

PREVENTION OF LAND DEGRADATION PROCESSES

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Abstract

Land degradation is a topical issue not only in Latvia, but also in Europe. Even the real estate additional tax rate of 1.5% does not prevent agricultural land from overgrowing, and there is no other legal mechanism to control it. One of the mechanisms of prevention of land degradation process is reconstruction of drainage systems, change of worthless agricultural land (less than 25 points) to forest land or improvement and return of agricultural land (more than 25 points) to economic production. Although such actions require financial resources, there may be a variety of financial support programs, for example, the decrease of the real property tax rate (in case of afforestation).

Key words: land use, land degradation, valuable agricultural land, afforestation

Introduction

One of the tasks of land management is to ensure sustainable use of land. Due to existing soil degradation risks in Europe and Latvia, sustainable use of land is restricted. The Land Administration Law has been implemented since January 1, 2015, to promote sustainable land use and its protection. Land and soil protection and quality assessment in this law are based on the guidelines of the Thematic Strategy for Soil Protection approved by European Commission (September 22, 2006). The main purpose of the Thematic Strategy for Soil Protection is to ensure the sustainable use of soil (Nikodemus et.al, 2008). As regards Latvia, there was not any single soil protection policy document before 2015. Some issues referring soil protection have been included in:

- The National Development Plan of Latvia for 2014-2020;
- Sustainable Development Strategy of Latvia until 2030;
- The National Environmental Policy Plan, 2004-2008;
- Rural Development Plan of Latvia 2007-2013 (Nikodemus et.al, 2008).

The Land Administration Law was based on several conditions of use of land and its protection:

- the preservation of valuable agricultural land with the quality assessment of more than 50 points, limiting its fragmentation and change of the land use category;
- land use planning and determination must be done in territorial planning documents of local government;
- a land user should preserve land and soil quality and land degradation;
- a land user should be informed in case of damage of topsoil;
- in case of alienation of land, which is located in the brownfields area, an owner of real estate shall be informed.

The Land Administration Law defines preservation of valuable agricultural land, restricting use of the land. Until 2015 the Regulations of the Cabinet of Ministers of the Republic of Latvia No. 291 "Regulations on agricultural areas of national significance " restricted the use of agricultural land, if the size of a plot of land is at least 50 ha (no matter of property borders) with land quality assessment more than 60 points, and if the land parcel was located in one of the municipalities of Zemgale. From 2015 all local governments have to ensure the preservation of agricultural land with quality assessment of more than 50 points, setting limits on land fragmentation and the change of the land use category.

In Latvia average quality assessment of agricultural land is 38 points. More than half (57%) of agricultural land quality assessment of Latvia has not more than 38 points. Results of the research by A.Ruža show that agricultural land with average quality assessment less than 25 points is not economically viable for use in agriculture (Pilvere, 2012). *Land reforestation or afforestation has to be mentioned as an option for the use of not valuable land.* Results of the research made by State Forest Research Institute "Silava" from Latvia show that new afforestation is suitable for:

- land with quality assessment less than 30 points;
- land with hilly terrain;
- stony soil;

- small land parcels with restricted access;
- land with wet clay soil;
- land with loose sand soil and weakly cultivated (Daugaviete, 2007).

The Forest Law regulates that afforestation includes actions to make forest grow on the land, which is not registered as forest land in the State Real Property Cadastre Information System. Land afforestation may be limited by specified requirements in the spatial development planning documents. If afforestation is not directly specified in planning documents, then the planned afforestation should be clarified by the local government. On the other hand, land covered by forest is increasing every year according to the Cadastre Information System recorded areas of land use categories. Over the past 14 years, the area of land covered by forests has increased by approximately 161 thousand ha. Even more, from 2009 to 2013 the forest area has increased by 62 thousand ha. A further increase of forest area is forecasted for the coming years. The main reasons for the increase of forest area are:

- natural overgrowing of unused agricultural land;
- artificial afforestation of abandoned agricultural land.

However, the Land Administration Law determines that planning of new areas for building must be carried out on brownfields. According to the law, the brownfields are recognized as areas of land in which the upper layer has been destroyed or damaged, as well as areas of abandoned building, extraction of mineral resources or former territories of economic or military action. However, land degradation explanations in the scientific literature mention that degraded areas are previously used or abandoned populated parts of cities, and that intervention is required to return them to effective use. It is considered that brownfields usually result from industrial or structural changes occurring in a country. For example, the transition from a socialist to market economy in many central and eastern European countries, including Latvia, created brownfields. The economic situation in Latvia does not contribute to the return of brownfields into productive use (Jackson et.al, 2010).

Methodology of research and materials

The analysis of prevention of land degradation is based on the information recorded in the Cadastre Information System, such as situation plans, soil maps, maps of qualitative assessments of the land, as well as regulations of the Land Administration Law on processes causing land degradation. The case study of economic justification of prevention measures of land degradation processes was carried out in the farm "Veckuiņi".

Discussion and results

Land and soil degradation is widely distributed across the world, for example, in Belarus, land degradation processes have been identified and distributed in eighteen types (Pomelov, 2013). The Land Administration Law regulates that land degradation decrease or even destroy economic and ecological value of land and land-related resources. The human activity or inactivity as well as natural processes may cause land degradation. The legislative acts provide that land degradation may cause:

- ingrowth of bushes on agricultural land;
- coastal erosion;
- inefficient maintenance of drainage systems and land bogging;
- abandonment of land as well as built-up area;
- pollution;
- landslides;
- soil degradation.

Results of inspection of agricultural land carried out by the Rural Support Service in 2013 showed that 85% of agricultural land was cultivated. Agricultural land is considered to be cultivated if grass mowing, harvesting or crushing as well as spreading at least once by September 1. There is a legal mechanism to limit the growing of bushes on agricultural land - additional rate of real property tax (1.5%), but there is no mechanism either to improve the technical condition of the drainage system or to reduce land abandonment. Investments required for the reconstruction of drainage systems, as well as for returning agricultural land to economic activity are instruments to avoid processes causing land degradation.

- reduction of real estate tax in case of afforestation;
- calculation of expenses of arrangement of drainage systems and afforestation;
- analysis of the amount and type of the support payments.

The farm “Veckuipji” with an area of 60 ha has planned reconstruction of drainage systems and land afforestation. The financial analysis was performed from three aspects – expenses, support payments and reduction of real property tax (Table 1).

Cadastral valuation is a massive periodic assessment of real properties carried out by the State Land Service. Cadastral valuation consists of development of the basis of cadastral value and the calculation of cadastral value. Cadastral values are mainly used for the calculation of real property tax.

Table 1

Financial analysis of prevention measures of land degradation processes in the farm “Veckuipji”

Category of financial impact	Euros
Reduction of real estate tax	168 (per year) 6,726 (in 40 years)
Expenses of arrangement of drainage systems and land afforestation	30,955
EU support payments	30,959

The process of *cadastral* valuation is determined by specific rules for all cadastral objects registered in the Cadastre Information System. The cadastral value has to be calculated directly when characteristics having an influence on cadastral value have changed. On the other hand, the Law on Immovable Property Tax determines objects which are subject to real property tax, for example, tangible items which are located in the territory of Latvia and cannot be moved from one place to another without damaging them, such as land and buildings, including registered non-operational buildings and engineering structures in the cadastral information system. Secondly, the law states which properties are not taxable for property tax purposes, for example, the local government-owned real properties, public water reservoirs, the land under public highways, roads, underground roads, tunnels, streets, railway tracks, city rail roads, bridges and piers. It is necessary to know the cadastral value of property, to calculate the amount of real property tax. The cadastral value of land (Kv), located in the rural area, is calculated using the following formula:

$$Kv = (P_{LIZ} \cdot BV_{LIZ} + P_M \cdot BV_M + P_{P_Z} \cdot 0,8 \cdot BV_{LIZ_I} + P_{P_D} \times BV_{LIZ_{IV}} + C_{maja}) \cdot K_{apgr} \cdot K_p, \quad (1)$$

where: P_{LIZ} : area of agricultural land [ha];

BV_{LIZ} : base value of the zone of agricultural land [EUR/ha];

P_M : area of forest [ha];

BV_M : base value of the zone of forest land [EUR/ha];

P_{P_Z} : area of other land [ha];

BV_{LIZ_I} : base value of the 1st quality group of agricultural land [EUR/ha];

P_{P_D} : area of yards and fish pounds [ha];

$BV_{LIZ_{IV}}$: base value of the 4st quality group of agricultural land [EUR/ha];

C_{maja} : constant of effect of a dwelling house;

K_{apgr} : ratio of correction of encumbrances.

The change of the category of land use – an area of agricultural land (P_{LIZ}), an area of forest (P_M) and an area of other land (P_{P_Z}) directly affects the cadastral value as well as the rate of the real property tax. However, the Regulations of the Cabinet of Ministers of the Republic of Latvia No. 76 state that land occupied by cultivated forest stands is not taxable for property tax purposes. The legislation provides that the real property tax does not apply to young stands of conifer and hardwood trees to 40 years of age, young stands of soft deciduous (except grey alder) trees to 20 years of age and young stands of alder trees to 10 years of age. Reduction of real property tax could be as a result of afforestation.

Financial resources needed for the reconstruction of drainage systems can be calculated for the following measures:

- deepening of the ditches;
- digging of new ditches;
- moving and levelling of excavated soil;
- construction of culverts and footbridges;
- installation of main drainage collectors;
- installation of drains;
- construction of drains outfall;
- harvesting of bushes;
- removal of ruins;
- filling of ditches;
- cultivation of soil (Kļaviņš, Sudārs, 2010).

Financial resources needed for afforestation according to the calculation of "Skogssallskapet", Ltd, can be calculated for the following activities:

- preparing of necessary specific soil;
- planting of forest stands;
- planting material itself;
- improvement of young stands of trees;
- adding of saplings in young stands of trees.

The European Union covered various activities of programs related to rural development until 2014. For example, the Rural Development Programme of Latvia for 2014-2020 developed by the Ministry of Agriculture is a base document to receive granted 1.53 billion euros in the framework of the Common Agricultural Policy 2014-2020. As a main points in the Rural Development Programme of Latvia for 2014-2020 are stated:

- generation of income from efficient production increasing value-added and market-oriented products;
- support to small and medium-sized farms;
- creation of value of each one hectare of land and forests as well as water objects;
- countryside management, where people are able to earn money and keep a family;
- development of science and improvement of the level of knowledge.

Conclusions and proposals

1. Common processes of land degradation in rural areas of Latvia include overgrowing of agricultural land, land abandonment and inefficient maintenance of drainage systems.
2. Afforestation of unused agricultural land facilitates sustainable use of land.
3. The prevention of land degradation process requires financial investments, which can be covered by several support payments.
4. The spatial planning documents may be improved by development of thematic plans which represent the land quality assessment map with areas up to 25 points for afforestation of less worth agricultural land, but not unused or abandoned valuable agricultural land.

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