Analysis of the policies and regulatory framework influencing maintenance of grassland ecosystems in the Baltic States

Synthesis Report

(Action A1 Policy assessment related to grassland ecosystems)

September 2015

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Analysis of the policies and regulatory framework influencing maintenance of grassland ecosystems in the Baltic States: Synthesis Report

Action A1: Policy assessment related to grassland ecosystems

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Content

1. Introduction

Natural and semi-natural grasslands (NSG) represent complex ecosystems that provide variety of different ecosystem functions and services, essential for maintenance of biodiversity as well as for survival and well-being of human society. Loss of grassland biodiversity leads to degradation or even destroying of the ecosystem functions and services, which would require enormous financial investments to maintain or provide these services artificially.

Despite the considerable efforts of the EU Member States for protection of biodiversity through establishment of the Natura 2000 network as well as by mainstreaming biodiversity strategy to sectorial strategies, e.g. introducing of the biodiversity conservation measures into the EU Common Agricultural Policy, the grassland ecosystems are still threatened all over the Europe. According to the EU 2010 Biodiversity Baseline assessment 76 % of grassland habitats assessments were unfavourable. The area covered by natural and semi-natural grasslands has considerably decreased in Europe throughout the last century as result of urbanisation and the intensification of agriculture on more productive and accessible areas, while remoter areas underwent marginalisation and abandonment. This trend is expected to continue also in future, since scenarios of land use change in Europe for the period up to 2030 suggest a continuous decline of agricultural land. Land abandonment has significant ecological and social consequences - the disappearance of a fine-grained mosaic landscape structure leads to its homogenisation and the loss of semi-natural habitats and a consequent decrease in biodiversity value; at the same time it results in loss of traditional landscape, identity of the place and creates feeling of depression among the local people.

Agri-environmental measures within the Rural Development Programme provide opportunities for landowners to maintain their grasslands, thus avoiding further overgrowing of the fields. However the applied measures are often not efficient in reaching the environmental and biodiversity conservation objectives, since they are developed for the whole country, not taking into account regional and local circumstances (i.e. natural and socio-economic conditions) and the subsidies in general provide more favourable conditions for promoting of agriculture production rather than maintaining semi-natural grassland habitats. Inconsistencies and lack of co-ordination between the nature conservation and rural development policies is a major obstacle in the Baltic States, which disables to address the root causes for the socio-economic recession in rural areas, land abandonment and the related loss of farmland biodiversity.

The LIFE Viva Grass project has performed analysis of the national policies and regulatory framework in the Baltic States in order to assess the established conditions for the grassland management and how favourable they are for maintenance of grassland ecosystems, biodiversity and related ecosystem services. Shortcomings of the existing policy and legal framework of the Baltic States have been identified. The analysis serves as a conceptual basis for development of integrated grassland management approach as well as formulating recommendations to the national authorities for improvement of rural development policies and strengthening of the legal systems for grassland management.

2. Background: trends in land use change and driving forces impacting the grassland management

Changes in landscape are caused by the dynamic interaction between natural and cultural processes – the cultural landscape is formed by consecutive reorganisation of the land in order to better adapt its use and spatial structure to the changing social demands (Antrop, 2005). Since the middle of the 20th century, land use transitions and related changes in the structure of European rural landscape were characterised by the processes of intensification and marginalisation of agriculture, which caused a significant impact on the landscape-ecological functions and processes as well as biological diversity provided by semi-natural grasslands (Reger, 2006; Stoate et al., 2001). The typical characteristic of this period is **landscape polarization** – agriculture is intensified on more productive and accessible lands, while remoter areas are marginalised and abandoned (Antrop, 2005; Pinto-Correia and Breman, 2008).

The **marginalisation** is „a process, driven by a combination of social, political and environmental factors, by which in certain areas farming ceases to be viable under an existing land use and socioeconomic structure" (Baldock et al., 1996). Regional differences of marginalisation in Europe are described by Pinto-Correia and Breman (2008) - in the regions of more intensive and specialised agriculture (e.g. in North-Western Europe), marginalisation mostly appears at a local scale, whereas in peripheral areas, such as the Mediterranean as well as Central and Eastern European countries (CEEC), it can affect entire regions and is connected to social and economic decay due to the decrease in economic activity and the related trend of depopulation.

The landscape polarization caused by intensification in parallel to the marginalisation processes results in opposite trajectories of land use change, which have either increasing or decreasing human impact on ecosystems and biodiversity (see figure 1). Intensification usually results in increasing area of arable land, while opposing trend of marginalisation is favouring extensive use of agriculture area, e.g. change to grasslands, or abandoning of agriculture practice and leading to forest expansion.

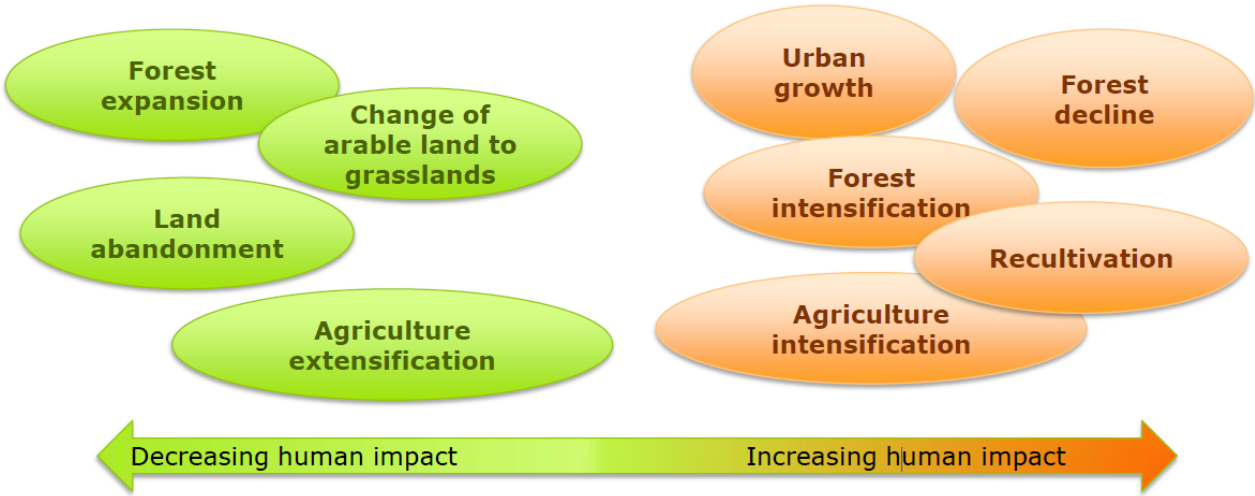

Figure 1. Trajectories of land use change (according to Kuemmerle et al., 2014, VOLANTE project deliverable 11.2)

The typical trends of the landscape change and the main driving forces for these trends are summarised in table 1.

Table 1. The main trends and related drivers for the landscape change in Europe

Trends	Drivers
Depopulation of rural areas	Market economy Change of life style from rural to urban
Land abandonment	Land reform Market economy
Agriculture extensification: - Maintenance of semi-natural grasslands - Organic farming	Land use policy Payments for agri-environmental schemes Nature conservation policy
Agriculture intensification	Land use policy Market economy Area-based subsidies

In the CEEC, including the Baltic States, during the period of socialism, intensification of agriculture and related landscape polarization was driven by collectivisation and related land use policy. Regaining of independence of the Baltic States from the Soviet Union in the 1990s, followed by transition to the market economy and restitution of land to former owners, led to decrease of the intensification trend and shifting to marginalisation and abandonment of former farmland (Baumann et al., 2011; Kuemmerle et al. 2008). Many land owners, who have regained their land properties, now lived in cities and lacked interest or the necessary investment capability to establish a farm enterprise. As result large share of former intensively used arable land was transformed to grasslands, shrubs or forest by artificial planting of trees or natural forest re-growth. The rates of land abandonment have decreased in the Baltic States since joining the European Union and access to financial support provided by the EU Common Agriculture Policy (CAP) and its Rural Development Programmes, such as single area payments as well as agro-environmental schemes promoting extensive grassland management practices. Though, the loss of population and the social abandonment of rural areas continue as a result of out-migration of mostly young people at working age (Bell et al., 2010; Ruskule et al. 2013).

The present trajectories of land use change in the Baltic States reveal the trend of polarisation of the rural areas, including land abandonment or extensive grassland management practices, applied with support of agro-environmental schemes and mostly typical for regions less suitable for intensive agriculture, as well as intensification of agriculture by transformation of semi-natural grasslands to cultivated grasslands or arable land, including production of energy crops (see figure 2).

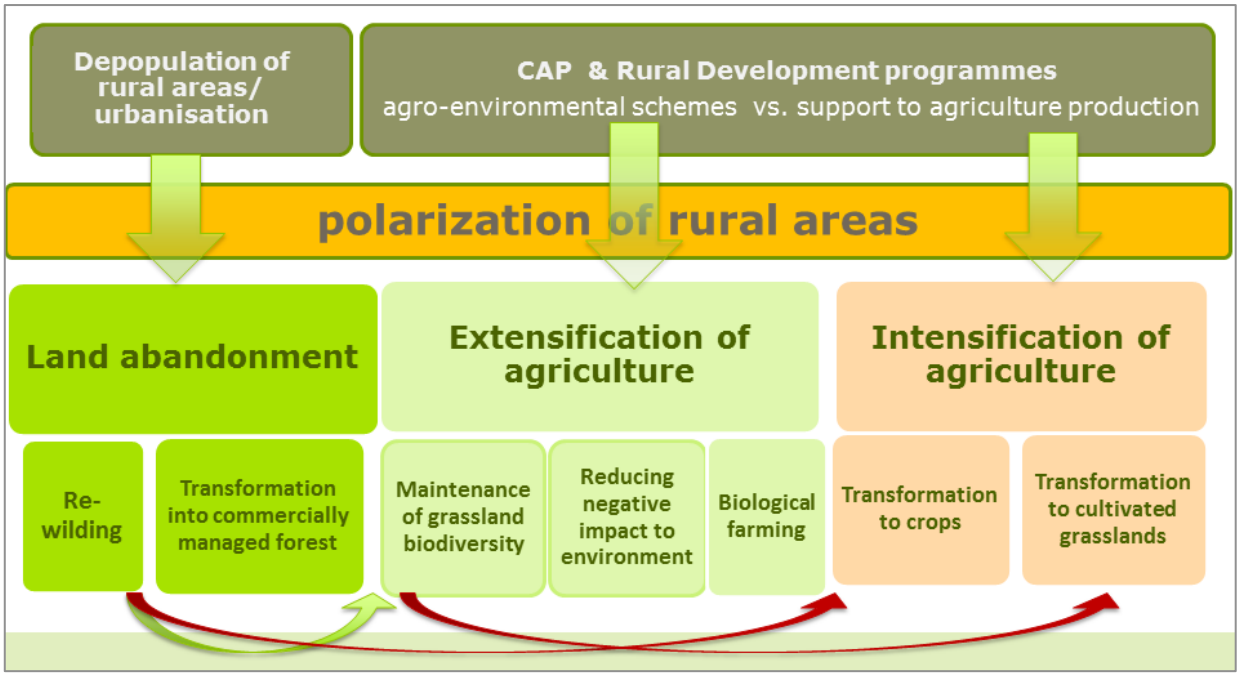

Figure 2. Main drivers and trends impacting grassland management in the Baltic States (Author: A. Ruskule)

In-depth analysis of the land use change processes in Europe and role of policy and governance was carried out by the EU 7th Framework Programme funded project "Visions of land use transitions in Europe (VOLANTE). The project has concluded that the main driving forces that are in charge for the landscape change in Europe are related to the EU and national policies and legislation, although the economy or market forces also have important role (Van der Sluis T. et al., 2015). The analysis was performed in six case study areas covering different environmental zones in Europe. One of the case studies was devoted to the boreal and nemoral zone, which is represented by the Baltic States. A regional workshop was held on 16 May 2014 in Tallinn, where Fuzzy Cognitive map of landscape change and casual driving forces was developed by the group of experts from the Baltic States. The results of the workshop indicated the following causal interrelations between the drivers of the landscape change in the Baltic States:

- Change of political system, including the end of the Soviet Union, joining EU and EU policies (e.g. CAP) has strong influence on national and regional policy and economic growth, driving the landscape change over the past decades;
- National and regional policies have driven changes in farming intensity and technologies, use of natural resources as well as in processes related to transport and urbanisation of the countryside (urban sprawl);
- Depopulation of the countryside has a role through local land abandonment and agricultural marginalisation.

The full picture on interactions of the driving forces in charge for landscape change in the Baltic States is presented in Figure 3.

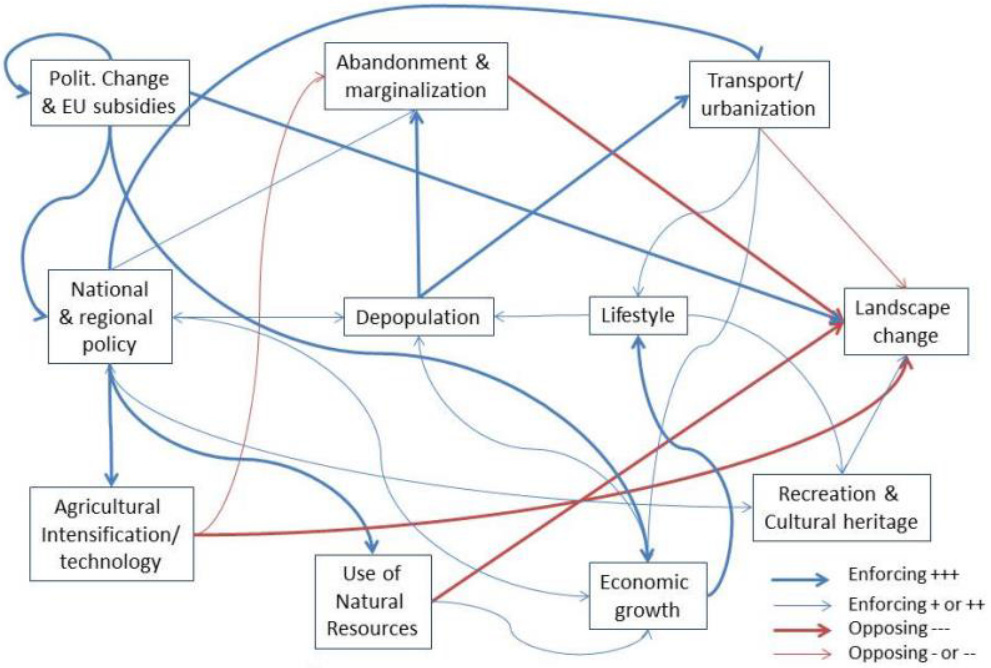

Figure 3. Fuzzy Cognitive map for landscape change and causal driving forces in boreal/nemoral region (Source: Van der Sluis T. et al., 2015. VOLANTE, Deliverable No: 2.3b)

Scenarios of land use change in Europe for the period until 2030 anticipate a continuous decline of productive agricultural land (Stoate et al., 2009). However, at the same time, agricultural production is no longer the primary function of rural areas - there is a growing demand in society for new functions, e.g. amenity or recreational quality of landscape as well as maintenance of biodiversity and ecosystem services (De Groot, 2006; Domon, 2011). As a result of the EU Common Agriculture Policy, introducing agro-environmental schemes and payments for maintaining the land in a good agricultural and landscape status, farmers are directly involved in maintaining biodiversity and rural landscape (Brady et al., 2009; Henle et al., 2008).

The background analysis demonstrates that the EU and national policies are the most influential present drivers of the landscape change in the Baltic States, like elsewhere in Europe, determining also the grassland management practices and thus impacting the status of grassland ecosystems and services they provide.

3. Materials and method of analysis

In order to assess the role and impacts of the EU and national policy documents and regulatory framework on grassland management practices in the Baltic States and status of grassland ecosystems, an in-depth analysis of the policy documents and legal acts was carried out, including the following steps:

Step 1: screening policy documents and legal acts having impact on maintenance of grasslands and related ecosystem services.

The major EU policies having impact of the grassland management (i.e. Habitats and Birds Directives, EU Biodiversity Strategy 2020 as well as the Common Agriculture Policy and Rural Development Programmes) were reviewed, noting the objectives related to maintenance of grassland biodiversity and different approaches applied in the Baltic States and other EU countries for achievement of these policy objectives.

In-depth analysis of the Baltic policy documents were carried out using the agreed common assessment framework and covering the following fields:

- Horizontal long-term strategic planning policy;
- Spatial planning policy;
- Rural development policy;
- Forestry policy;
- Energy policy;
- Environmental protection and nature conservation policy;
- Tourism policy.

The analysis addressed in total 24 policy documents and legal acts in Lithuania, 39 – in Latvia and 41 – in Estonia. For each document the objectives, specific measures and targets having impact on maintenance of grasslands and related ecosystem services were identified and compiled in an excel data base.

Step 2: Assessing impacts on grassland ecosystem and management of grasslands.

The assessment matrix was developed in the excel data base, where each policy/ legal measure or sub-measure was assessed according to the following criteria:

1) Impact on grassland ecosystems:
    a. Description of direct impacts on grassland ecosystems (including landscape) and indication, if the impact is positive or negative (+/-);
    b. Description of indirect impacts on grassland ecosystems (including landscape) and indication, if the impact is positive or negative (+/-);
    c. Identification of the specific impacts (+/-) on:
        - Loss/increase of biodiversity;
        - Loss/increase of semi-natural grassland area;
        - Impact on grassland ecosystem structure and functions;
        - Impact on rural landscape;
        - Avoiding distribution of invasive species
2) Impacts on grassland management practices:
    a. Description of direct impact on grassland management and indication, if the impact is positive or negative (+/-);
    b. Description of indirect impact on grassland management and indication, if the impact is positive or negative (+/-);
    c. Identification of the specific impacts (+/-) on the change in land-use/management:

Trend of land use change	Land-use/management practice
- Urbanisation/depopulation of rural areas	▪ Non-used land; ▪ Transformation of GE to built-up areas ▪ Increase of land value; ▪ Decrease of land value
- Intensification of agriculture	▪ Transformation of GE to cultivated land ▪ Fertilization ▪ Drainage
- Application of extensive grassland management /agri-environmental measures	▪ maintenance of grassland biodiversity ▪ minimisation of negative impact on environment ▪ biological farming
- Land abandonment	▪ Transformation to forest ▪ Transformation (restoration) to semi-natural grasslands

Step 3: Assessment of coherence and shortcomings in the policy documents in the Baltic States with regard to grassland management

Based on the results of the national policy analysis, a summary matrix on policy impacts on grassland ecosystems and management practices in the Baltic States was developed. The matrix includes a list of generalised policy measures represented at least in one country within the each policy area (i.e. horizontal long-term strategic planning; spatial planning policy; agriculture and rural development policy; forestry policy; energy policy; environment protection and nature conservation policy as well as tourism policy). The matrix includes assessment of significance (high, medium or low) of the policy measures depending, if they have direct or indirect impact, available financial support or if they are legally binding. Furthermore each measure was assessed, if it has positive or negative impact on maintenance grassland ecosystems, as well as on specific aspect (i.e. biodiversity, coverage, structure and functions of semi-natural grassland, landscape and distribution of invasive species) and impact on the change in land-use and management practices.

Step 4: Summary assessment of impacts on grassland ecosystems and services.

Based on the results of step 3 (assessment of coherence and shortcomings of the policy documents in the Baltic States with regard to grassland management) the list of identified grassland related policy measures was assessed against their impact on delivery of ecosystem services. The Common International Classification of Ecosystem Services - CICES V4.3 was applied for the assessment. The assessment matrix indicates the impact of the measure in the scale: -2 significant negative impact; -1possible negative impact; 0 – no impact; +1 possible positive impact; +2 significant positive impact; +/- variable impacts possible.

4. Comparison of the Baltic and EU policy objectives and approaches for maintenance of grassland biodiversity

This chapter provides overview on existing policies and trending practices in EU relevant for the restoration and maintenance of natural and semi-natural grasslands important for biodiversity conservation. In this context, the section attempts to compare Baltic policy approaches to natural/semi-natural grassland preservation approaches in EU. The scope of this survey does not include a detailed analysis of policy framework and its implementation particularities of each EU Member State. Instead, the chapter provides more general trending practices and policy related debates emerging from setting up nature conservation and agriculture policies for 2014-2020 period.

EU Birds (2009/147/EC) and **Habitats** (92/43/EEC) **directives** sets a basis for EU nature conservation policy, which define biodiversity conservation objectives in EU. Grassland conservation is among them either as conservation object as such (Habitats directive define grassland habitats under protection) or as habitat necessary to ensure conservation of certain species (e.g. staging areas for birds, ensuring conservation of rare bird species breeding in grasslands). EU Birds and Habitats directives are considered to be among the most ambitious policy legislation having priority attention, which has been experienced by Baltic States during EU accession process. Recently, in the EU political discourse the concerns have raised that these directives being rather old pieces of legislation needs substantial revision. As a result of this political debate, European Commission launches so-called "fitness check" to ensure that the directives "fit for its purpose". The process followed with intensive public consultation, which got an unprecedented level of interest providing more than 0,5 mln. responses to suggested questionnaire. Assessment of the consultation recognized that the active participation resulted from consultation campaigns organized by different interest groups. Overall assessment provides rather positive evaluation of nature directive's relevance[1]. Results of the "fitness check" shall be published by the end of 2016, while it seems that revision of the directives will not lead to weakening this legislative framework.

The EU biodiversity strategy is more directional policy set for the period 2014-2020, specifying actual conservation threats EU and defines strategic targets. This document derived as EU response to unachieved targets to stop biodiversity decline by 2010. The strategy defines targets, which also addresses necessity to maintain grasslands important for biodiversity conservation. Specifically, the targets 1 and 2[2] addressing restoration and maintenance of grasslands among the other habitats and protected species of EU concern. Target 3 (More sustainable agriculture and forestry) of the strategy is specifically addressed to agriculture recognising importance of this sector for biodiversity conservation. This target includes specific strategic actions, which are directly related to improvement of grassland maintenance. Action 9 (better target Rural Development to biodiversity conservation) deals with improvement more targeted measures through setting quantified biodiversity targets and stimulating collaboration facilitation. The Action 8 (Enhance direct payments for environmental public goods of the EU Common Agriculture Policy) is addresses to more wide scope of grasslands, which usually cover significantly larger area that RDP measures. The action recognises importance of environmental public goods delivered in agricultural landscapes and foresees that CAP direct payments would go beyond cross-compliance, improve and simplify current GAEC (Good Agricultural and Environmental Conditions)

[1] More information on "Fitness Check of the Birds and Habitats Directives": http://ec.europa.eu/environment/nature/legislation/fitness_check/index_en.htm

[2] The EU Biodiversity Strategy to 2020:
Target 1 – The full implementation of the EU nature legislation;
Target 2 – better protection and restoration of ecosystems and the services they provide, and greater use of green infrastructure;

standards. These strategic actions will be particularly important to improve EU grasslands quality at a large scale (going far beyond Natura 2000 network) in the context of biodiversity conservation and delivery of environmental public goods. Implementation of strategic action 8 under responsibility of EC, while action 9 implementation role is foreseen also to the Member States. However practical results of implementation of the action 9 are not yet observed in the Baltic States. A mid-term review of the strategy implementation has been carried out in 2015, which recognized that no significant progress has been made to implement target 3 of the strategy, while progress on targets 1 and 2 is recognized as insufficient.

Along adoption of the EU biodiversity strategy, nearly no special new tools have been designed for its implementation, except introduction of Prioritized Action Framework (PAF) to be designed for each Member State. The PAF is prepared by each EU Member State, which identifies country's priority on nature conservation policy implementation. The PAF provides a view to the Member States roadmap to achieve nature conservation targets, including issues addressed to the grassland management. Lithuania is the only Member State, which so far has not elaborated PAF, however it aims to finish the document by the end of 2016. The PAF as a tool for implementation of the EU biodiversity strategy is considered a major priority guiding document for the LIFE+ financial programme, which stimulates elaboration of the project application along the defined priorities. LIFE+ program is recognised as an important tool to implement EU biodiversity strategy and it greatly contributes with implementing innovative approaches, best practices of maintenance of grasslands across EU[3].

Looking on the spectrum of the policy implementation tools, it is evident that EU biodiversity strategy stimulates cross sectoral integration of networking stakeholders of agriculture, forestry sector as well as utilizing financial mechanisms under their disposal where biodiversity conservation has its place among the priorities. Another major EU policy relevant to grassland management is **The EU Common Agriculture Policy (CAP)**. As in the previous financial periods, CAP for 2014-2020 offers direct payments for farmers who implement cross-compliance requirement for farming. This period introduced greening concept as major innovation making the direct payments system more environment-friendly. Greening system offers to farmers 30% payment increase for area-based payments if farmers implement non-contractual practices benefiting for environment and climate. Maintaining permanent grasslands is listed among preferred practices. There has been a lot of criticism about CAP greening system, also from environmental experts who disregard them as providing ambitious and additional environmental benefit and consider them as lacking effectiveness due to number of exemptions given in the system. The mid-term and ex-post evaluation processes will provide more evident in future about the effectiveness of this approach. While looking at this innovation from the long-term perspective since introduction of CAP (since 1962), this agricultural policy is continuously evolving and gradually improving in the context of environmental performance. Therefore, experience of the current system is very important to measure its impact and be proactive in the process of the next period programming aiming to achieve improvements of the system.

Rural development programs (RDP) are more targeted tools of CAP, which foresees more specific measures supporting grasslands and respond to the particular needs of biodiversity conservation. The RDP regulation provides general framework, under which EU Member States defines specific measures relevant to their national/regional specifics and rural development strategy. There are 115 RDPs functioning across the region. Each of the Baltic States have single RDP covering whole territory of the

[3] Experience gathered through LIFE+ projects is summarised in a number of different publications, some of them devoted to grasslands management, e.g.:
http://ec.europa.eu/environment/life/publications/lifepublications/lifefocus/documents/grassland.pdf

country and containing rather similar measures, while other Member States (e.g. Italy, France, Germany, Spain, UK) have several RDPs representing specific region within the country.

Measures foreseen for implementation of Rural Development Strategies, are based on the payment system to farmers from EARDF fund, therefore its practical implementation in the field thought the RDPs is actually financed. This enables the strategies to be a major instrument influencing maintenance of grasslands across the EU. Implementation of the RDPs of the Baltic States can be viewed in the context of other EU countries in following aspects: a) spectrum of the measures applied; b) design and level of payments and c) administrative particularities.

With regard to the spectrum of measures applied, diversity of grassland habitats in the Baltic States requires rather complex set of measures, fulfilling different maintenance needs for due to specifics plant communities, depending on diverse soils and varying level of water regime. Maintenance of grasslands requires different intensities and timing of mowing, others – grazing, which from biodiversity conservation point of view ideally would require multiple management regimes available. Overall, Baltic States use rather standard "minimum scenario" approach. It fulfils minimal environmental expectations deriving from RDP regulation, while maintains relatively simple and low cost administrative efforts. However, Latvia's RDP recognizes different types of grasslands and its management needs. Lithuania has introduced a special measure under "non-productive investments" which enables single payments for the restoration of targeted mires and wet grasslands being important for globally threatens Aquatic Warbler. Ability of utilizing "non-productive investment" measure for the grassland restoration makes Lithuania rather exceptional in EU context. The scope of this paper does not include detailed analysis measures applied in all 115 RDP, however, some approaches are worth to be noted, which suggest that rather wide spectrum of grassland maintenance related measures are being applied across EU.

Poland is maintaining a system of agri-environmental measures where specific management requirements are set by individual farm management plan and consultations with special farm advisors on environment. Farmer who decided to involve advisor work and have individual farm management plan has a possibility to receive additional payment for extra management responsibilities taken or be released for some unnecessary restrictions. The advisors set an individual farm management scheme based on farm site visit and providing inventory of biodiversity and other features. Such approach may require intensive administrative efforts, on the other hand – it individualizes management requirements to maintain valuable habitats and therefore increase effectiveness of the measures.

The other approach, observed in several EU Member States (e.g. France, Austria, Germany, Sweden, Switzerland, UK) is outcome-based (or result-based) measures, which improve the environmental targeting and the promotion of long-term attitudinal changes of farmers towards agri-environmental measures. The principal of such measures is that there are either no or very limited initial management requirements set for the participants of the measure, while the payment for the farming practices is performed based on the environmental results achieved during implementation (e.g. defined by occurrence of certain indicator species in participating plot). Some examples illustrate that payments are based only on occurrence of indicator species (e.g. MEKA programme in Germany, flowering meadows measure in France). While in other occasions, some management requirements are set, while the payment is done based on following management rules and receiving extra bonus payment if defined environmental objectives (e.g. measured by indicator species) are achieved. Result-based agri-environmental measures becomes of high interest at EC as a good response to achieve EU biodiversity strategy[4].

[4] For more details about the Result-based payments please see at the handbook published by EC: http://ec.europa.eu/environment/nature/rbaps/handbook/docs/rbaps-handbook.pdf

Overall level of payment for the implemented agri-environmental measures is relatively low in the Baltic States. It would be challenging to provide comprehensive overview on the level of payments between agri-environmental measures in EU countries due to limited information and differences in the context of the region and different requirements of the measures. However, while screening across the countries, it seems that the payment level in the Baltic States is significantly lower. A relatively comparable example could be between the measures "protection of Aquatic warbler breeding habitats" (payment: 320 eur/ha) in Poland and "Aquatic warbler conservation in wetlands" (payment: 160 eur/ha) in Lithuania where management requirements are rather similar implemented in area having also comparable context of economic situation. The reasons determining rather low level of payments in the Baltic States could be related lacking baseline data (e.g. farming costs in wetlands, cost for the hand-mowing etc.) in the calculation mythology as well as lacking some components to be integrated in the costs calculation (e.g. costs for the utilisation of late cut biomass, which is not suitable as fodder are not included). There could also be lack of efforts in RDP negotiation process with EC. Comparison between levels of payments of the measures related to the management of grasslands and its analysis would require a separate study. While for the purpose of this study, it is sufficient to highlight that level of payment for the agri-environmental measures implementation can be one (but not the only one) of the key reasons towards the (lack of) success of the grasslands maintenance.

Another aspect, related to the design of the RDP payments is conceptual consideration if agri-environmental measures shall be treated as (a) agricultural practice delivering agricultural product (treating farming as economic activity) restricted with environmental measures or (b) agricultural practice delivering environmental public goods (as recognized by the EU biodiversity strategy). Currently, Baltic States considers agri-environmental measures as part of usual agricultural practices (orientation to agricultural product delivery) with voluntarily commitments taken (in form of restrictions). This can be understood as RDPs are being managed by the Ministries of Agriculture (primarily seeing agriculture as field of economy) acting as competent authority. As a result of this conceptual position, the level of payments is strictly calculated bases on additional costs and income forgone. Such approach is followed by interpretation of RDP regulation, which determines such criteria as basis of payment calculation. However, there are some attempts across the Member States to consider delivery of environmental public goods as part of the farmers "service" to society, which needs to be considered by upgrading the level of payments. This approach has not been widely used, but it becomes more frequent in the debates, especially between nature conservation stakeholders.

With regard to the administrative aspects, some countries (e.g. Finland) do not limit itself to the defining level of payment based on the obtained costs and income forgone. The auctions help to allocate contracts to those that provide the highest benefits for costs. The paying agency declares the conservation budget and environmental objectives and needs to define the criteria to describe environmental benefits of conservation measures in different types of agricultural land parcels. The farmers need to calculate the compliance costs for the selected measures on their farm and to submit the bid to the paying agency. The received bids are then ranked according to their environmental benefit cost ratio and selected from highest ration until the budget is exhausted. This approach is clearly linked to the understanding that applying environmental measures in farming practices is part of environmental public good delivery. Another innovation of administration can be observed in Netherlands where application to the agri-environmenal measures is settled not with individual farmers, but with cooperatives/associations uniting a large land parcel with a number of owners. In such conditions, environmental commitments can be shared and shifted among involved farms. This allows farmers sufficient flexibility to respond to experienced risks (e.g. climate conditions) which does not allow to fulfil the requirements in the particular field, while it can be done in the other field within the cooperative.

Given examples, illustrate a multitude of approaches taken to apply agri-environmental measures and seek for greater environmental performance and efficiency of costs. While Baltic States are following rather traditional administrative pattern (which is not exceptional and applied also widely in other MS). Unfortunately, it has some limitations as we consider effective agri-environmental measures to meet specific needs of grassland maintenance. Specific habitat requirements, often requires more complex measures, which leads to more sophisticated and/or more recourse demanding administration. Therefore, in order minimise administration burden, complex biodiversity oriented measures are not being implemented.

In order to achieve better environmental performance, managing authorities and experts of RDPs across the Europe are discussing potential of applying special tools to achieve better targeting (applying specific measures to the parcels, which would mostly benefit from it). Different approaches e.g. scoring special features (e.g. land cover, occurrence of rare species, farming behaviour), data exchange, and application of GIS modelling is under consideration. In this respect, Baltic States contribute to this development by application of some features, important for achieving better targeting of agri-environmental measures. Lithuania is using GIS system to define exact eligibility locations where particular activities of the 10.1 (payment for agri-environment-climate commitments) measure might be applied. Activities related to maintenance of wetlands, specific grasslands of EU importance and sites important for Aquatic warbler conservation can be applied only in the specific locations determined by the special GIS layers in the management system. While Estonia for assessing HNV (High Nature Value areas) indicator are applying special scoring system defining valuable features in the land parcels and therefore identifying parcels of higher environmental value. It is likely that such aspects will be further elaborated and especially improving data sharing between agriculture and environment sectors will greatly benefit to the increasing effectiveness of RDP implementation and maintenance of valuable grasslands.

5. Results of national policy analysis

5.1. Main findings on policy impact on grassland management practices and maintenance of ecological value of grasslands in Lithuania

The most influential groups of policies, that have impact on grassland management practices and biodiversity, are rural development, forestry and environmental protection. Other groups are more supportive type of policies. The main findings of this assessment show that there are enough ways to protect and preserve the grasslands and ecosystem services they provide. However some inconsistencies can be observed between spatial planning, forestry, rural and environmental policies and the main problem is afforestation of abandoned or unused agricultural area. Also saying that there are ways for protecting the grasslands it should be stressed that those are short-term protection related policies. Without the support of other policies concerning economic models for biomass usage the protection of grasslands could be in danger.

Horizontal long-term strategic planning documents

The General Plan of the territory of the Republic of Lithuania can be highlighted as one of the most important documents in this group. As it is the major territorial document for the whole country it sets the strategic directions for various themes for country development. Grasslands are not addressed

directly in this document, however the issue of grassland management is potentially represented in a statement in the plan that the uniqueness of the land, landscape and biodiversity must be preserved. This can be done by ensuring the viability of ecosystems as it is necessary to halt the loss of biodiversity, ecosystems and the services they provide. The main negative impact found in this document is the mentioned afforestation of unsuitable for agriculture and eroded lands, which potentially could also be a good place for semi-natural grassland formation. The only strategy that talks about the need to preserve ecosystem services which are provided by unique landscape and biodiversity is the National Progress Programme for 2014-2020.

Rural development policy

The most influential group in the management of grasslands is the rural development policies. The Rural Development Programme 2014-2020 has some measures which are related to the preservation of meadows. The most important measure for grassland management is "agri-environment and climate". It includes these sub-measures:

- Extensive meadow management by livestock grazing (101 EUR/ha);
- Management of specific meadows (69 EUR/ha);
- Extensive management of wetlands (208 EUR/ha);
- Preserving the habitats of the threatened population of aquatic warbler habitats in natural and semi-natural grasslands (291 EUR/ha);
- Preserving the habitats of the threatened population of aquatic warbler habitats in wetlands (160 EUR/ha);
- Managing slopes of reclamation ditches (if biomass is taken away – 155 EUR/ha, if not – 141 EUR/ha);

However, the main shortage acknowledged by farmers and probably the main demotivating issue in these measures is the starting date of mowing, which usually is after July 15th. This means that in most cases the late-mown biomass becomes worthless to the farmers and cannot be used for forage. There could also be discussions whether these dates are really necessary for saving breeding birds.
Other measures related to direct or indirect grassland management are:

- Measure "investments in physical assets" has a sub-measure – preserving habitats of the aquatic warbler. By declaring land for this sub-measure, farmers are able to clear the land from bushes and old grass and take the biomass away. After this they are obliged to take up one of the sub-measure related to aquatic warbler habitats conservation from the "agri-environment and climate" measure. This way the continuation of grasslands being managed is guaranteed. Farmers are compensated for their actual expenses;
- Measure "farm and business development" has a sub-measure called support for the production of biogas from renewable energy sources. It could potentially stimulate management of grasslands if the biomass would be used in biogas production;
- Measure "Natura 2000 and Water Framework Directive payments" has a sub-measure called compensation payment for Natura 2000 agricultural areas. Since Natura 2000 areas have some farming restrictions this payment allows farmers to get compensations for their losses while managing grasslands in those areas. The compensation is 70 EUR/ha for natural and semi-natural grasslands;
- Measure "payments to areas facing natural or other specific constraints" has two sub-measures called payment for those who are farming in areas facing significant natural constraints and payment for those who are farming in areas facing specific constraints. The first sub-measure is divided into two intensity levels: high constraint area (73,6 EUR/ha) and low (55,2 EUR/ha). The second is divided into two classes: areas of intensive karst (44 EUR/ha) and areas that are regularly flooded (48,8 EUR/ha).

Grasslands in general can be converted to cultivated land in Lithuania, except in NATURA 2000 areas and some national protected areas it is prohibited to do that. Every year the agency of environment calculates how many grasslands have been converted to cultivated land. If this number is over 5 %, some of the farmers have to restore grasslands instead of the cultivated land and managed them not less than 5 years.

The negative impact on grasslands could be produced by the measure which supports afforestation in the agricultural areas because there is no obligation to restore permanent grasslands in other areas of the same size that was afforestated. Nevertheless, for now, the Rural Development Programme seems to be one of the most effective economic models and policies that are available and making positive impacts on grasslands' maintenance. Next to this programme there is the description of requirements for good agricultural and environmental conditions of agricultural land. This policy describes the rules how meadows must be managed in a good way, so it has a strong connection to the Rural Development Programme and shows consistency.

Environmental protection and nature conservation policy

The most positive impact can be seen from the environmental protection/nature conservation policy group, although the National Environmental Strategy points out the unused agricultural and unsuitable for agriculture land, which should be afforested, so there is also some danger for the marginal grasslands. The Landscape and biodiversity conservation action plan for 2015 -2020 sets the target - 48% of the habitats of the European importance should reach a favourable status by the year 2020. Also the legal acts addressed by the analysis (Regulation of the Nature frame, Law of Protected areas and Typical regulations of protected areas) have strong statements about grasslands' importance.

Forestry policy

The most negative impacts are produced by the forestry policy group. For example, the rules of afforestation in non-forest land say: afforestation in non-forest land is allowed in abandoned land which is for more than five years not cultivated, not mown, not grazed lands. Also land plots which have a border with existing forests, groups of trees and bushes, swamps and farmland which started to overgrow with trees and bushes. That is a perfect catalyst for loosing important grassland habitats. Forestry policies are the ones which are the most opposite to other groups of policies. All of the three policies in the forestry group from one or the other angle support afforestation of unused or abandoned agricultural and non-agricultural land which usually are grasslands. So we can make a conclusion that there is somewhat a gap and miscommunication in developing consistency between these two major policy groups: forestry policies and policies which support grassland preservation.

Energy policy

The energy policies seem to have a generally positive impact on grassland maintenance but it is very indirect and very little elaborated. The National renewable energy development strategy highlights the big potential of biomass usage in the energetic sector, mentioning directly grass biomass as one of the potentials for energy and heat production, but it also underlines that there is a lack of knowledge and available infrastructure to make this process mainstream. The National strategy of energetic independence is also mentioning that the need for biomass will grow, but it seems that they do not see grass biomass as a potential resource, as only wood chips and straw is prioritized. Other energy policy documents support usage of biofuels for energy and heat production, however none of them indicates grass biomass as a potential resource. To sum up this group of policies it should be said that they are pointing to the right direction, however these policies should be updated from being neutral to being proactive in the matter of indirect impact on grassland management.

Summarising the whole policy assessment in Lithuania we can conclude the following:

1. There are a lot of policies from several policy type groups that have measures or directions which support grassland management, however some of them seem to be too general or neutral;
2. The opposition between forestry and rural development policies is evident and the possibilities for amending of the measures for better grassland preservation should be discussed.

5.2. Main findings on policy impact on grassland management practices and maintenance of ecological value of grasslands in Latvia

Most of the documents analysed stress the importance of sustainable development of the country. Some of them have just a marginal or indirect impact on grasslands and only few documents explicitly tackle the issues related to management of grasslands or maintenance of grassland ecosystems. Accordingly, significance of impacts of most policy documents and legislative acts assessed can be evaluated as being "Low" or "Medium" and with potential positive, negative or neutral influence on grassland ecosystems or grassland management in Latvia.

At the same time there are policy targets and directions that may have even negative impact on grasslands if unsustainable measures are implemented. For example, the target to increase production of energy from renewable energy sources (RES) e.g. biomass, may lead to transformation of grasslands to arable land for cultivation of energy crops e.g., maize or raps and thus decreasing the grassland area. Another example is promotion of entrepreneurship - building new infrastructure (e.g., for tourism) in order to develop the economy of the country may also cause additional pressure to grassland ecosystems. Impacts depend on exact measures taken at local and regional level.

The policy and regulatory documents having significant influence on grassland management practices and maintenance of grassland ecosystems are mostly related to the environmental and nature conservation and rural development policy and legislation e.g., EU support for environment and rural landscape improvement. Here exact requirements for management and maintenance of grasslands (including management of biologically valuable grasslands) and the conditions for obtaining compensation payments as well as compensation sums are set. In general, they are aimed to bring a positive effect on grassland ecosystems e.g., by ensuring long term (at least for 5 years) management of grasslands, stimulating mowing and grazing of permanent and biologically valuable grasslands thus preventing them from overgrowing with shrubs. Removal of the excess grass from the field is required (mulching is not allowed anymore). The practice will show if the compensation amount for management of grasslands and requirements for management are sufficient enough to protect semi-natural grasslands and bring positive results.

Horizontal long-term strategic planning documents

Three national level documents and six regional level (Riga, Kurzeme, Vidzeme, Latgale Planning region) documents (drafts) were analysed. Depending on implementation directions, the impact of national level documents can be regarded as positive or negative, with medium to low significance of impacts. Impact of all regional level documents on grassland ecosystems is rather neutral with relatively low level of impact significance.

Sustainable Development Strategy of Latvia until 2030 talks about supporting development of specialised, highly efficient and technologically up-to-date agrarian industry for the production of food products and industrial raw materials, supporting establishment of rural business co-operatives, development of transport infrastructure, increasing accessibility to rural regions and growth of development centres in the regions, which potentially can decrease the trend of grassland

abandonment, but also promote the intensification of use of agricultural lands. It also aims at use of the potential of cultural heritage for the development of creative tourism, where cultural landscape and rural environment are considered as a potential, thus promoting maintenance of grasslands as a part of the traditional rural landscape and not only for agricultural production. Furthermore the strategy aims at promoting the use of biofuel in public transport and agriculture, increase in thermal energy production efficiency, using high efficiency biomass (wood, straw) in the heat supply as well as production of biomass in those territories where agricultural lands are less favourable for the production of food. As concrete targets or support for the measures are not defined, there is a risk of losing abandoned semi natural grasslands (SNG) if grasslands will be transformed to cultivated agricultural lands and managed accordingly to grow biomass for production of biofuel (e.g. fertilisation, transformation to forest). The strategy also supports afforestation of unutilised agricultural lands of low value, thus contributing to the trend of grassland transformation into forest. At the same time this is the only strategic document, which stresses the need for management and preservation of the natural capital, including estimation of the value of products and services it provides, which shall lead also to assessment and more efficient use of grassland ecosystem services.

National Development Plan of Latvia for 2014–2020 defines more concrete development targets and tasks, which can have positive or negative impact on grassland depending on exact measures implemented. For example, concerning the objective on sustainable management of natural and cultural capital it sets exact targets to increase the area used for organic farming, cultivated land and forested areas. The increase of cultivated land in parallel to increase of forested area can be realised only by decreasing grassland area or non-used agriculture land, which potentially could be used for grassland restoration. On the other hand, increased area of managed land would have positive impact on rural landscape and part of ecosystem services. Also the measures like increase in the use of agricultural land in food production, increase of the soil fertility and investment support for production and processing of food quality scheme products may lead to possible intensification of agricultural use. At the same time food production from grasslands (e.g. cattle breeding), based on organic farming or extensive grassland management can have positive impact on maintenance of biodiversity, grassland ecosystems and services they provide. The National Development Plan envisages also the support for the access by small and medium enterprises producing agricultural, fisheries and forestry products to distribution networks and shortening of supply chains, which can increase the demand for agriculture products and promoting intensive as well as organic farming. The measures supporting growth of regions, creating preconditions for the development of business activity and ensure convenient and safe access to development centres (improving quality of roads) would have positive effect on development of rural areas and management of grasslands.

Regional Policy Guidelines (2013-2019) and the *Development Programmes of the Planning Regions* (Riga, Kurzeme, Vidzeme, Latgale) set rather general objectives for sustainable use of natural resources and balanced social, economic and ecological development of the regions. None of these documents is addressing management and protection of the grassland ecosystems directly. The focus is more on promoting development of entrepreneurship, providing qualitative space for living, improving tourism services and the quality of road network. Few of these documents address also use of the renewable energy sources. Development Programme of Kurzeme Planning Region comes up with the vision on biological farming has a potential in the region.

Spatial planning policy

Coastal Spatial Development Guidelines (2011-2017) and two legislation acts have been analysed, which can have from medium to low impact on grassland management. The *Coastal Spatial Development Guidelines (2011-2017)* state that the principle of ecosystem approach has to be applied and ecosystem capacity has to be taken into account, turning human activities more environmentally friendly, socially

responsible and with a long lasting economic return. At the same time it is stated that the coastal zone is economically active, multifunctional area, where climate change impacts are abated by qualitative infrastructure and good management. It envisages creating coastal infrastructure adopted to climate change, including buildings preventing erosion and "green" measures; public infrastructure net for tourism promotion, etc. Targets are set on number of infrastructure objects to be built. This can have an impact on transformation of grasslands to built-up areas, although in some cases it may also increase the land value.

The regulatory framework for spatial planning, including Spatial Development Planning Law and Regional Development Law do not address the maintenance of the grassland ecosystems directly, although they can have indirect positive effect. *Spatial Development Planning Law* aims at spatial development planning that would raise the quality of the living environment, ensure sustainable, effective and rational use of territories and other resources, as well as targeted and balanced development of economy. *Regional Development Law* aims at promoting and ensuring balanced and sustainable development of the State, taking into account special features and opportunities of the entire State territory and of its separate parts, to reduce the unfavourable differences among these parts, as well as to preserve and develop the features characteristic for the natural and cultural environment of each territory and the development potential thereof.

Rural development policy

Latvia - Rural Development Programme 2014-2020 is the most influential policy document, directly impacting grassland management. It sets the aims to restore, preserve and enhance biodiversity as well as landscape. The program has 3 important groups of measures that are aimed to induce positive impacts on grassland ecosystems and their management. First, the measure on “agri-environment and climate” includes the sub-measure “Maintenance of biodiversity in grasslands”, addressing existing biologically valuable grasslands (BVG), grassland biotopes and bird areas of European importance. Farmers can receive support for management of BVG (starting from 55 EUR/ha and for different categories of grassland biotopes and bird areas of European importance payments ranging from 83 to 330 EUR/ha) with conditions that grasslands have to be mown or grazed and grass removed until 15 September each year. Obligations shall be taken for 5 years. However, there is a risk that other payments are more beneficial, resulting in transformation of grasslands into arable land. This measure also does not contribute to increase of coverage of grasslands as support is envisaged only for already existing and approved BVG. Second, the measure “Organic farming” shall result in indirect positive impact on grassland ecosystems by reduced load of chemicals, reduced leakage of nutrients as well as appropriate grassland management (mowing or grazing and removal of excess grass by 15 August). Compensation payments are in the range from 97 to 485 EUR/ha. Third, the measure “Payments to areas having natural or specific constraints” has a direct impact on grassland ecosystems as comprise protection of grasslands from overgrowth due to requirement for grazing (certain density of herbivores have to be ensured). In such way also prevention of grasslands from abandonment and maintenance of natural landscape shall be ensured. Compensation payments are in range from 25-58 EUR/ha.

The regulatory framework for implementation of the Rural Development Programme is proved by two regulations of the Cabinet of Ministers (No. 295 and No. 171), which sets the conditions for receiving support as well as the order for allocation, administration and monitoring the State and EU rural development support to improve environment, climate and rural landscape. The regulations have significant direct and positive impact on GE as they prescribe the requirements for grassland management in order to ensure maintenance of biodiversity. The obligations shall be taken for 5 years - grassland has to be mown or grazed, grass removed and not let on field uncollected, any land cultivation is not allowed. Farmers managing grassland habitats of the EU importance are required to attend courses on grassland management.

Law on Agriculture and Rural Development provides a legal basis for agricultural development and specifies sustainable agricultural and rural development policy in accordance with the Common Agricultural Policy and the Common Fisheries Policy of the EU. The law determines the implementation, supervision and evaluation of policy in the sphere of agriculture and rural development in order to facilitate the sustainable development. It is stated that State aid and the EU support shall be granted in order to promote agricultural, rural and fisheries development, as well as to raise the standard of living for the population of rural territories and to create equal competition preconditions for Latvian and EU Member State producers of agricultural products. The significance of the impact of this law is low, although in general the indirect impact can be regarded as positive due to the fact that the law sets the frame for agricultural development in general.

Land Management Law aims at promotion of sustainable land use and land protection. It states that, e.g., municipality has to plan land use taking into consideration efficient management of natural resources and sustainable development. When changing land use type, priority should be given to areas not suitable for agriculture or forestry. Priority for building up should be put on degraded areas. Land owner shall not cause negative impact on land and respect the balance between the public and ownership interests. The Law also prescribes to implement measures in order to prevent degradation e.g., elimination of distribution of invasive species: municipality has to inform the land owner and request to implement measures within exact time period. It can have a positive effect on GE and grassland management, although the significance of the impact can be regarded as medium.

Forestry policy

The significance of impact of forestry policy documents on grassland ecosystems is estimated from low (*Draft Guidelines for Development of the Forest Industry and Related Sectors 2015 – 2020)* to medium (*Law of Forests* and related Regulations of the Cabinet of Ministers) and can have both positive as well as negative impacts depending on measures applied. The Guidelines aim at sustainable management of forests of Latvia. Although the document focuses on forests and does not explicitly tackle grasslands, in principle sustainable management of forests can create positive impact on other ecosystems, including grasslands. The *Law on Forests* regulates sustainable management of forests of Latvia. It prescribes that a landowner has a right to afforest land, if such rights are not restricted by regulatory enactments. Thus the low provides conditions, which might result in decrease of grassland areas. However, the land transformation and any activity that would change the land use type is not allowed in specially protected nature areas and micro reserves, unless a permit from relevant competent authority is obtained or environmental impact assessment is carried out. The Law also provides conditions for deforestation, if it is needed for construction, excavation of mineral resources, for erection of agricultural lands or for restoration of specially protected biotopes. A permit shall be issued by competent authority and the person has to compensate expenditures related to negative impacts of deforestation.

The conditions for support of afforestation are established by the *CM Regulations No. 1182 on the order for allocation, administration and monitoring of the State and the European Union Support for the implementation of the measure "Primary afforestation of lands unsuitable for agriculture"*. Afforestation by cultivating and supplementing of naturally grown forest stand is promoted to increase the efficiency of land use, but at the same time setting condition to maintain the biodiversity and utilising recreational and esthetical features of rural landscape. The minimum number of trees in the area being afforested has been defined. The amount of support depends on tree species and type of afforestation activities (growing of new trees or maintenance of stand allows receiving support in the range from 170 EUR - 1300 EUR /ha (for oaks, ash trees, maple, sweet cherry). Applications to afforestation are evaluated by several criteria and the applications get funding depending on the score received during assessment of the activities planned.

Energy policy

The energy policy in Latvia has neutral to negative, medium impact on grasslands. The *Energy Development Guidelines (2014–2020)* acknowledge sustainable energy as one of prerequisites of a competitive economy of Latvia, promoting highly efficient technologies for use of renewable energy sources (RES). Latvia has set a target to reach 40% of energy production from RES in the final energy consumption by 2020 as well as to reach 10% of RES in energy consumption in transport sector. If utilisation and demand in biomass for energy production grows, there is a risk of transformation of grasslands into cultivated land for cultivation of energy crops. Fertilisation of grasslands to obtain more biomass will be most probably increased, too. Accordingly it may have negative impact on grassland ecosystems - it can cause loss of biodiversity, loss of natural grassland area as well as negative impact on grassland structure and functions and rural landscape.

The *Energy Law* seeks for sustainable solutions in energy production, by supporting diversification of energy resources, facilitation of the use of local, renewable and secondary energy resources at the same time respecting environmental protection requirements and promoting use of environmentally friendly technologies. Thus, the impact on GE is strongly dependant on permit issuing policy for production of energy from biomass on the state level, EIA results for new energy production installations, and various other context factors.

Environmental protection/Nature conservation policy

The environmental protection and nature conservation policy mostly has direct positive impact on maintenance of grassland ecosystems. The analysis addressed several strategic policy documents and legal acts, which can have impact on grassland management.

Environmental Policy Guidelines (2014–2020) sets the goal to ensure the quality of ecosystems and to balance nature protection and economic interests. The policy objectives include maintenance and restoration of ecosystems and their natural structures as well as biodiversity of local wild species, setting exact targets for achievement of favourable conservation status of species and habitats of the EU importance, elaboration and implementation of nature protection plans for protected areas, protection plans of species and habitats, as well as restoration of protected habitats, following priorities set in Natura 2000 management program (target is 7000 ha of restored habitats by 2020). The guidelines include also specific measures for planning and implementation of management measures (e.g. integration of nature protection plans of specially protected nature areas with municipal territorial development plans and development of indicators to determine the balance between nature protection and economic interests), attraction of financial means for management of protected areas and supporting innovative nature protection methods (target is 50 EUR/ha/y for management of protected areas by 2020) as well as to ensure financing for support and compensation payments including payments for limitation of economic activities and/or additional conditions in protected areas. Furthermore, the guidelines set the objective to improve Natura 2000 network, by species and biotope mapping and by taking into account the most recent scientific surveys and regular monitoring data. These measures should have direct positive impacts on grassland ecosystems by providing better knowledge on management requirements and practices as well as administrative and financial support.

Another policy goal set by the Guidelines is to ensure contribution to climate change mitigation and to promote adaptation to impacts of climate change. Sub measures include promotion of sustainable use of biomass for energy production, using low emission technologies and promotion of economically and environmentally friendly supplies of biomass. If use of biomass is truly sustainable this shall not increase

pressure on grassland ecosystem or decrease the total area of grasslands because of transformation to cultivated land or forest.

Landscape Policy Guidelines (2013–2019) aims at multifunctional and qualitative landscape that improves human living quality in Latvia, promotes economic activity and recognition of locations, regions, and the whole state, as well as ensures biodiversity. It seeks for implementation of measures prescribed in National development plan 2020 and in other policy documents targeted at improvement of landscape quality. It sets targets for landscape evaluation, assessment of protected landscape areas, national and nature parks and historical-cultural territories. It envisages elaboration of 2 new landscape management instruments by 2019: (i) for landscape areas of national importance, (ii) integrated guidelines for development of landscape areas of national importance. As the guidelines do not tackle grassland ecosystems explicitly, significance of impact of this document can be regarded as low. Impacts are neutral or positive, as grasslands are part of landscape and improvement of landscape quality shall result in positive impact on grassland ecosystems as well.

National program on Biological Diversity sets the strategic goal to maintain and recover diversity of ecosystems, to promote maintenance of traditional landscape structure and to ensure balanced and sustainable use of natural resources. It sets also a specific goal to maintain areas of natural grasslands, create network of biologically valuable grasslands, to involve landowners in grassland management activities and to inform the society on biodiversity values and measures for their maintenance. It also indicates the importance of stopping the overgrowth of natural grasslands and pastures and to preserve typical plant and animal societies in natural grasslands. All these goals and measures are meant to have a positive impact on grassland ecosystems. The document also gives very good justification why such measures are necessary. This document serves as a reference for implementation as well as for enforcement of concrete measures defined by relevant legislation or for implementation of nature conservation projects in Latvia. Thus the importance of the impact can be regarded as medium to high.

Environmental Protection Law aims at ensuring the preservation and recovery of the quality of the environment, as well as the sustainable utilisation of natural resources. It sets provisions for liability for damage caused to the environment if damage is done to specially protected nature territories, micro-reserves, as well as specially protected species and biotopes, water, soil and subterranean depths. Although the law does not tackle grasslands specifically, in case damage is done to grassland ecosystems, it provides the legal means to seek for liability and claim for compensation. Thus it has positive impact and its significance can be assessed as medium.

Protection Zone Law determines the types of protection zones and their functions, principles for the establishment, procedures for the maintenance and control of the condition of protection zones; and restrictions of economic activity in protection zones. Different types of protection zones are distinguished around various types of objects or territories. This includes, for example, protection zones around water courses and artificial water bodies, in order to decrease the negative effects of pollution to water ecosystems. As not tackling the grasslands directly, it can be regarded that significance of impact of this document is rather low. Although depending on measures implemented, the effect in general can be positive as restrictions (e.g., economic activities, land transformation) can be attributed to preservation of grasslands laying in such protection zones.

Law on Specially Protected Nature Territories lays down principles and procedures, procedures for the establishment of a system of protected areas as well as administration and control. It prescribes that regulations on protection and use, nature protection plans may be developed for a protected territory. When conducting territorial planning, forest management, and all types of design works, regulations for the protection and use must be taken into account. Land owners have the right for compensation regarding restrictions on economic activity in protected territories. According to the law land

transformation in protected territories is prohibited without a particular permit from administration of protected territory and regional environmental board. Although the law does not address all grasslands in Latvia, it has a positive impact on GE and management of grasslands as seek for their preservation and maintenance. The significance of impact can be regarded as medium.

CM Regulations No. 467 on Restriction of the Distribution of Invasive Alien Species prescribe the procedure for restriction of the distribution of invasive alien plant species; procedures for monitoring, state supervision and control, information on distribution, etc. According to these Regulations the land owner or lawful possessor, on whose land the invasive alien plant species is located, in accordance with regulatory enactments regarding measures and methods for restriction of the distribution of specific invasive alien plant species, shall perform restrictions of the distribution of the relevant plant species. The actions aiming to preserve ecosystems from invasive species at state level should have direct positive impact on quality of grassland habitats. However the regulations do not provide exact recommendations on implementation of the measures, penalties or other enforcement tools, thus the strength of the impact can be regarded as medium.

National Programme for the Assessment and Management of Flood Risks 2008–2015 aims at creating such protection system of waters that would promote reduction of flood impacts, as well as developing the system of evaluation and management of flood risks in order to diminish negative impacts on human health, environment, cultural heritage and economic activities caused by floods. It envisages specification of priority areas being under the flood risk and determination of exact actions to eliminate or diminish flooding risk. At the same time it requires to specify the areas to be excluded from flood prevention measures, where change of hydrological regime can have negative impacts on biodiversity, specially protected species and habitats or reduce the areas of floodplain meadows. The strength of impact on grasslands can be regarded as medium. Depending on measures applied in specific territories, this impact can be either positive or negative. If flood prevention measures are implemented at grasslands to be prevented from floods, then it allows application of different options (mowing, grazing) of grassland management. However, possible transformation of land (for construction, infrastructure, agriculture, etc.) can happen that would decrease the total area of grasslands in the country.

Daugava, Lielupe, Venta and Gauja river basin district management plans (2010-2015) were analysed. All these 4 documents are similar and are aiming at reaching or maintaining good ecological and chemical quality and reduction of pollution with priority substances in surface waters. Similar targets are set also with regard to ground waters. Although not tackling grasslands explicitly, the measures for improvement of water quality in general can have positive influence on grassland ecosystems. The same refers to *Operational Programme for decreasing pollution and quality provision in priority fish waters and bathing waters* (developed in 2014), which envisages assessment of pollution of priority fish waters and bathing waters and planning of further actions.

Tourism policy

Latvian Tourism Development Guidelines (2014–2020) and Tourism Law were analysed. Their impact on grasslands can be regarded as neutral and significance of impact is low. *Latvian Tourism Development Guidelines (2014– 2020)* aim at sustainable development of tourism in Latvia and promoting the competitiveness of tourism products in foreign markets. Main directions include promoting development of competitive and new tourism products with higher added value and ensuring recognition of Latvia's tourism offers in target markets. Although it mentions that nature conservation aspects shall be taken into account in order not to decrease the nature values (e.g., Natura 2000 sites) being important for tourism sector, otherwise the Guidelines do not explicitly tackle the issue on grassland management or protection. *Tourism Law* provides a legal basis for the development of the tourism industry in Latvia. It

specifies the procedure in which State administrative institutions, local governments and merchants operate in the area of tourism. This document also does not have a direct influence on grasslands.

5.3 Main findings on policy impact on grassland management practices and maintenance of ecological value of grasslands in Estonia

Also in Estonia semi-natural grasslands are mainly addressed by environmental/nature conservation and rural development policies. Therefore these policies have the highest significance of impact on grassland ecosystems and management. It can be concluded that grassland ecosystem management is mainly dealt with in the frame of classical nature conservation measures meaning hands on restoration, grazing and mowing, and providing subsidies for these activities. Much less emphasis is put on integration with other sectors that could provide innovation, market and involvement, and could also provide sustainability for grassland management. However, in the regions, where nature conservation areas including semi-natural grasslands have bigger geographical coverage, also more integrated approach and indirect measures impacting grassland ecosystems are applied in regional strategic planning.

Currently the horizontal strategic planning documents are assessed as having the lowest impact - in some cases indirect positive impact through promoting sustainable development and recreational aspects can be expected, but mostly they are economically driven, promoting regional developments and cooperation. Very little emphasis is put on natural environment and its possible benefits. Spatial planning documents can have negative aspects, especially on lower level of planning - these plans often are driven by economic interest of a small group and in case of passive society or poor involvement they can override visions set by the higher level spatial plans. This can of course have negative impact on nature values, although this is mostly the case in densely populated areas.

Horizontal long-term strategic planning documents

Three state level strategies and 15 county level development plans were analysed with regard the impact on the grassland ecosystems. Although their impact on the grassland ecosystems can be considered positive or in few cases neutral, the significance of impact of strategic planning level remains low.

Estonian National Strategy on Sustainable Development - Sustainable Estonia 21, developed based on *Sustainable Development Act*, sets general directions to ensure sustainable development of Estonia until 2030. One of the goals of the strategy is ecological balance that includes three main components: use of natural resources in ways and quantities that ensure ecological balance; reduction of pollution, and preservation of biological diversity and natural areas. The strategy highlights ecological balance as an essential precondition for achieving any of the other goals. The impact of the strategy on grasslands and semi-natural communities can be assessed as positive, although the impact also depends on actual management decisions. For example, increasing the share of renewable energy production, though in itself praise worthy, can increase also pressure on the natural environment and biological diversity – but this threat is acknowledged in the strategy and mechanisms for adequate assessment of and compensation for adverse environmental impacts have been proposed.

Estonia's regional development strategy for 2014-2020 aims at better use of regional development prerequisites for economic growth and ensuring accessibility of goods/services necessary for increase of life quality, highlighting the skilful use of region-specific cultural and natural heritage for sustainable economic development. The strategy sets the target to increase gross domestic product in all counties; increase of share of region-specific economic fields (employment or economic indicators; increased in at least 50% of counties by 2020), enlivening of development based on region-specific resources and

prerequisites (increased in at least 50% of counties by 2020). The strategy has indirect impact on grassland ecosystems as it helps to create prerequisites for management of semi-natural habitats.

Most of the *County Development strategies* do not address grassland ecosystems directly, but include measures, which can have indirect positive impact on maintenance of grasslands. This is the case for several counties' strategic documents (e.g. *Pärnu County development strategy 2030+ and action plan 2014-2020; Hiiu County Development Strategy 2020+; Lääne-Viru County Development Strategy 2030; Jõgeva County Development Strategy 2020+; Põlva County Development Plan 2015-2020; Valga County development strategy 2020; Võru County Development Strategy 2014-2025*), which are mostly focusing on smart, knowledge-based economic growth, including greening of economy and agriculture, increasing organic production, development of environmentally-friendly high-technology small-scale production, supporting nature tourism and nature educational activities. Another group of County strategies (e.g. *Harju County Development Strategy 2025*, *Rapla County Development Strategy until 2027, Ida-Viru County Development Plan 2014-2020, Järva County Development Strategy 2012-2020, Viljandi County Development Strategy 2015-2020)* is mostly oriented to economic and regional development, aiming also at better public services and regional cooperation that would enhance living environment. These strategies have very little emphasis on nature environment and its possible benefits.

Grasslands are specifically addressed in strategic documents of Lääne and Saare Counties, proposing measures and activities that have strong impact on grassland ecosystems by creating prerequisites for management of semi-natural habitats and by informing the stakeholders. *Lääne County environmental development plan 2006-2015* sets very clear goals related to semi-natural grasslands: i) to ensure maintenance of characteristic nature, clean environment and semi-natural landscapes by compiling regional maintenance plans for semi-natural communities; and ii) to create a system for distributing information, including information on environmental subsidies. *Saare County Development Strategy 2020* highlights the need to increase the economic use of semi-natural habitats and renewable energy sources. Saare County development plan includes measures for restoring and management of semi-natural grasslands that foresees both data management and concrete restoration on high nature value grasslands. Also the *Tartu County Development Strategy 2014-2020* has strong emphasis on maintenance of biodiversity and landscape diversity and considering of the landscape protection needs in spatial planning.

Spatial planning policy

Spatial planning policy is guided by a strategic document *National Spatial Plan "Estonia 2030+"* and its *action plan* and regulated by the *Planning Act*. These documents as well as spatial plans of different levels were analysed to assess their impacts on grassland ecosystems.

National Spatial Plan "Estonia 2030+" and its *action plan* aim to ensure cohesiveness of the green network and preservation of valuable landscape features to serve the Commissions Strategy for Green Infrastructure. The main purpose of the plan is to tackle the principal matters of spatial development for the county as a whole and to provide guidelines for county plans. Measures for achieving the goals are set by the *Planning Act*, which establishes conditions for a balanced and suitable spatial development, spatial planning, land use and building work. One of the principles set in the Act is sustainable land use that includes keeping balance between built up environment and green areas. It also states that environmentally sustainable solutions should be preferred. The document also states that this principle should be taken into account while compiling spatial plans.

Planning Act regulates spatial planning on four levels. *National spatial plan* covers the whole Estonian territory including the EEZ. It is a basis for municipality plans and lays the foundations of a system which is comprised of natural and semi-natural biotic communities (hereinafter, 'green network') and which

ensures the preservation of various types of ecosystems and landscapes and balances the impact of human settlement and economic activities. National Spatial plan also address the ecological coherence of green and preserving and sustainable management of valuable landscapes (including semi-natural grasslands), which shall contribute into a functional green infrastructure.

County plans lay the foundations of sustainable and balanced development, ensuring that the development needs of the economic, social, cultural and natural environment are taken into account in a balanced manner during preparation of the spatial plans. County plans also envisage measures to ensure preservation of natural resources, valuable arable land, landscapes and natural biotic communities, and the functioning of the green network. *Comprehensive plans* (municipality level) designate built-up areas, areas of cultural and environmental value, valuable arable land, parks, green areas, landscapes, individual features of landscapes and natural biotic communities, and establish conditions for their protection and use. Comprehensive plans determine limited management zones and building exclusion zones on the shores and banks of water bodies pursuant to the procedure provided in the Nature Conservation Act. They will also make proposals, where necessary, for specification, amendment or termination of the protection regime for areas or objects placed under protection, and make proposals, where necessary, for placing areas and objects under protection. *Detailed plans* (land unit level) is used for dividing a planned area into lots, giving building rights, designating land use, giving construction parameters (height, depth) etc.

Although lover level spatial plans shall follow the ones of the higher level, the reality of the current planning system in Estonia is that it is based on detailed plans and in many cases even on a single development. This means that higher level plans have rather recommendatory nature and they can be changed with the lover level plans. As the lover level plans serve the interest of smaller part of the society they can be driven by economic interest of a small group, and in case of passive society or poor involvement they can often override visions set by the higher level spatial plans. This can of course have negative impact on nature values although is more the case of higher intensity populated areas.

Rural development policy

The objective of the *Estonian Rural Development Plan (ERDP) for 2014–2020* is to support Estonian rural development in a manner that is complementary to other measures of the European Union Common Agricultural Policy, cohesion policy and the European Common Fisheries Policy. It shall raise the competitiveness of agriculture, improve the sustainable management of natural resources, improve the climate action, and ensure balanced territorial development of rural areas. ERDP has high direct impact on management of semi-natural communities because it includes measures directly contributing to maintenance of grassland ecosystems, e.g. support for management of semi-natural communities (requirements include approval and management instructions by the Environmental Board, obligatory training on management of semi-natural communities), support for organic farming (grazing is a requirement for organic livestock farming), Natura 2000 support for agricultural land and animal welfare support. It also includes measures, having indirect positive impact on maintenance of grassland ecosystems, e.g. support for environmentally friendly management, support for breeding endangered breeds (Estonian cattle and horse breeds), supports for water and soil protection, investment supports (agricultural holdings, infrastructure, processing/marketing/product development, restoration of stone walls), quality schemes for agricultural products (e.g. pasture-raised meat), supports for knowledge transfer and advisory services, supports for co-operation and local development. However, there are also some measures that can have negative impact on grassland ecosystems, e.g. development and maintenance of agricultural and forestry infrastructure in frame of which also land improvement, incl. restoration of drainage systems is supported, or Natura 2000 support for private forest land that can contribute to loss of semi-natural habitats (e.g. wooded meadows) because it is easier for a land owner to grow forest than manage semi-natural habitats. Although application of RDP supports still includes a

lot of bureaucracy and there have been long discussions about the requirements (e.g. how high the grass can be on a managed meadow or how many junipers or bushes/trees can be or why grazing is not supported in some forest habitats) and the support rates are not covering the actual costs in some cases, the RDP subsidies are still the main financing source for management of semi-natural communities.

Regulation of the Minister of Rural Development on Subsidy for management of semi-natural communities sets the conditions (supported activities, subsidy rates and requirements) and procedures for RDP subsidy for management of semi-natural communities. Other essential documents of rural development policy include: *Estonian Organic Farming Development Plan 2014–2020*, which aims at improving the competitiveness of organic farming and increasing the consumption of local organic food (supports grassland management through supporting grazing and also indirectly through raising awareness on organic products); *Regulation of the Minister of Agriculture on Organic farming requirements,* which sets requirements for organic farming, including grazing on semi-natural grasslands and relevant reporting; and *Regulation of the Minister of Agriculture on Requirements for keeping the land in good agricultural and environmental status* includes requirements on protection of water, soil and landscape elements in agricultural land, which indirectly contributes to maintenance of grasslands and their biodiversity (supports establishment of grasslands on slopes for erosion protection; supporting biodiversity on agricultural land as well as eradication of alien species).

Forestry policy

Forestry Development Plan for 2011-2020 deals only with forest land and does not foresee increase of forest land (only increase of cutting). Forest policy can have negative impact on semi-natural communities only through forestry-related measures of RDP (e.g. Natura 2000 support for forest land).

Energy policy

National Development Plan of the Energy Sector Until 2020 aims to ensure continuous and sustainable energy supply in Estonia. It also includes targets for diversification of energy supply through the construction of new connections and more even distribution of energy sources in the energy balance and sets targets for the share of other energy sources in the Estonian energy balance and final consumption in 2020. This development plan may have impact on grasslands but the renewable sources are not explicitly defined. Estonia has achieved 2020 RES targets which means that this development plan has very low impact on the field. New more comprehensive development plan ENMAK 2030 is currently under development which sets the new target for RES share (50% by 2030). Impact on grassland ecosystems is not known as the share of different renewable sources is not explicitly defined. Potentially it can have both negative and positive impact. Too many biomass boilers may cause high demand for willow planting. But on the other hand it may provide market for the grassland resources that are currently under-used. There is a need for analysing RES potential and its impact on ecosystems in order to develop regional specific models for RES mix in total energy production.

Renewable Energy Action Plan Until 2020 and its operational programme are supposed to provide the roadmap for achieving Estonia's renewable energy goal and a 25% share of renewable energy in total energy consumption. Similar to the National Development Plan of the Energy Sector Until 2020 the targets set by the plan are already achieved and new targets are included to the before mentioned new development plan ENMAK 2030. This action plan's impact on grassland ecosystems is not clear as it does not define explicitly renewables' sources.

There is also *Electricity Market Act* which regulates energy production, energy market, reporting and grid activities. It also defines renewable energy sources but considers biomass as one source which is the biodegradable fraction of products, waste and residues from agriculture (including vegetable and animal

substances), forestry and related industries, as well as the biodegradable fraction of industrial and municipal waste.

Environmental/nature conservation policy

Estonian Environmental Strategy until 2030 is a roof strategy for the environmental sector. It sets the goal of "Preserving the diversity of nature and landscapes", including such measures as development of balanced support system for preserving the diversity of landscapes and habitats; making the surveillance and management system more efficient for guiding the land use outside protected areas and for supporting the preservation of diversity of species; development of high quality systematic nature education; development of measures for eradication of alien species and for avoiding distribution of potential new invasive species; development and increasing effectiveness of monitoring systems to enable knowledge-based decision-making; and preservation, complementing and development of existing network of protected areas.

The Nature Conservation Development Plan until 2020 (NCDP) provides the strategic basis for the development of sectors related to the conservation and use of nature. The strategic goals of the documents include awareness rising on nature conservation, favourable conservation status of species and habitats and diversity of landscapes, functioning of coherent ecological network and long-term sustainability of natural resources, following the principles of the ecosystem approach. Semi-natural communities are directly addressed by measures 2.2.1 Restoring and maintaining semi-natural communities and 2.2.9 Planning general conservation measures for threatened habitat types: drawing up action plans for habitat types, incl. general guidance for restoration/maintenance, analysing the sufficiency of current conservation measures, prioritising areas on the basis of the importance of conservation activities. NCDP also sets objectives for management of semi-natural habitats (45 000 ha of semi-natural communities restored and maintained by 2020). There are also other measures indirectly contributing to maintenance of semi-natural habitats, e.g. ensuring the preservation of protected landscapes, ensuring appropriate protection of all protected nature values (analyses of the efficiency of conservation, adjusting the protection regime), improving the impact assessment system for Natura 2000, drawing up additional guidelines and organising training, measures to ensure the availability of nature data and storing scientific collections; development of improved system of subsidies for Natura 2000 network and national economic instruments for biodiversity conservation; taking account of the value of ecosystem services in the use of the environment; analysing the negative impacts of the use of renewable energy on biodiversity and developing and applying mitigation measures.

Estonian Prioritised Action Framework (PAF) for NATURA 2000 is based on Nature Conservation Development Plan and sets conservation priorities, targets and measures for Natura 2000 habitats and species. It also gives an overview on current experience with use of EU financial instruments as well as estimates financing needs for management of Estonian Natura 2000 network. It includes conservation objectives and measures for all Natura 2000 habitat types, including semi-natural communities.

The action plan for semi-natural communities 2014-2020 gives an overview on the current situation, threats, management objectives for semi-natural communities until 2020 and measures to achieve them. It includes measures for continuous management and restoration of priority areas, improving management quality, ensuring necessary investments, solving questions related to land ownership, improving sustainability of SNG management as well as studies, inventories, monitoring. In addition to the action plan, there are detailed guidelines/instructions for management and restoration of semi-natural habitats developed by the Environmental Board in cooperation with specialists and scientists.

The Nature Conservation Act sets general rules, principles and proceedings for nature conservation, including necessary activities within protected natural object, covering also semi-natural habitats. It sets

the obligations to perform the management actions prescribed by the protection rules or the management plan, defines the nature conservation subsidies for management/restoration of semi-natural habitats, sets objectives for ensuring favourable conservation status of species. The *Regulation No 242 on the procedure for the acquisition of immovable containing protected natural objects by the state and for proceedings regarding proposals and criteria on the basis of which the use of an immovable for its intended purposes is deemed to be significantly hindered by the protection regime and the procedure and basis for determination of the value of an immovable*, sets the rule that the State is not buying land with semi-natural communities from private land owners. In some cases this rule can cause conflicts with land owners and loss of protected semi-natural habitats.

Other important legal acts that have impact on grassland management are *Regulation of the Minister of Environment on establishment of species protection sites for Orchidaceae of I and II protection category and protection rules, which* establishes protection rules for *Orchidaceae* that are important species in semi-natural habitats; *Regulation of the Minister of Environment on conditions for giving support under the measure „Maintenance and restoration of protected species and habitats"*; *Regulation of the Minister of Environment on Nature Conservation Subsidy,* setting conditions and rates for nature conservation subsidy supporting nature management works (restoration, bush and reed cutting, building fences for grazing) in semi-natural communities in protected areas (it sets the requirement to ensure management of the area during 5 years after restoration) and *Environmental Impact Assessment and Environmental Management System Act*, which provides legal grounds and procedure for the assessment of likely environmental impact, including requirements for impact assessment on Natura 2000 areas, having thereby an impact on protected semi-natural grasslands.

Tourism policy

Estonian National Tourism Development Plan 2014-2020 and its implementation plan for 2014-17 aims to guarantee that Estonia is internationally attractive and competitive tourism destination. The planned activities deal with increasing Estonian attractiveness as tourism destination and promoting domestic tourism, steering the development of tourism products and developing regional tourism products. The strategy has indirect impact both on grassland ecosystem and grassland management as it helps to market grassland produce/products and nature tourism development supports rural life. The strategy also acknowledges the importance of grasslands in in nature tourism, providing ecological produce and a variety of products.

6. Assessment of coherence and shortcomings of the policy documents in the Baltic States with regard to grassland management

Analysis of various national policy documents on horizontal and sectoral level in the Baltic States shows that in all three Baltic States horizontal strategic planning and spatial planning documents do not explicitly tackle the issues related to grassland management. Thus their impact on grasslands in most cases is rather indirect through setting the overall policy goals of sustainable development, ecological balance, resource efficiency, preservation of natural values, etc. Horizontal policy documents on a regional level, by admitting the necessity of preservation of natural capital, have a strong orientation towards economic development of the region (promotion of entrepreneurship, building of new infrastructure, nature tourism attraction, etc.). Also spatial planning on local, land unit level e.g. in Estonia, is quite economically driven thus it can happen that in order to meet local interests the lower level planning documents can prevail over higher level plans. Better situation is in regions having larger share of nature conservation areas – here grassland management is covered in more integrated manner and indirect measures e.g. promotion of organic farming, having in general a positive impact on grassland ecosystems are included in regional strategic planning documents. Accordingly, promotion of economic development and tourism may cause additional pressure on semi-natural grasslands, but at the same time can help the area and grasslands as well, to avoid the abandonment and overgrowth with shrubs and trees being a serious problem in the Baltic States. Thus impacts on grasslands depend a lot on exact policy decisions on measures taken at local and regional level.

Environmental/nature conservation policy, rural development policy and to some extent also forestry policy have the biggest influence on grassland management in all three Baltic States. Unfortunately little emphasis on a national policy level is put on integration between different sectors that would truly ensure sustainable management of grasslands. In sectoral policy documents e.g. tourism, energy, grassland management, if at all, is represented mainly through protection of natural capital (landscape and biodiversity), which is set as a general goal.

Environmental/nature conservation policy has high positive impact in the Baltic States. It creates preconditions for management of semi-natural grasslands, sets objectives for restoration, maintenance of ecosystems by grazing and mowing, biodiversity protection provides guides and rules for good management of grasslands, defines conditions for nature conservation subsidies for management of semi-natural grasslands (case in Estonia), etc. It also defines concrete targets to be reached e.g.:

- 45000 ha of semi-natural communities have to be restored and maintained by 2020 in Estonia;
- 7000 ha of restored area by 2020 in Latvia;
- 48% of habitats of European importance in Lithuania should have favourable conservation status.

Environmental/nature conservation legislation provides regulations for grassland maintenance and management in protected areas, e.g., setting a restriction on land transformation (afforestation of grasslands) in nature protection areas. The engagement of private landowners in management of grasslands inside and outside protected areas, is considered to be important. Thus, for example, in Estonia it is defined by legislation that state is not buying land with semi-natural communities from private landowners unless very high restrictions on activities are set for the area, which in turn can cause loss of protected semi-natural habitats.

Rural development policy gives strong direct and mostly positive impact. Besides providing support and subsidies for farmers and landowners, it sets requirements for management and maintenance of biologically valuable grasslands, ensuring long term (at least 5 years) management. It requires not decreasing the total area of supported grasslands, requests mowing and grazing, removal of the excess grass from the meadow, prohibits land cultivation, requests elimination of invasive species, and provides guidelines for management of biologically valuable grasslands. However there are several policy shortcomings. For example, in Latvia, subsidies are envisaged only for the already existing and approved biologically valuable grasslands, thus not contributing to the increase of overall coverage of grasslands in the country. Moreover, the support available for maintenance of grasslands is in the range from 55-330 EUR/ha (for maintenance by grazing 25-58 EUR/ha) that might not be attractive enough. Subsidies for cultivation of arable land are more beneficial than for maintenance of biodiversity in grasslands. Even for organic farming subsidies are higher (97-485 EUR/ha).

Although grasslands are not dealt directly by forestry policies, the forestry policy direction towards promotion of afforestation in the Baltic States can have negative impact on grasslands. In Estonia, although increase of forest land is not foreseen, measures related to forestry (Natura 2000 support for forest lands) or land improvement (restoration of drainage systems) can negatively influence grasslands. Similar situation is in Lithuania where rural, forestry and other policies promote afforestation of abandoned (more than 5 years not cultivated, not mown, not grazed areas) or unused agricultural areas. Also in Latvia if not being restricted e.g., in protected areas, land unsuitable for agriculture (e.g., land covered with bushes) can be afforested. Here even a financial support for afforestation can be received. Depending on tree species and afforestation activities financial support is in a range from 170-1300 EUR/ha. On the other hand, forestry legislation in Latvia allows also deforestation in order to restore specially protected habitats.

In order to reach energy diversification and increase self-supply, promoting the use of various renewable energy sources (RES) for energy production and biofuels is reflected in horizontal long-term strategic planning documents as well as in energy policy. In Lithuania there is even a financial mechanism introduced to support infrastructure transition to the use of biofuels (e.g., excise duty exemption for biofuels produced from biomass). Targets for increasing the share of RES in total energy consumption to be achieved by 2020 and 2030 are set in all three Baltic States. Although no exact targets for different types of RES are defined in the countries, it is admitted that biomass (e.g., wood, straw) in general has a large potential for production of biofuels and energy. The impact on grasslands derived from meeting these targets can be positive or negative depending on measures implemented. From one side it can have a positive impact if, for example, grass biomass otherwise left as a waste on field is used for energy production (biogas, biofuels, combustion). On the other side it can also increase the pressure on the natural environment and biodiversity by putting additional load during the harvesting of biological resources. There is also a risk of loss of habitats due to transformation of semi-natural grasslands to arable land for cultivation of energy crops (maize or raps) or to forest. Thus e.g., in Estonia these threats are acknowledged in the horizontal long-term strategic planning documents. Mechanisms to avoid negative effects are proposed to be developed allowing adequate assessment and compensation for adverse environmental impact.

Thus it can be concluded that management of grassland while targeted in several policy and legislation documents in the Baltic States in general is having a positive influence on grassland ecosystems and maintenance of biodiversity. However, it does not fully guarantee maintenance of the existing grasslands and increase in number and area of semi-natural grasslands in a long term perspective mainly due to inconsistency between horizontal, forestry, rural and environmental policies and their targets. Depending on measures applied to meet these targets, the implementation of policy and legislation can

have positive as well as negative impact on grassland ecosystems in the Baltic States. A lot depends on decisions taken at local level.

An overview on the main policy objectives and measures related to grassland management in the Baltic States is provided in the Table 2, including assessment, if the particular measure has positive or negative impact on maintenance grassland ecosystems, as well as specific aspect, such as biodiversity ,coverage, structure and functions of semi-natural grassland, landscape and distribution of invasive species.

Table 2. Summary of possible impacts of current policy and legal measures on grassland ecosystems in the Baltic States

Grassland related objectives and measures in the Baltic policy documents and legal acts	**Assessment of impact on maintenance of grassland ecosystems and its significance (+ positive; - negative)**			**Identified specific impacts on grassland ecosystems**				
	EE	**LV**	**LT**					
				Loss/increase of Biodiversity	Loss/increase of semi-natural grassland area	Impact on GE structure and functions	Impact on rural landscape	Avoiding distribution of invasive species
Horizontal long-term strategic planning documents								
Sustainable use of natural capital								
- evaluation of natural capital & ecosystem services		(+) low		+	+	+	+	
- defining goals for conservation and restoration of natural capital		(+) low	(+) medium	+	+	+	+	
- capitalization of natural stocks		(+/-) low	(+) low	+/-	+/-	+/-	+/-	
- use of potential cultural heritage for tourism development	(+) low	(+) low		+	+	+	+	
- afforestation of non-used agriculture land		(-) medium	(-) high	+/-	-	-	-	
Protection of biodiversity, ecosystem services and landscape								
- ensuring of ecological balance	(+) low	N.A	(+) medium	+	+	+	+	+
- setting targets/measures for maintenance of grassland ecosystems	(+) low	(+) medium	(+) high	+	+	+	+	
- application of environmental conservation technologies		(+) medium		+		+		+
Balanced regional development								
- supporting growth of rural development centres	(+) low	(+/-) medium	(+) low	+/-	+/-	+/-	+/-	+/-
- improving of road network, accessibility in rural areas	?	(+/-) medium		+/-	+/-	+/-	+/-	+/-
- diversification of rural business and employment opportunities	(+) low	(+/-) medium	(+) low	+/-	+/-	+/-	+/-	+/-
Agriculture development								
- promoting specialisation, efficiency and modernisation of agrarian industry	(+) low	(+/-) medium		+/-	+/-	+/-	+/-	+/-
- support for drainage and amelioration (increasing soil fertility)		(-) medium		-	-	-	-	+
- diversification of farming products/ trade opportunities	(+) low	(+) medium	(+) low	+	+	+	+	+
Increasing energy efficiency								
- increasing share of RES, including biofuels	(+/-) low	(+/-) low	(+) low	-	-	-	-	+
- production of energy crops		(-) medium	(-) medium	-	-	-	-	+

Grassland related objectives and measures in the Baltic policy documents and legal acts	Assessment of impact on maintenance of grassland ecosystems and its significance (+ positive; - negative)			Identified specific impacts on grassland ecosystems				
	EE	LV	LT					
				Loss/increase of Biodiversity	Loss/increase of semi-natural grassland area	Impact on GE structure and functions	Impact on rural landscape	Avoiding distribution of invasive species
Spatial planning policy								
establishing conditions for sustainable spatial development and land use	(+) low	(+/-) low	(+/-) high	+/-	+/-		+	
guidelines of municipality planning	(+) low	(+/-) low	(+) low	+/-	+/-		+	
determining zones of limited management and building exclusion	(+) low	(+) low	(+) low	+	+		+	
maintenance/establishment of green network	(+) low	N.A.	(+) high	+	+	+	+	+/-
protection of nature values/natural and semi-natural communities	(+) low	(+) low	(+) medium	+	+	+	+	
protection of valuable landscapes	(+) low		(+) medium	+/-	+/-		+	
Agriculture and rural development policy								
Preserving ecosystems related to agriculture and forestry:								
- maintenance of biodiversity in grasslands/ semi-natural communities	(+) high	(+) high	(+) high	+	+	+	+	+
- greening measures/water and soil protection, e.g. stubble fields, buffer zones along water bodies, etc.	(+) low	(+) low	(+) low	+			+	
- support for organic farming	(+) medium	(+) medium	(+) medium	+	+	+	+	+
- support for breeding endangered breeds	(+) low		(+) medium		+		+	
- payments to areas having natural or specific constraints/ Natura 2000	(+) medium	(+) medium	(+) medium	+	+	+	+	+
- training, advisory service and information actions	(+) medium			+	+	+	+	+
- afforestation of non-used agriculture land	(-) high	(-) high	(-) high	+/-	-	-	+/-	
Supporting agriculture production								
- single area payments	(+/-) high	(+/-) high	(+/-) high	+/-	+/-	+/-	+/-	+
- investment support in agriculture holdings, infrastructure, marketing and product development	(+) low			+/-	+/-	+/-	+/-	
- quality schemes for agriculture products	(+) low				+		+	
- support for young farmers and development of small enterprises	(+) low				+		+	
- land improvement (drainage)	(-) high	(-) medium		-	-	-		
Promoting sustainable use and land protection								
- requirements for protection of water and soil in agricultural land	(+) low		(+) medium	+			+	
- priority for change of land use type given to areas not suitable for agriculture or forestry		(+) medium		+			+	
- elimination of invasive species	(+) low	(+) medium					+	+
- landscape maintenance	(+) low		(+) medium	+	+		+	+
Forestry policy								
Promoting sustainable forest management								
afforestation of land not used for agriculture production	N.A.	(-) medium	(-) high	+/-	-	-	-	
guidelines for sustainable management of forest	(+) low	(+) low	(+) low	+		+	+	
deforestation for restoration of protected habitats		(+) medium		+	+	+	+	+

Grassland related objectives and measures in the Baltic policy documents and legal acts	Assessment of impact on maintenance of grassland ecosystems and its significance (+ positive; - negative)			Identified specific impacts on grassland ecosystems				
	EE	LV	LT					
				Loss/increase of Biodiversity	Loss/increase of semi-natural grassland area	Impact on GE structure and functions	Impact on rural landscape	Avoiding distribution of invasive species
Energy policy								
Promoting use and diversification of RES								
- diversification of energy supply	(+/-) medium	(+/-) medium	(+/-) high	+/-	+/-	+/-	+/-	+
- grassland biomass as RES	N.A.	(+) medium	(+) high	+	+	+	+	+
- cultivation (fertilization) of grasslands for higher biomass production	N.A.	(-) medium		-	-	-	+/-	+
- cultivation of energy crops	N.A.	(-) medium	(-) high	-	-	-	+/-	+
Environmental/Nature Conservation Policy								
Protection of ecosystems, species and habitats								
- conservation priorities and targets for species and habitats	(+) high	(+) high	(+) high	+	+	+	+	
- maintenance and restoration of ecosystems/ SNG	(+) high	(+) medium/ high	(+) high	+	+	+	+	+
- maintenance and improvement of landscape quality	(+)medium	(+) low	(+)medium	+	+		+	+
- management and restoration guidelines for SNG	(+) high	(+) medium/ high	(+) high	+	+	+	+	+
- requirements on use and management of protected areas	(+) high	(+) medium/ high	(+) high	+	+	+	+	+
- requirements for protection and management of protected habitats and species	(+) high	(+) medium/ high	(-) medium	+	+	+	+	+
- assessment of sufficiency of conservation measures	(+)medium			+	+	+	+	+
- development of national financial support mechanisms for biodiversity conservation	(+)medium		(+) low	+	+	+	+	+
- integration of nature management plans into municipality spatial planning		(+)medium		+	+	+	+	+
- conditions for acquisition of land with protected natural objects	(-) medium	N.A	N.A.		+/-			
Protection of environment								
- protection of water quality	(+) low	(+) low	(+) low	+		+		
- restriction of the distribution of invasive species	(+)medium	(+)medium		+		+	+	+
- climate change mitigations	(+) low		(+) low	+		+		+
- requirements on EIA procedure	(+) low/ medium	(+) low/ medium	(+) low/ medium	+	+	+	+	
Sustainable use of land and natural resources								
- application of ecosystem based approach in use of natural resources	(+) high	N.A	(+) low	+	+	+	+	
- valuation of ecosystem services	(+)medium	N.A		+	+	+	+	
- develop. of sustainable technologies for use of RES	(+)medium	N.A	(+) low					
afforestation of non-used agriculture land	N.A.		(+/-) high	+/-	-	-		'+/-
Tourism policy								
development of nature tourism in rural areas	(+) low/ medium	(+) low	(+) low		+		+	

Grassland related objectives and measures in the Baltic policy documents and legal acts	Assessment of impact on maintenance of grassland ecosystems and its significance (+ positive; - negative)			Identified specific impacts on grassland ecosystems				
	EE	LV	LT					
				Loss/increase of Biodiversity	Loss/increase of semi-natural grassland area	Impact on GE structure and functions	Impact on rural landscape	Avoiding distribution of invasive species
marketing of grassland products	(+) low/ medium	(+) low	(+) low	+	+		+	
protection and rational use of landscape			(+) low		+		+	

7. Assessment of the Baltic policy impacts on grassland ecosystems and services

Natural and semi-natural grasslands (NSG) represent complex ecosystems that provide variety of different ecosystem functions and services, essential for survival and well-being of human society. This includes provisioning services – e.g. fodder for animal feeding, biomass for energy production, herbs for medical treatment, genetic resources; regulating services – e.g. water regulation, soil retention, nutrient regulation, pollination; and cultural services – rural landscape and its aesthetic qualities and cultural heritage, providing basis for recreation and tourism, as well as quality of life for living in that area.

The delivery of these benefits to human well-being depends on the structure and functions of the ecosystems (Burkhard et al., 2014) as well as grassland biodiversity - there is evidence that different ecosystem processes depend on different plant species (Balvanera et al. 2016; Isbell et al 2011). As noted by Balvanera et al. (2016) "more diverse plant communities can provide higher levels of multifunctionality and higher levels of multiple ecosystem services". Loss of grassland biodiversity can lead to degradation or even destroying of the ecosystem functions and related services, which would require enormous financial investments to maintain or provide these services artificially.

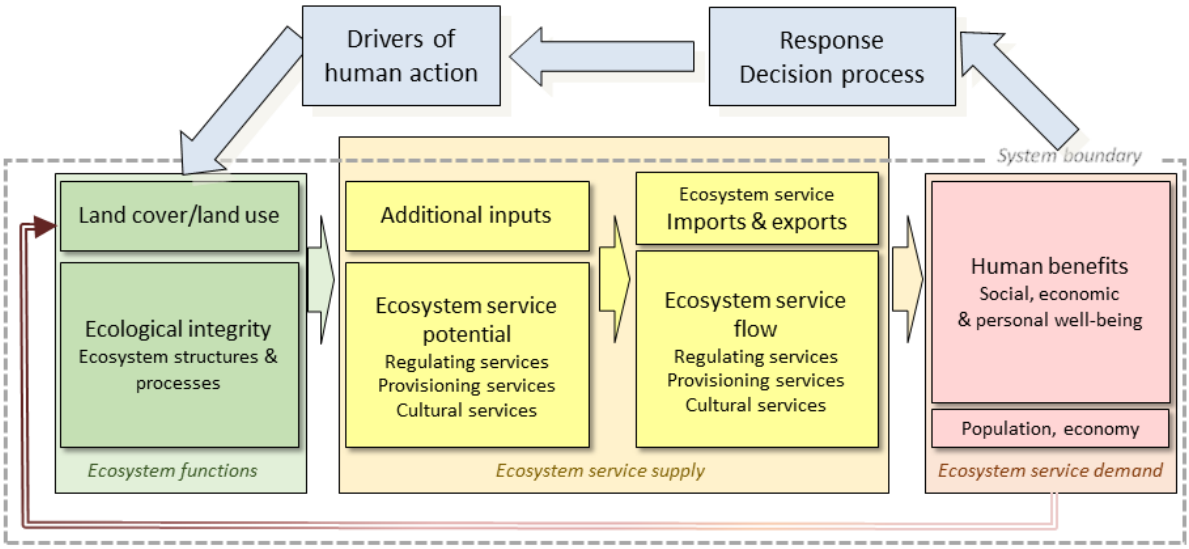

Figure 4. Conceptual model on relations between ecosystem functions, services, benefits and policy decision making process (source: Burkhard et al., 2014)

Existence of grasslands in the Hemiboreal region, including the Baltic States, almost entirely depends on agriculture practice or management activities directed for maintenance of grassland ecosystems and biodiversity. Thus also the delivery of grassland ecosystem services and related human benefits are determined by the land use and management practices and the EU and national policies, which act as a driving force for the land use change in the rural areas (see figure 4).

The changes in land use and management practices are leading to trade-offs in ecosystem service provision, including variety of negative as well as positive effects on delivery of grassland ecosystem services. For example, intensification of agricultural land use (including transformation of grasslands to crop lands) would result in increase of some of provisioning services (e.g. crops, reared animal outputs), while decreasing a range of regulatory and cultural services. Some studies also suggest that decrease of grassland biodiversity due to shift to monocultures and intensive land management can also decrease quality of some provisioning services – e.g. scientific evidence shows that more diverse plant

communities can also provide more plant biomass under conditions of intensive grazing, increase in biomass production without decreasing nutrition value or digestibility and risk of mineral deficiencies etc. (Balvanera et al., 2016). Also land abandonment and afforestation of former agriculture land can have positive as well as negative effects on delivery of ecosystem services (Lasanta et al., 2015). The positive effects include short-term increase of biodiversity (during initial stage of plant succession), better regulation of hydrological cycle, increase of water quality and control of soil erosion, greater carbon absorption as well as increase of forestry production in future. The negative effects include decrease in several provisioning services due to loss of arable lands and pastures, decrease in biodiversity in medium and long term, landscape homogenisation, loss of cultural landscapes and related cultural service.

The possible positive and negative impacts on delivery of ecosystem services in the Baltic States, which can be expected from the current policy and legal measures driving the land use change and management of grasslands, are reflected in the **annex 4**.

The analysis of the Baltic policy documents reveals that most of the measures, which can have impact on grassland management, should have mostly positive impact on delivery of ecosystem services. The horizontal policy documents, although having rather weak or indirect impact on management of nature values, including grasslands, are setting the general principles for sustainable use of natural capital as well as protection of biodiversity, ecosystem services and landscapes. At the same time the measures targeted at balanced regional development, promoting of agriculture and increasing energy efficiency can have both – positive as well as negative on ecosystem service provision.

As indicated before, the strongest impact on maintenance of the grassland ecosystems has the rural development policy. Agri-environmental measures of RDPs in general contribute mostly positively to delivery of ecosystem services, with exception of measures for afforestation of non-used agriculture land, which are limiting the potential for provisioning of crops and products from reared animals as well as resulting in loss of cultural landscape and related services. The measures for support of agriculture production, including single area payments, mostly have positive impact on provisioning services, while can have adverse impact on regulating and cultural services.

The most negative impact can be expected from energy policy promoting the use of renewable energy sources (RES). Although having positive impact on environment by mitigation of the climate change, use of biomass as RES would limit the delivery of other provisioning services, e.g. agriculture products, herbs for medicine and other fibres and materials from plants. The use of biomass from cultivated grasslands and energy crops are creating also negative impacts on most of regulating and cultural services.

The measures defined in environmental and nature conservation policy documents and legal acts are providing favourable conditions for regulating and cultural services, but can have limiting impact on few provision services. The tourism policy is mostly favouring provisioning of cultural services.

8. Conclusions and recommendations

- The present trajectories of land use change in the Baltic States reveal the trend of polarisation of the rural areas, including land abandonment due to depopulation of rural areas and urbanisation process, extensive grassland management practices, applied with support of agro-environmental schemes mostly in regions less suitable for intensive agriculture, as well as intensification of agriculture by transformation of semi-natural grasslands to cultivated grasslands or arable land, including production of energy crops.

- EU and national policies are the most influential present drivers of the landscape change in the Baltic States, determining also the grassland management practices and thus impacting status of grassland ecosystems and services they provide. EU Common Agricultural Policy (CAP) has the strongest influence on rural development, driving the present landscape change in the Baltic States.

- It seems that CAP is rather inert policy in the context of addressing environmental challenges, while on the other hand – objectives related to the grassland management in the EU biodiversity strategy recognises CAP and Rural Development Programmes (RDP) in particular as major sources for achieving biodiversity conservation targets. Therefore, it is very important at the early stage, to collaborate and influence further CAP reform so enhance progress of biodiversity conservation through these policies. It would be relevant if competent authorities of nature conservation in the Baltic States would establish a joint collaboration platform (e.g. on a Boreal biogeographic region level), which would facilitate common position on e.g. future evolvement of greening, improving design of agri-environmental measures, sharing information on calculation of payment levels and various administrative aspects.

- RDP measure on non-productive investments could be serving for restoration of most valuable grassland habitats. This opportunity is currently used on a very limited extend in Lithuania, but has a potential to be more widespread in the Baltic region.

- In the EU context, measures foreseen in the RDPs of the Baltic States are rather limited, seems lacks environmental ambition. This illustrates lack of collaboration between agriculture and environmental sectors in the countries, where competent authorities for environment would set higher priority to be involved in the planning of RDPs.

- EU Member States have elaborated different innovative support measures (e.g. result based agri-environmental measures, auction systems etc.), addressing increase of environmental performance effectiveness for assigned recourses. It would be relevant for the Baltic States to apply such best practices through implementing testing trials and adopting those measures to the country specifics such as farmers' behaviour.

- The Baltic policy documents and legal framework in general is providing favourable conditions for maintenance of grassland ecosystems and related services. However, it does not fully guarantee maintenance of the existing grasslands and increase in number and area of semi-natural grasslands in a long term perspective mainly due to inconsistency between horizontal, forestry, rural and environmental policies and their targets. Depending on measures applied to meet these targets, the implementation of policy and legislation can have positive as well as negative impact on grassland ecosystems in the Baltic States. A lot depends on decisions taken at local level.

- Environmental/nature conservation policy, rural development policy and to some extent also forestry policy have the biggest influence on grassland management in all three Baltic States. At the same time the national policies for the climate change mitigation and energy efficiency are stimulating use of biomass as renewable energy source, thus having impact on land use, development of rural landscape and maintenance of grasslands.

- Transformation of grasslands into arable land for intensive agriculture production or cultivation of energy crops as well as afforestation of non-used agriculture land are the main threats that can cause decline of semi-natural grasslands and grassland biodiversity as well as ecosystem services.

- The extensive grassland management practices and organic farming should have equal support conditions compared to intensive agriculture practices in order to avoid loss of semi-natural habitats, grassland biodiversity and related ecosystem services.

- Afforestation of non-used agricultural land shall be avoided in areas, which have ecological as well as socio-economic potential for restoration of semi-natural habitats.

- The potential of use of biomass as renewable energy source and its impact on ecosystems and services they provide shall be assessed at national level in order to develop sustainable, regional specific models for RES mix in total energy production.

- More efforts shall be targeted at integration of different sector policies to ensure maintenance of grassland ecosystems and services they provide as well as halting the loss of grassland biodiversity.

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Annex 1. Overview on the policy and legal documents analysed in Lithuania

Title of the document and its time scale	Assessment of impact (+/0/-)	Significance of impact	Comment
Horizontal long-term strategic planning documents			
General Plan of the territory of the Republic of Lithuania, in force until 2020	17(+); 1(0); 5(-)	High	The document provides strategic directions for conservation of grassland ecosystems mainly through landscape and biodiversity preservation. The negative side generally appears in directions for abandoned land afforestation
State progress strategy „Progress strategy of Lithuania „Lithuania 2030“, in force from 2012 to 2030	2(+)	Low	Mentions sustainable use of the landscape
National strategy of energetic independence, in force until 2020	1(0)	Low	It seems that though the need for biofuels will increase, grass biomass is not named as a priority
National renewable energy development strategy, in force until 2020	1(+); 1(-)	High	It recognizes grass biomass as a huge potential in producing biofuel and energy, however it also admits there is lack of data on the resources available and lack of investments in the infrastructure for grass biomass using
National Environmental Strategy, in force until 2030, vision until 2050	2(-)	High	Firstly confirms that the process of natural habitats loss and degradation is ongoing and promotes afforestation in unused agricultural and unsuitable for agriculture land
National Progress Program for 2014-2020	1(+)	Medium	Talks about the need to preserve the unique landscape, biodiversity and the provided ecosystem services
Spatial planning policy			
Specific conditions for land and forest use, in force since 1992	1(0)	High	Allows the existence of grassland ecosystems, however it is allowed to plough them in polders
Spatial Planning law, in force since 1995	1(+)	Medium	Sets the goal for municipal and local level general plan to provide rational conservation measures, also on landscape and biodiversity
Rural development policy			
Rural Development Programme 2014-2020	7(+); 1(-)	High	The RDP measures have a big influence on the issue of grassland ecosystems maintenance. The most positive impact comes from the measure agri-environmental payments. There could be some negative impact regarding the afforestation measure
Land Law, in force since 1994	1(+)	Medium	Land must be used according to landscaping and environmental protection requirements
Law of Agriculture, food sector and rural development, in force since 2002	1(+)	Medium	Promotes the application of agri-environmental measures
Description of requirements for good agricultural and	3(+)	High	Describes the rules of how meadows must be managed in a good way

Title of the document and its time scale	Assessment of impact (+/0/-)	Significance of impact	Comment
environmental conditions of agricultural land, in force since 2007			
Forestry policy			
Forest act, in force since 2001	1(-)	Low	There could be some negative impact regarding the afforestation of non-forest land
Rules of afforestation in non-forest land, in force since 2004	1(-)	High	The rules are very favourable for afforesting abandoned grasslands
Forest economy policy and its implementation strategy, in force until 2015	1(-)	Medium	Afforestation is promoted in abandoned and marginal areas
Energy policy			
Renewable energy law of the Republic of Lithuania, in force since 2011	3(+)	Medium	Enables the conservation of grassland ecosystems vs. crops for biofuels
Heat economy law of the Republic of Lithuania, in force since 2003	1(+)	Low	Promote usage of local fuels, biofuels and renewable energy sources for heat production
National renewable energy development strategy implementation plan for 2010-2015	1(+); 1(-)	High	Initiates the development of financial mechanisms for supporting infrastructure transition to biofuel usage, however at the same time promotes cultivation of energy crops in abandoned agricultural land
Environmental protection/Nature conservation policy			
Regulations of the nature frame/ an edict by the minister of Environmental Ministry, in force since 2007	1(+)	High	Meadows, pastures and wetlands cannot be afforested in the area of the nature frame
Law of Protected areas, in force since 1993	1(+)	High	Natural grasslands are seen as an important part of the nature frame
Landscape and biodiversity conservation action plan for 2015-2020	1(+)	High	Sets a target, that 48% habitats of European importance found in Lithuania should have a favourable conservation status
Typical regulations of protected areas, in force since 2004	6(+); 1(-)	High	Sets the regulations for grassland maintenance in different zones of the protected areas. Negative – lets meadow ploughing in the less strict zone in polders
Tourism policy			
Tourism development programme of Lithuania for 2014-2020	1(+)	Low	Acknowledges the protection and rational use of landscape
Economy policy			
Law on Excise Duties of Republic of Lithuania, in force since 2001	1(+)	Low	Excise duty exemption for biofuel produced from biomass could promote more grass biomass usage

Annex 2. Overview on the policy and legal documents analysed in Latvia

Title of the document and its time scale	Assessment of impact (+/0/-)	Significance of impact	Comment
Horizontal long-term strategic planning documents			
Sustainable Development Strategy of Latvia until 2030	+ / -	Medium	While aiming at maintenance and management of grassland ecosystems, there is a risk of grassland transformation to cultivated lands for biofuels production or to forest. Impact depends on applied management practises.
National Development Plan of Latvia for 2014–2020	+/ -	Medium	There can be a possible increase of demand and value of GE services but change of management practise and increase of management intensification may happen.
Regional Policy Guidelines (2013-2019)	0	Low	By increased business activities, more people kept in the area can increase pressure on GE, but at the same time keep the area from abandonment.
Development Programme of Riga Planning Region (2014-2020) *draft*	0	Low	Seeks for sustainable development based on social, economic and ecological dimensions.
Sustainable Development Strategy of Kurzeme Planning Region (2015-2030) *draft*	+/0	Low	Invites to pay more attention to preservation of natural values when using resources.
Development Programme of Kurzeme Planning Region (2015-2020) *draft*	0	Low	Resource efficiency and sustainability is among the priorities.
Development Programme of Vidzeme Planning Region (2014-2020) *draft*	0	Low	Aiming at balanced social, economic and territorial regional development.
Action Plan of Development Programme of Vidzeme Planning Region (2014-2020) *draft*	0	Low	Aiming at improving management of natural treasure and quality of living environment.
Action Plan of Development Programme of Latgale Planning Region (2014-2020) *draft*	0	Low	Aiming at decreasing regional differences, promoting economic activities, creation of working places.
Spatial planning policy			
Coastal Spatial Development Guidelines (2011-2017)	+/-	Medium	Although it is stated that ecosystem capacity has to be taken into account, promotion of infrastructure development in coastal area may affect negatively grassland ecosystems.
Spatial Development Planning Law (in force since 2011)	0	Low	Aims at raising the quality of the living environment, ensuring sustainable, effective and rational use of territories and other resources.
Regional Development Law (in force since 2002, with changes in 2014)	0	Low	Aims to promote and ensure balanced and sustainable development of the State, to reduce the unfavourable differences between regions, to preserve and develop the features characteristic of the natural

Title of the document and its time scale	Assessment of impact (+/0/-)	Significance of impact	Comment
			and cultural environment.
Rural development policy			
Latvia - Rural Development Programme 2014-2020	+/0	High	Compensation payments for grassland management can have positive effect. At the same time there is a risk that payment conditions for other activities are more beneficial than for maintenance of biodiversity in grasslands.
CM Regulation No. 295 on the allocation, administration and monitoring of the State and the European Union support for environment and rural landscape improvement (in force since 2010, last changes in 2014, not in force since 21.04.2015)	+	High	Aims to ensure appropriate management of biologically valuable grasslands. Farmers have to commit maintaining and managing the supported area for at least 5 years.
CM Regulation No. 171 on the State and EU rural development support, on the administration and monitoring for the environment, climate and rural landscape improvement for 2014-2020 planning period (in force since 2015)	+	High	Stimulates mowing and grazing of permanent and biologically valuable grasslands, preventing them from overgrowing. Obligations are taken for 5 years.
Land Management Law (in force since 2015)	+	Medium	Promotes sustainable use and land protection, sets provisions to request elimination of invasive species.
Law on Agriculture and Rural Development (in force 2004, last changes 2015)	+/0	Low	Provides a legal basis for agricultural development and specifies sustainable agricultural and rural development policy (State Aid and EU support).
CM Regulation No. 559 on the allocation, administration and monitoring of the State and the European Union support for rural development and fisheries in 2014- 2020 programming period (in force since 2014)	0	Low	Sets the order for administration and monitoring of support.
Law On Excise Duties (in force since 2004, last changes 2015)	0	Low	Prescribes the procedures by which excise duty is applied.
Forestry policy			
Guidelines of Development of the Forest Industry and Related Sectors 2015 – 2020 (project 05.2015)	+	Low	Aiming at sustainable management of forests in general creates positive impact on other ecosystems, including GE.
Law on Forests (in force since 2000, last changes in 2015)	+/0/-	Medium	If not restricted, afforestation is allowed thus posing a risk of potential decrease of grassland areas. The law also allows to perform deforestation in order to restore specially protected biotopes.
CM Regulations No. 1182 on the order for allocation, administration and monitoring of the State and the European Union Support for	+/-	Medium	Promotes afforestation (financial support is given) of areas unsuitable for agriculture e.g., area covered by bushes. Such areas can possibly be overgrown grasslands and

Title of the document and its time scale	Assessment of impact (+/0/-)	Significance of impact	Comment
the implementation of the measure "Primary afforestation of lands unsuitable for agriculture" (in force since 2009, last changes 2014)			thus can decrease the total area of grasslands. At the same time the measure supports utilisation of land otherwise not used at all.
Energy policy			
Energy Development Guidelines (2014–2020)	0/-	Medium	While aiming at sustainable energy and at increasing energy production from RES, there is a risk that cultivation of energy crops increases and there is a risk of fertilisation of grasslands to obtain more biomass
Energy Law (in force since 1998, last changes in 2014)	0/-	Medium	The impact on GE can be either neutral or negative taking into account the aim of the Law to promote diversification of energy resources, facilitation of the use of local, renewable and secondary energy resources at the same time observing the environmental protection requirements, and promoting friendly impact of energy industry on the environment and the use of environmentally friendly technologies.
Environmental protection/Nature conservation policy			
Environmental Policy Guidelines (2014–2020)	+	Medium - High	Maintenance and restoration of ecosystems and their natural structures as well as biodiversity of local wild species is one of the policy goals. It envisages attraction of more financial sources for restoration and management of habitats and protected species.
Landscape Policy Guidelines (2013–2019)	+/0	Low	Prescribes improvement of landscape quality, multi-functionality, training of landscape management specialists.
National program on Biological Diversity (approved in 2000)	+	Medium-High	Explicitly mentions the goal to maintain areas of natural grasslands, to involve landowners in grassland management activities, to stop overgrowth of natural grasslands and pastures, preserve typical plant and animal societies in natural grasslands.
Environmental Protection Law (in force since 2006, last changes in 2013)	+/0	Low	Aims at preservation and recovery of the quality of the environment, as well as sustainable utilisation of natural resources. It foresees liability if damage to environment is done.
Protection Zone Law (in force since 1997, with changes until 2014)	+/0	Low	Determines types and principles, limitations for protection zones. Aims at decreasing or eliminating the negative anthropogenic impact on objects for which the protection zones have been determined.
Law on Specially Protected Nature Territories (in force since 1993, last changes in 2013)	+	Medium	Sets procedures for the maintenance and control of the condition of protection zones. Land transformation in protected

Title of the document and its time scale	Assessment of impact (+/0/-)	Significance of impact	Comment
			territories is prohibited without a particular permit from administration of protected territory and regional environmental board.
CM Regulations No. 467 on Restriction of the Distribution of Invasive Alien Species (in force since 2008, last changes in 2010)	+	Medium	Requires land owners and possessors to perform restrictions of the distribution of invasive alien species.
National Programme for the Assessment and Management of Flood Risks 2008–2015	+/-	Medium	Aims at reduction of flood impacts. Requires specification of territories where due to nature conservation values flood prevention shall be excluded. Thus depending on measures applied in specific territories impact can be either positive or negative.
Operational Programme for decreasing pollution and quality provision in priority fish waters and bathing waters (developed in 2014)	+/0	Low	Improvement of conditions in priority fish waters and basing waters can have a positive impact on grassland ecosystems.
Daugava river basin district management plan (2010-2015)	0	Low	Improvement of quality of waters can have a positive influence on GE.
Lielupe river basin district management plan (2010-2015)	0	Low	
Venta river basin district management plan (2010-2015)	0	Low	
Gauja **river** basin district management plan (2010-2015)	0	Low	
Tourism policy			
Latvian Tourism Development Guidelines (2014– 2020)	0	Low	Aims at sustainable tourism development, innovative tourism products with higher added value and high quality.
Tourism Law (in force since 1999, last changes 2012)	0	Low	Provides legal basis for the development of the tourism industry in Latvia

Annex 3. Overview on the policy and legal documents analysed in Estonia

Title of the document and its time scale	Assessment of impact	Significance of impact	Comment
Horizontal long-term strategic planning documents			
Sustainable Development Act	+	low	Establishes the principles for the national strategy on sustainable development, incl. sustainable use of natural environment and nature resources.
Estonian National Strategy on Sustainable Development - Sustainable Estonia 21	+	low	Sets general directions, has indirect positive impact on biodiversity and semi-natural communities.
Estonia's regional development strategy for 2014-2020	+	low	Promotes balanced regional development and exploiting region-specific resources; has indirect positive impact on maintenance of semi-natural communities.
Development strategies of counties:[5]	0/+	low	Most of them do not mention grasslands but can have indirect positive impact through promoting sustainable development, nature/health/eco- tourism and recreation, organic agriculture/food production. Tartu County Development Strategy 2014-2020 includes also goals to protect biodiversity, cultural and natural landscapes. Lääne County has separate environmental development plan 2006-2015, which addresses semi-natural landscapes. Võru County Development Strategy 2014-2025 highlights the importance of a local tourism sector including the nature tourism and the existing capital of clean nature and diverse (cultural) landscape.
Spatial planning policy			
Planning Act	0/+	low	Establishing conditions for a balanced and sustainable spatial development, spatial planning, land use and building work and to ensure that these conditions take into account the needs and interests of the widest possible range of members of the Estonian society.
National Spatial Plan "Estonia 2030+" and its action plan	0/+	low	The main purpose of the plan is to tackle the most general and principal matters of spatial development for the country as a whole and to provide guidelines for county plans.
County plans	+/-	low	Impact depends on decisions made, e.g. on green network, valuable landscapes, coastal development etc.

[5] Pärnu County development strategy 2030+ and action plan 2014-2020; Lääne County environmental development plan 2006-2015; Saare County Development Strategy 2020; Hiiu County Development Strategy 2020+; Lääne-Viru County Development Strategy 2030; Jõgeva County Development Strategy 2020+; Tartu County Development Strategy 2014-2020; Põlva County Development Plan 2015-2020; Valga County development strategy 2020; Harju County Development Strategy 2025; Rapla County Development Strategy until 2027; Ida-Viru County Development Plan 2014-2020; Järva County Development Strategy 2012-2020; Viljandi County Development Strategy 2015-2020; Võru County Development Strategy 2014-2025

Title of the document and its time scale	Assessment of impact	Significance of impact	Comment
Municipality plans	+/-	low	Impact depends on decisions made, e.g. on green network, valuable landscapes, coastal development etc.
Detailed plans	-	medium	Can change municipality plans
Rural development policy			
Estonian Rural Development Plan 2014-2020	+/-	high	Mostly positive impact as management of SNG is mostly based on RDP measures and financing. Measures related to forestry (e.g. Natura 2000 support for forest lands) or land improvement (drainage) can have negative impact on grasslands.
Estonian Organic Farming Action Plan 2014–2020	+	medium	Development of organic farming, especially livestock farming, is supporting grassland management (grazing and grass-based feed is required for organic production)
Regulation of the Minister of Rural Development on Subsidy for management of semi-natural communities	+	high	Sets the conditions (supported activities, subsidy rates and requirements) and procedures for RDP subsidy for management of semi-natural communities
Regulation of the Minister of Agriculture on Organic farming requirements	+	medium	Sets requirements for organic farming
Regulation of the Minister of Agriculture on Requirements for keeping the land in good agricultural and environmental status	+	low	Sets requirements for protection of water, soil and landscape elements in agricultural land.
Forestry policy			
Forestry Development Plan for 2011-2020	0		Deals only with forest land and does not foresee increase of forest land (only increase of cutting). Forest policy can have negative impact on SNG only through forestry-related measures of RDP (e.g. Natura 2000 support for forest land)
Energy policy			
National Development Plan of the Energy Sector Until 2020	-/+	medium	The targets set by the plans are already achieved and new targets are included in the new development plan ENMAK 2030. Impact on grassland ecosystems is not clear as the share of different renewable energy sources is not defined.
Renewable Energy Action Plan Until 2020 and its operational programme	-/+	medium	
Environmental protection/Nature conservation policy			
Estonian Environmental Strategy until 2030	+	medium	Roof strategy for all strategies in the environmental sector.
Nature Conservation Development Plan until 2020	+	high	The main document setting objectives for management of semi-natural communities.
Estonian Prioritised Action Framework (PAF) for NATURA 2000	+	high	PAF is based on Nature Conservation Development Plan and sets conservation priorities and targets for Natura 2000 habitats and species.
Action plan for semi-natural communities 2014-2020	+	high	Action plan gives overview on the current situation, threats, management objectives for SNC until 2020 and measures to achieve them.
Nature Conservation Act	+	high	Sets general rules for nature conservation.

Title of the document and its time scale	Assessment of impact	Significance of impact	Comment
Regulation No 242 of the Government of the Republic on the procedure for the acquisition of immovables containing protected natural objects by the state and for proceedings regarding proposals and criteria on the basis of which the use of an immovable for its intended purposes is deemed to be significantly hindered by the protection regime and the procedure and basis for determination of the value of an immovable	-	medium	Based on § 20 Acquisition of immovable containing protected natural object. In principle sets the rule that the State is not buying land with semi-natural communities from private land owners. In some cases this rule can cause conflicts with land owners and loss of protected semi-natural habitats.
Regulation of the Minister of Environment on establishment of species protection sites for *Orchidaceae* of I and II protection category and protection rules.	+	medium	Defines protected species and establishes protection rules for Orchidaceae that are important species in semi-natural habitats.
Regulation of the Minister of Environment on conditions for giving support under the measure „Maintenance and restoration of protected species and habitats“ (structural funds)	+	high	Plans use of structural funds under priority action "Green infrastructure and improved preparedness for emergencies" including the measure "Necessary investments for grassland management" (infrastructure, cattle and equipment necessary for management and restoration of grasslands).
Regulation of the Minister of Environment on Nature Conservation Subsidy	+	high	Sets conditions and rates for nature conservation subsidy supporting nature management works (restoration, bush and reed cutting, building fences for grazing) in semi-natural communities in protected areas.
Action Plan for West Estonian Archipelago Biosphere Programme Area (BPA) for 2014–2020	+	medium	Plans management and information actions for BPA, including activities related to semi-natural communities.
Action plan for climate change mitigation and adaptation in agriculture sector 2012-2020	+	low	Analysing the impact of organic farming on climate change mitigation and making proposals for amendments to existing sectoral measures (e.g. RDP). Pointing out the need for bigger resources for measures related to management of semi natural grasslands and ecological farming
Environmental Impact Assessment and Environmental Management System Act	+	Low/medium	Sets requirements for EIA and Natura 2000 assessment, impacting thereby also protected SNG.
Tourism policy			
Estonian National Tourism Development Plan 2014-2020 and its implementation plan for 2014-17	+	Low-medium	The strategy has indirect impact both on grassland ecosystem and grassland management as it helps to market grassland produce/products and development of nature tourism supports rural life.

Annex 4. Possible impacts of current policy and legal measures on delivery of ecosystem services in the Baltic States

Explanations: -2 significant negative impact; -1possible negative impact; 0 – no impact; +1 possible positive impact; +2 significant positive impact; +/- variable impacts possible

Specific grassland related objectives and measures	Identified impacts on maintenance of ecosystem services																															
	Provisioning services								Regulating services														Cultural services									
	Cultivated crops	Reared animals and their outputs	Wild berries, mushrooms	Materials from plants	Plants &animals for agric. use: fodder, fertilisers	Herbs for medicine	Genetic material from wild plants & animals	Biomass-based energy sources	Bio-remediation by biota	Filtration/storage/accumulation by biota	Filtration/storage/accumulation by ecosystems	Mediation of smell/noise/visual impacts	Control of erosion rates	Vegetation enabled air ventilation	Pollination and seed dispersal	Maintaining habitats	Pest, disease, invasive species control	Maintenance of soil fertility and structure	Chemical condition of freshwaters	Global climate regulation by carbon sequestration	Local climate regulation	Experiential use of plants, animals and landscapes	Physical use of landscapes (recreation)	Scientific value	Educational value	Cultural heritage value	Entertainment: ex-situ experience via media	Aesthetic value	Symbolic value	Sacred and/or religious value	Existence value	Bequest value
Horizontal strategic planning documents																																
Sustainable use of natural capital																																
- evaluation of natural capital & ecosystem services	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
- defining goals for conservation and restoration of natural capital	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- capitalization of natural stocks	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- use of potential cultural heritage for tourism development	1	1	1	1	1	1	0	-1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
- afforestation of non-used agriculture land	-2	-2	2	2	-2	-1	-1	2	2	2	2	2	2	2	-1	+/-	+/-	-1	2	2	2	+/-	+/-	2	1	-2	0	-1	+/-	+/-	+/-	+/-
Protection of biodiversity, ecosystem services and landscape																																
- ensuring of ecological balance	+/-	1	1	1	1	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	2
- setting targets/measures for maintenance of grassland ecosystems	-1	1	0	0	2	2	2	1	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2	2	2	2	2	2
- application of environmental conservation technologies	-1	-1	1	0	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	1	0	0	2	2
Balanced regional development																																
- supporting growth of rural development centres	1	1	0	1	1	1	+/-	1	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	2	1	1	1	1	2	+/-	+/-	+/-	+/-
- improving of road network, accessibility in rural areas	2	2	0	2	2	+/-	+/-	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	2	2	0	2	2	0	1	+/-	+/-	+/-	+/-
- diversification of rural business and employment opportunities	2	2	2	2	2	2	+/-	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	2	2	2	2	2	2	+/-	+/-	+/-	+/-

Specific grassland related objectives and measures	Identified impacts on maintenance of ecosystem services																																	
	Provisioning services								Regulating services															Cultural services											
	Cultivated crops	Reared animals and their outputs	Wild berries, mushrooms	Materials from plants	Plants &animals for agric. use: fodder, fertilisers	Herbs for medicine	Genetic material from wild plants & animals	Biomass-based energy sources	Bio-remediation by biota	Filtration/storage/accumulation by biota	Filtration/storage/accumulation by ecosystems	Mediation of smell/noise/visual impacts	Control of erosion rates	Vegetation enabled air ventilation	Pollination and seed dispersal	Maintaining habitats	Pest, disease, invasive species control	Maintenance of soil fertility and structure	Chemical condition of freshwaters	Global climate regulation by carbon sequestration	Local climate regulation	Experiential use of plants, animals and landscapes	Physical use of landscapes (recreation)	Scientific value	Educational value	Cultural heritage value	Entertainment: ex-situ experience via media	Aesthetic value	Symbolic value	Sacred and/or religious value	Existence value	Bequest value
Agriculture development																																		
- promoting specialisation, efficiency and modernisation agrarian industry	2	2	0	1	2	2	2	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	1	+/-	+/-	+/-	+/-
- support for drainage and amelioration (increasing soil fertility)	2	2	-1	1	2	+/-	+/-	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	-2	2	2	-2	-2	+/-	+/-	+/-	+/-	+/-	-1	+/-	+/-	+/-	+/-	-1	-1
- diversification of farming products/ trade opportunities	2	2	2	2	2	2	1	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	1	1	1	1	1	1	2	+/-	+/-	+/-	+/-
Increasing energy efficiency																																		
- increasing share of RES, including biofuels	2	1	+/-	+/-	+/-	+/-	+/-	2	+/-	+/-	+/-	+/-	+/-	+/-	-1	-1	-1	+/-	+/-	2	+/-	+/-	+/-	1	1	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
- production of energy crops	2	-2	-1	2	-2	-2	-2	2	2	2	2	-2	-2	+/-	-2	-2	-2	-2	-2	-2	+/-	-2	-2	1	1	-2	-2	-2	-2	-2	-2	-2	-2
Spatial planning policy																																		
establishing conditions for sustainable spatial development and land use	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
determining zones of limited management and building exclusion	-1	-1	1	-1	-1	1	1	-1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
maintenance/establishment of green network	-1	1	2	+/-	+/-	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
protection of nature values/natural and semi-natural communities	-2	2	2	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
protection of valuable landscapes	2	2	1	1	1	1	1	-2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
Agriculture and rural development policy																																		
Preserving ecosystems related to agriculture and forestry:																																		
- maintenance of biodiversity in grasslands/ semi-natural communities	-2	2	1	1	2	2	2	2	1	1	1	1	1	1	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2
- greening measures/water and soil protection,	-1	0	1	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	2	2	1	1	1	0	0	1	1	1	1
- support for organic farming	2	2	0	1	2	2	2	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	1	1	0	0	0	0	0	0

Specific grassland related objectives and measures	Identified impacts on maintenance of ecosystem services																														
	Provisioning services								Regulating services													Cultural services										
	Cultivated crops	Reared animals and their outputs	Wild berries, mushrooms	Materials from plants	Plants &animals for agric. use: fodder, fertilisers	Herbs for medicine	Genetic material from wild plants & animals	Biomass-based energy sources	Bio-remediation by biota	Filtration/storage/accumulation by biota	Filtration/storage/accumulation by ecosystems	Mediation of smell/noise/visual impacts	Control of erosion rates	Vegetation enabled air ventilation	Pollination and seed dispersal	Maintaining habitats	Pest, disease, invasive species control	Maintenance of soil fertility and structure	Chemical condition of freshwaters	Global climate regulation by carbon sequestration	Local climate regulation	Experiential use of plants, animals and landscapes	Physical use of landscapes (recreation)	Scientific value	Educational value	Cultural heritage value	Entertainment: ex-situ experience via media	Aesthetic value	Symbolic value	Sacred and/or religious value	Existence value	Bequest value
- support for breeding endangered breeds	0	2	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	2	2	1	2	2	0	2	2
- payments to areas having natural or specific constraints/ Natura 2000	0	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1
- training, advisory service and information actions	2	2	0	1	2	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
- afforestation of non-used agriculture land	-2	-2	2	2	-2	+/-	+/-	2	2	2	2	2	2	2	-1	+/-	+/-	-1	2	2	2	+/-	+/-	2	1	-2	0	-1	+/-	+/-	+/-	+/-
Supporting agriculture production																																
- single area payments	2	2	0	1	2	1	0	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	-1	-1	+/-	1	1	0	0	0	0	1	+/-	+/-	+/-	+/-
- investment support in agric. infrastructure, marketing &product development	2	2	0	2	2	2	0	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	1	2	0	0	1	1	1	+/-	+/-	+/-	+/-
- quality schemes for agriculture products	2	2	0	2	2	2	0	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	0	1	0	0	1	0	0	0	0	0	0
- support for young farmers and development of small enterprises	2	2	0	2	2	2	0	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	1	1	0	0	1	0	1	0	0	0	0
- land improvement (drainage)	2	1	-1	1	2	-1	-2	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	-2	2	2	-2	-2	+/-	-1	+/-	1	0	-2	0	-1	-1	-1	-2	-2
Promoting sustainable use and land protection																																
- requirements for protection of water and soil in agricultural land	-1	+/-	2	+/-	+/-	2	2	-1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- priority for change of land use type given to areas not suitable for agriculture or forestry	2	2	+/-	+/-	2	2	2	+/-	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
- elimination of invasive species	2	2	2	2	2	2	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	2	2	+/-	+/-	+/-	+/-	2	2	2	2	2	2	2	2	2	2	2
- landscape maintenance	2	2	1	1	1	1	1	-2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
Forestry policy																																
Promoting sustainable forest management																																
afforestation of land not used for agriculture production	-2	-2	2	1	-2	+/-	+/-	2	2	2	2	2	2	2	-1	+/-	+/-	-1	2	2	2	+/-	+/-	2	1	-2	0	-1	+/-	+/-	+/-	+/-

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guidelines for sustainable management of forest	0	0	2	2	0	1	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
deforestation for restoration of protected habitats	0	2	1	1	2	2	2	+/-	-1	-1	-1	-1	-1	+/-	2	2	2	1	+/-	-2	+/-	2	2	2	2	2	2	2	2	2	2	2	2
Energy policy																																	
Promoting use and diversification of RES																																	
- diversification of energy supply	+/-	+/-	+/-	+/-	+/-	+/-	+/-	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	2	+/-	+/-	+/-	2	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
- grassland biomass as RES	-2	-2	-2	-2	-2	1	1	2	1	1	1	1	1	1	2	2	2	1	1	2	1	1	1	2	2	+/-	0	1	1	1	1	1	
- cultivation (fertilization) of grasslands for higher biomass production	-2	-2	-2	-2	-2	-2	-2	2	1	1	1	1	1	1	-1	-1	-1	1	-2	2	1	-1	-1	1	1	-1	0	1	-1	-1	-1	-1	
- cultivation of energy crops	2	-2	-2	-2	-2	-2	-2	2	2	2	2	-2	-2	-2	-2	-2	2	-2	-2	1	-2	-2	-2	1	1	-2	-2	-2	-2	-2	-2	-2	-2
Environmental/Nature Conservation Policy																																	
Protection of ecosystems, species and habitats																																	
- conservation priorities and targets for species and habitats	-2	+/-	2	+/-	+/-	2	2	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- maintenance and restoration of ecosystems/ SNG	-2	1	+/-	0	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- maintenance and improvement of landscape quality	2	2	1	1	1	1	1	-2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2	2
- management and restoration guidelines for SNG	-2	2	+/-	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- requirements on use and management of protected areas	-2	+/-	2	+/-	+/-	2	2	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- requirements for protection and management of protected habitats and species	-2	+/-	2	+/-	+/-	2	2	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- assessment of sufficiency of conservation measures	-2	+/-	2	+/-	+/-	2	2	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2

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- development of national financial support mechanisms for biodiversity conservation	-2	+/-	2	+/-	+/-	2	2	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- integration of nature management plans into municipality spatial planning	-2	+/-	2	+/-	+/-	2	2	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- conditions for acquisition of land with protected natural objects	-2	+/-	2	+/-	+/-	+/-	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-
Protection of environment																																
- protection of water quality	-1	+/-	1	1	1	2	2	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- restriction of the distribution of invasive species	2	2	2	2	2	2	2	2	+/-	+/-	+/-	+/-	+/-	+/-	+/-	2	2	+/-	+/-	+/-	+/-	2	2	2	2	2	2	2	2	2	2	2
- climate change mitigations	+/-	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- requirements on EIA procedure	+/-	+/-	2	+/-	+/-	2	2	+/-	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Sustainable use of land and natural resources																																
- application of ecosystem based approach in use of natural resources	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- valuation of ecosystem services	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
- development of sustainable technologies for use of RES	0	0	0	2	0	0	0	2	1	1	1	1	1	1	1	2	2	1	1	2	1	1	1	2	2	1	1	1	0	0	1	1
afforestation of non-used agriculture land	-2	-2	2	2	-2	+/-	+/-	2	2	2	2	2	2	2	-1	+/-	+/-	-1	2	2	2	+/-	+/-	2	1	-2	0	-1	+/-	+/-	+/-	+/-
Tourism policy																																
development of nature tourism in rural areas	0	1	2	2	1	2	0	0	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	2	2	2	2	2	2	2	2	2	2	2
marketing of grassland products	0	2	1	2	2	2	2	2	1	1	1	1	1	1	2	2	2	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2
protection and rational use of landscape	2	2	1	1	1	1	1	-2	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	2	2	2	2