THE WOOD RESOURCE AVAILABILITY INFLUENCING FACTORS IN PRIVATE FORESTS IN LATVIA

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Abstract. The forests and woods are the main resources in Latvia. It is vital to understand the amount of wood resources that is being extracted from private forests now and in future in order to be able to predict the forest sector development and growth.
The study objective was to identify the key factors in the wood resource availability and assess their role in private forests. In October 2009, the study was conducted to appraise the private forest owners the operational results and find out the future plans in connection to wood resource extraction. In the study a random sampling method was applied, where in the respondent selection the State Forest Service database information was used. In the study the respondent interviewing method CATI with computerized telephone interviews was used. In the selection of affecting factors the expert's method was applied.
The study showed that only 25.40% of all private forest owners claimed that there was wood resources extraction in forests, but 29.50% of all private forest owners claimed that they were planning to perform the wood resource extraction in 2010. If the timber selling prices increased by more than 10 LVL per m^3 in 2010, then 38% of all respondents claimed that they would increase the wood resource extraction in forests. The study data show that 30% of all private forest owners admit that there are growing stands in the forests, but they can not be harvested, because road infrastructure is poorly developed or there are no roads in the forests.
Key words: wood resource, private forest, Latvia.

Introduction

Concerning the territory, Latvia is a small country, but there is a large number of private forest owners - about 150 000, thus creating a fragmented wood resources supply from private forests (Meža nozares…, 2009). In recent years, Latvian wood resource availability question has become very topical, because the market condition has changed and the competition has increased in the domestic and global markets.

In Europe and other parts of the world, the scientific research on trends of the private forest sector, on predictions and on opportunities as well as onresources already started in the previous century (Dennis…, 1989; Järvelainen…, 1983; Karppinen…, 1995; Kuuluvainen…, 1991; Roos…, 1996). In Latvia, the forest owners surveys were carried out within the framework of international cooperation projects in 1996 (Development…, 1996). But this is the first study, which has analysed and studied the private forest owners sector in Latvia in depth. Currently the main data sources on the private forest sector in the country are the National Forest Service, Ministry of Agriculture who prepare statements and reports, as well as special publications in various journals and newspapers.

The study objective was to identify the key factors in wood resource availability and assess their role in private forests. The wood resource is a raw material that is derived from tree trunk, less often from the twigs and roots. Rational wood resource exploitation affects this resource availability. According to the statistical inventory data, there are approximately 3.26 million hectares of land in Latvia which are covered by forests of agricultural territories that meet the criteria related to being into forestland (Forest sector…, 2008). The forest statistical inventory data (April 1, 2009) show that 47% of the total forest areas are the state forests, but 53% - private forests. During the last 70 years, the forest area in Latvia has almost doubled, while the volume of wood has increased to 630 million m^3 after forest inventory statistical data (Meža nozare…, 2009, Figure 1).

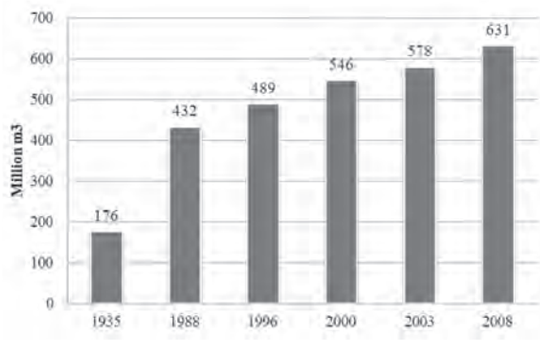


Figure 1. Total wood amount according to the data of the Ministry of Agriculture, million m^3, 2009.

The economic activity in the state forest is carried out according to sustainable forest management principles. The wood resource extraction in the state forests is performed systematically and regularly; as a result, the wood resource availability planning and forecasting process is easier (Forest sector…, 2008). The amount of wood that is cut down in Latvia`s forests each year remains quite stable – between 10 and 11 million m^3 of wood resource each year. In 2009, 10.73 million m^3 of wood were cut – 7.73 million in the state-owned forests, and 3.00 million in the forests owned by private owners, local government, or other types of owners (Koku ciršana…, 2010; Figure 2).

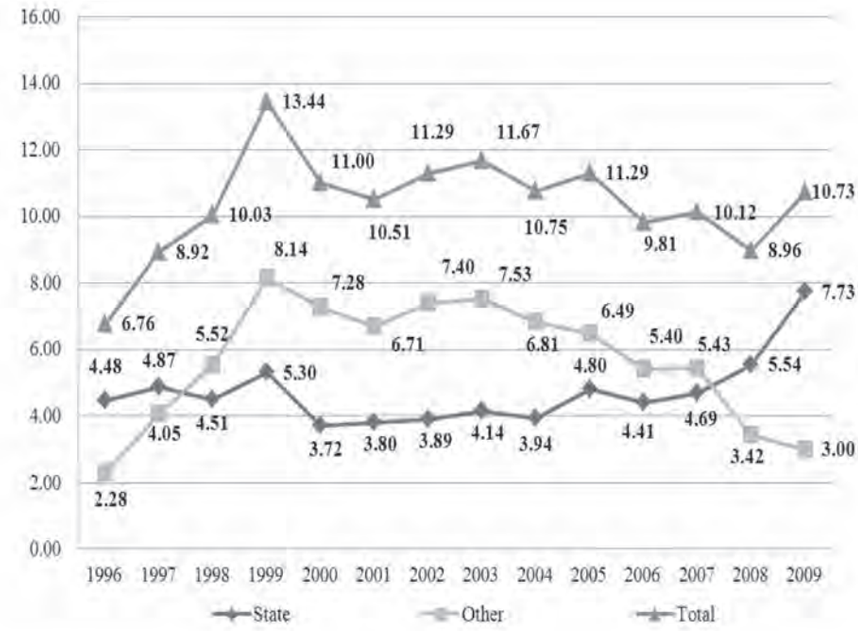


Figure 2. Timber cutting in state and private forests according to the data of the State Forest Service, million m^3, 2009.

In recent years, the wood resource mostly comes from the state forests, that is two times more than in the private forests, although nearly half of the forest areas is owned by private forest owners. The wood resource extraction in the private forests takes place according to free market conditions, where the final products are sold by the market prices when the price of supply matches the demand price. During the past five years the wood resource extraction in the private forests has decreased, especially during the period of 2007 – 2009.

Therefore, a detailed study of factors which operate in free market conditions and influence the wood resource availability directly in the private forests, is necessary to be carried out in order to understand better the processes and trends in this sector. The wood resource extraction must be balanced between the state forests and private forests, since it is determined in the Latvian forest policy guidelines that long- term intensive exploitation in one of these sectors is no allowed.

Materials and Methods

The study target group is the Latvia`s forest owners. The planned sample size was 1000 respondents, where the whole forest owners group includes 600 respondents (the 1st target group), but the forest owner group planning to carry timber felling in 2009, includes 400 respondents (the 2nd target group). The achieved sample size was 907 respondents, where from the first target group the responses were received from 583 respondents, but from the second target group - from 324 respondents. In the study a random sampling method was used, where in the respondent selection the State Forest Service database information was applied. In the study, the respondent interviewing method CATI (Computer Assisted Telephone Interviews) with computerized telephone interviews was used (Kvantitatīvās pētījuma…, 2010). In the selection of affecting factors the expert's method was used.

In the forest sector and related sectors the expert method is often used since the current trends and processes can be understood better and assessed only by experts of forest sector. In the study five experts from the forest industry were interviewed, and each expert determined the value of each factor affecting the timber resource availability. The affecting factors were assessed according to 5-point system (two decimal places), from one to five points where one – is the lowest assessment, but five - is the highest assessment. Further, according to expert assessments the average value was calculated. In the study 12 factors affecting the wood resource availability had been identified. They are the economic activities, the timber selling prices, the geographical position, the legislation and policy, the knowledge and experience, the infrastructure, the climatic conditions, the imported wood resource, lack of funding, the wood resource extraction place, the forest quality and the product markets. As a result, the following four main factors were selected: the economic activity, the wood selling prices, the infrastructure and the funding attraction.

Results and Discussion

For data processing the statistics treatment methods are used: descriptive statistics and data inter-comparison. Since this is the first study on the private forest owners, the study results can be used as the reference for other studies, the mutual data comparison

and evaluation. The study results are always with a certain degree of statistical error probability. It has been taken into account whilst analyzing and interpreting the study results. If these differences are included in the statistical error limits or less, then they can be regarded as minor.

The statistical error is calculated by the following formula (Meža nozares…, 2009):

$$SE = q \times \sqrt{\pi \times (100 - \pi) / n}$$

where:

SE – statistical error;

q – the coefficient that at 95% probability is equal to 1.96;

π – in the study achieved responses of the percentage breakdown;

n – the number of respondents.

To determine the statistical measurement error, unweighted number of respondents in the group and the results as a percentage are given. Using these values, the section can find the measurement error limits of +/- percentage with 95% probability. For example, if the study result from the surveyed Latvian forest owners (respondents n = 583) the target group of 20.0% is obtained and which is the affirmative attitude towards the judgment. Then the probability of 95% can be said that the statistical measurement error is + / - 3.2% range. It follows that the group, which identifies itself with this judgment, is from 16.8% to 23.2%.

Using the study results, the factors affecting the wood resource availability in private forests and the decision to carry out / not to carry out wood extraction in these forests can be judged. From the study results it can be concluded that the key affecting factors whether to carry or not to carry out the wood extraction in private forests are the following: low economic activity from the private forest owner side, the low timber selling prices, the road infrastructure deficiency and the funding deficiency.

The economic activity

For this study, the economic activity is understood as the wood felling (the timber sales) from the private forests (Ķirsons, 2009). A stable wood resource extraction in the private forests can provide the timber industry with necessary resources, so it is important to understand further private forest owner activities in 2009 and 2010.

According to the obtained results of the study, only 25.40% of all private forest owners claimed that in nine months (in 2009) the wood resource extraction in forests was performed, 61.40% claimed that the timber felling was done before 2009, but 12.20% of all private forest owners claimed that they had never done the wood resource extraction in forests (Figure 3).

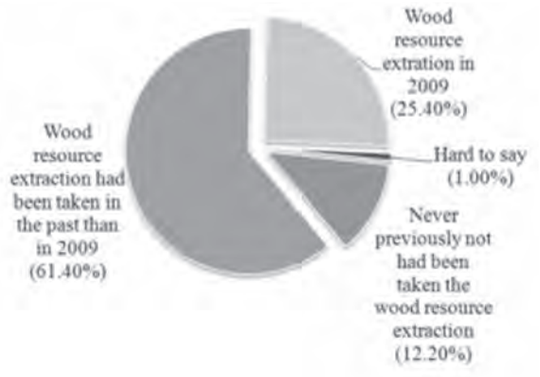


Figure 3. Wood resource extraction, %.

The private forest owners, who according to the data of the State Forest Service had planned to carry out the wood resource extraction constituted 54.00% of all respondents and confirmed that they had carried out the wood extraction in forests, but 45.70% respondents claimed that the wood resource extraction was not carried out in 2009 (Figure 4).

Most frequently mentioned causes for wood resource extraction in the private forests in 2009 are as follows:

1. 38% of all respondents claimed that the firewood or timber resource was needed for their own needs;
2. 29% of all respondents confirmed that the wood resource extraction was done in accordance with the forest inventory plan;
3. 21% of private forest owners claimed that the income of wood resource extraction was intended to cover the household expenses.

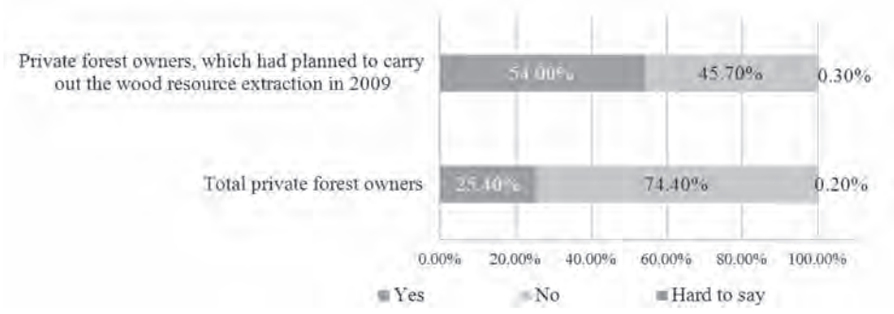


Figure 4. Wood resource extraction in 2009, %.



Figure 5. Wood resource extraction in 2010, %.

A little less frequently, respondents indicated that the money obtained from the wood resource extraction they invested in the non-forestry business (15% of all private forest owners), credit or debt settlements (12%), but 12% of all respondents mentioned other reasons.

An important factor of wood resource availability is planned activities in connection with the wood resource extraction in the private forests. The study shows, that 29.50% of all private forest owners claimed that they are planning to perform the wood resource extraction in 2010, 49.40% of all respondents had just thought about wood resource extraction in forests. But 21.10% of all respondents had not made their decision about wood resource extraction in forests yet. 35% of all respondents, who planned to perform the wood resource extraction in 2009, plan to do it also in 2010, but 43% of all respondents are not planning the wood resource extraction, and 22% of private forest owners do not know what they will do (Figure 5). The research results show that a large proportion of the private forest owner does not intend to perform the timber felling in forests, which significantly may influence the wood supply for timber industry.

To understand the overall forest sector development, it is important to understand the size of wood amount that could be expected from the private forests. The study shows that 35% of all private forest owners claimed that the wood resource extraction volumes will amount to 100 m^3, 10% of all respondents said that it would range from 101 to 250 m^3, but 19% of all private forest owners claimed that the volumes would amount from 251 to 500 m^3 and just 12% of all respondents claimed that would be more than 500 m^3 from forest (Figure 6).

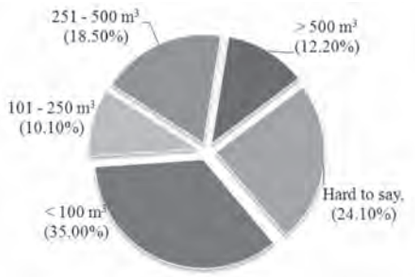


Figure 6. Potential wood resources volumes in 2010, %.

Most frequently mentioned causes why the wood resource extraction will not be carried out in 2010 are as follows:

1. 34% of all private forest owners claimed that the low prices in the timber markets are predicted;
2. 24% of all respondents claimed that there are no growing stands in their forests;
3. 15% of all forest owners said that the income from forest in coming years would not be necessary;
4. 13% of all respondents claimed that they were not sure about the sufficiency of timber resources volume in forests;
5. 5% of all private forest owners claimed that they could not do anything, because the neighboring forest has been cleared.

Timber selling prices

In the availability of wood resource the timber selling prices that are determined by the economic activity in the private forests is an important factor. Therefore, it is important to clarify the private forest owner motivation if the timber selling prices increase. If the timber selling prices increased by more than 10 LVL per m^3 in 2010, then 38% of all respondents claimed that they would increase the wood resource extraction in forests. Slightly less frequently, 27% of all private forest owners claimed that, if the price increased in the range of 6 to 10 LVL per m^3 then they would be willing to increase the wood resource extraction. But 8% of all respondents claimed that, if the price rose by 3 to 5 LVL per m^3 then they would be willing to increase the timber felling in forests (Figure 7).

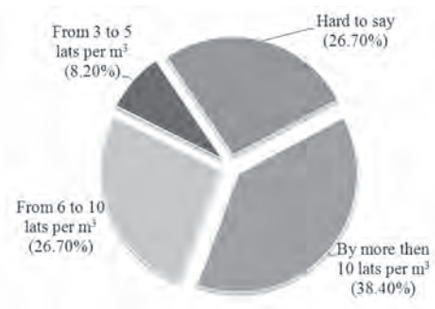


Figure 7. Timber price and its influence on the wood resource extraction from private forests, LVL.



Figure 8. Road infrastructure in private forests, %.



Figure 9. EU funds attraction in private forests, %.

Road infrastructure in private forests

For obtaining of additional wood resource from the private forests, it is important to identify the current situation of the road infrastructure and its impact on the wood resource extraction (Ķirsons, 2009c). The study data show that 30% of all private forest owners said that there are growing stands in their forests, but they cannot be felled, because the road infrastructure is poorly developed or there are no roads in the forests (Figure 8).

European Union funds attraction

Forest management requires substantial financial resources so that the private forest owners can recover just after several years, therefore, an important factor in wood resource extraction is the EU (European Union) financial involvement in forest management (Ķirsons, 2009a). The study data show that 28.60% of all private forest owners claimed that they used the EU funding for forest management (Figure 9).

The study findings show that 75.40% of the EU funding go to young stands cleaning, but 23.40% of the EU funding are used for afforestation of agricultural land. But 11.9% of the EU funding go to the worthless thinning in forests and just 2.4% - go to the drainage system renovation.

Conclusions

1. An important factor in the wood resource availability is the low economic activity in the private forests during nine months in 2009. Only 25.40% of all private forest owners claimed that there was wood resources extraction in forests, but 61.40% - claimed that the timber felling had been done before 2009. But 29.50% of all private forest owners claimed that they planned to perform the wood resource extraction in 2010 and 49.40% of all respondents had just thought about wood resource extraction in forests. This situation can be promoting the timber resources deficit in the local market, in Latvia.
2. If the timber selling prices increased by more than 10 LVL per m^3 in 2010, then 38% of all respondents claimed that they would increase the wood resource extraction in forests. Slightly less frequently, 27% of all private forest owners claimed that, if the price increased in the range of 6 to 10 LVL per m^3 then they would be willing to increase the wood resource extraction. Such a situation has arisen because the private forest owners are willing to get the same price that it was in 2007.
3. The study data show that 30% of all private forest owners said that there are growing stands in their forests, but they cannot be felled, because of poor road infrastructure or even lack of roads. This percentage is very high, so this problem needs solution as fast as possible.
4. An important factor in wood resource extraction is the EU (European Union) financial involvement in forest management and 28.60% of all private forest owners claimed that they have used the EU funding for forest management. 75.40% of the EU funding go to young stands cleaning, but 23.40% of the EU funding are used for the afforestation of agricultural land.

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