 km</u> from their forest estates</li> </ul>
<b>3. Forest management:</b> "New urban forest owners, owners with little knowledge on forestry, and also owners with relatively large holdings"	<b>Forest owners that</b> <ul style="list-style-type: none"> <li>• Have <u>no or little forestry-related education</u></li> <li>• Are <u>not farmers (are wage-earners, entrepreneurs etc.)</u></li> <li>• That have <u>owned forests since 1996 or shorter time</u></li> <li>• Live <u>&gt; 5 km</u> from their forest estates</li> <li>• Receive <u>no or very little income</u> from their forests</li> <li>• Have <u>&gt; 20 ha</u> forests (see Table 28)</li> </ul>
<b>4. Legal and economic matters:</b>	Important for <u>all forest owners</u> ; no differences were detected between owner groups
<b>5. Markets, environment and co-operation between forest owners:</b> "Owners with large holdings, owners with some forestry education, and owners for whom forests have economic importance"	<b>Forest owners that</b> <ul style="list-style-type: none"> <li>• Are <u>30-64 years</u> old</li> <li>• Have <u>comprehensive school/college level</u> education</li> <li>• Have already <u>some forestry education</u> (courses or full degree in forestry)</li> <li>• Have <u>&gt; 20 ha</u> forests</li> <li>• Live in Pärnumaa, Hiiumaa, Saaremaa, Läänemaa</li> <li>• Receive <u>some income annually</u> from their forests</li> </ul>

### 5.3. DISCUSSION

A sufficient knowledge base of private forest owners is considered necessary for securing both the economic and ecological sustainability of private forestry. The ownership structure of Estonian private forests is still developing due to the ongoing land reform process: The number of forest owners will increase, and the importance of developing well-functioning information and training services for these owners will increase accordingly. The aim of this study is determine these information and training needs.

The validity and reliability of the results was assured by acquiring appropriate background information when designing the questionnaire, testing the questionnaire both by experts and through a telephone survey, and by comparing the test data of telephone survey with the mail survey data. No differences were detected in this comparison. In addition, the relatively high response rate of 71%, and the sufficiently high number of respondents (544) assures the reliability of the study.

The reliability was also assured by selecting such forest owners as the sample that had been at least somewhat active in forestry matters (forest owners in the registers of Eesti Erametsaliit (Estonian Private Forest Union) and Erametsakeskus (Private Forest Centre)). These forest owners have larger forest estates than Estonian forest owners on average have, which may cause some bias. In most aspects, however the respondent forest owners in this study represent quite well all the forest owners in Estonia, and the results are quite consistent with other studies, including those based on systematic samples. Anyhow, some caution is needed when generalising the results of this study into the whole forest owner group in Estonia.

The results show that the availability of household timber and economic security that the forest provide have remained among the most important objectives for forest ownership from mid-1990s to early 2000s. In addition, environment and landscape values are very important, and more important than incomes from timber sales or recreation. The result probably reflects the fact that many Estonian forest owners have not made any timber sales so far. In addition, many forest owners live apart from their forests and this limits the recreational use of their own forests. These observations are fairly well in line with a recent study conducted by the Centre of Forest Protection and Silviculture (see Centre of Forest Protection...2001<sup>2</sup>).

Private forest owners consider legal and economic infrastructure as more problematic in Estonian private forestry than physical forestry infrastructure or even forest management issues. In more detail, Estonian forest owners think that illegal logging (forest thefts), taxation, lack of investment capital, forest legislation and its implementation and control are among the most significant problems in private forestry. Also lack of knowledge capital and information resources are considered serious problems. Illegal logging (forest thefts) is currently considered more significant problem than in mid-1990s (see Karppinen 1996).

The objectives for forest ownership and problems in private forestry are reflected in forest owners' information needs: Information is needed most strongly about legal and economic issues, but also about forest diseases and pest control. These results are quite similar with the study by the Centre of Forest Protection and Silviculture 2001<sup>2</sup>. In addition, there are quite strong information needs about forest management, environmental matters and round wood markets. The broad lines in forest owners' information needs have not changed dramatically during the last few years: Karppinen (1996) showed that Estonian forest owners needed most often information about legal and silvicultural problems.

The forest owners' information needs concerning economic and legal matters is not surprising. Estonia transferred to a market economy at the beginning of the 1990s. Legislation is thus young, it is still developing and implementation and control practices are thus still developing. The strong information needs about forest diseases and pest control may be initiated due to the forest damage caused by a storm in Estonia in the autumn of 2001, i.e., just before this survey was carried out.

Overall, forest owners need information about all forestry-related issues at least moderately much, even on safety and other forest work issues that they considered the least important. This is well in line with the fact that forest owners consider insufficient information and knowledge base among the serious problems in Estonian private forestry. Accordingly, there is a clear need for extending the information and training services.

The content of information is probably the most important matter when developing information and extension services, but also the information channels matter. This study suggests that the more important the issue is, the more the forest owners prefer interactive channels, such as personal guidance and courses. In the study by the Centre of Forest Protection and Silviculture (2001<sup>2</sup>), the respondents however preferred printed information also on legal matters, which are considered very important issues. Perhaps legal and economic matters are even greater importance to those forest owners who have relatively large forest estates than for "average" Estonian forest owners.

The acquisition of household timber is the most important objective of forest ownership for many owners, and only a minor proportion of them possess safety equipment. Despite this, Estonian forest owners have the least information needs about safety in forest work. This does not necessarily indicate that safety and efficiency in forest work are not matters where information and training would not deserve more attention.

Broadly speaking, Estonian private forest owners seem to prefer quite similar channels in searching for forestry-related information to Finnish forest owners. However, Finnish private forest owners seem to prefer personal guidance even more than Estonian forest owners (see Karppinen et al. 2002). One explanation for this may be that the availability of training services is scarce in Estonia.

The results of this study suggest that strong emphasis should be put on courses or other advisory services that focus on legal and economic matters when developing information services for private forest owners in Estonia. Important and thus urgent issues also are forest management, environmental questions, forest diseases and pest control and round wood markets. The distribution of printed information might be anyhow a rele-

vant solution in the beginning phase regarding any of these information issues: Printed information easily reaches large number of forest owners and with reasonable costs.

This study suggests that information and training may be demanded and utilised somewhat differently by different forest owner groups: Self evidently, owners who quite recently have acquired their forests need particularly much information about forest management. Instead, markets and environment as well as co-operation between forest owners would interest particularly such owners who already are somewhat familiar with forestry: Owners who have some forestry related education, quite large forest estates or some incomes from forestry. Forest owners living on rural areas, particularly those living very close to their forests, are more interested about forest work practices but less interested about forest management than owners living apart from their forests.

The willingness to pay for information and extension services would deserve more detail analysis than what was possible in this study. Anyhow, some proportion of the forest owners might consider paying for the information services, although willingness to pay for information services seems to have decreased during the last few years.

## 6. YHTEENVETO SUOMEKSI

### 6.1. TUTKIMUKSEN TAUSTA, TARKOITUS JA TOTEUTUS

Virossa metsänomistuksen rakenne on muuttunut ja muuttuu edelleen. Maareformi nostaa yksityismetsänomistajien määrää ja yksityismetsänomistajien omistuksessa olevaa metsäalaa. Yksityismetsien määrän arvioidaan nousevan suunnilleen 60 prosenttiin Viron koko metsäpinta-alasta. Tämä vastaa noin 1-1,2 miljoonaa hehtaaria. Yksityisessä omistuksessa olevia metsätiloja arvioidaan syntyvän noin 100 000 eli yhden tilan keski-kooksi muodostuu kymmenkunta hehtaaria.

Useimmilla uusista metsänomistajista on hyvin vähän tai ei lainkaan kokemusta metsätalouteen liittyvistä asioista. Siksi Virossa on ilmeinen tarve kehittää metsänomistajille tarjottavia tieto- ja koulutuspalveluita. *Tämän tutkimuksen ensisijaisena tavoitteena on selvittää virolaisten yksityismetsänomistajien metsätalouteen liittyviä tieto- ja koulutustarpeita sekä tutkia taustaltaan erilaisten metsänomistajaryhmien välisiä eroja tieto- ja koulutustarpeissa.* Lisäksi tutkimuksessa selvitetään miten metsänomistajat mieluiten haluaisivat tätä tietoa saada. Myös Viron yksityismetsänomistuksen rakennetta kuvataan, samoin virolaisten yksityismetsänomistajien metsänomistukseen liittyviä tavoitteita ja käsityksiä Viron yksityismetsätalouden ongelmista.

Tutkimuksen aineiston kerättiin postikyselynä marraskuussa 2001. *Kysymyslomake lähetettiin 844 yksityiselle virolaiselle metsänomistajalle.* Tutkimuksen otos muodostettiin metsänomistajista, jotka olivat antaneet yhteystietonsa Viron yksityismetsäkeskukselle (Erametsakeskus) ja Viron yksityismetsänomistajien liitolle (Eesti Erametsaliit). *Yhteensä 69 % (584) kyselyyn osallistuneista palautti hyväksyttävän kysymyslomakkeen ja nämä muodostavat tutkimuksen aineiston. Kuitenkin 17 metsänomistajaa ilmoitti luopuneensa omistuksesta, 7 omistajaa ei tavoitettu väärin yhteystietojen takia ja 2 oli kuolleet, joten lopullinen otoskoko oli 818 ja vastausprosentti siten 71%.*

Otos päätettiin muodostaa yllä mainituissa rekistereissä olevista metsänomistajista, koska näiden aktiivisuutta osoittaneiden metsänomistajien otaksuttiin olevan parhaiten tietoisia metsäalaaan liittyvistä käsitteistä ja kysymyksistä. Tällä tavoin haluttiin varmistettiin korkeampi vastausprosentti ja vastausten asiantuntevuus. Molemmat seikat lisäävät luotettavuutta ja tulosten käyttökelpoisuutta. Aineiston luotettavuutta pyrittiin varmistamaan myös lomakkeen kysymysten laadintavaiheessa tukeutumalla aiempien tutkimusten ja kirjallisen aineiston lisäksi asiantuntijahaastatteluihin. Lisäksi tulosten luotettavuutta testattiin myös vertaamalla lomakkeen testausvaiheessa tehtyjen puhelinhaastattelujen ja lopullisen postikyselyn aineistoja. Vertailuissa ei havaittu eroja.

Muilta osin aineistona olevat metsänomistajat vastaavat taustapiirteiltään Viron metsänomistajakuntaa melko hyvin, mutta tämän tutkimuksen metsänomistajien metsäala on selvästi suurempi ja naisten osuus on pienempi kuin Viron metsänomistajakunnassa keskimäärin (ks. luku 4.1). Koska aineisto on painottunut suurehkojen metsälöiden omistajiin, tuloksia vertailtiin suunnilleen samaan aikaan tehdyn toisen tutkimuksen kanssa, missä 1600 metsänomistajan otos poimittiin koko metsänomistajakunnasta. (Centre of Forest Protection...2001<sup>2</sup>) sekä tilastolähteisiin.

Vertailtavilta osin tulokset ovat varsin samansuuntaiset. Tulokset ovat myös melko samanlaisia Karppisen (1996) varhaisemman tutkimuksen kanssa. Tämän tutkimuksen tulosten yleistämisessä on siten tarpeen noudattaa jonkin verran varovaisuutta, mutta kaikkiaan yleistettävyyks Viron koko yksityismetsänomistajakuntaan lienee kohtalainen.<sup>13</sup>

Empiirisen aineiston analyysissä hyödynnettiin keskiarvoja, jakaumia, faktorianalyysejä ja faktoripiste- ja ristintaulukointia sekä tilastollisia metsänomistajaryhmien välisiä eroja mittaavia testejä.

## 6.2. TUTKIMUKSEN KESKEISET TULOKSET

### METSÄNOMISTAJIEN TAUSTA

Tässä tutkimuksessa metsänomistuksen keskimääräinen pituus vuoden 2001 syksyllä oli neljä vuotta. Tämä vastaa tilannetta Viron koko yksityismetsänomistajakunnassa varsin hyvin. Metsätila on saatu haltuun enimmäkseen palautuksen kautta<sup>14</sup>. Tilanne on vastaava Virossa yleisestikin. Edelleen tämän tutkimuksen aineistona olevista metsänomistajista valtaosa asuu alle viiden kilometrin etäisyydellä tilastaan<sup>15</sup>, mikä sekkin on Viron koko yksityismetsänomistajakunnassa tyypillinen tilanne.

<sup>13</sup> Viron ympäristöministeriön teettämässä tutkimuksessa (Centre of Forest Protection...2001<sup>2</sup>) aineistopohja oli laajempi kuin tässä tutkimuksessa, mutta vastausprosentti oli alhaisempi. Tämän tutkimuksen kysymyslomakkeessa ja Viron ympäristöministeriön teettämän tutkimuksen kysymyslomakkeessa käytettiin myös varsin erilaisia kysymystyyppejä. Siltä osin kuin vertailuja oli mahdollista tehdä tulokset metsänomistajien keskeisimmistä tietotarvealueista olivat melko samanlaisia. Viron ympäristöministeriön teettämässä tutkimuksessa ei kuitenkaan analysoitu esimerkiksi metsänomistajaryhmien eroja tieto- ja koulutustarpeissa.

<sup>14</sup> Maareformissa palautetaan metsäalueet, jotka kuuluivat yksityisille metsänomistajille ennen vallankumousta vuonna 1940, alkuperäisille omistajille tai heidän jälkeläisilleen. Maareformi suoritetaan joko palauttamalla (ilmaiseksi) tai yksityistämällä (metsäalue ostetaan valtiolta huutokaupassa).

<sup>15</sup> Katso Centre of Forest Protection...2001<sup>2</sup>. Sen tutkimuksen otos poimittiin systemaattisella otannalla koko Viron yksityismetsänomistajapopulaatiosta ja edustaa siten paremmin kaikkia virolaisia yksityismetsänomistajia.

*Metsätilan keskimääräinen pinta-ala (35,4 ha) on tässä tutkimuksessa selvästi isompi kuin kaikkien Viron yksityismetsälöiden pinta-ala (10,5 ha) on keskimäärin. Lisäksi naismetsänomistajien osuus (24 %) on pienempi kuin heidän osuutensa Viron koko yksityismetsänomistajakunnassa (39 %). Tämän tutkimuksen metsänomistajat ovat myös keskimäärin hieman nuorempia (52-vuotiaita) kuin kaikki virolaiset yksityismetsänomistajat ovat keskimäärin (55-vuotiaita).*

Virolaisten metsänomistajien järjestäytymisaste on toistaiseksi matala. Vain joka kymmenes tämän tutkimuksen vastaajista kuuluu johonkin metsänomistajaorganisaatioon. Kaikkien virolaisten metsänomistajien järjestäytyneisyysaste on selvästi tätäkin alhaisempi eli arviolta vain muutaman prosentin luokkaa.

#### **METSÄNOMISTUKSEN TAVOITTEET**

Yksityismetsänomistajien tärkeimmät tavoitteet metsänomistukselle ovat kotitarvepuun, sekä poltto- että rakennuspuun, hankinta ja metsien antama taloudellinen turva. Lisäksi metsänomistajat pitävät tärkeänä tavoitteena luonnonsuojelua ja maisemanhoitoa. Vertailu Karppisen (1996) aikaisempiin tuloksiin ei osoita tavoitteissa tapahtuneen viime vuosina olennaista muutosta.

Noin puolet tutkituista metsänomistajista oli vuoden 2001 syksyyn mennessä tehnyt ainakin kerran metsänomistuksensa aikana puukaupan. Keskimäärin yhdellä kerralla oli myyty 75 m<sup>3</sup> puuta. Puukauppojen osalla on todennäköistä, että tämän tutkimuksen vastaajakunta on aktiivisempi kuin Viron yksityismetsänomistajat ovat keskimäärin. Näitä puukauppoja koskevia tietoja ei voinekaan yleistää kuvaamaan tilannetta Viron yksityismetsissä keskimäärin, vaan tulokset kuvannevat puukauppaa lähinnä suurehkojen metsälöiden omistajien keskuudessa.

#### **YKSITYISMETSÄTALOUDEN ONGELMAT**

Virolaisten yksityismetsänomistajien näkemyksen mukaan yksityismetsätalouden suurimmat yksittäiset ongelmat ovat laittomat hakkuut ja riittämätön pääoma metsätalouden investointeihin. 1990-luvun puolivälissä metsänomistajat arvioivat metsävarkaudet vähäiseksi ongelmaksi (Karppinen 1996). Muutos saattaa merkitä sitä, että laittomat hakkuut ovat yleistyneet. Toisaalta sekin on mahdollista, että metsänomistajat ovat nykyään ainoastaan paremmin tietoisia asiasta.

Tällä hetkellä myös *verotuksen epäkohdat* ovat metsänomistajien mielestä yksityismetsätalouden suurimpia ongelmia<sup>16</sup>. Merkittäväksi ongelmaksi koetaan sekin, että monet

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<sup>16</sup> Nykyinen verotuskäytäntö on selitetty kappaleessa 1.5 sivulla 7

*metsänomistajat asuvat etäällä metsistään sekä yksityismetsätalouteen liittyvän traditi-  
on ja tietopääoman puuttuminen. Lakien puutteellinen toimeenpano ja valvonta ovat  
kohtalaisia ongelmia, samoin pitkäksi venähtänyt maareformiprosessi.*

Järjestelmien kehittymättömyys puukaupassa, koulutuksessa sekä neuvonnassa nähdään  
jonkinasteisena ongelmana, samoin fyysisen infrastruktuurin kuten koneiden tai metsä-  
teiden puute. Nämä ovat kuitenkin pienempiä ongelmia kuin edellä luetellut.

## TIETOTARPEET

Viron metsänomistajien tarvitsevat kaikkein eniten tietoa oikeudellisista sekä taloudelli-  
sista asioista sekä metsätuhoista. Yli kolme neljäsosaa vastaajista katsoo tarvitsevansa  
näissä kysymyksissä erittäin paljon tai paljon lisätietoa ja koulutusta.

**Table 41.** *Viron yksityismetsänomistajien tieto- ja koulutustarpeet.*

<b>Metsäalaaan liittyvä asia:</b>	<b>% vastaajista, jotka tarvitsevat erittäin paljon tai paljon tietoa ja koulutusta</b>	<b>Suosituin tietokanava</b>
Oikeudelliset asiat (esim. hakkuuluvan hankkiminen)	81	<b>Henkilökohtainen neuvonta</b>
Metsäsairaudet ja tuholaisten torjunta	80	<b>Kurssit</b>
Taloudelliset asiat, sijoitusmahdollisuudet, verotus jne.	77	<b>Kurssit</b>
Puutavaran laatuvaatimukset	70	<b>Kurssit</b>
Metsäsuunnittelu	65	<b>Kurssit</b>
Metsänuudistaminen (puulajin valinta, maanmuokkaus)	64	<b>Kurssit</b>
Ympäristöasiat (ml. sertifiointi)	60	<b>Kirjallinen materiaali</b>
Raakapuumarkkinat: hinnat ja puunostajat	57	<b>Kirjallinen materiaali</b>
Puutavaran mittaus	50	<b>Kirjallinen materiaali</b>
Menetelmät ja standardit puukaupassa	46	<b>Kirjallinen materiaali</b>
Hakkuutyön suunnittelu (esim. ajourat, ojitus)	45	<b>Kirjallinen materiaali</b>
Uudistusten ja harvennusten suunnittelu (esim. puulajin valinta)	44	<b>Henkilökohtainen neuvonta</b>
Tehokkaat työmenetelmät	40	<b>Kirjallinen materiaali</b>
Turvavälineiden käyttö	36	<b>Kirjallinen materiaali</b>
Metsäteollisuustuotteiden markkinat	36	<b>Kirjallinen materiaali</b>
Työvälineiden huolto	36	<b>Kirjallinen materiaali</b>
Turvalliset työmenetelmät	28	<b>Kirjallinen materiaali</b>

*Metsänomistajat haluavat oikeudellisista asioista, metsänuudistamisesta ja harvennuk-  
sista tietoa mieluiten henkilökohtaisena neuvontana. Metsätuhoja sekä taloudellisia  
asioita koskien tieto haluttaisiin kurssien kautta. Kaikkiaan tulokset osoittavat, että  
kaikkein tärkeimmissä tietotarpeissa kirjallinen tieto ei metsänomistajien mielestä riitä:  
Halutaan mahdollisuus vuorovaikutteiseen neuvontaan, jossa yksilöllisiinkin kysymyk-  
siin voi saada vastauksen.*

Kirjallista materiaalia pidetään kuitenkin useimmissa tässä tutkimuksessa selvitettyissä tietotarvealueissa soveltuvimpana tietokanavana: Kirjallinen materiaali soveltuu hyvin niin metsätyömenetelmien, puumarkkinoiden ja puukaupan kuin ympäristöasioidenkin kohdalla tiedon levittämiseen. Kirjallista materiaalia tutkimuksen vastaajat ovat myös tähän mennessä useimmin käyttäneet etsiessään tietoa metsätalouteen liittyvistä asioista (ks. Taulukko 34 sivulla 39).

Yllä kuvatut erilliset tietotarpeet tiivistettiin faktorianalyysillä viiteen laajempaan ”tietoalueeseen” tai dimensioon: *1. työmenetelmät, 2. puutavaran laatu ja arvo, 3. metsätalouden suunnittelu ja metsäsairaudet, 4. taloudelliset ja oikeudelliset asiat ja 5. markkinat, ympäristökysymykset ja metsänomistajien välinen yhteistoiminta*. Taustaltaan erilaisten metsänomistajien tieto- ja koulutustarpeiden eroja analysoitiin näiden laajojen tietotarvealueiden suhteen.

Sukupuoli ei tämän tutkimuksen mukaan näytä olevan merkitsevä eikä ikäkään kovin merkitsevä tekijä tietotarpeiden taustalla. Eroja näyttää sen sijaan olevan sen mukaan kuinka kauan metsälö on ollut omistajan hallinnassa ja asuuko omistaja metsätilallaan tai sen välittömässä läheisyydessä vai etäämmällä. Lisäksi metsän taloudellinen merkitys ja metsälökoko sekä metsänomistajan yleinen- ja metsällinen koulutustaso ovat erojen taustalla. Merkittävää on, että vain yhden tietoalueen suhteen metsänomistajien välillä ei ole mitään eroja: Laki- ja talousasioista kaikki metsänomistajat tarvitsevat tietoja yhtä kipeästi.

Mitä tuoreempi asia metsänomistus on, sitä suurempi tietotarve metsänomistajalla on metsänhoidon suunnittelua ja metsätuhoja koskevista asioista. Samoin etäällä metsistään asuvat metsänomistajat tarvitsevat tätä tietoa enemmän kuin lähellä metsiään asuvat omistajat.

Maanviljelijöille metsätalouden suunnittelu lienee tutumpaa kuin muille metsänomistajaryhmille, sillä he tarvitsevat vähemmän tietoa metsäsuunnittelusta ja -tuhoista kuin muissa ammateissa toimivat metsänomistajat tai eläkeläiset. Sen sijaan lähellä metsiä asuvat omistajat luultavasti työskentelevät itse metsissään useammin kuin muut omistajat, sillä he tarvitsevat tietoa työskentelymenetelmistä enemmän kuin etäällä asuvat. Aktiivisessa työiässä olevat metsänomistajat tarvitsevat enemmän tietoa markkina-, ympäristö- ja yhteistoiminta-alueelta kuin nuoret, alle 30-vuotiaat tai jo eläkeiässä olevat yli 65-vuotiaat. Akateemisesti koulutetut metsänomistajat erottuvat kuitenkin ryhmänä, joka tarvitsee tältä alueelta vähemmän tietoa kuin muut.

**Table 42.** Metsänomistajaryhmät, jotka tarvitsevat eniten tietoa ja koulutusta viidessä eri tieto- ja koulutustarvedimensiossa.

Metsiin liittyvä tieto- ja koulutustarvedimensio (Ks. Taulukko 28, sivu 30)	Vastaajaryhmät, jotka tarvitsevat eniten tietoa a.o. aihepiiristä
<b>1. Työmenetelmät:</b> "Haja-asutusalueilla asuvat metsänomistajat, metsänomistajat, jotka asuvat metsätiloillaan tai niiden välittömässä läheisyydessä"	<b>Metsänomistajat, jotka</b> <ul style="list-style-type: none"> <li>Ovat suorittaneet <u>peruskoulun</u></li> <li>Asuvat alle <u>0,5 km:n etäisyydellä</u> metsätilastaan</li> <li><u>Asuvat haja-asutusalueilla</u></li> </ul>
<b>2. Puutavaran laatu ja arvo:</b>	<b>Metsänomistajat, jotka</b> <ul style="list-style-type: none"> <li>Asuvat <u>yli 5 km:n päässä</u> metsätilastaan</li> </ul>
<b>3. Metsätaloussuunnittelu ja metsätuhot:</b> "Uudet kaupunkilaismetsänomistajat, etäomistajat, muut kuin viljelijä-metsänomistajat"	<b>Metsänomistajat, jotka</b> <ul style="list-style-type: none"> <li><u>Eivät ole saaneet mitään tai vain vähän metsäalan koulutusta</u></li> <li>Ovat <u>palkansaajia, yrittäjiä tai ylipäättään muussa ammatissa kuin maanviljelijöinä</u></li> <li>Ovat <u>omistaneet metsää vuodesta 1996 tai vähemmän aikaa</u></li> <li>Asuvat <u>yli 5 km:n päässä</u> metsätilastaan</li> <li>Eivät ole toistaiseksi saaneet <u>lainkaan tai vain vähän tuloja</u> metsistään</li> <li>Omistavat <u>yli 20 ha</u> metsää</li> </ul>
<b>4. Taloudelliset ja oikeudelliset asiat:</b> "kaikki metsänomistajat"	Tärkeitä <b><u>kaikille metsänomistajille</u></b> ; eroja eri vastaajaryhmien välillä ei havaittu
<b>5. Markkinat, ympäristö ja metsänomistajien välinen yhteistyö:</b> "Ei-akateemiset metsänomistajat, suurten metsätilojen omistajat, työelämässä mukana olevat metsänomistajat, metsänomistajat, joille metsät ovat jo antaneet taloudellista tuloa, Lounais-Viron rannikoilla tai saarilla asuvat metsänomistajat"	<b>Metsänomistajat, jotka</b> <ul style="list-style-type: none"> <li>Ovat <u>30-64-vuotiaita</u></li> <li>Suorittaneet <u>perus- tai keskiasteen tutkinnon</u></li> <li>Ovat osallistuneet jonkinlaiseen metsäalan koulutukseen</li> <li>Omistavat <u>yli 20 ha</u> metsää</li> <li>Asuvat Pärnumaan, Hiiumaan, Saaremaan, Läänemaan maakunnissa</li> <li>Saavat <u>jonkin verran tuloja</u> metsistään</li> </ul>

Metsänomistajien yleistä halukkuutta maksaa metsänomistajille tarjottavista tieto- ja koulutuspalveluista selvitettiin myös. *Kolmasosa vastaajista arvioi olevansa valmis maksamaan ainakin jonkin verran tietoa- ja koulutuspalveluista.* Toisaalta noin puolet vastaajista ei osannut sanoa mielipidettään ja 13 % ei ollut valmis maksamaan metsänomistajille tarjottavista palveluista. Tulos on vain suuntaa-antava, sillä kysymyksessä ei eritelty minkälaisesta palvelusta on kyse tai kuinka paljon metsänomistajat ovat valmiita maksamaan. Lisäksi näyttää siltä, että maksuhalukkuus metsänomistajien keskuudessa on hieman hiipunut 1990-luvun puolesta välistä, jolloin valtaosa (61 %) metsänomistajista arveli olevansa halukas maksamaan koulutuspalveluista (ks. Karppinen, 1996).

### 6.3. PÄÄTELMÄT

Viron yksityismetsänomistajilla on merkittävää ja moninaista tiedon tarvetta metsätalouteen liittyvistä asioista. Yksityismetsänomistajat myös arvioivat tiedon ja koulutuksen puutteen kohtalaiseksi vakavaksi ongelmaksi Viron metsätaloudessa, joskaan ei kaikkein vakavimmaksi ongelmaksi. Joka tapauksessa tämän tutkimuksen tulosten valossa on olemassa ilmeinen tarve kehittää metsänomistajille tarjottavia tieto- ja koulutuspalveluita Virossa. Tämä tarve kasvaa lähivuosina edelleen, sillä yksityisomistuksessa olevien metsien pinta-ala ja samalla yksityismetsänomistajien määrä ovat kasvussa keskeneräisen maareformin takia.

Oikeudelliset ja taloudelliset asiat sekä metsäsairaudet ja tuholaisien torjunta ovat asioita, joista virolaiset metsänomistajat tarvitsevat eniten tietoa ja koulutusta. Tulos on samansuuntainen Viron ympäristöministeriön (Centre of Forest Protection...2001<sup>2</sup>) teettämän tutkimuksen tulosten kanssa. Vähiten tietotarpeita Viron metsänomistajilla on työmenetelmien tehokkuutta ja turvallisuutta koskien – siitäkään huolimatta, että kotitarvepuun saaminen on monille metsänomistajille tärkein metsänomistuksen tavoite. Vähemmistöllä metsänomistajista myöskään on työturvavälineitä. Tulokset eivät täten välttämättä osoitakaan, että näitä asioita koskeva tieto ei olisi tarpeellista, vaan asian merkittävyyttä saattaisi olla tarpeen korostaa.

Mitä tärkeämpänä tietoa pidetään, sitä enemmän metsänomistajat haluaisivat saada tätä interaktiivisessa tilanteessa, eli henkilökohtaisena neuvontana tai kursseilla. Sinänsä kirjallinen muoto on metsänomistajien keskuudessa kuitenkin varsin suosittu tapa saada metsäalaa koskettavaa tietoa.

Tämän tutkimuksen perusteella yksityismetsänomistajille suunnattavan tietopalveluiden sisältöön tarvitaan tietoa metsäsuunnittelusta, metsänuudistamisesta ja metsätuhoista. Näitä käsittelevää tietoa metsänomistajat haluaisivat mieluiten kursseilta. Tietoa tarvitaan runsaasti myös puumarkkinoista, puukaupan teosta ja raakapuun laatuvaatimuksista ja mittauksesta sekä ympäristöseikoista metsäsertifiointi mukaan lukien, mutta näiden kohdalla kirjallinen materiaali on useimpien metsänomistajien mielestä riittävää. Kirjallinen materiaali katsotaan sopivimmaksi myös työmenetelmien, turvavälineiden käytön, ja yleensä käytännön metsätöiden kohdalla. Kuitenkin tietoa oikeudellista asioista, verotuksesta ja muista taloudellisista seikoista kaivataan kaikkein eniten. Henkilökohtainen neuvonta olisi metsänomistajien mielestä tarpeellista erityisesti oikeudellisten asioiden kohdalla sekä toisaalta myös uudistusten ja harvennusten suunnittelussa.

Neuvonta ja kurssit ovat kuitenkin varsin kalliita keinoja. Siten kirjallisessa muodossa olevan tiedon tarjonnan kehittäminen on myös olennaista, etenkin kun kirjallisen tiedon

avulla pystytään tavoittamaan suuri joukko metsänomistajia kohtuullisin kustannuksin. Tosin jotkin metsänomistajille tarjottavat palvelut saattaisivat toimia maksullisuuden periaatteella, mutta tämän tutkimuksen tulosten valossa maksullisuudesta ei voi tehdä selkeitä päätelmiä. Yksityismetsänomistajien suhtautumista neuvonta- ja koulutuspalveluiden maksullisuuteen onkin yksi suunta jatkotutkimukselle.

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## APPENDICES

### Appendix 1. Questionnaire of the study

**THEME 1. BACKGROUND INFORMATION ABOUT THE RESPONDENT**

**Ques. 1. Year of birth** \_\_\_\_\_

**Ques. 2. Gender:** Female  Male

**Ques. 3. Professional qualification:** Please, indicate at each point one alternative with a cross (x) that describes you best

**Professional education:**

- 1. Comprehensive school \_\_\_\_\_
- 2. College level \_\_\_\_\_
- 3. University degree \_\_\_\_\_

**Vocational status:**

- 1. Employee \_\_\_\_\_
- 2. Farmer \_\_\_\_\_
- 3. Entrepreneur \_\_\_\_\_
- 4. Pensioner \_\_\_\_\_
- 5. Unemployed \_\_\_\_\_
- 6. Other, what \_\_\_\_\_

**Forestry related education:**

- 1. No forestry-related qualification \_\_\_\_\_
- 2. Participation in forestry courses \_\_\_\_\_
- 3. Forestry training in connection with agricultural training \_\_\_\_\_
- 4. Forestry degree, what \_\_\_\_\_

**THEME 2. YOUR OWN FOREST ESTATE**

**Ques. 4. What is the total area (in hectares) of your forest estate?** \_\_\_\_\_

**Ques. 5. How and when have you obtained your forest estate?** Please, indicate the manner(s) with a cross (x) that describes you and respective acquisition years and hectares.

	Manner	Year	Hectares
1. Through inheritance	_____	_____	_____
2. By buying from the relatives	_____	_____	_____
3. By buying from the open markets	_____	_____	_____
4. Through land reform	_____	_____	_____
5. Returned	_____	_____	_____
In Total (hectares)			_____

**Ques. 6. What is the distance (in kilometres) from your home to your forest estate?** (If you own many parcels, distance to your nearest one) \_\_\_\_\_

**Ques. 7. How large a proportion (% on average during the last 3 years) of your annual gross income is derived from forests?** \_\_\_\_\_

**Ques. 8. Which forestry tools and safety equipment do you have? At each point 1-7, please indicate with a cross (x), whether you have the particular equipment.**

Forestry tool:	Yes	No
1. Chain saw	_____	_____
2. Clearing saw	_____	_____
3. Tractor + forwarding equipment	_____	_____
4. Safety helmet (including eye and hearing protection)	_____	_____
5. Safety clothing (including safety boots)	_____	_____
6. Grip tong	_____	_____
7. Measuring tape	_____	_____

**Ques. 9. What is the form of ownership of your forest estate? Please, select only one alternative with a cross (x) that describes your situation best.**

- 1. You are the owner alone \_\_\_\_\_
- 2. You are the owner with your spouse \_\_\_\_\_
- 3. Forest estate is owned by heirs, How many? \_\_\_\_\_
- 4. Forest estate is a person-, farm- or real estate combine \_\_\_\_\_

**Ques. 10. How important do you find the following objectives in your forest ownership?**

Please, indicate one (1-5) alternative with a cross (x) in each row 1-10 that describes your opinion best.

Objective of forest ownership:		Very im- portant	Important	Fairly important	Not very important	Not at all important
		1	2	3	4	5
1.	Obtaining economic security					
2.	Recreational use					
3.	Pasturage					
4.	Job opportunities					
5.	Emotional and traditional values					
6.	Acquisition of income by selling timber					
7.	Forest provides firewood and construction timber					
8.	Conservation of forest nature and landscape					
9.	Secondary forest products (berries, mushrooms, game)					
10.	Investment opportunity					
11.	Other, what?					
12.	Other, what?					

**Please indicate which of the objectives (1-12) mentioned above are the three most important?**

**Number of the objective:**

- 1. Most important \_\_\_\_\_
- 2. Second most important \_\_\_\_\_
- 3. Third most important \_\_\_\_\_

**Ques. 11. What silvicultural measures have been carried out or are planned for your forest?**

Please indicate in each point 1-8 if you have done or you are planning to do the following measures and have you performed the measures on your own or someone else has done them.

Silvicultural measures:		Performed		Will be done during the next two years		
		No	Yes	No	Yes	
			By own work	By out-sider		By own work
1.	Regeneration and planting					
2.	Sapling stand thinning					
3.	Thinning					
4.	Final cutting					
5.	Drainage and ditching works					
6.	Forest road construction					
7.	Other, what?					
8.	Other, what?					

**Ques. 12. Have you sold industrial round wood during last 5 years? Yes \_\_\_\_\_ No \_\_\_\_\_**

**If Yes when? Year \_\_\_\_\_ How much m<sup>3</sup>? \_\_\_\_\_**

**THEME 3. FORESTRY IN ESTONIA**

**Ques. 13.** According to your opinion, are the following matters problematic in private forestry in Estonia? Please, indicate one (1-5) alternative with a cross (x) in each row 1-23 that describes your opinion best.

		Very Problematic			Not at all Problematic	
		1	2	3	4	5
1.	Lack of machinery or work force					
2.	Lack of forestry-related knowledge (e.g. silviculture, forest management, wood trade)					
3.	Lack of information and training					
4.	Lack of saplings and plants					
5.	Lack of demonstration areas					
6.	Lack of forest infrastructure (roads, ditches)					
7.	Forest owners live apart from their forests					
8.	Lack of tradition in private forest ownership					
9.	Implementation of forest legislation in Estonia (e.g. deficient control of forestry act)					
10.	Forestry and agriculture are managed in different ministries					
11.	The thinning of young forests is unprofitable					
12.	Land reform is still in progress					
13.	Taxation (e.g. sales at delivered price vs. standing stumpage sale, taxation of enterprises vs. private persons)					
14.	Lack of forest insurance					
15.	Forest owners have insufficient investment capital					
16.	Illegal logging					
17.	Lack of information about round wood markets					
18.	Undeveloped standards in round wood trade					
19.	Lack of tradition in round wood trade					
20.	Lack of a timber measurement system					
21.	Weak domestic wood-processing industry					
22.	Some other, what?					
23.	Some other, what?					

**Please name which of the issues (1-23) mentioned in the previous question are the three most severe problems (in order).**

**Number of the problem:**

- 1. Most severe \_\_\_\_\_
- 2. Second most severe \_\_\_\_\_
- 3. Third most severe \_\_\_\_\_

**THEME 4. NEED FOR INFORMATION AND TRAINING**

**Ques. 14.** In which forestry related issues would you like to get information and training? Please, indicate one (1-5) alternative with a cross (x) in each point 1-20 that describes your situation best.

Forestry related issue:		Very Much			Not At all	
		1	2	3	4	5
1.	Planning the site (e.g. forwarding roads, ditching)					
2.	Planning the cutting and thinning (e.g. tree selection)					
3.	Forest management					
4.	Regeneration (tree species selection, soil cultivation)					
5.	Safe working practices					
6.	Efficient working methods					
7.	Use of safety equipment					
8.	Servicing of working equipment					
9.	Measurement of timber					
10.	Guiding the quality requirements of timber					
11.	Legal matters (e.g. in procuring logging permission)					
12.	Economic matters, investment options, taxation etc.					
13.	Round wood markets: prices and timber buyers					
14.	Forest industry markets					
15.	Methods and standards in wood trade					
16.	Co-operation between forest owners					
17.	Environmental issues (incl. certification)					
18.	Forest diseases and pest control					
19.	Some other, what?					
20.	Some other, what?					

**Please name which of the issues (1-20) mentioned above are the three most important that you would like to receive information and training on (in order)**

**Number of the issue:**

- 1. Most important \_\_\_\_\_
- 2. Second most important \_\_\_\_\_
- 3. Third most important \_\_\_\_\_

**Ques. 15.** On which sources do you lean when you are looking for information related to forestry? (In issues mentioned in previous question) Please, indicate one alternative with a cross (x) in each row (1-13) that describes your situation best.

Source:	Often	Sometimes	Never
1.	Local forest authorities		
2.	Timber procurers		
3.	Relatives and acquaintances		
4.	Journals and periodicals		
5.	Literature		
6.	Own experience		
7.	Meetings organised for forest owners		
8.	Association for forest owners		
9.	Forest experts		
10.	Mass media (television, internet, radio)		
11.	Environmental organisations		
12.	Co-operatives of forest owners		
13.	Some other, what?		

**Please name from the information sources mentioned above 3 institutions that are, according to your opinion, the most appropriate and reliable in providing the information and training that you need.**

**Number of the information source:**

- 1. Most appropriate \_\_\_\_\_
- 2. Second most appropriate \_\_\_\_\_
- 3. Third most appropriate \_\_\_\_\_

**Ques. 16. Are you willing to pay for information and training related to forestry:**

Yes  No  Difficult to say

**Ques. 17. Who are you willing to pay? Please, rank the information providers below from 1 to 3 according to your opinion. 1 = best provider, 2 = second best provider, 3 = third best provider.**

**Ranking:**

- 1. For private information and training provider \_\_\_\_\_
- 2. For public information and training provider \_\_\_\_\_
- 3. For co-operation owned by private forest owners \_\_\_\_\_

**Ques. 18. How would you like to obtain information and training in the following forestry related issues? Please choose in each row (1-18) the method that according to your opinion best offers information and training.**

Forestry related issue:		Courses or- ganised for forest owners	Printed and AV information	Personal guid- ance
1.	Planning the site (e.g. forwarding roads, ditching)			
2.	Planning the cutting and thinning (e.g. tree selection)			
3.	Forest management			
4.	Regeneration (tree specie selection, soil cultivation)			
5.	Safe working practices			
6.	Efficient working methods			
7.	Use of safety equipment			
8.	Servicing of working equipment			
9.	Measurement of timber			
10.	Quality requirements of timber			
11.	Legal (e.g. in procuring logging permission) issues			
12.	Economic matters, investment options, taxation etc.			
13.	Timber markets and trade			
14.	Environmental issues (incl. certification)			
15.	Forest diseases and pest control			
16.	Some other, what?			
17.	Some other, what?			
18.	Some other, what?			

**Ques. 19. Do you belong to a forest owners' organisation? Yes \_\_\_\_\_ No \_\_\_\_\_**

**If yes, to which one? Please name \_\_\_\_\_**  
 \_\_\_\_\_

**THANK YOU VERY MUCH FOR YOUR TIME AND EFFORTS. ALL ANSWERS WILL BE KEPT STRICTLY CONFIDENTIAL AND ANONYMOUS**