Improvement Possibilities of Forest Land Transformation in Latvia

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Abstract

Due to the natural and artificial afforestation of non-used agriculture land, the growth of forest areas in Latvia is much faster than their reduction in connection with land transformation. The process of change of forest land use type in Latvia is complicated, bureaucratic, time-consuming and expensive, if it is not performed with the state investment funds, state or municipal co-funding. The forest land transformation process does not threaten the increase of forest land area in future, because it is a socially economic process related to the aspiration of people to improve the quality of their living environment and not to illegal acquisition of timber. The goal of this study is to identify the main problems in the process of transformation of forest land in the Republic of Latvia and gaps in legislative instruments regulating the process of change of land use type, to prepare recommendations for their elimination, to develop a methodology for calculation of compensation for the losses caused to the state as a result of destruction of natural forest environment.

Key words: forest land transformation, methodology of compensation

Introduction

In most of the European Union (hereinafter – the EU) countries the forest land transformation process is being controlled in order to restrict unwarranted decrease of forest land area (Bāra 2008). The analysis of legislative requirements of several neighbouring countries shows that they all have common features. In the countries with high forest coverage the forest land transformation is permitted in almost all economic forests. The transformation has to be approved with the respective planning or development supervision authorities of the particular territory and a permit should be received. In most countries the administrative fee – compensation to the community – must be paid for the issue of the permit. There are countries in which the initiator of transformation has to afforest the agricultural land in the same area as the transformed forest territory. It is only logical that the severest restrictions are in the countries with low forest coverage. In these countries transformation is prohibited apart from very few and special exceptions. Scandinavian countries, where the forest coverage is high, are most liberal in this respect.

Over the last century not only the structural landscape of forests changed, but Latvia's natural rural scenery as well (State Land Service 2007). This change occurred due to the above-described increase of forest coverage – natural overgrowing of agricultural lands and artificial afforestation. Since the early 1920's the forest area of Latvia has increased from 1.472 million ha in year 1923 to 2.932 million ha in 2005 (Tuherm *et al* 2007). According to the provisional data of the statistic inventory measurements at the beginning of 2007 the forest-covered area reached 3.611 million ha, or 55.9 % from the national territory (Forest sector in Latvia 2007).

In Latvia forests and use of forest land have always played an important role. The valuable experience accrued over the years in this connection can be analysed and results of this analysis can be used to improve the existing laws and regulations. The territory is characterised by high forest coverage and its potential to increase up to two thirds of the total terrestrial area of the country. Considering the high forest coverage in Latvia, at times in order to facilitate rural development, the need arises to change the type of forest land use or to transform the forest land use into other land use types, *e.g.* for housing developments, building of roads and water reservoirs, excavation of quarries and other purposes. On the basis of the application submitted by the initiator of the transformation, the State Forest (hereinafter – the SFS) and State Land (hereinafter – the SLS) Services make the necessary changes in the respective databases of resources and the forest land acquires another legal status of further land use or utilisation type. Most

often these plans are not carried out, because in the last six years the state has imposed very strict restrictions on forest land transformation – a complicated procedure for receiving a permit and high charges for elimination of 'natural forest environment' as a result of transformation (Bāra 2007).

So far the losses and gains pertaining to the change of land use type have not been thoroughly assessed considering the exiting economic, social and ecological situation in Latvia, therefore this study presents an approach to calculation of compensation that has never been applied in Latvia before and that is based on a criterion of 'naturalness' of forest and ecological significance. Latvia's forests are semi-natural because they are more or less affected by human-induced actions. Along with the elimination of the forest, the forest environment and its values are also destroyed, therefore it is very important to define – which of these values are so significant that their disappearance would incur substantial losses to the community in general and would entitle the state to require compensation. In the current economic, social and ecological situation it is important to find a scientific substantiation for fluctuations of forest resource balance due to prospective natural and artificial land transformation in future.

In order not to diminish the importance of the forest in preservation of environment and its particular role in national economy, the Latvian Forest Policy (State Forest Service 1999) has set a requirement to prevent the diminishing of the existing forest land area through application of restrictions on transformation of forest lands. Currently at a national level the work has begun on development of the Latvian Land Policy, therefore the theme of research is very topical and studies in this area have theoretical as well as practical importance.

Materials and methods

The studies have been performed in the period 2001 - 2007. Since 2000 authors has been practically studying the process of forest land transformation, summarising statistic data and analysing the related legislative acts. Between February 2000 and August 2004 G. Bāra as a senior assistant of the Department of Forest Resources at the Latvian Ministry of Agriculture was in charge of development of legislative acts and preparation of amendments pertaining to forest land transformation. In this period G. Bāra headed several working groups which collaborated with ministries, state, municipal and non-governmental organisations; prepared drafts for orders of the Cabinet of Ministers (hereinafter – the CM) for issue of transformation permits; participated in several seminars where presented reports on transformation issues; communicated with submitters of transformation applications and provided practical support in solution of various problems; visited on site several objects applied for transformation and assessed the real situation on site against the one provided for in the law, *etc*.

For the implementation of the tasks of this study the information was used that was obtained from the Ministry of Agriculture, Ministry of Environment, SLS, SFS, Latvian Association of Local and Regional Governments and other public institutions and organisations, their public reviews, statistical materials, developed legislative instruments, financed studies, *etc.* The analysis of experts' opinions was performed summarising the results of the latest studies of other countries in this field. The raw data was acquired studying international scientific literature on forest economics and environment protection, materials of international conferences and other publicly available information on the internet.

In line with the above stated tasks the results of the studies were basically obtained through application of the following scientific research methods (Meļķis 1996, Latvia University of Agriculture 2005): 1) sociological research (analysis of regulations, experts' interviews, questioning); 2) interpretations (comparative, grammatical, systematic and historical); 3) statistic analysis of reciprocal relations (correlation analysis).

Results and discussion

Currently the CM Regulations No. 806 "On Forest land Transformation" (*Meža zemes transformācijas* ... 2004) that are issued in line with Article 42(2) of the Forest Law (*Meža likums* 2000), Article 4(4) of the Law on Gauja National Park (*Gaujas nacionālā* ... 1999) and Article 36(4) of the Law on Protective Zones (*Aizsargjoslu likums* 1997) are in force.

The regulations define that the forest land transformation is a process of change of forest land use to another use as a result of which the forest land is no longer used as a land for forest management purposes. These regulations define in detail the provisions for forest land transformation: the procedure of submission and review of a transformation application, reception of a permit; the procedure of calculation and payment of the compensation to the state for losses caused as a result of transformation, as well as clearly state when the transformation is considered to be completed.

The councils of cities, districts and parishes are primary authorities for assessment of the aim of transformation performed in accordance with the spatial or

detail design. State Forest Service, as a public administrative institution, on the basis of the Forest Law and Regulations No. 806 carries out the necessary actions, examines documents and issues permits for forest land transformation, calculates losses and controls completion of the transformation process. The methodology for calculation of losses and the formula, which is pegged to the minimum salary in the country, contained in the CM Regulations No. 806 account for the rapid increase in the amount of losses. A topical issue today is preparation of amendments to Regulations No. 806 what made the author study these processes and develop proposals.

Analysis of the statistical data (State Forest Service (2) 2008) clearly shows, how the number of issued transformation permits increases every year – from 176 permits in 2001 to 647 permits in 2006 and 433 permits in 2007 (Figure 1). Mostly it is related to the growing speed and scope of construction in our country as well as with the building of the related infrastructure objects. Similarly the availability of funding and co-funding from the state and EU resources has increased what facilitates initiation and development of various projects. Similar trends are observed in the calculated payment for transformation or calculated losses collected by the state for elimination of natural forest environment due to forest land transformation from the initiators of transformation who act without co-funding from the state or local government. The amount of losses calculated since 2001 has grown about nine times, due to the formula for calculation of losses is based on the minimum salary in the country (Bāra 2006). Sum of calculated losses during the period 2001-2007 has grown from 0.189 million EUR to 1.684 million EUR , but overall transformable area in this period was growing only from 382 to 423 ha (Figure 1).

The available statistical data leads to a conclusion that since 2001 the minimum salary in the country has increased two times (Figure 2) and in 2008 it already reached the level of 227 EUR thus having increased by 2.6 times. On average per one hectare the losses calculated in 2001 for elimination of natural forest environment constituted 761 EUR, but in the first quarter of 2007 – already 3,976 EUR. Thus, in 2003 there were zero losses calculated for 73 % of the transformed area, in 2004 – 45 %, and in 2007 – 50 %.

The statistical data of the previous years should be studied in order to comprehend more thoroughly the possible losses to be caused by the forthcoming transformation. At first it is important to identify how big areas are transformed every year, in what territories and for what purposes. Over the last three years 1,423 ha were applied for transformation, in 16 % permits were not issued, consequently, it was allowed to transform 1,191 ha – in 52 % of cases with payment for losses and in 48 % cases without payment for losses.

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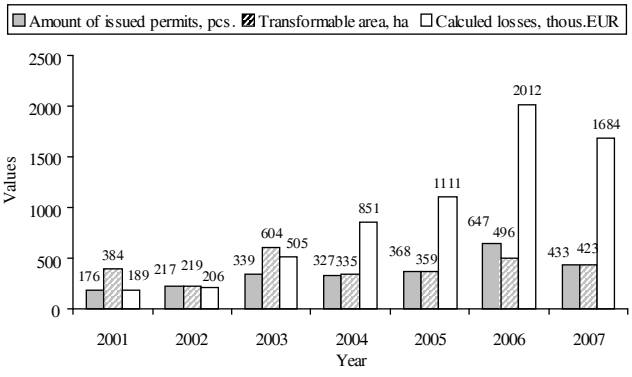


Figure 1. Number of issued forest land transformation permits, area, amount of losses, 2001 – 2007 (SFS data, authors' calculations)

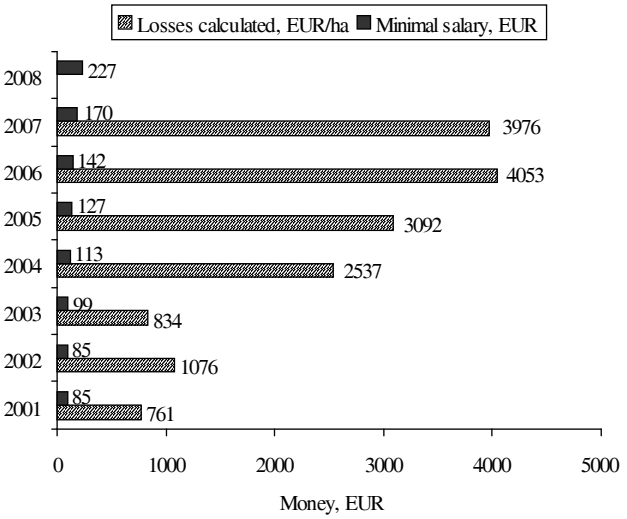


Figure 2. The losses calculated for elimination of natural forest environment on average per 1 ha and changes of minimum salary by years (SFS data, authors' calculations)

Overall 187 ha were transformed in state forests and 1,005 ha in other forests where the losses had to be compensated in 64 % of their area in state forests and only 49 % of their area in other forests. Transformation in state forests was refused only in 10 % of the total area declined for transformation while in other forests – 90 %.

It should be noted that the CM Regulations No. 806 foresee the issue of transformation permits without payment for losses in cases the aim of transformation is regeneration of specially protected habitats or transformation of plantation forests for agricultural purposes, or implementation of infrastructure projects that are included in the state investment programme, or investment projects that are funded or co-funded from the state or municipal budget resources. Overall in the last three years 66 ha in state forests and 509 ha in other forests were exempted from compensation for losses. In state forests the largest area of exempted forests – 54 ha or 82 % - were located in the territory of Riga/Ogre forest district while in other forest districts the figures were such: 21 % (108 ha) – in Cesis, 16 % (84 ha) – in Balvi and 11 % (57 ha) in Zemgale (State Forest Service (2) 2008).

The statistics do not provide separate information why the permit was issued without compensation for losses, however, considering the existing methodology for calculation of losses, we can conclude that these mostly were state investment projects as well as state and municipality co-funded projects both in state and other forests. Until the end of year 2007 – within six years none transformation permit has been issued for establishment of tree nurseries for forest planting stock and forest tree seed orchards, as well as for regeneration of specially protected habitats. Thus, we can conclude that all projects exempted from compensation for losses were investment projects that were financed or co-financed from the state or municipal budgets or the infrastructure projects included in the state investment programme.

Assessing the forest coverage of each region, it has to be concluded that the socially economic factors and the geographical location affect the transformation intensity more than availability of timber resources. In the regions with high forest coverage, *e.g.* in Ventspils, Alūksne, Talsi, forest owners are not very active in applying for transformation permits, as shows the number of issued transformation permits and the size of transformed areas.

The correlation analysis performed as part of the study proves that the number of issued transformation permits and the size of transformed areas considerably depend on the number of population; however, the forest coverage has practically no effect on this activity of population. This fact proves the hypothesis proposed at the beginning of the paper that the forest land transformation is a socially economic process related to the aspiration of people to improve the quality of their living environment and is not related to illegal acquisition of timber.

So, the correlation analysis was performed in order to reveal a reciprocal relation between the size of transformed areas, the number of issued transformation permits and the number of population by regions and by forest coverage. The results showed that the number of transformations is closely related to the number of population (0.98) – the larger the number of inhabitants in the region, the larger the number of issued transformation permits. Similar tendencies can be seen in relation between the number of population and the transformed area (0.87), *i.e.* the more inhabitants reside in the region, the larger the area applied for transformation. The correlation analysis shows that there is almost no connection between the forest coverage in regions and the number of transformation permits issued in them (0.11) and transformed forest area (0.05). The number of population considerably affects both the number of issued transformation permits and the size of transformed area, however, forest coverage almost has no effect on this activity of inhabitants. This fact proves the hypothesis proposed at the beginning of the discussion that the forest land transformation is a socially economic process related to the aspiration of people to improve the quality of their living environment and is not related to illegal acquisition of timber.

According to the latest statistical data (State Forest Service (2) 2008) the largest areas, which cover vast territories, are used for pits and construction. It should be noted that excavation of pits and quarries is directly related to promotion and encouragement of intensive restoration and construction of infrastructure objects at a national level while construction is fostered by the existing socially economic situation in the country, the possible financial support and possibilities of transformation without payment for losses (Figure 3).

Forest lands are transformed into agricultural lands and *vice versa* – agricultural lands into forest lands. Statistics show (State Forest Service (1) 2008) that afforestation intensity is much higher than forest transformation. Figure 4 clearly shows that in the period between 2001 and 2007 afforestation applied to larger areas than transformation of forest land into other purposes of land use, moreover, with the difference having a tendency to increase every year. In 2001 the area of afforested lands exceeded the area of transformed lands almost twice but in 2007 already about fifth times.

Forest plantation mostly refers to afforestation of abandoned agricultural lands that is state promoted through various means. A well-known example is a possibility to receive a guaranteed amount of money as a compensation for afforestation costs that is available to any active forest owner in a form of state and EU grants (Ministry of Agriculture 2007). The EU co-

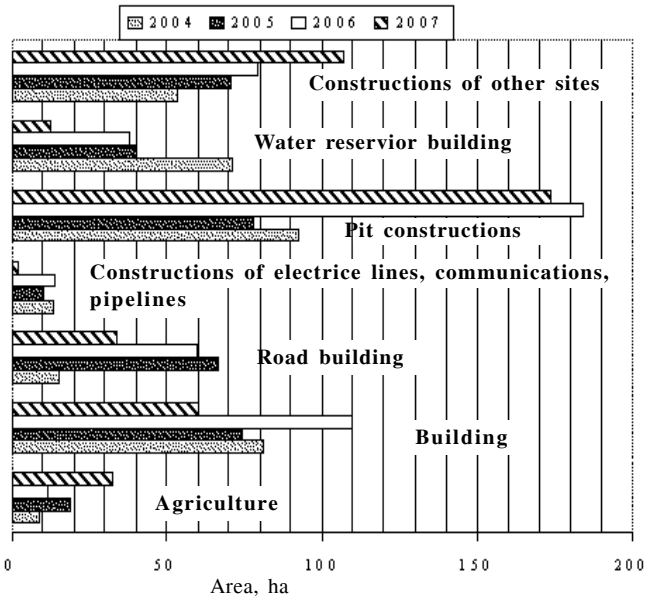


Figure 3. Distribution of area depending on transformation purpose (SFS data, authors' calculations)

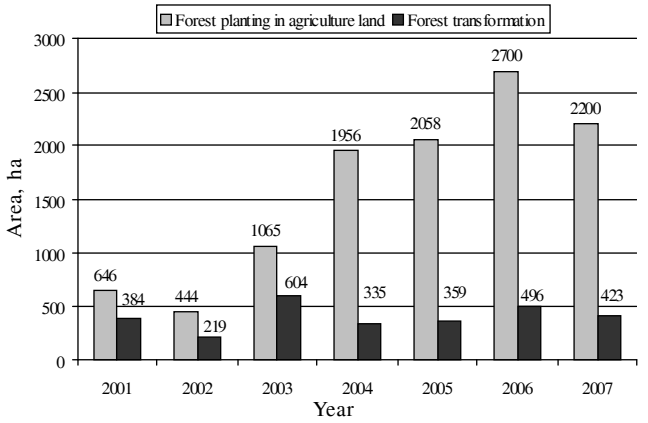


Figure 4. Afforestation of agricultural lands and forest transformation into the other types of land uses (SFS data, authors' calculations)

funding foresees to compensate for up to 75 % of afforestation costs. The costs of soil preparation, seedlings and planting are taken into account, yet not exceeding EUR 400 per ha, as well as costs of two-year tending and protection of the artificially and naturally regenerated forest stands, including the year of acceptance – 140 EUR per ha in a year. Thus, in 2007 about 2,200 ha of agricultural land were afforested, the precondition for which was reception of permits for transformation of agricultural land.

Section 6, Article 41, Paragraph 1 of the Forest Law (*Meža liku*ms 2000) defines: "In case the forest land is transformed into other uses, the person initiating the transformation shall compensate the state for the loss of natural forest environment". The Law does not provide a wider definition of the concept 'natural forest environment' yet gives explanation of two other terms – forest and forest land – as well as provides a list of forest values and qualities. Legislative acts of Latvia permit transformation of any forest land irrespective of types of its management upon reception of a transformation permit. However, it should be noted that in each transformation case in specially protected nature territories it is necessary to receive approval from the CM, before transformation permit is issued. Such territories include the strict regime zone of national parks, the 300 m-protective zone of dunes along the coast of the Baltic Sea and the Gulf of Riga, *etc*. (*Meža zemes transformācijas*… 2004).

The value of natural forest environment in the particular land unit depends on the significance of its ecological functions in the particular forest plot besides the significance of these functions not always depends on the forest stand age. The Law on Forest defines what values and qualities the forest has, naming the main physical qualities – timber and non-timber products, as well as non-physical or ethical, aesthetic and ecological qualities. It is very important to emphasise which of the values are mostly attributed to the benefit of an individual and which are attributed to the benefit of the public in general.

Once in ten years Latvia has to submit data on distribution of forest area by utilisation, management, forest 'naturalness' and types of protection to the Food and Agriculture Organisation of the United Nations (hereinafter – the FAO). If the international practice requires distributing forests by their naturalness and the Republic of Latvia has accepted it, then laws and regulations should provide definitions of these terms, thus making them public and giving a possibility to apply them. At present these terms have been translated and approved only at the level of the Ministry of Agriculture, which summarises this information and sends to the FAO (European Communities... 2000).

Summing up all aforesaid it can logically be concluded that the Republic of Latvia is situated in a zone of a partly transformed ecosystem where natural and semi-natural forests have been preserved and where plantations can be found.

However, this methodology for calculation of losses (*Meža zemes transformācijas*… 2004) has several essential drawbacks:

• the amount of losses is a fluctuating value that is pegged to the minimum salary in the country, what

actually reflect neither the real amounts of losses, nor paying capacity of population;

• the amount of losses does not depend on survey results of the transformable forest stand, but on average, theoretically determined indices in the country;

• the outcome of assortment is calculated as theoretically possible, assuming that the transformable area is an unmixed forest stand;

• the calculation of a relative value of 1 ha forest stand was obtained on the basis of the market price of assortments in 2000, thus the real situation in the timber market at the moment for application for transformation is discounted.

Taking into account the interests of the public as well as the FAO classification, the author (Bāra 2008) suggests considering not only the criterion of forest naturalness but also the principle of ecological significance of the stand. In order to create a balance among social, ecological and economic interests, the amounts of losses caused in the transformation process must be grouped according to forest stand naturalness and ecological significance (Figure 5). The figure shows that receiving an application for reception of a transformation permit, it should be evaluated what category the transformable stand falls into – natural or semi-natural forests. In order to make the process of loss calculation easier, was suggested these activities to entrust to the Consultation Service Centre (hereinafter – the CSC) – the structural unit of the SFS (Bāra 2007). This establishment could perform practical calculation of loss incurred by the public due to transformation as a result of elimination of natural forest environment or protected semi-natural forest environment according to the formula (1), taking into account the survey results characterising the particular forest stand and updated information from the timber market (available from publicly accessible sources and not more than six months old), as well as a type of restrictions to economic activities. The amount of compensation to the state for reduction of forest area is calculated according to the formula (2).

$$Z = (\sum V_{sort} C_{sort}) \cdot K_{ekol}, \quad (1)$$

where Z – amount of loss to the public, EUR; V_{sort} – estimate of respective round timber assortment in a site, m^3; C_{sort} – market price appropriate for round timber assortment, EUR per m^3; K_{ekol} – coefficient, depending on restriction to economic activities on forest land.

$$Q = S \cdot (A_{LAD} + 2 \cdot I_{LAD}), \quad (2)$$

where Q – amount to be compensated to the state for shrinking of forest area, EUR; S – transformable area, ha; A_{LAD} – costs of afforestation of abandoned agricultural lands according to RSS, EUR; I_{LAD} – costs of one-year tending and protection of planted stand, according to RSS, EUR.

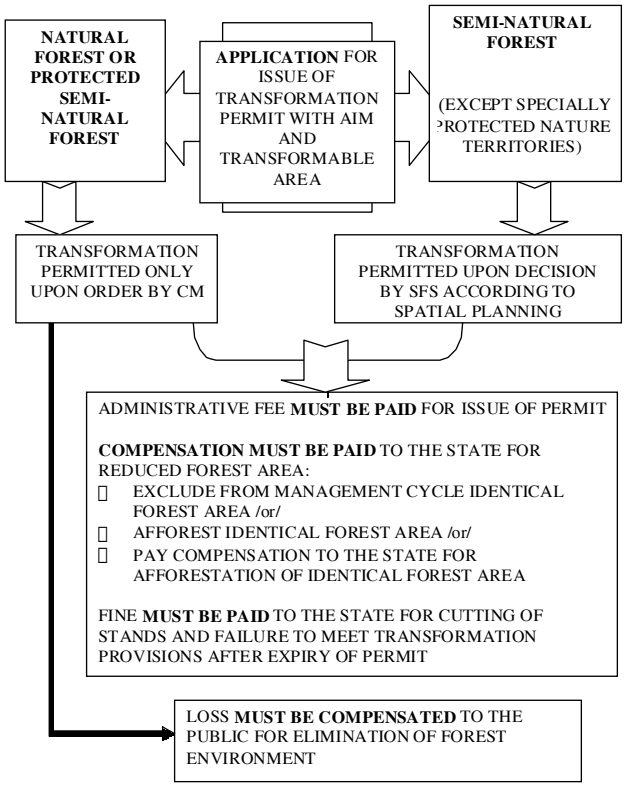
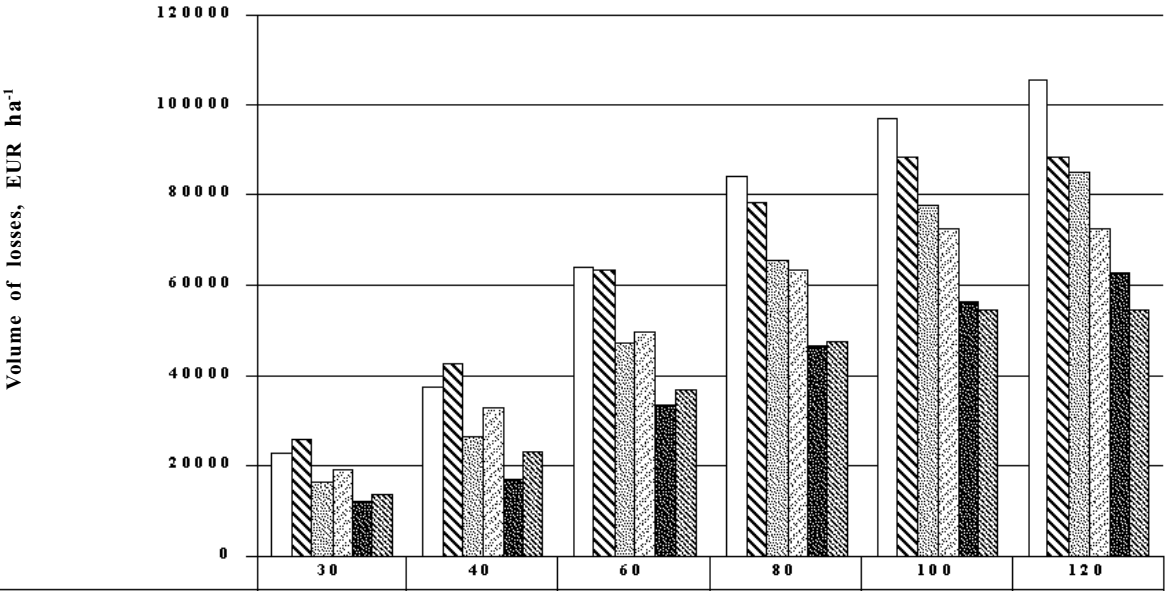


Figure 5. Determination of losses and compensation (by authors)

In the Figure 6 is graphically compared, how the amounts of losses for transformation of one-hectare natural forest stand change depending on the site index, prevailing species and methodology applied for calculation of losses (Bāra 2008). The amounts of loss to the public are calculated for transformation of 1ha pine, spruce and birch stands in the zone of restricted economic activities of the protective belt along the Baltic Sea and the Gulf of Riga depending on the site index, age and applied methodology (according to the CM and author's methodology). The amount of losses calculated according to the methodology proposed by the authors in pine stands up to 60 years old is slightly lower that the one determined by the CM Regulations but then it increases. In the provided calculations the changes in amounts of losses by years and site indexes are similar, however, contrary to the determined by the CM Regulations, applying proposed methodology (Bāra 2008), the initiator of transformation will have to pay for losses according to the proved fact, real survey results in each particular stand and current market situation.



	30	40	60	80	100	120
1. site quality by formula of autor	22663	37516	63985	84206	96730	105648
1. site quality by legislation	25901	42941	63389	78384	88608	88608
2. site quality by formula of autor	16302	26469	47400	65206	77702	85257
2. site quality by legislation	19085	32717	49757	63389	72250	72250
3. site quality by formula of autor	11928	17097	33654	46434	56459	62991
3. site quality by legislation	13632	23174	36806	47712	54528	54528

Maturity of stands, years

Figure 6. Losses calculated for transformation of 1 ha pine forest

Graphically reflecting the amounts of losses caused by transformation of spruce stands, the situation is similar as with pine stands, however, it changes for birch stands. In the birch stands of the 1st and 2nd site index, except the 3rd site index, irrespective of the age class of the stand, the amounts of losses calculated according to the author's formula are higher than these determined by the CM. An explanation could be a particularly high price on birch timber in the first half of 2007. The results would differ if there was no demand for timber of this particular species in the market and if their price was low.

The authors' points out that it is much more useful to peg the calculation of losses to the real outcome of assortment and market price of timber and thus, also to the demand, than still peg it to the minimum salary determined in the country. If the demand for raw materials of a particular tree species and their price is high, the amount of losses at that moment is increased. It is not profitable for an initiator of transformation to get a transformation permit only for cutting of a forest stand and selling of valuable timber materials because thus the amount of profit is considerably limited. As the demand in the market declines, the price of assortments and calculation of losses also decreases, what gives the initiation of transformation a possibility not to overpay for forest stand at that particular moment.

Recommendations and Conclusions

Recommendations:

1. In order to attain the goals of the forest policy and to prevent shrinking of the forest area in the country, the initiator of transformation in all cases of transformation must compensate to the state for potential lack of the forest land, what may be done in three possible ways:

a) if the initiator of transformation has other forest lands apart from those applied for forest transformation, he/she must exclude from economic activities the same area of forest stand, besides, according to the survey results, it should be as similar to the transformed forest stand as possible;

b) if the initiator of transformation has no other forest lands but he/she has areas used for agricultural purposes, then an identically large area of forest should be planted on agricultural lands next to the forest stand;

c) if the initiator of transformation has no lands used for agricultural purposes, then he/she must pay to the state the compensation for planting of forest in another territory, determining the amount of money by 25 % larger than approved by the provisions of the Structural Funds of the Rural Support Service for afforestation of abandoned agricultural lands and tending of plantations until the adding of the stand to the forest covered area.

2. As the damage to the community is inflicted by abating areas of natural and ecologically significant forests, then for their transformation a corresponding amount of compensation must be paid calculated assessing individual parameters of each particular forest stand.

3. If the area applied for transformation is a semi-natural forest, which is not protected by the state, then losses, according to the above mentioned, have not been inflicted to the community and thus, should not be compensated for.

4. The paid amounts of losses and compensations should be transferred into special budget foreseen for state support to afforestation of abandoned agricultural lands or payment of compensation to forest owners for restrictions or prohibition to perform economic activities. Thus, not only deficiencies in the appendices to the existing transformation regulations could be eliminated, what are related to the calculation principle of the relative value of one hectare, but also the problem of lack of money for payment of compensations could be partly solved.

5. In order to make easier the time-consuming calculation and estimation of losses caused by transformation and possible compensations, the SFS has to conclude co-operation agreements with its structural unit – CSC that beside consultations how to prepare correctly and submit a transformation project would also provide paid services, namely, would survey on site the applied transformation object, measure the trees to be felled, check project sketches and other documentation necessary for further implementation of the project, and prepare an estimate of losses and compensation in Latvia. Thus, the SFS could evaluate the submitted auxiliary materials and make the decision about the issue of a transformation permit faster and without involvement of additional employees.

Conclusions:

1. The forest land transformation process does not threaten the increase of forest land area in future, because it is a socially economic process, related to the aspiration of people to improve the quality of their living environment and not to illegal acquisition of timber.

2. The existing legislative acts determining the procedure for issue of a transformation permit and calculation of losses to the state for elimination of natural forest environment have to be defined more clearly and improved.

3. Applying proposed methodology for calculation of losses and compensations that is based on forest naturalness and the principle of ecological significance, the principle of social justice would be assured, the progressive changes in public thinking and socially economic conditions would be taken into account.

4. Taking as a basis proposed methodology for calculation of losses and compensation, several significant improvements will be achieved in future:

a) the responsible employees who have to make decisions will have less work;

b) issue of transformation permits will be easier and faster;

c) administration of loss and compensation calculation will be optimised;

d) the payment for reception of each particular transformation permit will be adequate and corresponding to the changing market situation and socially-economic significance of the forest stand;

e) the money paid into the special budget of the state will be diverted for the support of appropriate activities.

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ВОЗМОЖНОСТИ УСОВЕРШЕНСТВОВАНИЯ ТРАНСФОРМАЦИИ ЛЕСНОЙ ЗЕМЛИ В ЛАТВИИ

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Резюме

Общая лесная площадь в Латвии увеличивается на много быстрее, чем уменьшается из-за трансформации лесных земель. Это происходит благодаря натуральному и искусственному облесению, главным образом заброшенных сельскохозяйственных земель. Законодательство Латвии позволяет в определенных случаях изменять форму использования лесных земель – произвести трансформацию. Однако процесс трансформации лесной земли в Латвии сложный, долгий и дорогостоящий. В статье приведен анализ статистических данных, характеризующих процесс трансформации лесной земли, и идентифицированы недостатки и основные проблемы этого процесса. Разработаны предложения усовершенствования процесса трансформации лесной земли и предложена методика калькуляции утрат, возникающих в связи с изменением формы землепользования, и расчета величины компенсации в связи с потерями, занесенными натуральной лесной среде.

Ключевые слова: трансформация лесной земли, методология компенсации