Key findings from assessment of socioeconomic impacts

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KEY FINDINGS FROM ASSESSMENT OF SOCIOECONOMIC IMPACTS

LIFE
Viva
Grass

Riga, 2019

Contents

1. Introduction

The LIFE Viva Grass project, implemented from June 2014 until April 2019, aims to support maintenance of biodiversity and ecosystem services provided by grasslands, through encouraging ecosystem-based planning and economically viable grassland management in Estonia, Latvia and Lithuania. Furthermore, the project demonstrates opportunities for multifunctional use of grasslands as a basis for sustainability of rural areas and stimulus for local economies. The LIFE Viva Grass was developed as a "policy governance" project, thus having a strategic and demonstrative character.

A major task of the project was development of an integrated planning tool, which could operationalise the ecosystem services concept into decision-making on grassland management in various planning contexts. Application of the tool ranges from a farmer's choice of the grassland related land use, development planning by municipalities, management planning of protected areas, through to national policy-making tailored to the rural support conditions. The project activities for testing the tool were implemented at different administrative levels - county or regional; municipal or local; nature protected areas and farm level.

Management of grasslands delivers direct and indirect economic and social benefits, at the same time being an important activity for safeguarding biodiversity. The benefits can be assessed within the concept of ecosystem services which helps planners and decision makers assess the trade-offs between different management options, as well as plan and supervise land use and management practices in a comprehensive and sustainable way. Land use and management practice impacts on the structure and conditions of grassland ecosystems, which in turn determines what kind of ecosystem services and benefits can be delivered for society, including impacts on social and economic situations (Figure 1.1).

With this brochure we present key findings from the socio-economic impact assessment of the project activities. The assessment is built on an indicator approach allowing the monitoring of the changes at relevant spatial and administrative units over time. We also reflect on the trade-offs between different agricultural land management options to demonstrate the application of the concept of ecosystem services for viable grassland management planning.
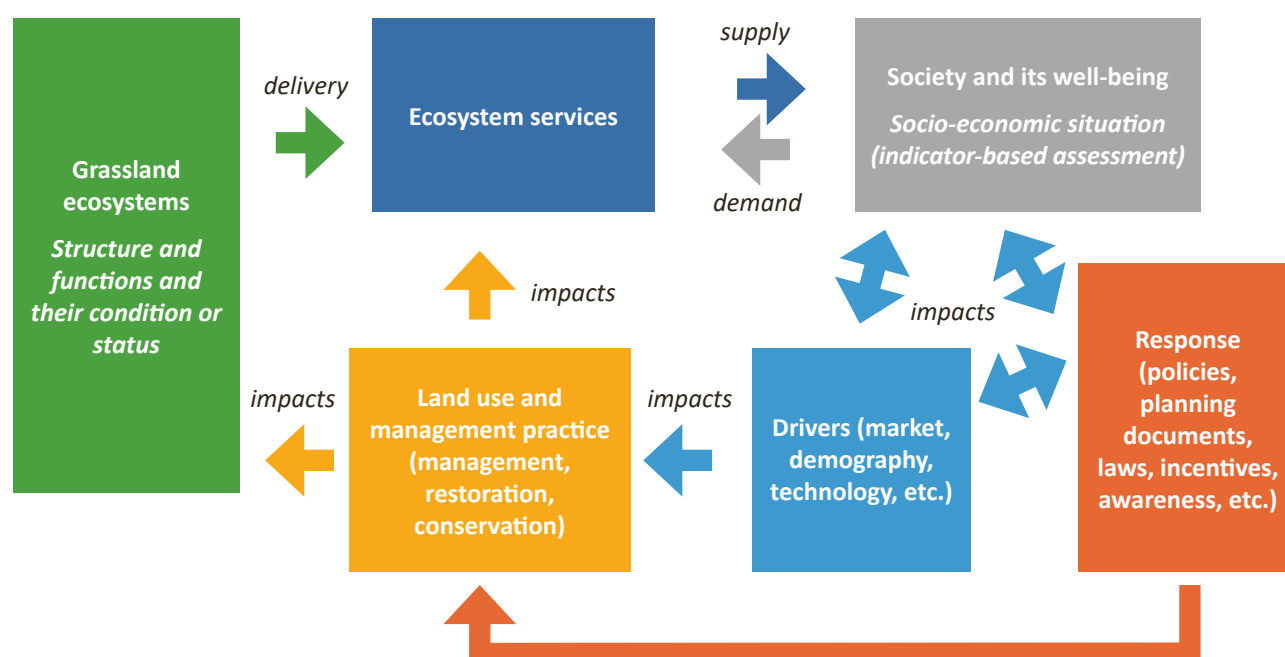

Figure 1.1 Viva Grass assessment framework

2. Overview on nine project case study areas

REGIONAL LEVEL:

- *Lääne county, Estonia* was selected to develop and demonstrate application of the integrated planning tool for relevant planning cases at regional level. The use of biomass from grassland for bioenergy production was explored to demonstrate the functionalities of the tool to support regional development planning on the use of grasslands as an alternative energy source. During the project duration Estonia implemented an administrative reform that eliminated county administrations; nevertheless, the issue addressed by the project is still valid for planning at regional level.

MUNICIPAL LEVEL:

- *Saaremaa municipality, Estonia* – the tool will contribute to management of semi-natural grasslands by developing a green network scheme at municipal level. During the project duration, Estonia implemented an administrative reform leading to a merger of smaller municipalities. The initial partner Lümanda municipality became a part of Lääne-Saare, but since 2018 has been a part of Saaremaa municipality.
- *Cēsis municipality, Latvia* – the tool will provide decision-making support in the planning of landscape maintenance and restoration by prioritisation of areas based on the relevant ecosystem service supply, as well as risk factors related to landscape quality. Outputs of the tool are to be integrated in the new Cēsis municipal development plan aimed at supporting long-term grassland management as an important structural and functional component of rural landscapes.
- *Madliena parish in Ogre municipality, Latvia* – local stakeholders developed proposals to improve grassland management at local level. Mapping and assessment of ecosystem services, their contribution to well-being were delivered by applying a participatory approach and communicating on ecological as well as social values of grassland ecosystems.
- *Šilutė municipality, Lithuania* – proposals elaborated on nature tourism development, where grassland management shall be an essential precondition for developing the areas as an attractive tourism destination.

FARM LEVEL:

- *Kurese, Estonia* – grazing by cattle ensures maintenance of the alvar habitats and traditional landscape in ~180 ha. Continuation of the grazing was at risk due to limited access of cattle to drinking water. The project supported the farm with the instalment of a proper water supply as well demonstrating the values of ecosystem services and provided recommendations for the future.
- *Šovītes, Latvia* – a farm where ~ 85 ha of grassland was restored by removing shrubs and their root systems, cattle grazing, microrelief improvement (milling, levelling) to enable its management with grass cutting machinery, and introduction of the species rich in seed material for increasing the biological value of grasslands and the ecosystem service supply.

PROTECTED AREA LEVEL:

- *Pavilniai regional park, Lithuania* is located within the administrative boundaries of Vilnius, thus the socio-economic impacts are related to the capital city. During the project the grasslands were restored (~11 ha) to provide visitors and business developers with new access to the areas suitable for recreational activities.
- *State Pašešuvis landscape reserve and Dubysa regional park* are located in the Raseiniai district municipality. Both nature conservation areas are administered by the Dubysa regional park directorate. The restoration activities (ca~31 ha) provided preconditions for regular grazing and grass cutting.

Tallinn
Paldiski
Kohtla-Järve
Narva
Tapa
Rakvere

Lääne county

Hiiumaa

Kurese nature farm

Saaremaa municipality

Viljandi

Pärnu

Tartu

Lake Peipus

Lake Pskov

Kuressaare

Gulf of Riga

Valga
Võru

Kolka

Ventspils

Mērsrags

Cēsis municipality

"Šovites" farm

Stende

Riga

Madliena parish

Tukums
Jūrmala

Ogre

Saldus
Jelgava

Liepāja

Jēkabpils

Daugava

Mažeikiai

Šiauliai

Panevėžys

Daugavpils

Kretinga

Šilutė municipality

Dubysa regional park

Klaipeda

Utena

Nemen

Taurage

Nemunas

Pavilniai regional park

Neris

Kaunas

Vilnius

Pregolya

Viliya

Alytus

Velikaya

Activities in „LIFE Viva Grass"
case study areas

Notice board

Testing of the Tool

Bird guide

A watering facility for grazing animals

Report on assessment of grassland manage-
ment in Lümanda during the last 20 years

Mapping and assessment of ecosys-
tem services by local stakeholders

Recommendations for further
grassland maintenance

Restoration of grasslands

Round tables and
stakeholder meetings

Visitor days

Figure 2.1. LIFE Viva Grass project case study areas

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3. Mapping and assessment of ecosystem services

A major task of the project was development of the Viva Grass Integrated Planning Tool that embeds the ecosystem services concept and supports better decision-making on grassland management in various planning contexts. Ecosystem services (ES) provide multiple benefits to people, thus also impact on the socio-economic situation and well-being of local communities. Viva Grass Tool provides information on the supply potential of provisioning and regulating ES in the agroecosystems (semi-natural, permanent and cultivated grasslands and arable lands) and demonstrates the relationship between land uses and ES supply. In Cēsis municipality's demonstration area, the cultural ecosystem services were also mapped and assessed.

The Viewer module of the tool enables any stakeholder, including land owners or farmers, to have the opportunity to explore more about his/her fields in terms of supply of provisioning or regulating services. The services are grouped in bundles (named 'production' bundle, 'habitat' bundle and 'soil' bundle) that show interactions or trade-offs between ES. For example, there is a trade-off between biomass production and habitats: increasing productivity of grassland usually requires a certain degree of intensification through fertilisation, ploughing, reseeding and other activities. These intensification practices in turn simplify the grasslands' structure and decrease the number of grassland species, leading to a loss of habitats for birds and arthropods. The Viewer module also allows any user to explore scenarios that show the impact of land use changes between different agro-ecosystem categories on the supply of provisioning and regulating ecosystem services. The indicated trend in the change of ES supply due to a change of agricultural land use stimulates awareness raising about the interconnections between different ecosystem services and the subsequent trade-offs in order to gain the optimum amount of desired benefits.

For strategic and planning purposes, the Viva Grass Viewer module presents a "hot-cold spot" analysis (Figure 3.1). This information layer calls on planners, policy-makers and landowners to reconsider the
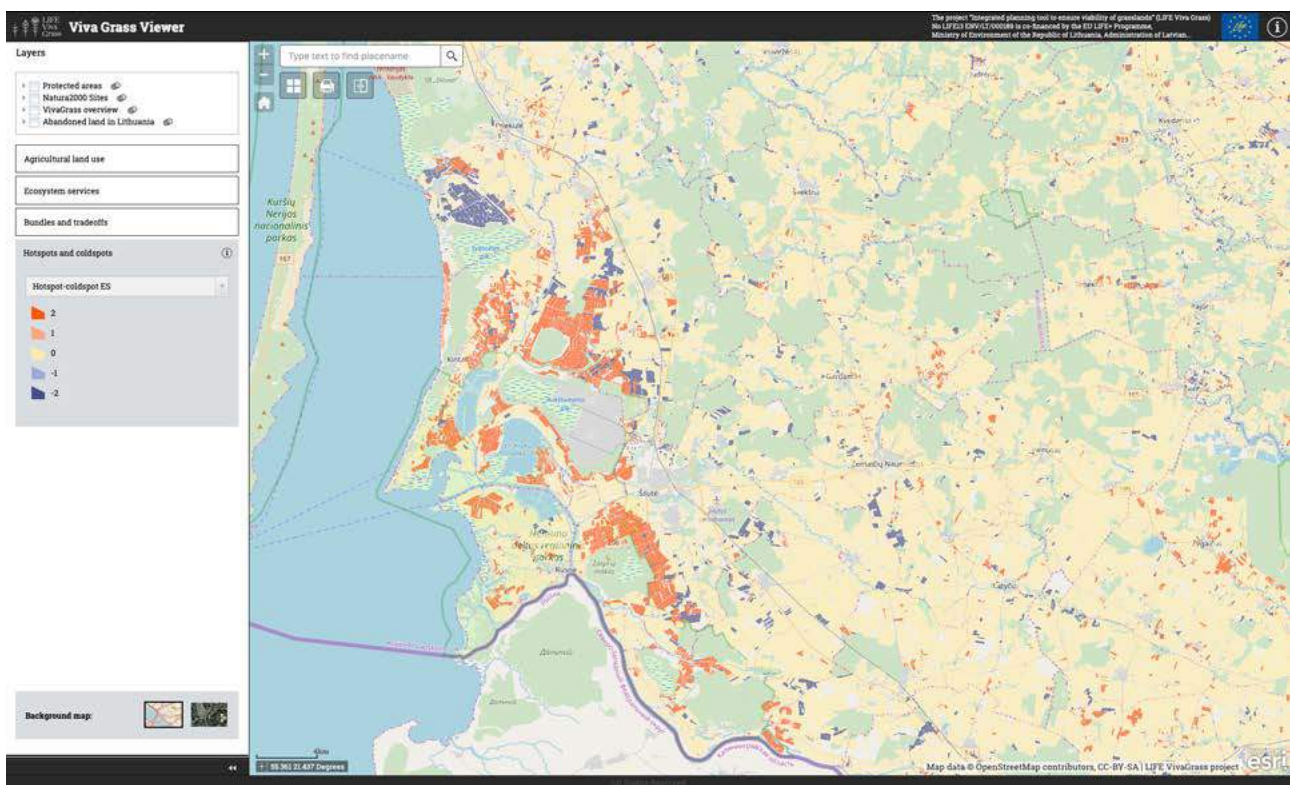

Figure 3.1. *Hot-cold spot analysis example for Šilute municipality areas*

current land uses. "Cold-spots" are fields with low or very low (below 3) values at the majority of ecosystem services provided and indicate degrading/inappropriate management of agricultural land. The land use change would ensure the increase of ES and thus also multiple benefits for society.

4. Indicators for monitoring of socio-economic impacts

The methodology for assessing socio-economic impacts is built on an indicator approach allowing the monitoring of trends and changes in status through time, including after the duration of the project. At the start of project implementation, the team identified a set of indicators corresponding to two key criteria: i) relevance for the project goals; ii) data availability for the respective administrative and farm level. The project identified many socio-economic indicators related to agriculture and rural development and selected the most relevant for the Viva Grass project assessment needs. However, the available socio-economic indicators (see Figure 4.1) reflect not only the direct impact caused by the project activities (management and restoration of the grasslands) themselves but the cumulative impacts of different political, market, technological, climate and other drivers. A combination of drivers has the final, long-term effect on grassland ecosystems.

Statistics that provide input for socio-economic indicators are collected based on territorial administrative units – municipality, region or national level. In order to reflect a change in the nature-protected areas, the relevant territorial unit – district municipality – has been used as a proxy to reflect a socio-economic change.

Impacts from the project activities can be assessed not only quantitatively (measured units) but also in a qualitative way as the empirical data are missing for many social aspects and well-being dimensions. In such cases, a narrative based on available local knowledge or experience is presented to enhance the assessment.

Land use indicators

- Share of agriculture land
- Share of grasslands (seminatural; permanent; sown)
- Area for organic farming

Economic indicators

- Agriculture farming structure (size of farms, livestock, etc.)
- Price for land
- Tourism and related services
- Road infrastructure

Social and well-being indicators

- Demography (age structure; birth rate)
- Employment & unemployment rate; employed in agriculture
- Income & salary level
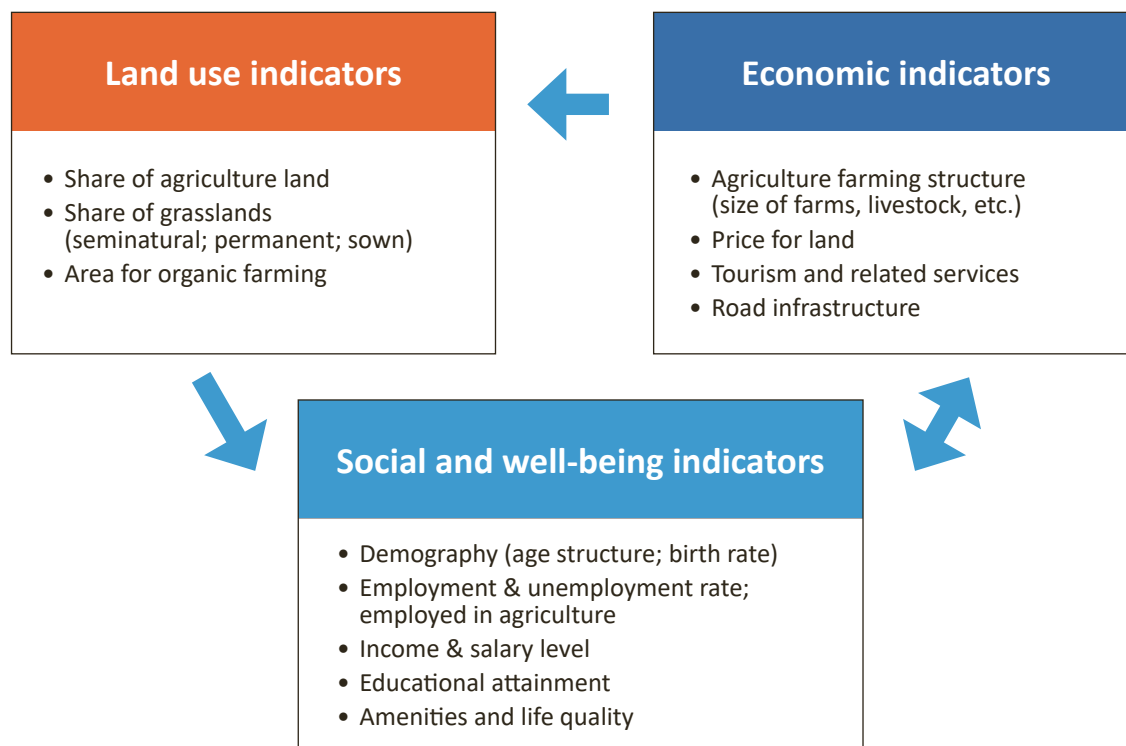- Educational attainment
- Amenities and life quality

Figure 4.1. The key indicators selected for the socio-economic assessment

5. Changes in land use

The Corine Land Cover data presents the status of land cover every six years – 1990s, 2000, 2006, 2012 and 2018 in the whole of Europe. Based on the Pan-European data, a long-term trend in the change of land cover and particularly in grassland cover can be observed. Annual changes in agricultural land use can be monitored using spatial data of rural support systems. The changes in land cover result from multiple drivers, mainly EU common and national agricultural policies that provide subsidies and set the conditions as well as changes in global or regional markets. The farmers adapt and shift the farming activities to tolerate the drivers and imposed changes and calculate their most profitable and feasible outputs in given circumstances.

The Land Cover data includes grassland ecosystems in classes of pasture, transitional woodland-scrub and moors and heathland. The trend between 2012 and 2018 varies between the project areas – in some the share of grasslands has increased, for some it has decreased (Table 5.1).

Table 5.1. *Share of grasslands (% of the project area) (source: CORINE land cover)*

Area	1990	2000	2006	2012	2018
Lääne county, Estonia	8.3	8.2	13.3	13.5	14.4
Saaremaa municipality, Estonia	10.3	9.9	13.0	12.7	12.8
Madliena parish, Latvia	12.3	16.7	17.6	15.6	14.5
Cēsis municipality, Latvia	8.1	8.1	11.9	11.8	10.3
Šilutė municipality, Lithuania	14.8	13.4	11.6	11.6	16.2

During the project period, the agricultural sector experienced a transition between two Common Agricultural Policies. The impact of new policies that set new conditions regarding grasslands is recognisable from 2015 and onwards. This has resulted in a positive outcome towards the grasslands managed and supported by subsidies in the project areas. In Saaremaa municipality and Lääne county the managed grassland areas have increased by 4%, in Šilute municipality by 8%, and in Cēsis municipality and Madliena parish by 12.3%.

6. Changes in socio-economic situation during the project duration

6.1. County and municipal level

6.1.1. Demography and community vitality index

The Baltic States have experienced a depopulation trend since the 1990s. As highlighted in the LIFE Viva Grass initial socio-economic assessment, the number of inhabitants in Cēsis municipality, for example, has decreased by almost 25% in the period 1990-2015. The Figure 6.1. shows that the negative trend is still continuing in most of the project areas. Vilnius city is experiencing an increase in residents. An increase until 2017 was also observed for Lääne-Saare municipality, which was established by merging Lümanda, Kaarma, Kärla parishes. The statistics of Saaremaa municipality for 2017-2018 reveal a negative demographic trend.

The age structure of the population is an important indicator for illustrating labour force and social potential for new development, particularly in rural areas. A large proportion of an older generation might indicate constraints in the availability of employees. The data on population reveals that the proportion of the older population (65 years or over) is increasing in most of the demonstration areas. As the proportion is close to 20% or higher, the ageing of the population is an actual issue. In EU (28) the proportion of the older generation has also increased from 18.5% in 2014 to 19.8% in 2018, whereas the proportion of the younger generation (0-14 years) has been stable at 15.6%.

According to the settlement vitality index, based on population and building activity figures, the situation in grasslands as well as in peripheral rural areas in general is generally negative.
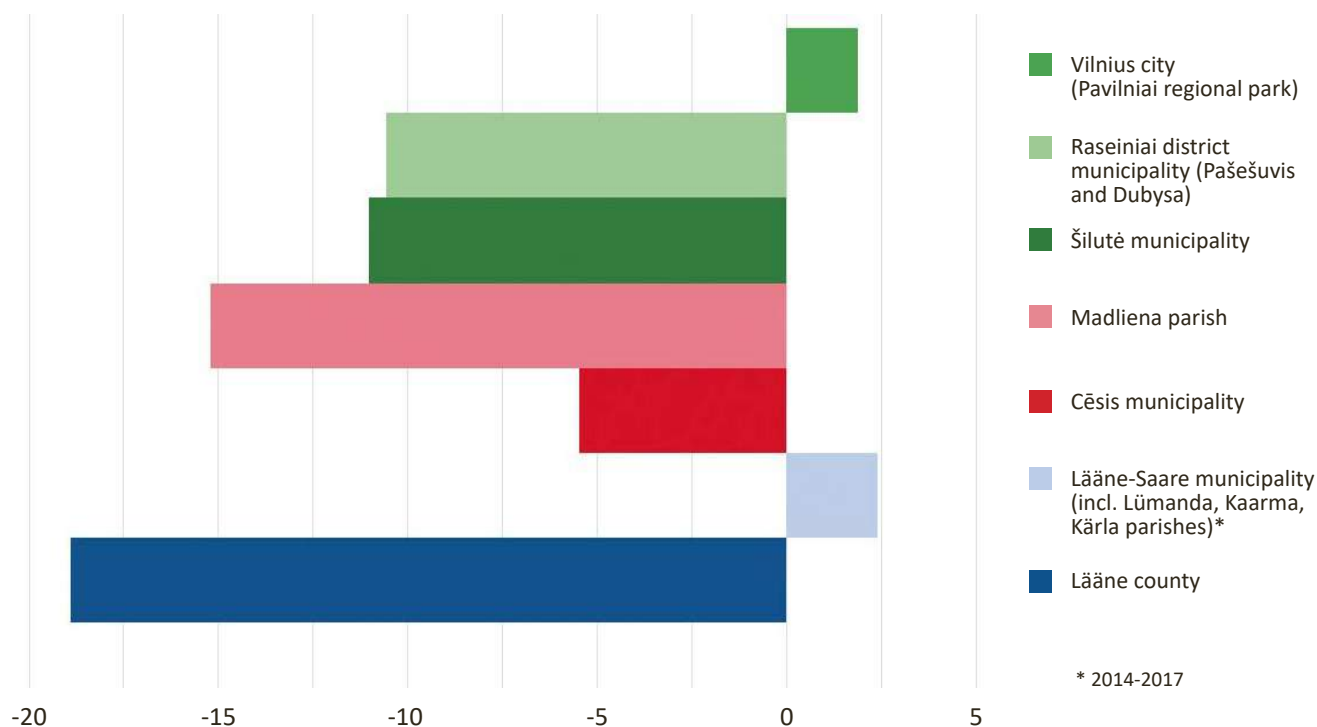

Figure 6.1. *Change in population (%) in the project areas between 2014- 2018 (data source: Statistics Estonia, Central Statistical Bureau Latvia, Statistics Lithuania)*

6.1.2. Agricultural land price and land abandonment

The price for land (selling or renting) is among the drivers that impacts on land-use patterns in Europe, including land abandonment. The low price indicates the low demand for land, consequently it may signal a potentially higher risk of land abandonment.

Although there are regional differences, the three Baltic States have experienced an increase in the price for land between 2013-2017 (Figure 6.2.). The prices for sales of agricultural land have increased in the range of 11% in Lithuania, 42% in Latvia and 52% in Estonia. An increase has also been recorded in EU countries; however, the average European speed is much slower than here. The price for agricultural lands in the three Baltic States was still among the lowest in Europe – about 2-3000 EUR per hectare in average in 2017. The price for agricultural land including arable land and grasslands in the Estonian and Latvian project areas was lower than in average in the countries, thus having a higher risk of abandonment. In Lithuania, Kedainiai and Raseiniai district municipalities where the protected areas are located, the price for agricultural land including arable and grassland was higher than in average in the country, as this Lithuanian region has intensive agriculture activities and demand for new land is very high.

In Europe, buying arable land was more expensive than buying grasslands. It was the same situation in the Baltic States. The price for grasslands was also increasing, although at different rates. The price for grasslands in the project areas was about 1.5-2.2000 EUR per hectare on average in 2017. However, the situation with prices in relation to arable land and grasslands has been different compared to the average in the Lithuanian project areas.
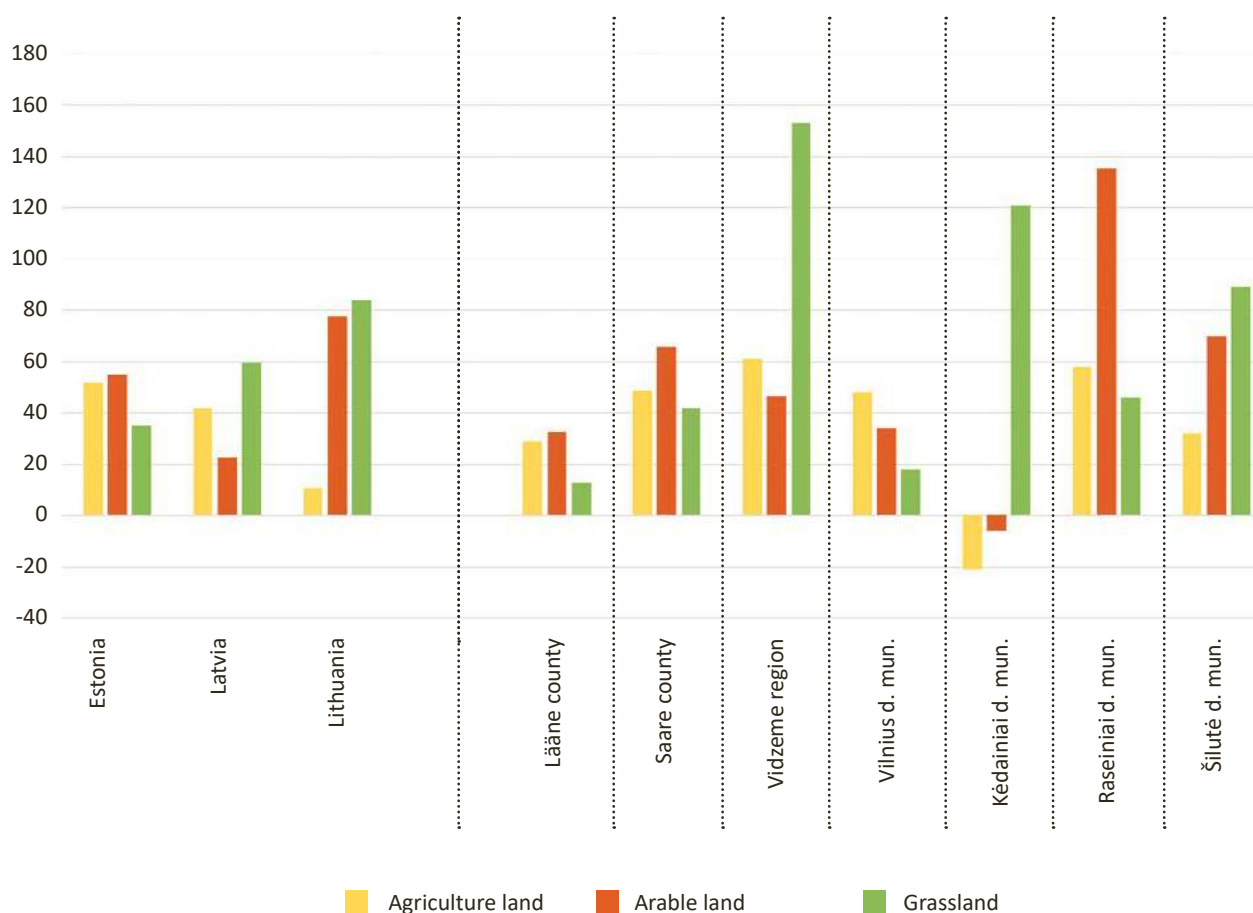

Figure 6.2. *Change in the price for land (sales, %) between 2013-2017
(data source: Statistics Estonia, Central Statistical Bureau Latvia; Statistics Lithuania)*

Renting of the land is another type of management for carrying out agricultural activities. However, the cost of renting land is an important factor that farmers have to take into account when developing their business. Although with some regional differences, the price for renting also increased in all three countries. The renting price for arable land was about 60EUR/ha in Estonia and Latvia and about 100EUR/ha in Lithuania. As with land prices, renting permanent grassland was slightly cheaper than renting arable land in Estonia. The situation in the LIFE Viva Grass project areas has been relatively dynamic. In Kėdainiai and Šilute district municipalities, grasslands were rented for a higher price than arable land in some of the project years.

During the LIFE Viva Grass project, about 30 ha of overgrown and abandoned land was restored and returned to its use as grasslands in Cēsis municipality. For the time being Cēsis municipality has contracted local farmers to manage the restored areas where there is the potential to sell or rent the land in future. Also Dubysa regional park administration works in close cooperation with the local farmers, who will maintain the restored areas as grasslands.

Viva Grass Integrated Planning Tool also includes information on the land abandonment status in Lithuania. It is estimated that 57100 ha of the agricultural land is abandoned in Lithuania, which makes up about 1,7% of the whole agricultural land in Lithuania.

The risk of agricultural land abandonment has been used as one of the criteria in defining management priorities for landscapes in Cēsis municipality. To create a data set, an extensive field survey and analysis of remote sensing data was carried out in 2014; for the situation in 2018, re-cultivated land from the IACS dataset was extracted. Agro-ecological and geographical factors were revealed by regression analysis and combined in a composite indicator of the risk of abandonment.

6.1.3. Farm structure

The farm structure indicates the overall trend in land management. Larger farms are more industrialised compared to the small farms which are mainly used for family farming. Consequently, these larger farms utilise more agriculture land. According to Eurostat, the number of farms has reduced in EU (28) by about 25% from 2007-2016, there was a slower decrease (approx. 3%) between 2013-2016.

The trend in farming activity is comparatively similar in the three Baltic countries (Figure 6.3). During the project implementation (2014-2018), the number of farms also decreased in the project areas: about 14% in Šilutė district (LT) and Vidzeme region (LV); 11% in Kėdainiai district (LT) and just 2% in Raseiniai district (LT). Due to administrative reform, the information on trends in Saaremaa municipality and Lääne county is lacking. The overall trend is that the number of larger sized farms (above 50 ha) is increasing.

An increase in the farm size has been observed in all project areas. In Vidzeme region, the number of farms that have more than 100 ha has increased, while small sized farms have decreased. Almost 4600 farms or 14% of farms have stopped farming in 2013-2016 in the Vidzeme region, where Cēsis municipality is located. In Estonia, the situation has been slightly different. The number of very small farms below 1ha has increased, whereas the number of farms from 1 ha to 100 ha has decreased and the number of larger farms (above 100 ha) increased. Due to structural changes, almost 3000 farms stopped farming in 2013-2016. Moreover, there has been a shift in the legal status of farms – there are fewer natural persons involved in the agricultural sector. Slight differences in trends can be observed in Lithuanian project areas: Šilutė municipality has experienced a growth of farms starting from 30 ha, and from 20 ha in Raseiniai district.
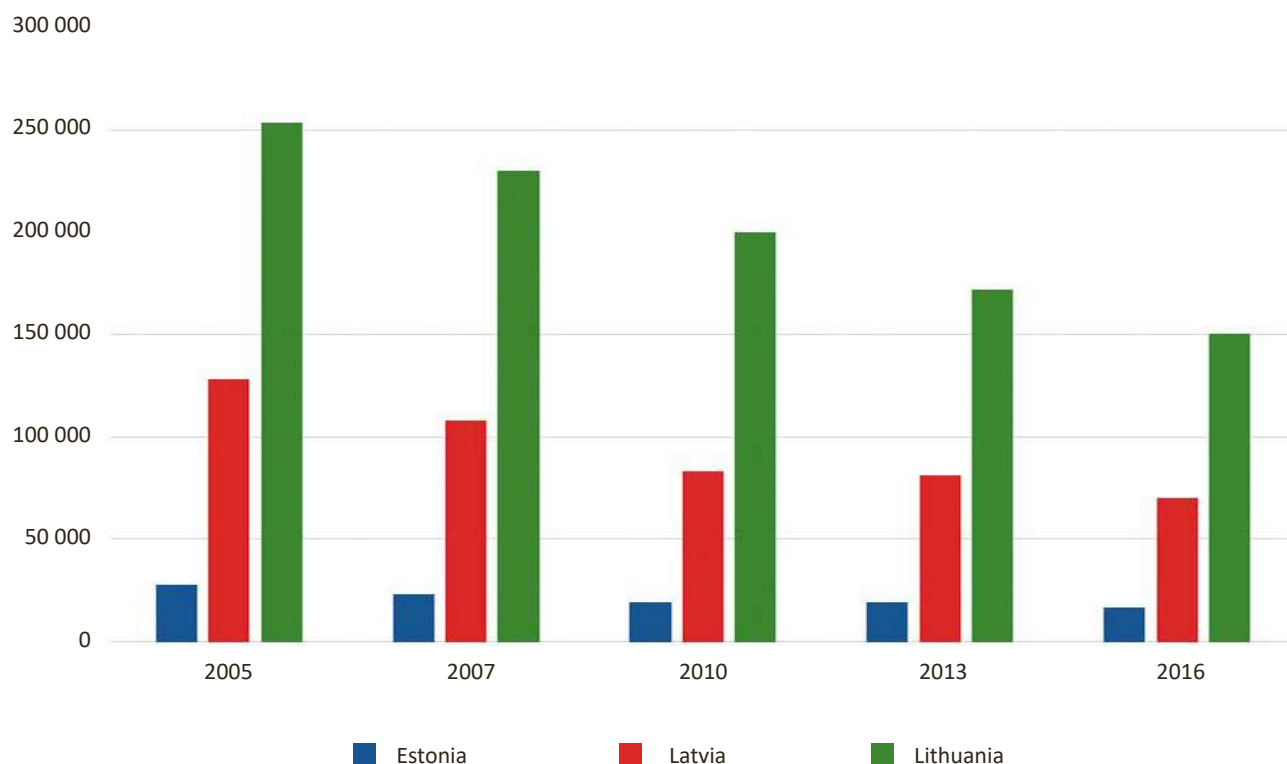

Figure 6.3. *Number of farms (data source: Eurostat, 2018)*

6.1.4. Employment

Agriculture is one of the key sectors providing jobs in rural areas. However, the labour input is decreasing as the farming pattern changes – intensification and innovations have reduced the need for manpower in the countryside in Europe and in the Baltic States. The recent data on agricultural labour input was lowered by almost 10% in Estonia and Latvia between 2014-2016, whereas there has been a minor change in Lithuania (about 2%). Nowadays, labour forces are very mobile, and agricultural holdings work across municipalities and regions. Therefore, statistics on employment rates cannot be as easily attributed directly to a municipality.

Family farming is an important traditional business as well as a lifestyle model in the Baltic States and in the European Union. However, the number of farms as well as people employed in their own farms is decreasing. According to the national statistics in Estonia, family farms and family members working on their farms have decreased by more than 20% between 2013-2016. In Latvia, including Vidzeme region, the trend has not been so drastic – 10% fewer family members working in farms whereas in Lithuania – 16%, in Šilutė municipality – 22%.

Grassland management is related to grazing (pastures) and conservation of grass as hay or silage, which in turn requires a regular and more intensive labour input compared to seasonal crop production. Labour intensity also depends on the livestock - meat or milk production and type of farming – conventional or organic.

6.1.5. Livestock for grasslands

Economic viability of grasslands depends on livestock, as semi-natural grasslands can be maintained either by grazing livestock or mowing grass as biomass for livestock or other alternative uses. Traditionally grasslands are maintained to have a biomass for livestock. During 2014-2017 the trend of sheep farming indicated a slow increase in the number of animals, as well as the number of farms in Latvia and Lithuania, but with a decrease in Estonia. Nevertheless, the sheep density in Estonia is still higher than in Latvia and Lithuania. With regard to bovine (cattle), the trend between 2014-1018 has been negative in all countries- the number of animals has decreased from approximately 5% in Estonia and 6% in Latvia to 11% in Lithuania. The number of farms with bovines (cattle) has also reduced.

The density of the bovine animals and sheep per grassland areas is the highest in Estonia and the lowest in Latvia (Figure 6.4.). Grazing pressure depends on the characteristics of the meadow, soil fertility, humidity and may vary from one year to another. Adequate or recommended grazing pressure increases a meadow's natural value as well as the feed value of plants. The recommended grazing pressure values have been compiled from several sources, mainly habitat management recommendations and management plans of protected areas. These values are used in the Viva Grass Tool as a guidance for farmers and managers/planners in order to achieve an optimal balance between forage production and biodiversity. Optimal grazing pressures are also shown within the BioEnergy module as a way to illustrate the multiple ES provided by grasslands beyond grass calorific potential.
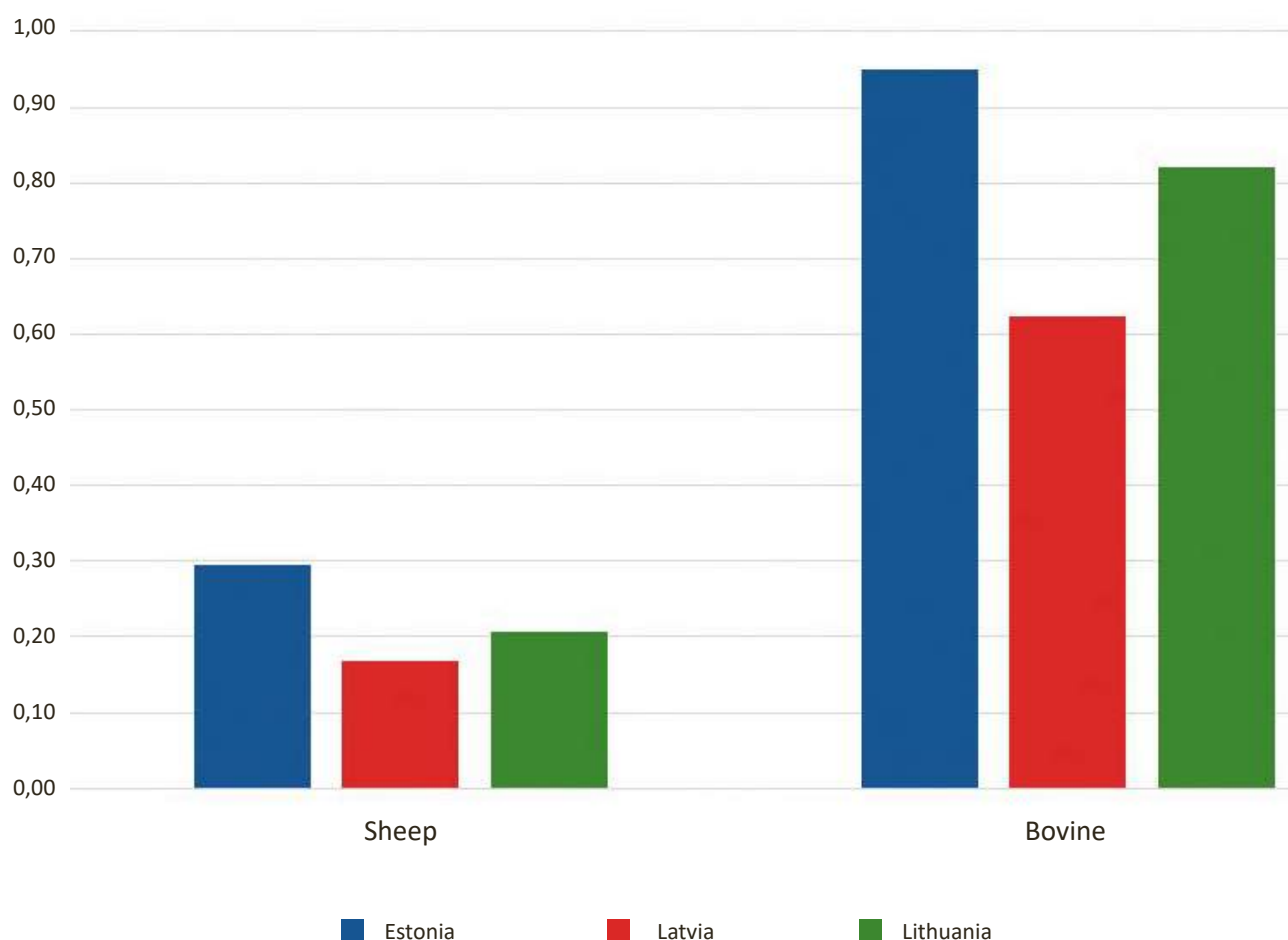

Figure 6.4. Number of sheep and bovine animals per ha of used grassland in 2018 (data source: Eurostat, 2018)

6.1.6. Organic farming

Organic farming is an essential agricultural sector that supports the maintenance of semi-natural grasslands, their habitats and species in the Baltic States. Financial support for organic farming is ensured throughout the European Union, however, in different rates. Among the three countries, Lithuania had the highest support in 2017– 216€/ha; in Latvia – 109€/ha; in Estonia – 93€/ha; average in EU –214€/ha. The support has been sufficient to increase the number of organic farms in Estonia and Latvia (about 20% between 2014-2017) whereas the number of farms in Lithuania has been fluctuating.

According to Eurostat, the organic area made up 7% of total EU agricultural land in 2017. In the Baltic States the proportion is higher: in Estonia 19.6%, in Latvia 13.9%, in Lithuania 8%. The trend has been positive from 2016-2017 which is the result of the current Common Agricultural Policy (Figure 6.5.).

At the start of 2019, there were about 200 organic farms in Saaremaa municipality and 100 farms in Lääne county. There were about 25 organic farms in Cēsis municipality, and 45 in Šilutė municipality.

As the area covered by organic farming is increasing, the positive trend and new outline of the Common Agricultural Policy beyond 2020 provide a promising outlook on management of permanent grasslands with organic farming methods.
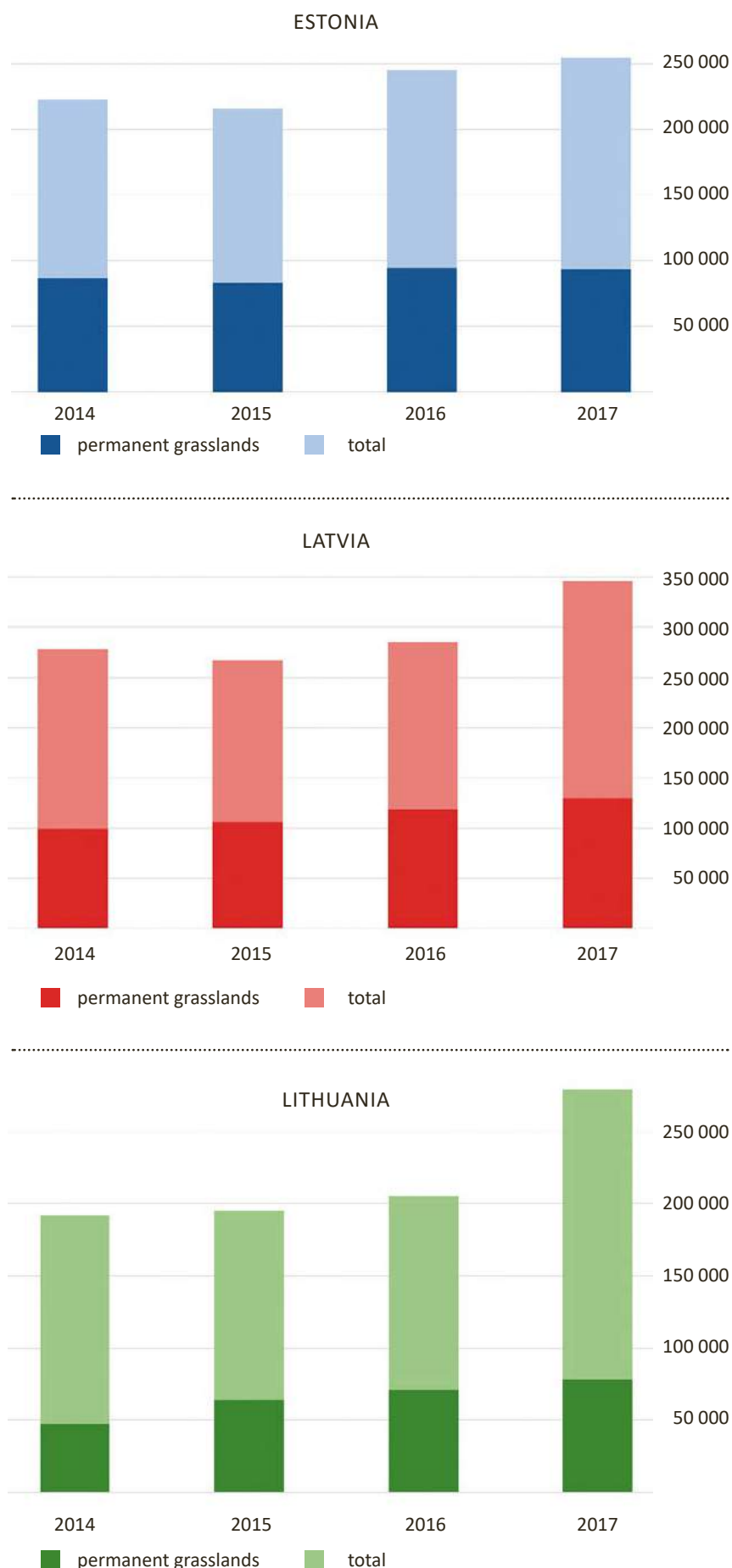

Figure 6.5. Agricultural area (ha) under organic farming (data source: Eurostat)

6.2. Changes in the socio-economic situation at farm level

Both project areas at farm level represent the farms with livestock which perform grazing activities and create demand for hay and fodder. Grazing and grass cutting are the primary management options to ensure the existence of grasslands.

6.2.1. Kurese farmland

Kurese farmland is located in West-Estonia, Pärnu County, Lääneranna municipality. Since April 2016, the farm has been owned by the company Saare Rantso Ltd. The territory of the Kurese farm is part of the Kurese Landscape Protection Area and the Natura 2000 site Kurese SAC. At the beginning of the project, 170 ha of semi-natural grasslands were managed. In 2015, 10 more ha of alvars were restored (i.e. trees and bushes removed but the site still needs continuation of restoration by grazing) in the territory of Kurese farm, so the total territory of managed semi-natural grasslands is 180 ha.

The semi-natural grasslands are managed by cattle grazing. Up to 2015, the cattle (approx. 200 heifers) for management of semi-natural habitats (alvars, dry and wet grasslands, wooded pastures) were brought (lent) for the grazing season from other farms. Before the project, a lack of drinking water for animals in the farm did not accommodate permanent livestock as well as an increase in the number of animal units. During the LIFE Viva Grass project (in 2015) a water supply was installed in the form of drilled well and water reservoirs. This action provides conditions that the cattle can stay on the site also during winter.

The farm receives income not only from sales of the organic beef cattle, but also from different subsidies, including subsidies for restoration and management of semi-natural communities, a subsidy for organic farming, a Natura 2000 forest subsidy, a subsidy for restoration of stone walls, Single Area Payment and Greening. Having permanent livestock, the farm has also increased the number of employees.

The management of Kurese farm lands has a focus on sustainable economic activities, with a strong component of nature conservation needs and targets, as the farm is located on a landscape protection area. The farm also has good preconditions for nature tourism as the grasslands are very diverse and

untouched by intensive farming and the location also has a rich cultural heritage. However, the tourism segment has not yet been developed as an income generating activity.

Table 6.1. Key indicators at Kurese farm

Key indicators	At the beginning of the project	At the end of the project	Future outlook
Area of farm (ha)	224	224	increase
Area of grasslands in the farm (ha)	170	180	Increase
Livestock (permanent, own)	0	90	to have 0,7-1 cow/ha
Total Employment/Labour (persons) at the farm:	1	3	3-4
• **Family labour force**	1	1	1
• **Regular non-family labour force**	0	2	2-3

Kurese nature farm was a pilot area for testing the Viva Grass Integrated Planning Tool at farm level and the results were used for development of the management plan. Figure 6.6. shows that most of the area in the Kurese farmland belongs to the habitats bundle, formed by four ecosystem services: herbs for medicine, maintaining habitats, global climate regulation, pollination and seed dispersal.

The southernmost part of the Kurese farm belongs to the soils bundle (Figure 6.7). The ecosystem services that form this bundle are related to the role of soil functions in ecosystem processes: bio-remediation, filtration/storage/accumulation, chemical condition of fresh waters and weathering processes/soil fertility.

The farming systems characterised by this ecosystem services configuration require specific management practices. Low intensity grazing is advised, alongside grazing rotations. Soil protection practices are also important in order to avoid erosion processes. The disruption of the supply of one ecosystem service may trigger a decrease in all other ecosystem services included in the habitats bundle.

grasslands out of bundle
grasslands on the habitat bundle

0   250   500 meters
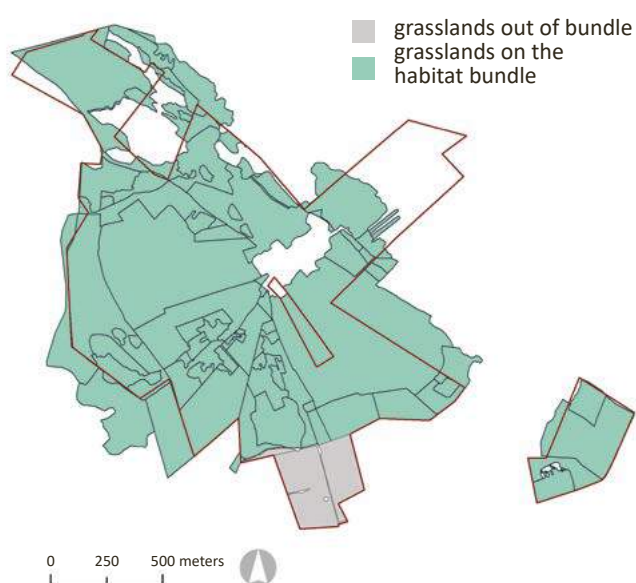
Figure 6.6. Grasslands in Kurese farm belonging to the habitats bundle

grasslands out of bundle
grasslands on the soils bundle
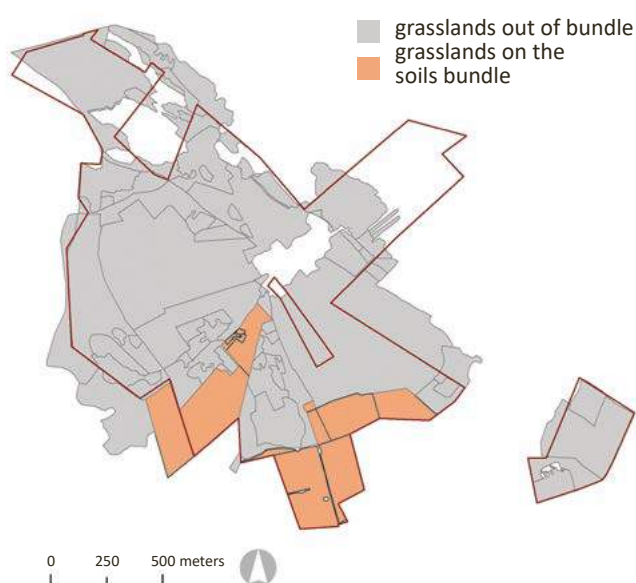
0   250   500 meters

Figure 6.7. Grasslands in Kurese farm belonging to the soils bundle

6.2.2. "Šovītes" farmland

"Šovītes" farm is located in the central part of Latvia, Vidzeme uplands, Vecpiebalga municipality. The territory of the farm is approx. 120 ha, of which about 85 ha are grasslands; the remaining part was covered by forests in 2017. The farmer purchased the abandoned agricultural land in 1997, with the aim of starting a beef cattle business. However, the full-scale farming only started in 2014, including the restoration of the abandoned grassland areas. When joining LIFE Viva Grass project partnership, the farmer was interested in applying sustainable, nature friendly farming practices in order to maintain the landscape and biological assets of the area while at the same time producing high value meat products. At the end of the project, the farmer considered changing the business model of "Šovītes" farm from pure beef cattle breeding and grassland management to a diverse grassland related business according to the developed multi-functional business plan. The future of "Šovītes" farm is connected to selective cattle breeding, forage production and harvesting semi-natural grassland seeds.

In the frame of the LIFE Viva Grass project, grassland restoration activities were implemented gradually over 5 different grassland fields (approx. 85 ha). The aim was to enhance 3 fields as pastures – grazing grasslands for cattle; and 2 hay fields (meadows) to produce fodder. The decision was not only to remove shrubs and to level the microrelief of fields, but also increase the natural diversity of the grassland to improve the quality of grass fodder. Additionally, economic aspects play a significant role – the owner has calculated that natural self-sustaining grassland requires less investment in the long-term compared to cultivated grassland.

During project implementation the management of "Šovītes" farm was taken over by the farm "Kalnā-ju ferma". The farmer also applied for the status of organic farming in 2015 and consequently received support from the Latvian Rural Development Programme for this. However, due to the mandatory condition to generate an income of 200 €/ha the farmer withdrew from the support scheme for organic farmers in 2017.

Table 6.2. Key indicators at Šovītes farm

Key indicators	At the beginning of the project	At the end of the project	Future outlook
Area of farm (ha)	120	120	Increase
Area of grasslands in the farm (ha)	80	85	Increase
Livestock (permanent, own)	approx. 60 (36 cows, 1 bull)	20 cows	Change in breeds from 2020
Total Employment/ Labour (persons) at the farm:	1	1	Invariable
Family labour force	1	1	
Regular non-family labour force	0	0	
Non-regular non-family labour force	0	0	
Biomass production	800 rolls; 10/ha; use as forage	1105 rolls; 13/ha; use as forage	

At the beginning of the LIFE Viva Grass project, the farm had 60 Limousin cattle. The number of animals changed during the project implementation due to grassland restoration works and related insufficient fodder provided by the fields of the farm. Moreover, the extreme dry and wet years were experienced during project implementation which impacted not only on grassland restoration but also on production of biomass. During project implementation, 37 ha of grassland were restored including re-sown with a perennial grass mixture to ensure sufficient grass biomass for beef cattle grazing and forage production. Other grassland areas (approx. 48 ha) were restored by intensive grazing practices to reduce expansionary plant species. Due to different challenges, the farmer decided to change the farming practice from Limousin cattle breeding to a mixed type of farming.

"Šovītes" farm was one of the case study areas for testing the Viva Grass Integrated Planning Tool at farm level and the results were used for development of the management plan. The Viva Grass Tool shows a high supply of ecosystem services on pollination, bioremediation and regulation of chemical conditions of freshwater in the area of "Šovītes" farm (Figure 6.8).
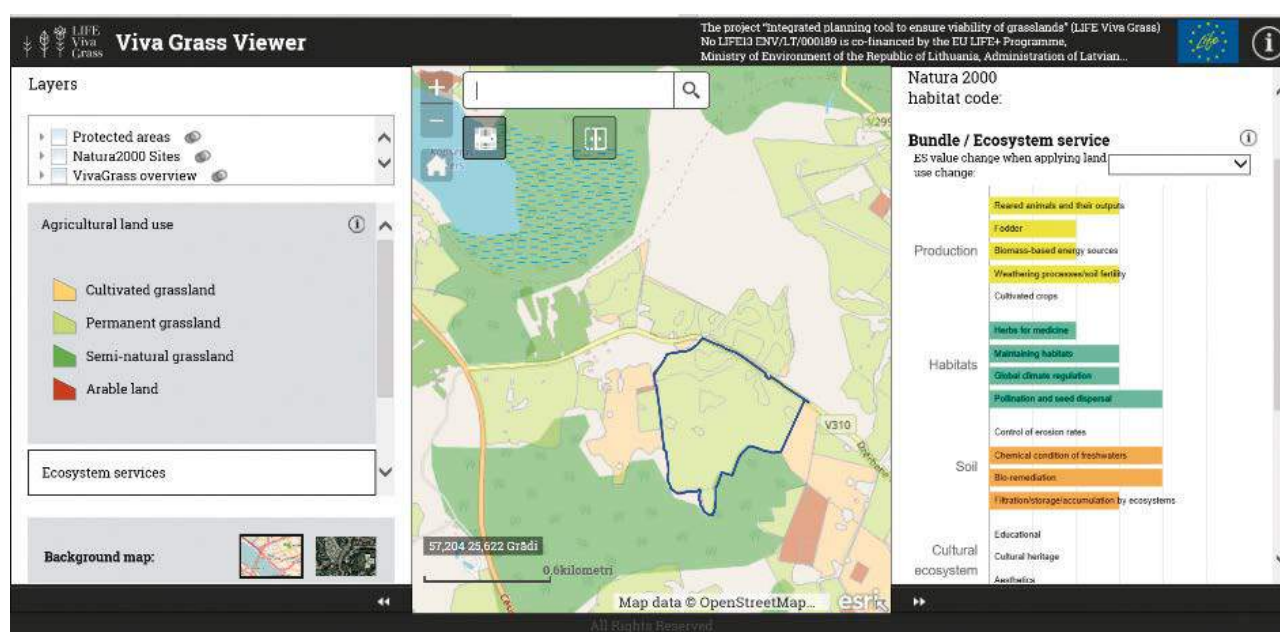

Figure 6.8. Viva Grass Viewer result - assessment of ecosystem services of the current land use type –permanent grassland

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7. Tourism, recreation and cultural ecosystem services

Nature based tourism and recreation is an alternative source of income for farmers/landowners in the countryside, as well as for local economies (lodging, catering, merchandising). Tourists are attracted to those sites which have specific environmental characteristics (e.g., specific ecosystems, wilderness, attractive scenery). However, important criteria for tourism are also accessibility of sites of interest, amenities and ancillary services provided. Areas with better access to tourist attractions may have greater potential than those with more difficult access. Lodging and various tourist facilities play an important role in bringing income to local communities. In the municipalities of the project areas, the number of accommodation establishments and the corresponding amount of rooms and beds have increased gradually (Figure 7.1.). The municipalities have also experienced an increase in the number of tourists; however, the trend is more dynamic (Figure 7.2.). The positive trend also stimulates grassland and landscape maintenance as this is an important activity to keep the resources in good condition.
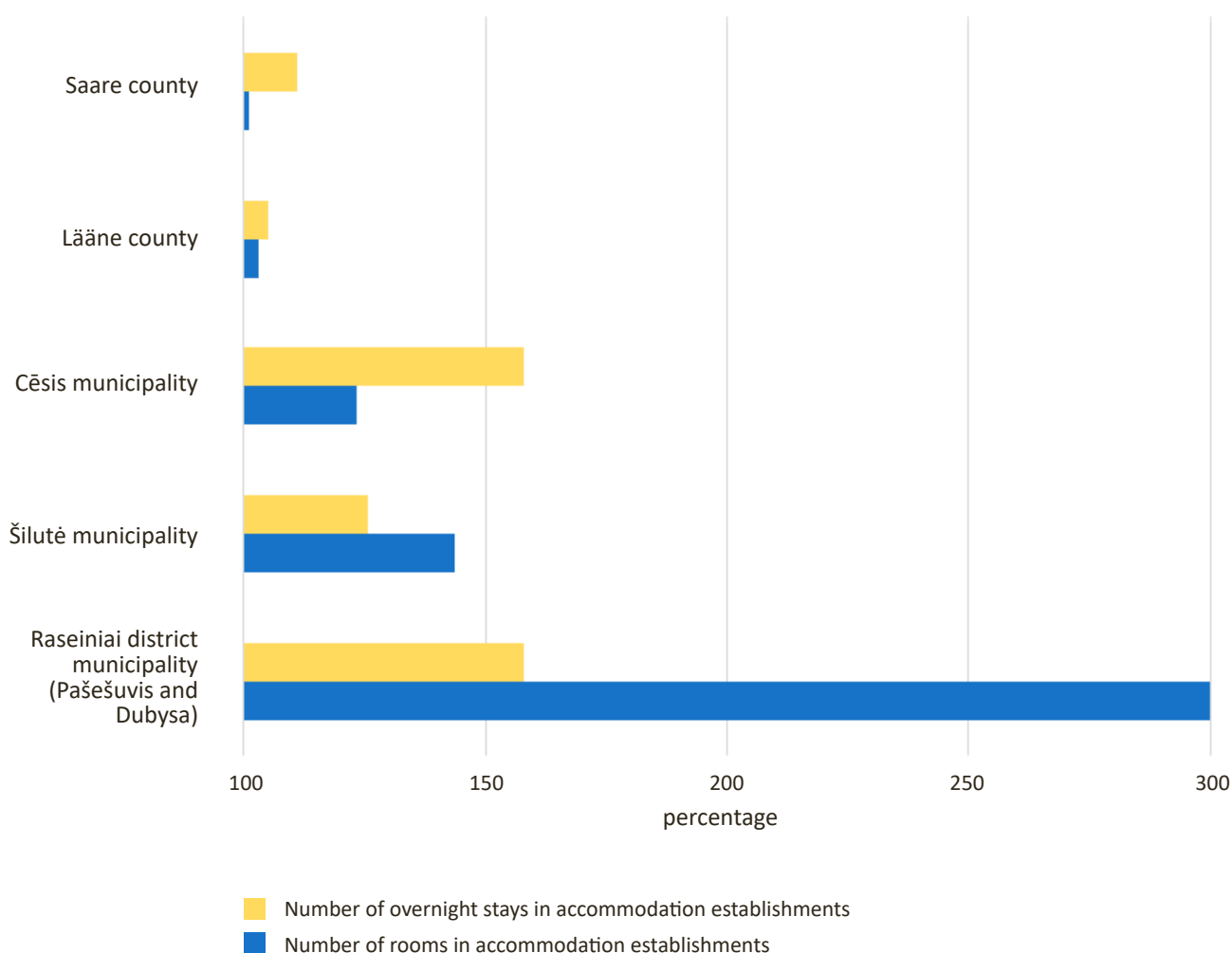

Figure 7.1. Relative change in number of rooms and overnight stays from the year 2013 to 2018 (2013=100)
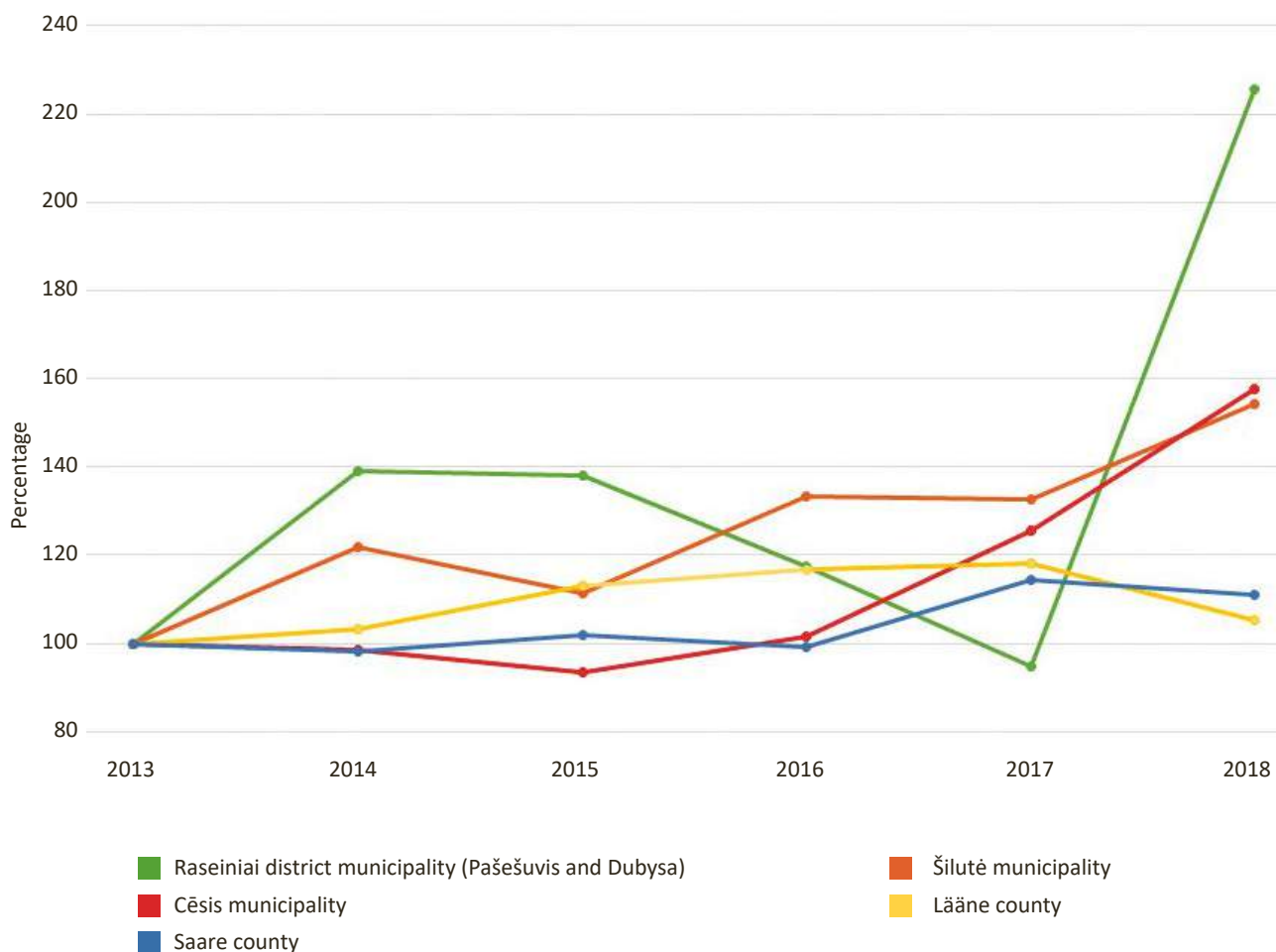
Figure 7.2. Trend in accommodated tourists in 2013-2018 Figure 7.2. Trend in accommodated tourists in 2013-2018

7.1. Bird watching – growing potential for local economies

Grasslands are an important habitat for many bird species. In turn, bird species are a reason for the recreational activity of birdwatching, or birding. Šilutė municipality and its adjacent areas is a unique area in Lithuania well known for its rich biodiversity, fishing and floods. The bird migratory route crosses the area, hundreds of bird species are found here, and thousands of geese may be observed in meadows in springtime. A few globally endangered bird species (e.g. Aquatic Warbler, Great Snipe etc.) breed in the Nemunas delta and create the potential of attracting ornithologists worldwide. In this area, nature tourism could become a connector between farming and nature protection providing the region with the most valuable grassland management solution. However, nature tourism is still underdeveloped there and thus promotion of the activity and areas is needed to encourage people to visit the sites.

A guidebook for birdwatchers was created to inform about the unique values of the project area as well as highlight the most suitable bird watching sites. The book "Birding in Lithuania. Nemunas
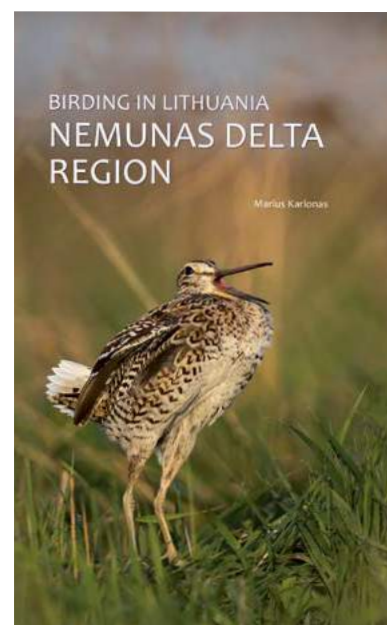
delta region", published in Lithuanian and English in 2017 was hugely popular. The guide covers 22 areas in Western Lithuania. The areas have been selected based on long term observations in this region by ornithologists, and the list of notable species was drawn up according to the latest data. The book was distributed for target audiences in special events and fairs e.g. in one of the biggest tourism fairs for birdwatchers "Birdfair 2018". In total, 2300 copies in English and 1300 Lithuanian copies were printed. The book is also available for downloading on the LIFE Viva Grass website.

The guidebook and organised visitors' days attract more visitors to the region. The project survey shows that 60% of foreigners responded that the book encouraged or partly encouraged them to visit Nemunas delta region and 69% of them are planning to visit the area. It has been estimated that about 500 people participated in the birding events in 2017 and 2018. According to the data of Statistics Lithuania, the average daily expenditure of domestic tourists in the spring and autumn seasons of 2018 was about 24.4-36€ and for foreign tourists 82-101.6€. The increase in generating income from auxiliary services related to birding activities is feasible, as the room/bed occupancy in hotels and similar accommodation is between 30-40%.

7.2. Outdoor recreation for urban dwellers

Outdoor recreation is one type of the cultural ecosystem services that is provided through physical and experiential interactions with the natural environment, including grasslands. Open and mosaic type landscapes, semi-natural and species-rich grasslands enable human activities promoting health, recuperation or pleasure through active or passive interactions with ecosystems and the components.

Pavilniai regional park has the most picturesque landscapes in the heart of the capital city of Lithuania. In urban areas classical agriculture practices cannot be implemented, however these grasslands provide valuable recreational opportunities for Vilnius inhabitants. During the LIFE Viva Grass project, restored abandoned grassland areas were used to establish a walking trail in Ribiškės landscape reserve. It also served as an attraction for organised open visitors' days and several nature educational events about grassland. During weekends, the area is visited by many people. Various research studies on the value of recreational services, and particularly the impact of physical activities on chronic illnesses, have estimated significant health benefits as well as reduced costs for the State health budget, as well as for individuals.

7.3. Tourism and environmental education

Tourists and outdoor holidaymakers are often most interested in learning about the area they are visiting. Providing information is an important activity as this gradually raises awareness about the biodiversity, grasslands and landscapes, as well as the assets of particular sites and the wider area. LIFE Viva Grass project has established outdoor information boards in different designs in eight case study areas, which present facts and visual materials about grasslands and their values in local context. The information boards were used during visitor days and public events to educate visitors about the issues.

Figure 7.3. Examples of educational and information stands installed during the project: A) Madliena municipality; B) Cēsis municipality; C) Saaremaa municipality; D) Dubysa regional park

C

D

7.4. Mapping and assessing cultural ecosystem services for landscape planning

Mapping and assessing cultural ecosystem services (MAES) provided by grasslands was one of the tasks implemented by the LIFE Viva Grass project to demonstrate an ecosystem-based approach in planning and to link the importance of grassland management with the well-being of local people.

Cultural services are defined as the non-material benefits people obtain from ecosystems, such as symbolic, spiritual, or intellectual benefits, or recreational experiences from interaction with nature. To assess the supply of the grassland ecosystem services, the relevant indicators were selected (Table 7.1).

Table 7.1. LIFE Viva Grass indicators for MAES integrated in landscape planning in Cēsis municipality

Criteria	Indicators used for assessing the criteria value
Aesthetical value	Vicinity of water bodies and streams
	Linear landscape elements (hedgerows, stonewalls)
	Naturalness of surroundings
	Naturalness of grassland
	Undulating terrawin
	Openness of landscape
Recreational potential	Proximity of rural recreational enterprises
	Proximity of watching towers
	Presence of hunting ground
	Social gathering places
	Camping sites
Educational value	Vicinity of educational trails
	Vicinity of educational sites
Cultural heritage value	Vicinity of cultural heritage monuments
	Vicinity of pre-19th century farmsteads
	Traditionally managed grasslands
Ecological value **(expert assessment on scale 0-5)**	Maintaining habitats: number of species
	Herbs for medicine: number of species
	Pollination: number of species
	Global climate regulation: Carbon sequestration

The importance of the landscape and grassland ecological value for the well-being of local inhabitants has been acknowledged by the stakeholders of Cēsis municipality. These were the highest ranked criteria by stakeholders for prioritisation of the areas for landscape management and restoration in Cēsis municipality, while testing the Viva Grass Tool in the landscape planning context and developing recommendations for the action plan of the new development programme of the municipality. Implementation of the action plan would in the long-term increase the landscape value, as well as the tourism potential of the rural areas in the municipality, thus contributing to the well-being of inhabitants by improved recreational opportunities and amenities, as well as income opportunities from providing tourism services and selling local grassland products.
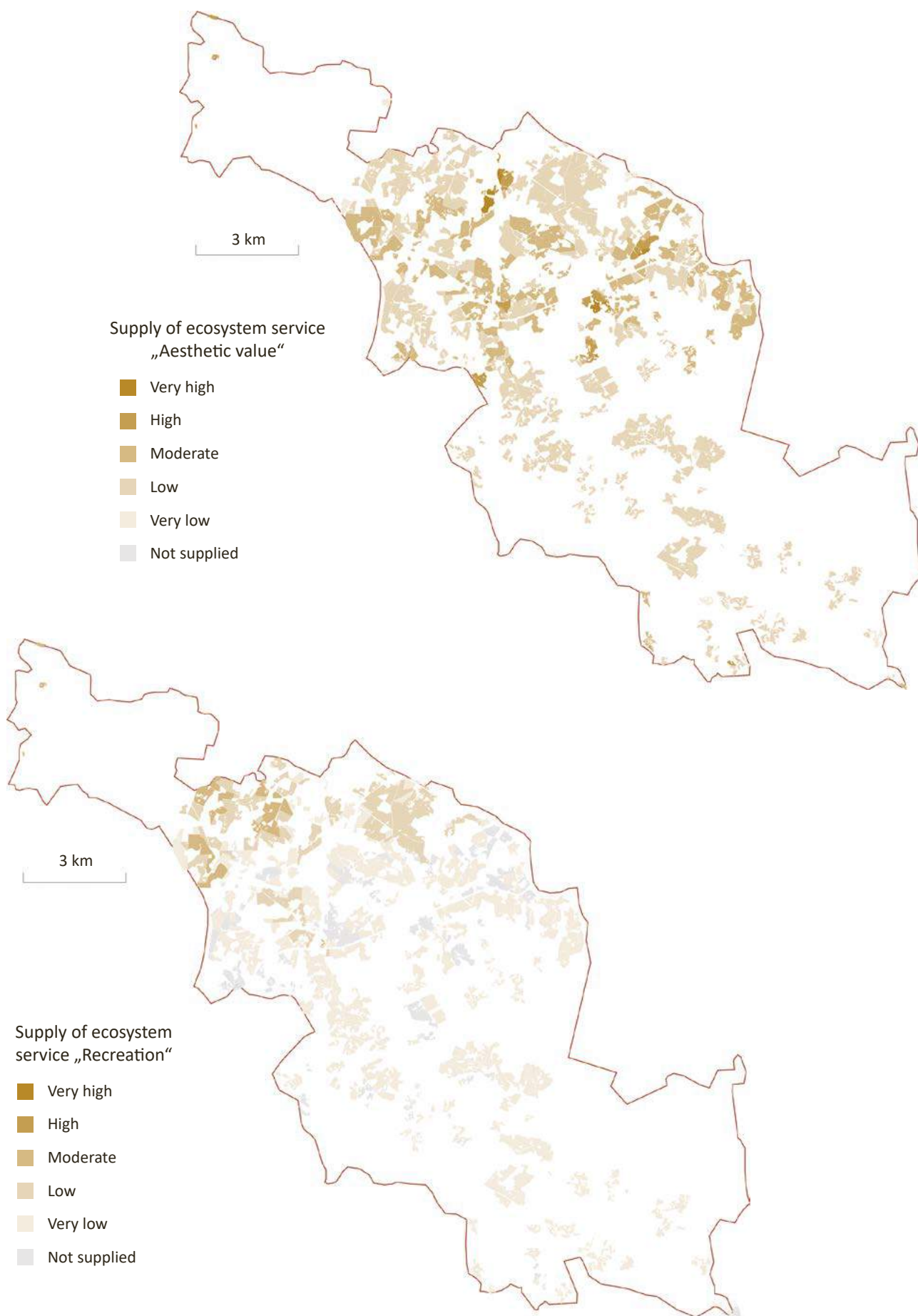
Supply of ecosystem service „Aesthetic value"

■ Very high
■ High
■ Moderate
■ Low
■ Very low
■ Not supplied

3 km

Supply of ecosystem service „Recreation"

■ Very high
■ High
■ Moderate
■ Low
■ Very low
■ Not supplied

3 km

Figure 7.4. Mapping and assessing of aesthetic and recreational ecosystem services in Cēsis municipality

Conclusions

Population and ageing

With regard to the socio-economic impact assessment, the indicators reveal a significant depopulation of the areas since of the early 1990s: the number of inhabitants in Cēsis municipality, for example, has decreased by almost 25% between 1990-2015. The data on population reveals that the proportion of the older population (65 years or over) is increasing in most of the demonstration cases. Correspondingly, the settlement vitality index has a negative trend.

Farming

The project areas are experiencing similar trends to those in the Baltic States and the EU on average. The number of farms is decreasing while the average size per farm is increasing. This also means that the number of persons employed in agriculture decreases.

Livestock and organic farming

The presence of livestock in the area influences the type of agricultural activities and maintenance of grasslands. The statistics indicate that the number of sheep and bovine has fluctuated during the project implementation. A positive trend has been observed in terms of area, including permanent grasslands managed according to organic farming rules.

Socio-economics at farm level

The ownership of the two project case study farms experienced change during the project implementation, therefore the farming practices have also been more dynamic. Nevertheless, the grassland is and will be the main use of the land that will ensure cattle breeding in both farms, as well as biomass production in Šovītes farmland. The farmers are planning growth in their activities as far as possible.

Tourism and recreation

The improving tourism potential was particularly addressed in a few project case study areas – Šilutė, and Cēsis. It is evident that information and infrastructure play important roles in promoting this activity. Although the number of tourists is increasing in these areas, the accommodation capacity still seems to be sufficient. Recreation of local people or the number of one day visitors has also increased during the project due to arranged visitors' days as well as other educational events.

Ecosystem services

Assessment of ecosystem services, related bundles, trade-offs, hot- and cold-spots enables a new, ecosystem based approach in management planning that helps to find the most beneficial (both for ecosystems and for people) ways for management and use of grasslands. The Viva Grass Integrated Planning Tool helps to understand and implement it in practice. LIFE Viva Grass project provided different examples of applying the concept of ecosystem services in land use planning, including, for example, planning of the Green Network or Green Infrastructure, or prioritisation of grasslands for management in protected areas.

The aim of the
LIFE Viva Grass
project is to support
maintenance of
biodiversity and
ecosystem services
provided by grasslands,
through encouraging
ecosystem-based
planning and
economically
viable grassland
management.

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