

THE FOREST AND FORESTRY IN LATVIA

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The forest is one of Latvia's major assets. It takes up 2.82 million ha or 44% of the Latvia's total land area - 64 thousand km². This illustrates the great importance of the forest for the Latvian economy, landscape, environment, flora and fauna. For many Latvians the forest also means a place for leisure activities, recreation and hunting.

FOREST LAND

During the last 70 years the forest cover percent shows a stable trend of growth. The increase is from 25% in 1923 to 44% in 1994 (Fig. 1).

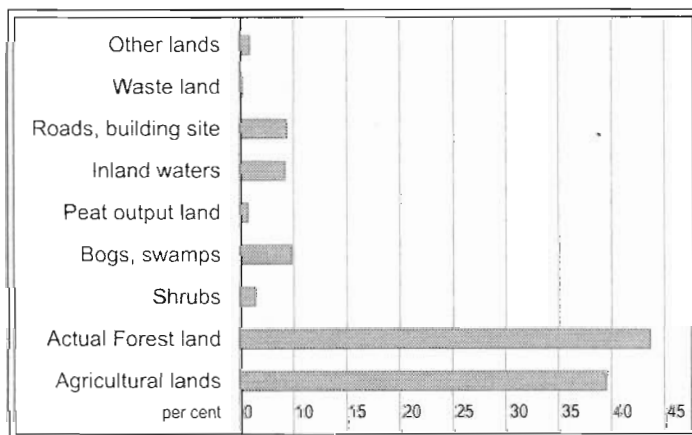


Fig. 1. The land use in Latvia (1992), total area 6,458.9 thousand ha.

The territorial distribution of woodlands in Latvia is highly uneven. Areas with a higher forest cover are in the central part (Riga region), the South-East (Cesis and Madona regions) as well as in the West (Ventspils, Liepaja, Talsi regions) of the country. The highest forest cover is in the Ventspils region - 60%, the lowest in the Dobele region - 26%.

FOREST OWNERS

The law is clearly stating that lands which were in private ownership until 21.07.1940 are going to become private again. As it follows from the statistics of that time, under private ownership there were about 2/3 of land or 4.2 million ha as the result of the first land reform in the 20s, and later supplemented by extra 1,735 thousand ha. The law on land privatization states that about 1,734 thousand ha of land could remain the state property including about 1,390,300 ha of forest land which was the state property in 1935.

To have an idea about the forests that can be

privatized, it is useful to compare the distribution of forest land according to users in 1935 and right before the reforms, in 1988. The first results of the land reform now under way are represented in Table 1.

Table 1. Distribution of forest land.

	1935		1988		1994	
	Thou. ha	%	Thou. ha	%	Thou. ha	%
State forests	1390.3	79.6	1744.9	63.3	1606.3	59.9
Private forests	306.4	17.5	-	-	440.3	15.5
Collective and state farm forests	-	-	916.4	33.2	215.2	7.6
Other forests	50.5	2.9	96.2	3.5	557.8	20
Total	1747.2	100	2757.5	100	2819.6	100

During the land privatization 258,000 applications were submitted, covering 3,083 thousand ha of land including about 705 thousand ha of forest or about 26% of the total forest area. As it follows from the forest area likely to be privatized, now 324 thousand ha remain still unclaimed, while for 242 thousand ha compensation is claimed.

GROWING CONDITIONS AND SPECIES COMPOSITION

The forest growing conditions in Latvia are highly varied. They are subdivided into five site class types: the woodlands on dry mineral (58.0%), wet mineral (10.4%), wet peat (12.0%), drained mineral (9.6%) and drained peat (10.0%) soils. The distribution of tree species over the site class types is also uneven.

Species distribution over forest site types do not correspond the optimum growing conditions for particular tree species. As an example, 3,306 ha of spruce, 661 ha of white alder and even 47 ha of oak stands are growing on the three poorest dry site types, normally suitable only for pine. Also species composition for forests of different origin

and history (state owned and belonging to agricultural enterprises) follows different patterns.

Tree species	Area,%
Scots pine	39.7
Norway spruce	20.6
Birch	28.4
Black alder	2.4
Aspen	2.5
White alder	5.3
Oak	0.3
Ash	0.8

STANDING VOLUME

The entire standing volume (above-ground volume of standing trees overbark) makes up 489 million cubic meters. The higher standing volumes are in the state-owned forests as the result of a higher level of silvicultural tending.

The mean volume of mature stands is 258 m³/ha. The changes in the mean volume during this century display also changes in forest management practices. The average volume of all stands including the mature stands is showing a tendency to increase. Latvia's forest resources are greater now than in the first half of this century.

Natural die-back is estimated to make up 2.4 million m³ per year including 1.4 million m³ in conifer stands. Previous forest health regulations enforced to remove all dead trees from the stand. New regulations are prescribing sanitary cuttings only in cases of forest pests. The accumulation of deadwood in stands where is no risk of pests and diseases helps to maintain high levels of biodiversity and therefore to balance productivity and ecological goals.

FOREST HARVESTING

The aim of forest management is to keep the current level of utilization of the forest resources so that it does not reduce the future possibilities for forest utilization. Harvesting of mature stands must be followed by the establishment of new stands. The harvesting operations should consider the sensitive features of the forests, so as to avoid understocking and a loss of productivity and viability of forest ecosystems.

For final felling different technologies are used. Depending upon the forest category, the forest lands fall under certain silvicultural and exploitation constraints. The most common harvesting method is clear cutting with up to 100 m wide cutovers made in a mature stand.

Silvicultural treatment on a commercial basis is carried out in both exploitable and restricted management forests, except for some especially protected areas. The treatments practiced are thinning, conversion and sanitary

felling, aimed at improving the tree species composition in the stand, obtaining higher yields, better quality and health of the remaining stand. In 1988, 19 thousand ha of young stands were cleaned, but in 1994 - only 15.7 thousand ha.

The volume to be removed in final and intermediate cuttings is specified by the forest management plan, which is based upon the status of the respective stand, the age structure and the dominant tree species. The volume of allowable cut in final felling is estimated to be 5.7 million m³, plus 2.7 million m³ in thinnings, thus totalling 8.4 million m³ (Fig. 2). At the basis for estimation of the allowable cut in the country's forests is the principle of permanent, increasing and even forest utilization. In general, we can say that this is the principle of sustainable forest yield management. Today number of activities are aimed to find better balance between economical and ecological functions of forest to achieve real sustainable forest management.

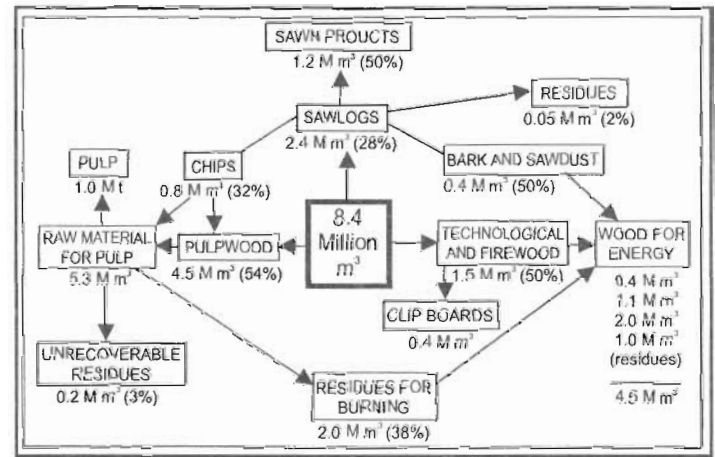


Fig. 2. Wood flow for Latvia based on the estimated cut.

FOREST REGENERATION

Latvia's forests are restocked either naturally or artificially. 70% of clear cut areas are reforested by planting, 30% of these are areas usually on wet mineral and wet peat soils, which are regenerated naturally by pine, spruce, and deciduous species.

To provide for artificial reforestation by using genetically enhanced seed and planting stock, forest seed orchards have been laid over the total area of 965 ha. The main forest tree species are represented as follows: pine - 697 ha, spruce - 170 ha, larch - 57 ha, birch - 10 ha, aspen 11 ha, others 20 ha. The annual demand for pine and spruce seeds to cover reforestation needs amounts to 1.0 and 0.5 tn, respectively.

In 1994, the yield of seedlings produced by 27 nurseries of the overall area of 426 ha made up 7.8 million for pine and 18.9 million for spruce, thus fully meeting the demand for planting stock.

In 1994 the area under clear cuttings comprised 11.2 thousand ha.

FOREST AND ENVIRONMENTAL PROTECTION

Forest is an important component of the Latvia's environment. Therefore the aim of forestry is also to preserve the diversity of nature. For this reason a certain part of the Latvian land area is subject to some form of nature protection.

All forests in Latvia are divided into three forest categories according to their function and importance from the ecological, economical or from the point of view of some specific function:

Category I - protected forests 9.6 % :

- nature reserves	5 sites	38.7 thou. ha
- national park forests	1 site	51.6 "-
- nature park forests	11 sites	15.0 "-
- nature protection forests	180 sites	87.6 "-
- soil- protection		44.4 "-
- forest parks	76 sites	72.2 "-

Category II - restricted management forests 16.3 % :

- protected landscape forests		55.1 thou. ha
- green zone forests		244.0 "-
- environment protection forests		225.7 "-

Category III -commercial forests (all other forests) 74.1%.

Especially protected forest areas of 248.2 thousand ha, or 7.7% are classified as restricted management forests and commercial forests with special regulations of management and utilization. The most important ones are the following:

- forests along rivers and lakes	138.7 thou. ha
- forests along roads and railways	44.4 "-
- forests around rutting sites for cock-capercaillie	20.5 "-
- reserved forest compartments	11.8 "-
- forests as cultural monuments	5.4 "-
- protected landscape forests	4.3 "-
- sites for scientific research	3.8 "-
- forests around protected water reservoirs	3.8 "-
- parks and dendrological plantations	3.6 "-
- protected margin and edge stands	3.4 "-

To follow up the condition of Latvia's forests, a system of forest monitoring was established and is in operation. The monitoring of forest health in Latvia is carried out by the Latvia Forest Inventory Institute. Starting with 1990 the assessment of tree crown defoliation and dechromation are carried out on 398 permanent observation plots, as well as chemical composition of foliage and vegetation. The forest monitoring is performed according to the European forest monitoring methodology. At the same time the observations are done on the sample plots close to the sources of air pollution (industrial plants, factories, etc.). Starting with 1994, the introduction of American monitoring system is

going on.

The total amount and changes in emissions of air pollutants and defoliation of forests assessed on permanent plots are presented in Table 2.

Table 2. Emissions and forest condition in Latvia.

Data	Unit	1990	1991	1992	1993
Total amount of					
- sulfur	kg/ha/year		10.1	14.0	
- nitrogen	kg/ha/year		4.8	5.4	
Percentage of sample trees per class	%				
- class 2 (moderate)	%	36			33
- class 3 (severe)	%	1			2
- class 4 (dead)	%	0			0
(according to the UN/ECE and EU defoliation classification)					

NON-WOOD GOODS AND BENEFITS

Economically important forest by-products in Latvia are resin, sap, branches, Christmas trees and boughs for decoration. Also of interest are herbs, buds, stools, bast, bark, birch-boughs. Forests are providing also possibilities for hay-making, cattle grazing, placing of apiaries, collection of forest seeds for the needs of reforestation, collection of berries, fruits, nuts, mushrooms, and other raw materials found in the wild.

The Latvia's forests are rich in game animals. Winter populations of 1994 were approximately as follows: moose - 8,700; deer - 29,200; roe - 91,800; wild boar - 26,370; beaver - 22,780; fox - 18,530; wolf 810; lynx - 650. Hunters can meet the small game such as wild ducks, geese, woodcocks, black grouse, capercaillies and other forest birds and waterfowl in wetland sites, lakes and ponds.

INCREASING THE FOREST PRODUCTIVITY AND INFRASTRUCTURE

The silviculture activities are the main potential to increase forest productivity. These include tending of newly established young stands and reforested areas. Research based on thinning models will help us to achieve best results in stand productivity simultaneously taking care of ecological values.

The woodland drainage is a potential source for increasing forest productivity. Nevertheless, the best balance between forestry interests and environment conservation still is a challenge for foresters and specialists in forest ecology.

Besides, the bigger the area already drained, the greater the demand for the maintenance and reconstruction of the existing drainage systems. Right now, 42 thousand ha of forest land once drained is in need of maintenance activities.

Proper management and exploitation of forest resources is impossible without a system of forest roads satisfying the defined requirements. At present the overall length of forest roads amounts to 13.1 thousand km or 0.75 km per 100 ha of forest, which does not comply with the optimum of 1 km of road per 100 ha of forest. Thus, the length of forest roads is to go up to 17.4 thousand km, or an increase of 4.3 thousand km is needed.

FOREST ADMINISTRATION

The basic principles for forest administration are stated by the law "Forest Management and Utilization". The principal state authority is the State Forest Service of Latvia. Under its supervision and management there are 35 Head Forest Districts, 259 Forest Districts and 2,159 Ranger Districts. They carry out the forest management in the state-owned forest and exercise general control all over the Latvia's forests. One regional forest district covers approximately one administrative region, one forest district covers nearly the territory of one local community. In some cases (Ogre Head Forest District) the division nearly matches local administrative organization. In the future it seems reasonable to adjust borders of these units of the State Forest Service with local administrative units (or may be two or three in regions with a small percent of forest covered area). The forest inventory is also under the responsibility of the State Forest Service.

INVENTORY SYSTEMS AND METHODS IN USE TODAY ON NATIONAL, REGIONAL AND LAND USERS LEVEL

Forest inventory, forest management planning and all other project activities currently are performed by the State Forest Inventory Institute. It is financed from the State budget through the State Forest Service and is working under its supervision. Inventories of all the state-owned forest lands were done once in 10 years. For the other (mainly agricultural) forests this was true to a lesser extent. During the last 20 years the inventory was done on the average on 300 thousand ha of forests per year. Until 1978 the inventory was performed as "the basic inventory" - the forest inventory was done checking stand parameters and silvicultural work done by regional forestry enterprise since the previous inventory. Then, on the basis of collected data forest management plan for that regional forestry enterprise was elaborated. From 1979 simultaneously with "the basic inventory" there was introduced also "the permanent

inventory", that is the forest inventory specialist was working all the time at one forestry enterprise checking up only forest stands where some silvicultural or logging activities were planned or done. Between 1971 and 1991, the number of different forest management plans made amounts to 1,137. Since 1991 the forest inventory is made as "the basic inventory" that implies inventory of all the forests in the territory of the Head Forest District, irrespective of their ownership status.

Currently forest inventory and forest management planning represent two parts of one process.

During the next decade (until 2005) it will be necessary to perform forest inventory on the area of 250 to 300 thousand hectares per year.

Forest inventory and management planning includes the following activities:

- inventory of changes in forests and forest lands
- planning of silvicultural activities;
- technological planning for logging operations (suspended in 1992 due to lack of funding);
- management planning for hunting grounds;
- planning and management planning for parks and recreation areas (suspended in 1992 due to lack of funding);
- planning of short rotation plantations;
- maintenance of forest monitoring system;
- planning of forest drainage systems and road construction;
- other activities (maintenance of Latvia's forest data base, maintenance of cadastral information, estimation of allowable cut for the whole of Latvia and for separate regions, evaluation of felling areas).

The present forest inventory and management planning system is working and is more or less matching the situation we have. Of course, it is necessary to improve the inventory technology and equipment, but functionally it works. The biggest problem for the forest inventory service now is to make the inventory and forest management planning for an enormous number of new and potential forest owners. According to some estimates, in Latvia there will be up to 200 thousand small or medium-sized forest holdings.

FORESTRY LEGISLATION

The Law on "Forest Management and Utilization" was in force since 1992. The Law was adapted to the needs of transition period until a full ownership is established over the private forest holdings.

The restitution of private ownership is the dominating forest policy question for the time being. The Law on Forest Management and Utilization was revised as a new text by the Parliament in March 1994.

The changes in the Forestry Act had to be done in a

very short time in order to harmonize it with the Civil Code. The revision concerns mainly the following:

- duties and rights of the forest owner;
- the forest land that has remained unclaimed by the legal successors belongs to the state;
- stumpage fee system on private land is replaced by taxes;
- State Forest Service manages the state owned forests;
- renting forest land is regulated by the Law;
- regulations for nature reserves are stated in a legislation act, e.g. the procedure for payment to the forest owner, which is still unsettled;
- what areas should be protected should be pointed out by the State Forest Service, the process is just now going on;
- forest holdings exceeding 1,000 ha are to hire a professional forester as the manager;
- smaller holdings are to invite a consultant once a year in order to decide on the operations for the current year;
- State Forest Service bears responsibility for the advice given for 3 years;
- afforestation methods on agricultural lands should be demonstrated by the State Forest Service;
- reforestation and cleaning should be done at the expense of the owner. If the owner fails to do it, the State Forest Service does reforestation and cleaning, but the owner must pay for it;
- increasing the yield of forest, results of research should be implemented. A special fund will be set up in order to finance reforestation and silvicultural work;
- the owner has to report of his intention to make clear cuttings to the local forestry authorities three weeks in advance. He must follow the management plan.
- in order to pick mushrooms, berries, etc., the owner's permission must be obtained; he has the prior right to do

so according to the Law. Local authorities can decide on restrictions to free access to forests, e.g. during the season of high danger of forest fires;

- State Forest Service can collect payment for the consultant work for individual farmers;
- forest inventory and management planning on private forests is done by the state at the expense of the owners;
- Forest Policy Guidelines for Latvia - proposals should be presented to the Parliament but elaborated by the Government. In 1996, perhaps in 90-95% cases the ownership will be settled including the state ownership. A lot of forest policy means must be adapted to that situation.

It is quite evident that the process of forest policy and legislation formation is going along with other processes in Latvia's society and is far from completed. At the same time we are following the developments in forest policy in Europe and we are trying to harmonize our advances with an overall trend towards sustainable forest management. During the last few years special attention was paid to ensure the stability and development of the ecological functions in forests. Two basic approaches were used. First, all Latvia's natural biotopes must be preserved as representative sample sites. This means that we must also update our system of protected forest areas to match that principle. Second, in Latvia, with its long-standing forestry traditions and where nearly all the forests have experienced some impact by man, it is impossible to distinguish between forest management and forest conservation. We are looking towards integrated forest functioning and goal-oriented forest management systems, where the goal determines forest management means ensuring balance between all forest functions - economical, ecological and social.