

THE CHANGE OF FOREST COVERAGE IN LITHUANIA

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Abstract

The article presents the Lithuanian forest land change in the period of more than a hundred years. The causes leading to forest land use change are analyzed in the article. The beginning of forestry in Lithuania can be traced back to Sigismund Augustus times starting from 1557, when Wallach reform was launched. However, over time forest land and its use evolved for a variety of political, social and economic factors. In 1795 the state-owned forests in Lithuania amounted to 35% of the total area of forests; other forests were owned by landlords, churches and kulak farms. Later forests were cut down quite rapidly, many of them burned down, but reforestation work was insignificant. The smallest forest coverage during the analyzed period was in 1945, just 16.5%. Forests were thinned out, wastelands and waterlogged areas dominated. Later, albeit with different variations, the forest coverage of Lithuania increased and today forest area accounts for more than 34% of the total area of the country, the majority of which are private forests. More detailed characteristics of forest land use and user trends as well as their causes are presented in the article. It also looks at the possible prospects.

Key words: forest uses, forest coverage, afforestation, forest land, agricultural land use, land-use features, abandoned land.

Introduction

Lithuania is situated in forest area, where the natural vegetation is the forest. But over time forest coverage in Lithuania has declined due to human economic activity. 200 years ago the forest occupied almost 40% of the country, in 1914 – just 19.7%, whereas in 1939 – only 16.7%. After the Second World War, the deportations and later collectivization resulted in a lot of uncultivated land and the forest began to grow. Specific indicators of forest were analyzed by professors P. Matulionis (1930), M. Lukinas (1967, 1977), S. Karčiauskas (1971), N. Eitmanavičienė (1976), S. Karazija (1979; 1988), G. Pauliukevičius (1982), J. Kenstavičius (1995) and others. According to the state forest accounting data, in 1948 forest coverage of Lithuania was 19.7%, in 1956 – 22.6%, in 1966 – 24.6%, in 1983 – 27.9%. Before the restoration of Lithuania's independence, i.e. in 1990, the country's forest coverage was 28.5%. After the restoration of independence, the forest coverage of the country has been increasing and in 2000 it amounted to 30.9%, but in 2015 the total forest area is 2,220.5 thousand ha, i.e. the figure for forest coverage is 34.01% according to the Land Fund data of the Republic of Lithuania. The forests are dominated by conifers, they represent 64% of all stands. In individual regions of the country, the forest coverage is very uneven. This relates to the fertility of the lands.

Forests are one of the most important treasures of Lithuanian nature, having significant economic, social and ecological value. Lithuania has formed the long-term forestry policy and its implementation strategy in order to ensure sustainable forestry development, meet society needs for forests and ensure forest preservation for future generations recognizing the long duration of forests and different forms of ownership and their interaction, while promoting the conditions of correctly managed forests that would bring economic benefits.

Lithuanian forestry policy is formulated in accordance with: the Lithuanian Constitution and other laws; the European Convention for the protection of wildlife signed in Bern in 1979; the Biodiversity Convention signed in Rio de Janeiro in 1992; the world's forest conservation principles adopted in the United Nations Conference on Environment and Development; Ministers' Conferences (held in 1990 in Strasbourg, in 1993 in Helsinki and in 1998 in Lisbon) of European forest conservation resolutions; the European Union's forestry policy and strategy principles; the European Union directives, forestry and nature conservation issues. The European Union's forestry strategy (the latest version was adopted in 2013) approved by the European Council is guided by basic principles, namely: sustainable forest management, forest multifunctional role in maintaining the balance and ensuring forest protection; resource efficiency, forestry and the forest sector's contribution to rural development, economic growth and job creation optimization; responsibility for the world's forests by promoting sustainable forest production and consumption (Europos ..., 2013).

As can be seen from the above statistics, forests cover quite a large part of the territory of the Republic of Lithuania and the forest coverage is slightly higher than European average, but the forestry policy states that the country's forest coverage should increase to at least 35% taking into account the natural frame and landscape needs.

The aim of the research is to distinguish forest land use peculiarities of Lithuania. The objectives of the research is:

1. to examine the strategic documents, laws and regulations related to the forestry administration;
2. to examine the basic statistical indicators that characterize forest use and forestry system's development change in Lithuania;
3. to present major forest use change characteristics after the fulfilment of the analysis.

Methodology of research and materials

Scientific literature and legal documents, analysis and synthesis, statistical analysis and mathematical processing and comparative analysis were used to achieve the aim. The Lithuanian forest development and forest policies' change, forest utilization statistics, the laws, regulations, the afforestation program, strategy, research papers, rural development programs and other available literature were analyzed.

The main legal instruments that were analyzed in the research included the land and forest laws determining forest policy issues. Rural development programs are important in the context of forests growing. The State Forest Service statistics were analyzed as well: forestry statistics and the national forest inventory. One of the most important sources were the data of the State Land Fund describing all private, state and municipal land situated in the territory of the Republic of Lithuania. The collected data and information were structured and summarized.

Results and discussion

Lithuanian forestry by 1990. The times of Sigismund Augustus (since 1557, when Wallach reform was started) should be considered as the beginning of the forestry in Lithuania. It can be said that until the Union of Lublin (1569), Lithuania applied the field system, hunting in the forests and beekeeping were more important than wood. In the sixteenth century trees were already an object of trade. This is proved by forest-related references enlisted in the law of Wallach reform: forests were separated from the fields; stands were released (given) for the construction purposes and other matters only to those farmers who did not own the forest; the Law also dealt with deforestation and afforestation, reforestation, however, the purpose of afforestation was not forest cultivation, but the maintenance of hunted animals.

Lithuanian state forests in 1795 (Lithuanian-Polish division) amounted to 309 thousand ha (35% of the total forest area), other forests were owned by landlords, churches and kulak farms. Later forests were cut down quite rapidly. "The Forest Protection Act", released in 1888, could not stop deforestation any more.

During the German occupation (1915-1918), the forest coverage rate in Lithuania decreased even more. During the whole period of the occupation the clear felling was carried out in 26,512 ha and selective one – in 38,460 ha. The total volume amounted to 12 million m³. During the above mentioned period forests were not replanted, but large areas were burned down.

The Provisional Revolutionary landlords' and peasants' government of the Lithuanian Soviet Socialist Republic, which was established after the war, founded an immediate activity program by the manifest of December 16, 1918: all land with inventory as well as all the forests, waters and underground belonging to landlords, kulaks and monasteries was passed to the ownership of all working people of Lithuania.

The Soviet government protected the forests. In 1919, the Agricultural and Forestry People's commissariat issued a decree on the basis of which it was forbidden to deforest the growing forest. According to this decree the local population were allowed to use only deadwood, fallen trees and so on.

On August 18, 1920, "The Land Reform anticipatory law to alienate forests, wetlands, waters and the privilegedly acquired lands" was released. According to the law, 537 thousand ha of forests were expropriated until 1939. During bourgeois times, many forests were cut down. Forests were cut down not only for people's needs but also for export. About 260 thousand tons of wood were exported in 1929, and 420 thousand tons – in 1939.

Forests were regenerated very slightly. Since 1918 until 1939 (Fig. 1) about 260,245 hectares of forest were cut down, and 55,884 ha, i.e. only 21% of the total cut down area were sown and planted. In 1926 forests were sold in public procurement to peasants and in auctions – to forest merchants.

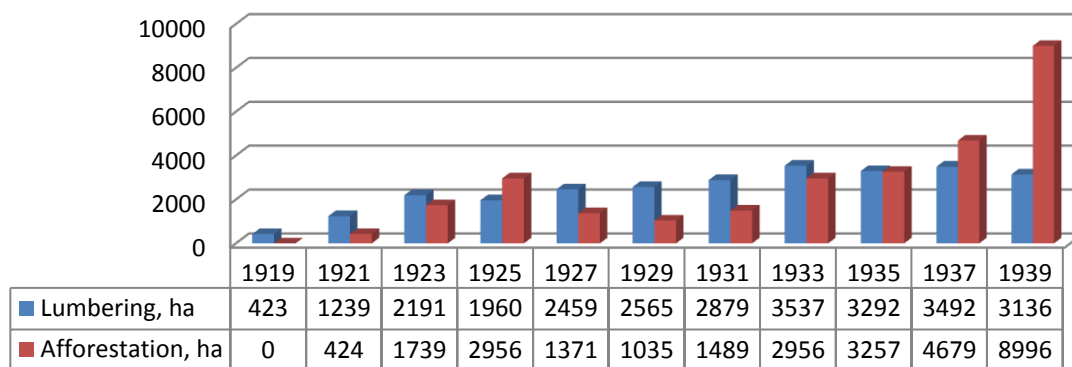


Fig 1. Deforestation and reforestation during the period between the years 1919 and 1939 (compiled from the source Ancukevičius et al., 1975)

Due to the deteriorating situation in forestry, the government was forced to adopt "Forest plantations law " on May 11, 1937. The law accelerated the forest growing work, but did not stop the destruction. The purpose of the law was to accumulate more funds for forest restoration, but it was not perfectly executed: forest enterprises exercised afforestation in their own discretion, a lot of money was returned, the quality of reforestation was poor, large areas of forests were left to natural regeneration, etc. (Ancukevičius et al., 1975).

Estimating forest land and stand groups, errors were not avoided, which over time decreased (in 1998 the error of forest land assessment was 2.52%, in 2002 – 1.14% (Kuliešis et al., 2003)). The data on the country's forest coverage (around 1980) in various sources are different, i.e., the data of the official statistics' website shows that forests in 1937 amounted to 906.482 hectares. According to the State Forest Service data from 1937, Lithuania's total forest area was 1082432 hectares, of which forest area occupied 931.986 hectares, while the non-forest area (i.e. roads, water bodies, peat bogs, soils, and grasslands) – 150.446 hectares (Lietuvos ..., 1973). Meanwhile, O. Ancukevičius et al. (1975) argued that in Lithuania state forest area was 728.913 hectares in 1937, while according to the official statistics' website – 733.822 ha. According to the forestry data of 1988, forest land occupied 1.931 thousand ha, while the Land Fund accounts for 1974.9 thousand ha. As one can see, the data really are quite different.

In 1940 forestry was neglected, forest coverage of the country amounted to just 16.7%. Forests were thinned out, while wastelands, waterlogged areas and so on dominated. In forestry, the same as throughout the Lithuanian SSR, socialist forestry system prevailed, socialist forms of work were widespread. However, in 1941 large-scale reforestation work began and about 9194 hectares of forest was re-established by sowing and planting trees. There were also concerns about the education of foresters – the Forestry Faculty of Vilnius State University was founded in the fall of 1940.

During the second occupation (1941-1944) forests in Lithuania were cut and eliminated rapidly. Under the pretence of the protection from partisans clear felling was conducted almost within 100 metres on both sides of roads and railway tracks. Immature forests with convenient access were cut down. Forest areas decreased dramatically. During the occupation, forests were destroyed by fires as well. Due to the war and other reasons, about 11.5 thousand ha of forests were burned down. It is estimated that the country's forest coverage in 1945 was below 17% (Lietuvos valstybiniai ..., 2012). At that time, an independent department of forests acted under the Kaunas General Commissariat, which handled all the forest administration activities. Forestry was dedicated to the needs of the occupants and some forests were planted only thanks to great efforts of foresters. Serious damage was done to forest management – fleeing Germans destroyed the central archive of forest management.

On January 1944 in Moscow, A. Kvedaras was commissioned to organize the Lithuanian SSR Forest Industry People's Commissariat, which was founded in July of 1944 and in 1946 was transformed into the Ministry of Forest Industry. This forest management body has been restructured for several times with the purpose of improving forest management. But the most prominent event happened in 1957 – the establishment of the Ministry of Forestry and Forest Industry of Lithuanian SSR. At that time the local administrative units changed as well: only forestries and one industrial forestry were left instead of former 34 forestries and 7 industrial forestries. The number of forestries has been gradually increasing, while reducing their size and improving the administration. Since 1964 forestries were

reorganized into four industrial forestries of a new type. Subsequently, the number of forest districts grew along with the growing number of forestries.

In 1945, Lithuanian forest coverage reached only 16.5%. However, 3257 hectares planted with forests already in 1945 and 6503 hectares in 1947. In 1946 sanitary felling was expanded. In 1948 forest coverage reached 19.7%. In 1949 the law "Concerning reforestation and forest growing measures' enhancement in Lithuanian SSR" was passed. 15 thousand hectares of forest were planted in agricultural land during the period between 1946 and 1950, in addition 11-12 thousand ha of forest were planted annually during the period between 1951 and 1970 (Lietuvos valstybiniai..., 2012). In 1951 the area planted with forest reached about 19 thousand ha per year.

Oak woodlands were restored until 1955. Larches were planted everywhere as much as possible. Forest drainage and road construction were taken care of. In 1956 Lithuanian forest coverage reached 22.6%, and in 1961 – 23.9%. Since 1961 the main forest felling in the republic has been carried out so as not to exceed the growth rate. In order to meet economic needs of the country, timber was transported from other republics. In 1965 the area of forests in the country amounted to 420 thousand ha (Table 1). Forest coverage reached 26.4% in 1973 (Antanaitis et al., 1988).

Table 1

Forest and agricultural land area (1965-1970), thousand ha

| Year | Forest land | Fallow ground | Arable land | Meadows | Grasslands |
|------|-------------|---------------|-------------|---------|------------|
| 1965 | 420 | - | 2,703 | 626 | 425 |
| 1966 | 432 | 25 | 2,505 | 467 | 442 |
| 1967 | 434 | 25 | 2,511 | 463 | 439 |
| 1968 | 451 | 17 | 2,497 | 454 | 470 |
| 1969 | 485 | 12 | 2,456 | 438 | 530 |
| 1970 | 497 | 9 | 2,458 | 430 | 551 |

(Source: Lithuanian Department of Statistics)

The analysis of Table 1 shows that the area of forests and pastures has increased. Forest management works expanded during the specified period, measures to protect forests have been improved. In 1983 Lithuanian forest coverage reached 27.9%. Arable lands and meadows gradually declined during that period. However, from 1975 until 1982 arable land areas began to grow slowly increasing by about 0.4 thousand ha annually and there were 2.411 thousand ha in 1985. Meadow areas decreased by 5.3 thousand ha from 1976 to 1985.

In 1985 the area of 9.9 thousand ha was cut down. During the period between 1986 and 1988 around 8.5 thousand hectares of forest were cut down, while in 1990 – 10 thousand ha. Felling area gradually increased, but efforts were made to replant it. In 1985 reforestation was performed in 8,747 hectares, from 1987 to 1989 – in about 7,800 ha and in 1990 – in 7,604 hectares (Lithuanian Department of Statistics). Farmland area decreased from 4,124.7 thousand ha to 3,373.0 thousand ha during the period between 1949 and 1989. It is likely that the area decreased due to its transfer to state forestries, due to urban development as well as the decrease in the number of individuals using agricultural land for personal use (Aleknavičius et al., 2010).

Forest area change after 1990. After the restoration of Lithuania's independence and the beginning of the land reform, the private forest area increased steadily. Forest coverage in Lithuania was about 29.8%. Before 1998 the national forest inventory was carried out irregularly and inaccurately therefore the exact information about forest resources and forest condition was not known. Since 1998 the national forest inventory (regional monitoring of forests has been carried out in Lithuania since 1987) has been organized. Currently, the inventory is carried out using a sampling method and is dedicated to the performance of Lithuanian forest monitoring. Meanwhile, the inventory of forest condition in Europe started around 1980 by means of a 16 x 16 km grid of the middle of that year (Vries et al., 2001). Forest monitoring program includes and values the crown condition, forest growth (gains), foliar and soil chemical composition (Forest intensive ..., 2001). The forest inventory was facilitated by technological progress (orthophotomaps, geo-referencing), various systems and applications (GIS). The inventory monitored cleared spaces, data on reforestation and afforestation, timber resources and other characteristics.

The analysis of the statistics shows that the biggest changes in forest coverage over 20 years were between 2006 and 2007, when the forest area has increased by 62 thousand ha. In addition, significant changes have occurred between 1998 and 2001, when the forest area increased by about 23.5 thousand ha. Forest land amounted to 1970.3 thousand ha in 1993, to 1974.9 thousand ha in 1998, to 1998.4 thousand ha in 2001. Forest land area increased by 14.7 thousand ha in the time period from 2006 to 2007 (Fig. 2).

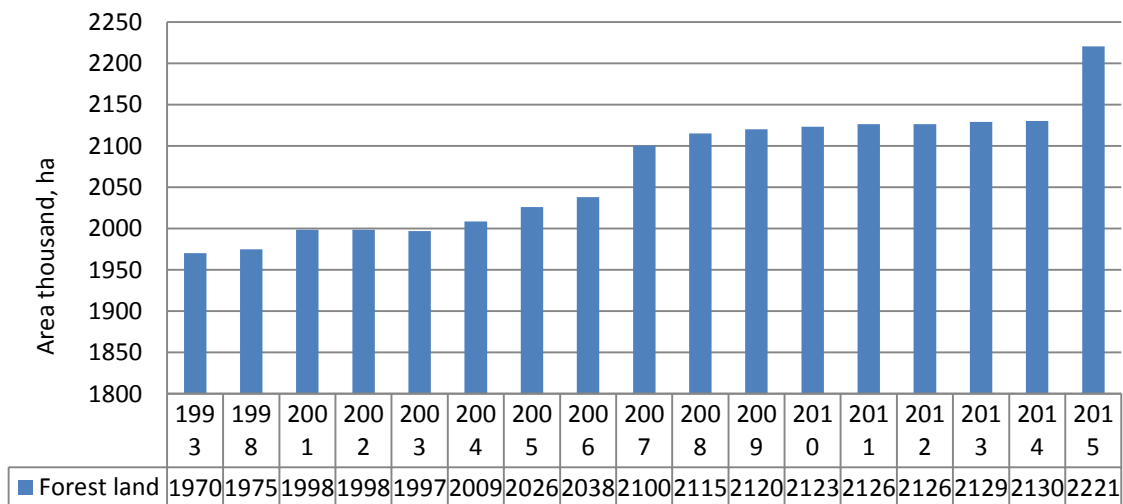


Fig. 2. Forest land area, thousand ha (Source: the Land Fund data).

Thus the country's forest coverage was 29.8% in 1990, while it reached 30.9% in 2000 and 2001. According to the long-term forest health monitoring results, the condition of all major tree species deteriorated until 1995. Since 1995 the improvement trend in the condition of forests was noticed. The condition of Lithuanian forests is average in comparison with other European countries (Lietuvos ..., 2002). Between 1993 and 1996 forests were cut down mainly due to windfalls, drought or insect damage, between 1997 and 2001 the felling of trees was done accordance with established norms. During the period between 1999 and 2002 the area from 0.8 to 1.0 thousand ha was afforested every year (Lietuvos valstybiniai..., 2012). In 1990, 7,604 hectares of state forest have been restored and planted, while agricultural land occupied 3,496.7 thousand ha. Between 1994 and 1997 forest enterprises carried out clear-felling in about 10,562 hectares, while reforestation and afforestation amounted to an average of only 7,935 hectares during the same period. Volumes of forest clear-felling in state forests has decreased since 1998. Clear-felling of trees was done in the area of 9,693 ha in the above mentioned period, while in 2007 – only the area of 9,414 ha. According to the General Forest Enterprise data, about 10,322 hectares of forests were restored and planted annually (by 2013).

Forest land area amounted to 1,998 thousand ha (30.6% of the country's area) in 2002, privately owned forest land amounted to 403.2 thousand ha (20.5%), the state forest land – 1560.3 thousand ha (79.5%). The largest part of private forests is situated in Telšiai, Panevėžys and Utena counties. 20.9 thousand ha on average were cut down annually, approximately 17.7 thousand ha of forest stands were restored, new forest in non-forest lands was planted in the area of 1.5 thousand ha in the time period between 2003 and 2007 (Kuliešis et al., 2009). The felling of trees prevailed in state forests while in private forests forests trees were cut down almost half as much during the period between 1993 and 2001 according to the analysis of the stem volume of cut trees. Clearfelling was done in 17 thousand ha of forest stands annually in the period between 1998 and 2004 (Kuliešis, 2006). As regards the period between 2004 and 2008, 16.2 thousand ha were restored annually on average, of which 8.6 thousand ha recovered spontaneously, 7.6 thousand ha were restored artificially (22.2 thousand ha were cut down, including 17.3 thousand ha of clearfellings on average). Reforestation and afforestation were carried out in unsuitable for farming lands with low productivity score as well as in cutting sites. Forest planting in non-forest land rules allow afforestation in agricultural land areas intervening between them; restrictions on afforestation were set in the rural development and other programs.

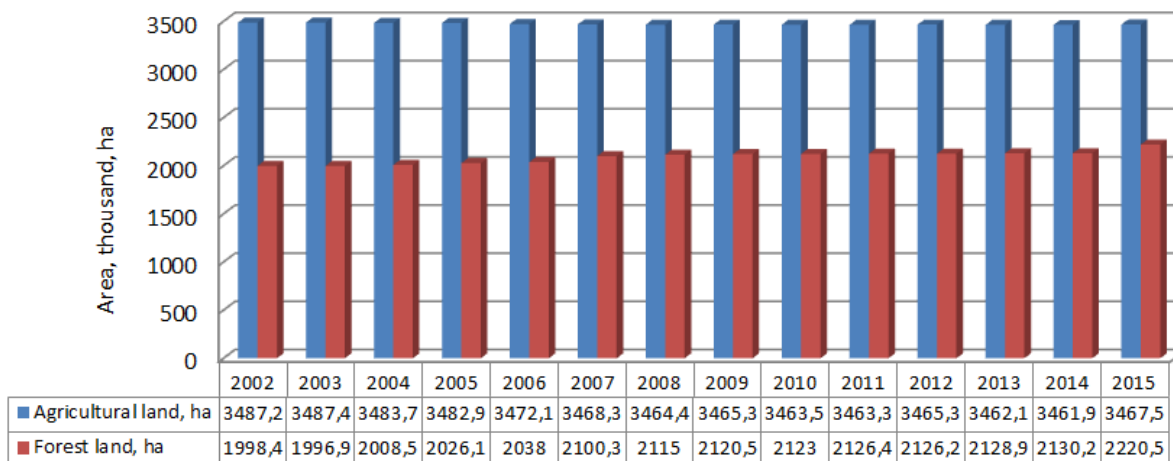


Fig. 3. Agricultural land and forest land between the period of 2002 and 2015 years
(Source: the Land Fund data)

The data presented in Figure 3 give evidence that forest land had a tendency to increase and agricultural land had a tendency to decrease in the course of more than ten years. Agricultural land decreased by 19.7 thousand hectares (about 1.4 thousand ha per year), while forest land increased by 222.1 thousand hectares (about 15.7 thousand ha per year) in the period from 2002 to 2015.

About 4-5 thousand ha of former agricultural land regenerated naturally according to the State Forest statistical data as of 2002 and 2003. Forest enterprises afforested 1,180.5 hectares of unused land and land unsuitable for agriculture in 2003 (Aplinkos..., 2003). 1,118 hectares of new forest was planted in the state forestry sector in 2004, 1.9 thousand ha of forests were planted in non-forest land each year (Kuliešis A. et al., 2009). More and more cutting sites were left for natural regeneration by forest enterprises between 2000 and 2005. Restored cutting sites in private forests amounted to 2,543 ha in 2004. From 2004 to 2008 the restored area increased by 862 hectares on average. 1,304 hectares of afforested land belonged to the state, 840 hectares belonged to the private land in 2005 (Aplinkos..., 2005).

In 2006 private landowners planted 2385 hectares of forest. The results of the survey of private forest owners, carried out during the years 2005 and 2006, show that only 36% of respondents believe that abundance of forests is too low in the county they live, more than a half (54.1%) believe that abundance of forests is enough. Respondents from Marijampolė (54.5%), Šiauliai (48.9%) and Klaipėda (47.3%) counties believe that there are not enough forests in their counties. However, overall, 77.4% of respondents say that the Lithuanian forest area is decreasing. This applies to all counties (Lietuvos miškų..., 2006). Forestry enterprises planted 1,230 hectares of new forests in the course of 2006. Between 2003 and 2006 forest enterprises planted from 1.1 to 1.3 thousand ha of new forests in vacant land of the Land Fund each year.

A declining roundwood demand and prices could be expected to result in decreasing deforestation in 2009. According to the State Forest Service data, 6.3 million m³ of merchantable timber was logged in 2002, 6.2 million m³ – in 2005, 5.7 million m³ – in 2008 and 2009. The felling of trees in state forests was carried out in the area of 138.4 thousand ha in 2008, and forest enterprises restored 9284 hectares of forest. In order to ensure sustainable forestry development, rational allocation and the use of the resources, forest enterprises passed 120.0899 hectares of land for afforestation in 2009.

10,193.7 hectares of forest were restored and planted in 2010. 38.4% of the total forest land consisted of private forests (the State Forest Service data for 2010). According to the data of the National Land Service under the Ministry of Agriculture, on January 1, 2010 there were 168,3 thousand hectares of land which was not used for agriculture and which was degraded in the country, including 145.6 thousand hectares of land not used for agriculture and 22.7 thousand hectares of damaged land. Abandoned land occupied the area of 176.9 thousand ha of the country in 2010. The survey carried out by the Lithuanian Institute of Agrarian Economics found that the majority of respondents pointed out that forest should be planted in such places (89% of specialists and 74% of farmers) answering the question, what should be done in abandoned land (Kuliešis et al., 2011).

The United Nations General Assembly officially declared that the year 2011 is the International Year of Forests. That decision was intended to draw the attention to the importance and the problems of

forests, to increase public interest in sustainable forestry and forest conservation. 10,324.2 hectares of forest were recreated and planted (in 2011 forest enterprises recreated 9.5 thousand ha, newly planted – 0.7 thousand ha). Over the past 10 years forest land area increased by 53.1 thousand hectares and a number of new forests were planted both in private and state land (22.5 thousand hectares were planted accounting for 42% of an increase in forest land area) during the same period, but the need to continue to expand forest areas remains. The land currently not used for agriculture and land inappropriate for use may be used for this purpose (Lietuvos..., 2012).

According to the data of the Land Fund of the Republic of Lithuania, in 2015 agricultural land amounted to the area of 3,467,599.20 hectare, and forest land – to 2,220,512.18 hectares (representing 34.01%). Alytus County has the highest percentage of forest coverage – 49.4%, Vilnius – 44.2% and Telšiai – 37.3%, while the lowest percentage of forest coverage is in Marijampolė County – 22.3%, in Klaipėda – 26.8% and 27.7% in Šiauliai County. The biggest change is visible in Utena County – the forest coverage increased by 2.8% there, however, the forest coverage increased by 2.3% in Telšiai and by 2.1% in Vilnius, in Tauragė County it remained the same, the forest coverage increased by 0.4% in Alytus County, by 0.5% – in Klaipėda, by 0.6% – in Marijampolė (Land Fund ..., 2015). Analyzing by counties one can see that the majority of abandoned lands that could be used for afforestation are in Utena County, which make up 2.37% of the total area of the county, in the county of Vilnius – 2.34%, in the county of Alytus – 1.37%, in the county of Panevėžys – 0.95%, in the county of Kaunas – 0.91%. The lowest percentage of abandoned land is in Marijampolė County – 0.46%, in Telšiai County – 0.47%, in Šiauliai County – 0.52%, in Klaipėda County – 0.57% and in Tauragė County – 0.66%. In the counties where productivity score is higher, the prevalence of abandoned lands is marginal, these areas are more intensively used for agricultural activities and it leads to unequal distribution of forests in Lithuania (Table 2).

Table 2

Abandoned land and forest coverage indicators in Lithuania in 2015 by county

| County | Area, thousand ha | Average productivity score | Abandoned lands, ha | Forest coverage, per cent |
|-------------|-------------------|----------------------------|---------------------|---------------------------|
| Alytus | 541.7 | 35.8 | 7,465.85 | 49.4 |
| Kaunas | 808.6 | 43.2 | 7,383.36 | 30.3 |
| Klaipėda | 521.3 | 38.6 | 2,999.47 | 26.8 |
| Marijampolė | 446.6 | 44.0 | 2,071.27 | 22.3 |
| Panevėžys | 787.8 | 45.6 | 7,529.31 | 28.9 |
| Šiauliai | 853.7 | 46.0 | 4,472.07 | 27.7 |
| Tauragė | 440.7 | 39.3 | 2,932.41 | 33.9 |
| Telšiai | 434.9 | 38.4 | 2,075.84 | 37.3 |
| Utena | 719.1 | 36.0 | 17,101.02 | 36.0 |
| Vilnius | 972.9 | 36.6 | 22,793.11 | 44.2 |

As it can be seen from the completed forest area change analysis, the trend of forest growth dominated in the last decade that was influenced by the successfully used financial aid from the European Union for Lithuanian rural development for the fulfilment of afforestation measures of the years 2007-2013.

The EU support for Lithuanian forestry for the period 2007-2013 was provided by means of 10 measures. According to the Lithuanian Rural Development Programme for the period 2007-2013, about 800 million Litas have been provided to be invested in the forestry sector. According to the data of the Ministry of Agriculture for the period 2007-2013, the amount of the aid to forestry reached 563.9 million (excluding 1st and 2nd measure, i.e. training and information activities and the use of advisory services). The largest part of the aid was for afforestation – 385.4 million Litas or 67.8%.

Lithuania planted several thousand hectares of new forests each year taking an advantage of the aid. This allowed not only to expand the forestry potential, but also to use the available natural resources more efficiently, because a large part of these forests were planted in abandoned and fallow land areas. According to the data of the Ministry of Agriculture, afforestation of agricultural land, non-agricultural and abandoned agricultural land increased 6 times using the support from European Union programs.

The area of newly planted forests in Lithuania during the period of 2007-2014 amounted to 30.7 thousand ha. According to the statistics, 265.5 million Litas were paid under the Lithuanian rural

development program measures “First afforestation of agricultural lands“ and “First afforestation of non-agricultural and abandoned agricultural lands“.

As it has been already mentioned before it is planned that the country's forest coverage should reach 35% by 2020, and the area of planted new forests should amount to 30 thousand ha (Lietuvos..., 2012). Currently, forests cover 2,220.5 thousand ha in Lithuania and make up 34.01% of the total area of the country, therefore we believe that this goal will be reached much earlier. Meanwhile, the European Union's support for afforestation should be extended to such an extent so as to ensure the improvement of land use procedures and prospects of long-term economic activity in rural area, i.e., that when planting forests in agricultural land plots the necessity to preserve land with productive soils as well as with the equipped drainage systems should be taken into account. Afforestation should be planned or authorized in unproductive land areas or areas uncomfortable to work with machinery, as well as in land areas situated far away from residential dwellings that do not have good access roads, where the growing of agricultural plants or the reclamation (cultivation) of abandoned, currently unused for agricultural production land requires a lot of cost and is economically unviable. It is particularly important that these issues should be addressed without harming the area's ecological diversity, without compromising conditions for agricultural activities after replanting forests in remaining farmland and grassland areas.

Conclusions

1. The Sigismund Augustus times (since 1557, when Wallach reform was started) should be considered as the beginning of the forestry in Lithuania. In 1795 Lithuanian state forests amounted to 309 thousand ha (35% of the total forest area), other forests were owned by landlords, churches and kulak farms. Later forests were cut down quite rapidly, many of them were burned down, but reforestation was negligent. In the time period from 1918 to 1939 more than 260 thousand ha of forests were cut down, while about 55 thousand ha were planted, e.g., only 21% of the total felled area. Forest coverage of the country amounted to just 16.5% in 1945. Forests were thinned out, wastelands, waterlogged areas, etc. dominated. However, from this period until 1983 forest areas in Lithuania gradually increased with different variations (ongoing sanitary cuttings, reforestation) and in 1983 Lithuanian forest coverage reached 27.9%.
2. After the restoration of Lithuania's independence and the beginning of the land reform, on the whole, the area of forests, including the private ones, increased steadily. In 1991 the forest coverage in Lithuania was about 29.8%. The national forest inventory (regional monitoring of forests in Lithuania is carried out since 1987.) was organised only in 1998. Before that the inventory of forest areas was performed inaccurately, the exact information about forest resources and forest condition were not known, the inventory was done irregularly.
3. During the period of more than 20 years, the major change in forest coverage was in 2006-2007. During the analyzed years the forest area increased by 62 thousand ha. Besides, significant changes occurred in 1998 – 2001, when the forest area increased by about 23.5 thousand ha. Later the forest area in Lithuania tended to increase on average by 4.3 thousand ha per year. In 2015, according to the data of the Land Fund of the Republic of Lithuania, forest land accounted for 34.01% of the total area of the country. The increase of forest areas was influenced by forest reforestation, afforestation of abandoned and low productivity lands, natural regeneration of farmlands. A large part of forest belongs to private owners. State and private forests ratio has a significant impact on the entire forest management structure of Lithuania.
4. In the last decades the successfully used aid from the European Union for the Lithuanian rural development for the period 2007-2013 has a significant impact on the prevailing trend of forest growth. The EU support for Lithuanian forestry for the period of 2007-2013 was provided for 10 measures. According to the Lithuanian Rural Development Programme for the period of 2007-2013, approximately 800 million Litas have been provided to invest into the forestry sector, which in reality reached 563.9 million (excluding the 1st and 2nd measures, i.e., professional training and information activities and the use of advisory services). The largest part of the aid was meant for the afforestation – 385.4 million Litas or 67.8%.
5. The country aimed to increase forest coverage to 35% by 2020, but as the analysis shows, this goal will be reached much earlier. The European Union aid for afforestation should be extended to such an extent so as to ensure the improvement of land use procedures and prospects of the long-term economic activity in rural areas, i.e., the necessity to preserve land with productive soil as well as

with equipped drainage systems during the afforestation of agricultural land plots should be taken into account.

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