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POTENTIAL IMPACTS OF EU POLICIES ON CULTURAL LANDSCAPE DIVERSITY: EXAMPLE OF SLOVENIAN COASTAL LANDSCAPES

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ABSTRACT

Recent EU agriculture and nature conservation policies explicitly target cultural landscape preservation. In absence of a national policy on cultural landscapes, the measures of these policies are transposed to national legislation without much consideration of their impacts in local territories. A framework for impact assessment of these measures on cultural landscape diversity is presented and tested in six landscape units of Slovenian coastal landscapes. High landscape and bio-diversity of the observed landscapes is reflected in the existing (informal) guidelines for management. These are used as reference framework to evaluate the measures of EU policies. The approach is based on the territorial impact assessment concept using expert opinion and an anaylsis of data on land-use change. The expected impacts are positive in both units where either intensification or forest regrowing processes have already diminished landscape diversity. In other four units, the expected impacts are ambiguous and difficult to forecast, but may also involve negative consequences.

Keywords: European policies, nature conservation, common agricultural policy, cultural landscape diversity, territorial impact assessment

I POTENZIALI EFFETTI DELLE POLITICHE EUROPEE SULLA DIVERSITÀ DEL PAESAGGIO: ESEMPIO DI PAESAGGI DI COSTA SLOVENA

SINTESI

In Slovenia non abbiamo una politica, che affronterebbe lo sviluppo e la tutela del paesaggio in una maniera coerente, e quindi neanche uno strumento per coordinare gli effetti dei diversi regolamenti sul paesaggio. Articolo presenta una valutazione degli effetti spaziali (Territorial impact assessemnt – TIA) che la politica agricola con gli obiettivi di conservazione della natura, ha sulla diversità del paesaggio culturale in sei unità di paesaggio delle regioni costiere slovene. In due unità di paesaggio, dove i processi di l'agricoltura intensiva e crescita eccessiva hanno già ridotto la diversità del paesaggio, sono previsti gli effetti positivi dei provvedimenti europei. Nelle altre quattro unità i loro effetti rimangono imprevedibili, con potenziali conseguenze negative.

Parole chiave: Politiche europee, conservazione della natura, la politica agricola comune, la diversità del paesaggio culturale, valutazione di impatto territoriale.

INTRODUCTION

Landscape is a result of the interaction of human and natural processes (European landscape convention, 2015, Zakon o ratifikaciji..., 2003). In the history, humans had economic motives to cultivate the landscape and thus change it from natural to cultural one. While these changes have been traditionally slow and adapted to the spatial context, the contemporary cultural landscapes are undergoing an accelerated transformation. Loss of landscape diversity, coherence and identity have been recognized among their most critical negative consequences (European landscape convention, 2015, Zakon o ratifikaciji..., 2003, Antrop, 2005, Palang et al., 2006). A number of contemporary policies have responded by integrating the protection of (traditional) cultural landscape into their objectives and measures, most notably agricultural and nature conservation policies. In the EU, these two are developed centrally within the Commission of the EU and implemented by the EU legislation and financial instruments. Unlike these, spatial (including landscape) policies have not been centralized on the EU level. This is to a large extent due to the recognition that landscapes are too heterogeneous to be easily managed from a centralized perspective. However, many of those centralized policies have strong impacts on landscape and these impacts are rarely evaluated, especially ex-ante (Golobič, Marot, 2011). Disregard for secondary impacts might explain why good individual policies, based on strong values and even on common sense, often lead to disappointing overall results (Fischer et al., 2015). While the member states have some flexibility in the transposition of EU regulations in the national legislation, this »territorialization« is seldom successful (Golobič, Marot, 2011; Golobič et al., 2015).

The question of the future of cultural landscapes has specific relevance for Slovenia. These landscapes are today recognized as valuable from a variety of perspectives. High geographical and cultural diversity, which has given rise to a wide range of cultural landscapes, is probably the main element of national identity. High biodiversity, which is the focus of nature conservation, is strongly related to cultural landscape. Between 60 and 80% of agricultural land in Slovenia could be defined as areas of high natural value (Program razvoja podeželja RS..., 2015), where biodiversity is maintained by traditional and extensive agriculture practices. Consequently, biodiversity is reduced by either the intensification of agricultural production in lowlands or abandonment of agriculture in remote areas. Cultural landscapes in some parts of Slovenia, including the Mediterranean, are also important tourism destinations. Of five identified landscape macroregions in Slovenia, Meditteranean regions are considered to have the highest variability of landscape patterns (Marušič et al., 1998).

The following part of the paper discusses the potential impacts of nature conservation (Natura2000) and agricultural (Common agricultural policy; CAP) policies, whose objectives and measures since recently directly target cultural landscapes. It is expected that the implementation of their measures conceived for an »average« European cultural landscape, may reduce landscape diversity and increase unification. Testing this hypothesis was done by confronting a chosen set of »european« policy instruments with landscape objectives (management guidelines) as specified for coastal landscapes in Slovenia. Comparison of the landuse chage in the period between these measures came into effect (2002) and recent data (2015) was additionally used to explain the trends and support the assumptions. Although the comparison of the findings does not allow for definite cause-effect conclusions, it does give an indication whether and in which direction the impacts should be further investigated.

SCOPING: MEASURES OF THE NATURE CONSERVATION AND AGRICULTURE POLICIES RELATED TO LANDSCAPE DIVERSITY

The analysis of the policies in this paper focuses on a selection of measures of the nature conservation and agricultural policies, which have intended or already proven impacts on landscape diversity. The nature conservation policy has been transposed to Slovenian legislation by two main strategic documents: National biodiversity strategy (Strategija…, 2002, Strokovne podlage za strategijo … za obdobje 2015–2025, 2014) and Natura2000 management plan (Program upravljanja ... za obdobje 2014–20, 2014)[1]. The measures include definition of habitat types requiring improvement or restoration and the most suitable restoration areas. Specifically, the measures involve the establishment and the maintenance of hedges, groups of trees and individual trees, vegetation along streams, windbreaks and hedges (field margins) outside the forest. These measures can be performed through sector plans for natural resources management (forestry, fishing, hunting, water resource management), as well as the appropriate spatial planning practice. In the absence of an explicit planning instrument for agriculture, the farmers can be stimulated by the use of financial instruments of the Common agricultural policy (CAP), in particular through rural development programme as well as regulations referring to direct payments (i.e. cross-compliance). Cross-compliance system (Uredba (EU) št. 1306/2013) incorporates in the CAP basic standards regarding the environment, climate change, good agricultural and environmental condition of land, public health, animal health, plant health, and animal welfare. Presently, the national requirements for the cross-compliance (Uredba o predpisanih zahtevah ravnanja..., 2011) include soil erosion, soil organic mat-

1 Although these documents are presently in their draft versions it can be expected for both to be adopted soon without major revisions.

ter, soil structure, minimum level of maintenance, and protection and management of water resources.

The latest changes in the CAP involve dedicating 30% of the finance to »greening« component of direct payments which will support agricultural practices beneficial for the climate and the environment applicable throughout the Union. This involves the obligation for the member states to establish »ecological focus areas« on 5% of the agricultural holdings areas that have more than 15 hectares of the arable land. The compulsory nature of those practices should also concern farmers whose holdings are fully or partly situated in »Natura 2000« areas. The following types of land management could be considered as »ecological focus areas«: permanent grassland, set-aside land, terraces, landscape features (hedgerows/forest strips, individual trees, tree rows, groups of trees, field margins, ponds, ditches, traditional stone walls, buffer zones, agro-forestry areas, strips along forest edges, areas with short rotation coppice with no use of mineral fertilizer and/or plant protection products, afforested areas, etc. (Uredba (EU) št. 1307/2013).

Relevant instruments are listed in Table 1 (Strokovne podlage za strategijo … za obdobje 2015–2025, 2014, Program upravljanja ... za obdobje 2014–20, 2014, Uredba o predpisanih zahtevah ravnanja..., 2011, Uredba (EU) št. 1306/2013, Uredba (EU) št. 1307/2013).

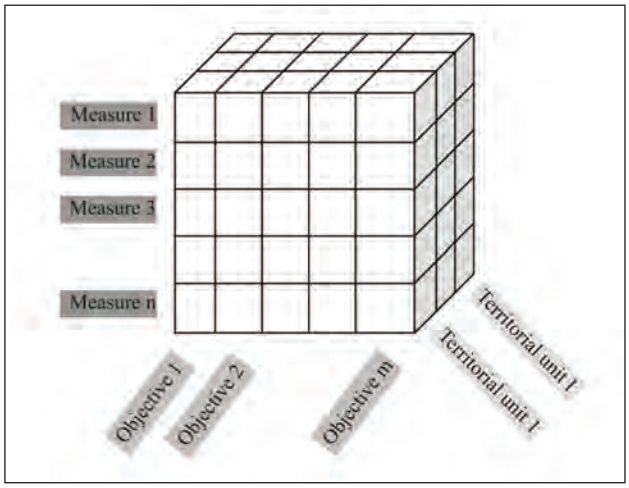
Table 1: Policy measures (objectives + instruments) which are considered to be potential drivers/inhibitors of landscape change (summarized in the rows of the impact assessment matrix)
Preglednica 1: Ukrepi politik (cilji + ukrepi), ki veljajo za možne pospeševalce/zaviralce sprememb v krajini (povzeti so v vrsticah matrike ocene vplivov)
Tabella 1: Misure politiche (obiettivi + strumenti), che sono considerati potenziali conducenti / inibitori del cambiamento del paesaggio (riassunte nelle righe della matrice di valutazione d'impatto)

Policy objective	Instrument
Maintenance of permanent grassland	Biodiversity measures of agri-environment payments: permanent grassland I & II; special grassland habitats; grassland habitats of butterflies; habitats characterized by steep grassy areas; bird habitats of humid extensive meadows, Cross-compliance: grasslands shall be managed (mowed/grazed) at least once per year, no later than 15. 10. of the current year. Natura2000 management plan: designation of endangered habitat types and the most suitable restoration areas.
Maintenance of pastures	Biodiversity measures of agri-environment payments: rearing of local breeds, at risk of rearing termination
Maintenance of meadow orchards (traditional orchards where fruit trees are grown in low density on grassland)	Biodiversity measures of agri-environment payments: meadow orchards; Cross-compliance: in Natura 2000 sites (birds) green cover in meadow orchards shall be managed at least 1x per year, no later than 15. 10. of the current year.
Preservation of the landscape features: individual trees or groups of trees, hedges, tree alleys, hedgerows/border tree strips, pools, meadow orchards, strips of terrestrial vegetation, stone walls, boulders and solitary rocks, windbreaks, field margins, borders, ditches, hayracks, haystacks etc.	Biodiversity measures of agri-environment payments: maintenance of hedges; Cross-compliance: Minimum level of maintenance / the preservation of the landscape features on agricultural land (currently only for features, which are defined as natural values under Nature Conservation Act and under Rules on the designation and protection of valuable natural features) Cross-compliance: existing border tree strips and hedgerows in Natura 2000 sites (birds) shall be trimmed (pruned) and thinned only in prescripted time Biodiversity measures of agri-environment payments: water resources: Cross-compliance: Buffer strips along watercourses.
Preservation of the landscape features: topography and surface configuration, slopes, terraces	Cross-compliance: maintenance of terraces due to protection against erosion. In agricultural areas where fields have slope of 20% or more, from 15 November to 15 February at least one of the following measures has to be applied: - contour plowing - maintenance of stubble - revegetation

EVALUATION OF THE IMPACT OF BIODIVERSITY FOCUSED AGRICULTURAL MEASURES ON LANDSCAPE DIVERSITY

The slow but consistent shift of the CAP from an increase of productivity towards environmental objectives is the result of the recognition that the original market and structural support payments achieved intensification of practices, which are responsible for increasing habitat degradation, loss of biodiversity and homogenization of rural landscapes (Lomba et al., 2014). Since the agri-environmental schemes were introduced to CAP in 1992, followed by the environmental cross-compliance schemes in 1998, the share of the payments with environmental focus increase with each policy reform and financial perspective. There are no evaluations whether and to what extent these measures succeeded in preservation of the cultural landscape diversity. There are however some findigs about the impact on biodiversity in cultural landscapes. The evaluation of Rural development programs for the period 2007-2013 indicates that the CAP changes have not managed to provide adequate instruments to protect the high natural value farmlands (Lomba et al., 2014). However, the efforts to map these areas have not been very successful until now, partly also due to high diversity of European landscapes as well as the diversity of national management and policy frameworks.

Similar to the EU level, the effectiveness of CAP measures on cultural landscape diversity has not been explicitly measured in Slovenia. The cause-effect conclusions are difficult to make, partially due to the fact that the national agricultural policy objectives and measures have been similar to those of the CAP also before their implementation in Slovenia in 2004 (Knep, 2008). The assessments most often refer to the uptake of the measures by the farmers and not to actual effects in the landscape. For the programming period 2007-2013, the nature conservation objectives have only been achieved in 11 % of the areas (22% grasslands) as measured by the share of the adapted agricultural activities by 2012. The low involvement in the biodiversity agri-environment payments could be attributed to theirs unattractive financing, high monitoring and control requirements, demanding entry conditions, uncertainty due to unclear and changing rules as well as insufficient promotion and lack of education activities (Program upravljanja ... za obdobje 2014–20, 2014, Rode et al., 2013, Žgavec, 2012). Furthermore, there are structural reasons within the agricultural sector, such as farm holder's age, as well as small and fragmented properties (Žvikart, 2010). The result is vanishing of species-rich grasslands in some areas of Natura2000 (for example Ljubljansko barje, Goričko, Šentjernejsko polje ...), due to intensification of use. Additionally, the realization of the objectives failed due to the overgrowth of grassland with forest, as a result of the abandonment of agricultural activities.



Picture 1: Hypercube concept of TIA (ESPON 2006b; p.55)
Slika 1: Večdimenzionalni koncept presoje učinkov na prostor
Immagine 1: Il concetto multidimensionale delle valutazioni d'impatto territoriale ovvero TIA - Territorial impact assessment

The protection of the landscape features was inadequate as well (Žvikart, 2010, Strokovne podlage ... za obdobje 2015 – 2025, 2014) in particular because the appropriate actions have not yet been established. Furthermore, certain incentives and grants also obstruct the biodiversity conservation (Strokovne podlage ... za obdobje 2015 – 2025, 2014).

METHOD

The adopted approach is one of territorial impact assessment (Golobič, Marot, 2011; Marot et al., 2013; Golobič et al., 2015; Fischer et al., 2015), which is specifically developed for differentiating the impacts of centralized policies across the territorial units. Instead of using a traditional two-dimensional impact matrix (Leopold et al., 1971); this approach introduces the third dimension; i.e. territorial units, in this case landscape units (Picture 1). The evaluation focuses on the instruments from the ongoing financial perspective (2014-2020) with acknowledgment that similar instruments have been in place since Slovenian accession to the EU (and to some extend also before). The perspective of the evaluation is therefore partly ex-ante and partly ex-durante.

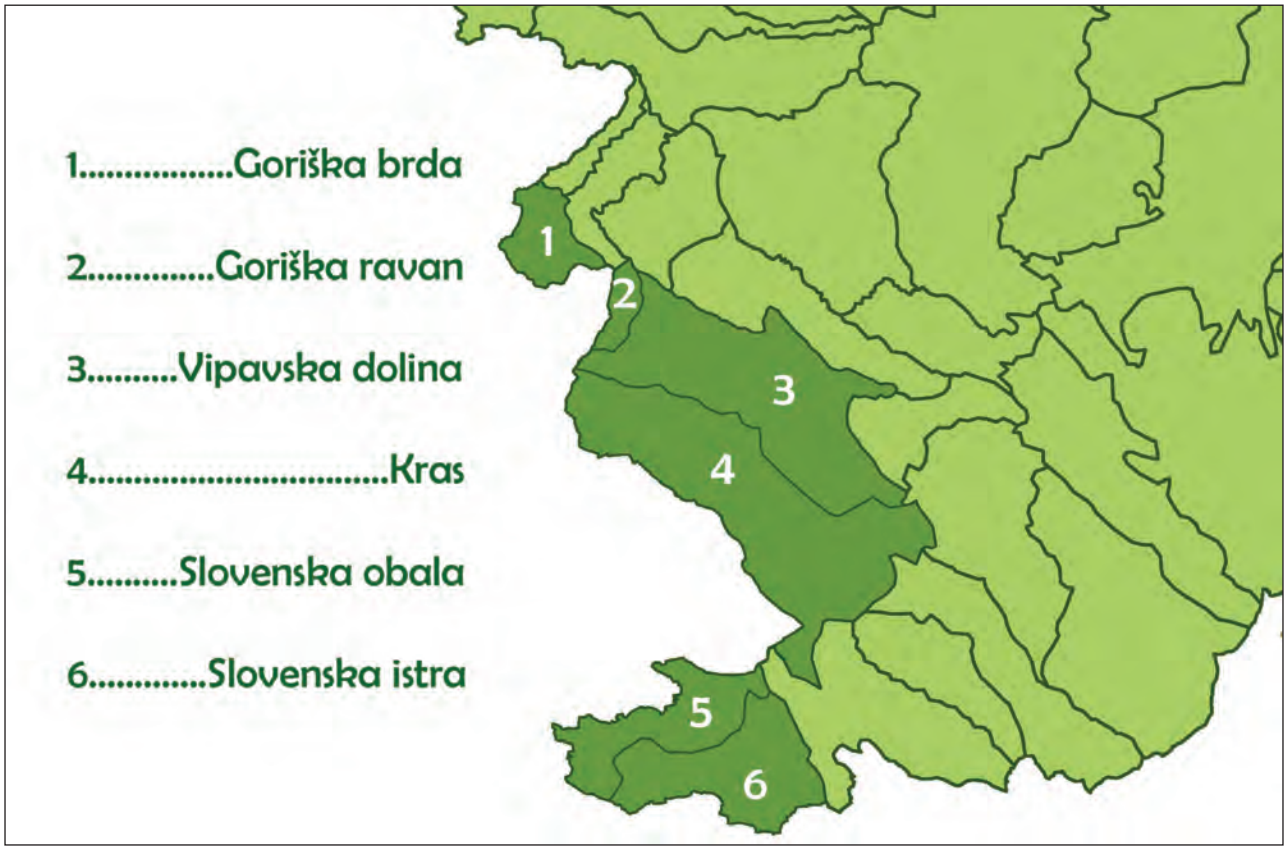
The approach is divided in two parts. The first one involves the qualitative evaluation of the compatibility of the measures with the landscape diversity objectives using the impact assessment matrix (IAM). The first side of the matrix is filled-in by policy measures, as identified above (Table 1). The second side of the impact evalua-

Picture 2: Five Slovenian macro-regions: Alpine, Subalpine, Subpanonian regions, Karst- regions of inner Slovenia and Mediterranean regions
Slika 2: Pet slovenskih krajinskih makro-regij: Alpske, Subalpske, Subpanonske regije, Kraške regije notranje Slovenije in Mediteranske regije.
Immagine 2: Cinque macro-regioni Slovene: regioni alpine e subalpine, regioni della Subpannonia, regioni carsiche della Slovenia interiore e regioni del Mediterraneo.

tion matrix requires definition of criteria and reference for cultural landscape diversity. These are described by the guidelines and objectives (Table 2) as defined in the Regional distribution of landscape types in Slovenia (Marušič et al., 1998; Marušič et al., 1998a; Marušič et al., 1998b), for each landscape unit. Although the document itself does not have a formal status, it has been used as a reference in several policy documents (i.e. Spatial Development Strategy of Slovenia, 2004; Spatial order of Slovenia, 2004, local land use plans) and procedures (e.g. environmental impact assessments). A selection of guidelines, which explicitly address either agriculture or protection of natural features in the agricultural landscape, was used for the purpose of this analysis.

The third dimesion of the IAM is defined by the territorial units. The Regional distribution of landscape types in Slovenia applies landscape regionalization on 4 levels: macro-regions, regions, units and subunits, which were identified by their climate, geomorphology and land use. There are five macro-regions: Alpine, Subalpine, Subpanonian regions, Karstic regions of inner Slovenia and Mediterranean regions (Picture 2). This paper focuses on Mediterranean regions, more specifically Coastal regions, which include the following landscape units: Goriška Brda, Goriška ravan, Vipavska dolina, Kras, Slovenska obala and Slovenska Istra (map Picture 3). These 6 units contain 35 different landscape patterns. Although there are some landscape patterns, which appear in different units, each unit has specific characteristics and unique landscape identity. Climate is the most important element influencing the common identity of Mediterranean landscapes, as it conditions typical landuse; vineyards and orchards and at the same time limits the share of forested landscape. The differences within the landscape units are due to bedrock, which is either limestone (Carst) or flysch (Marusic et al 1998).

To test whether the diversity among the units also reflects in the specific management guidelines, the guidelines are listed in the matrix and compared (Table 2).



Picture 3: Coastal regions including the landscape units 1 - 6
Slika 3: Obalne regije, ki vključujejo krajinske enote od 1 do 6
Immagine 3: Regioni costiere comprese le unità di paesaggio 1-6

The evaluation is implemented using impact assessment matrix (IAM) (Golobič, Marot, 2011) where the measures of agricultural and nature conservation policy (Table 1) are confronted with guidelines for landscape management (Table 2). IAM is filled separately for each landscape unit. As policy measures are equally applicable in all units, the list of the measures (rows of the matrix) is the same in all IAMs. The list of landscape objectives (columns) differs as to include those guidelines, which are relevant for certain landscape unit. Every policy measure is then assessed from the aspect of every landscape objective as: – (negative impact), o (not applicable) or + (beneficial impact). In the cases, where impacts could not be reliably foreseen or are ambiguous (depending for example on the technique adopted or micro location); the (+/-) is used. The evaluation was done by the Delphi procedure, collecting the expert opinions of a group of four landscape researchers. The diverging scores were dicussed, followed by the second round of collecting. Finnaly, the average score was calculated for each cell of the IAM. The aggregated result for a landscape unit was obtained by the synthesis of all scores relevant for this unit. The synthesis is not an average as the trade-offs between the impacts are not considered to be acceptable (Radej, 2011). The negative scores were therefore retained in the final score.

The extensive quantification or modelling are not commonly applied in the case of strategic assessment as their results usually don't justify the required effort (Fischer et al., 2015; Golobič et al., 2015). We used a simple quantitative analysis of landscape change during the last decade to complement the findings from the evaluation. These data were obtained from the Records on Actual Land Utilisation for the years 2002 and 2015, which are freely accessible on the Ministry of Agriculture, Forestry and Food web site (Javno dostopni podatki ... http://rkg.gov.si/GERK/). The area of individual land use category in each landscape unit was calculated in the ArcMap 10.1 software. Some recalculation was needed to make the data comparable, as some categories changed between the data sets. New categories were introduced (1180 – permanent crops on arable land, 1190 – greenhouse, 1212 – nurseries, 1600 – untreated agricultural land), while one (1130 – temporary meadow) was abandoned (Nastran et al., 2013, Pravilnik o registru kmetijskih gospodarstev, 2014). The at-

Table 2: An overview of the landscape management objectives as applicable for each of the considered landscape units (Marušič et al., 1998a)
Preglednica 2: Pregled usmeritev za upravljanje krajin, ki veljajo za vsako od obravnavanih krajinskih enot (Marušič et al., 1998a)
Tabella 2: Compendio delle linee guida per la gestione del paesaggio che si applicano a ciascuna delle unità di paesaggio considerate (Marušič et al., 1998a)

Landscape objective	Goriška Brda	Goriška ravan	Vipavska dolina	Kras	Slovenska obala	Slovenska Istra
Preserve the small scale land-division with vineyards	X					
Plant trees around the houses (Mediterranean conifers, fruit trees)	X					
Plant trees along the main lines in landscape (roads on ridges paths, property borders, terraces) and specific (symbolic) places	X					X
Preserve forests/ natural growth on steep slopes and in the cloughs	X		X			
Preserve/manage/revitalize/reconstruct orchards and vineyards	X	X	X			
Preserve the rocky outlook on Skalnica and Sveta gora slopes		X				
Preserve the natural riverbeds and the typical vegetation along the streams / revitalize regulated streams		X	X		X	X
Control the meliorations to comply with traditional landscape / revitalize meliorated agricultural areas by planting of the bushes and trees			X	X		X
Maintain animal husbandry to prevent the spontaneous reforestation and preserve typical vegetation of Carst including pastures and meadows with stone walls				X		
Preserve fields in the pothole bottoms				X		
Leave the abandoned terraces on northern/ steep slopes to natural overgrowth to prevent erosion					X	X
Preserve the terraces on southern slopes with traditional "cultura mista"					X	
Preserve the natural (cliffs, coast) and cultural (saline fields) landscape					X	
Preserve the features of karstic edge						X

tempt to analyse the change of landscape pattern using the size and numbers of the land use polygons could not be fulfilled, because the method and detail of mapping changed, which would have biased the data too much.

RESULTS

A comparison of the landscape objectives between different landscape units shows that these are unit specific, but they also overlap (Table 2). None of them is common for all 6 units; the most general one is the objective referring to *preservation/revitalization of the natural riverbeds and the typical vegetation along the streams*, which is applicable in 4 out of 6 units. Half of the units share the objectives regarding *preservation and/or management of orchards and vineyards* and *control of the meliorations or revitalization of the meliorated agricultural areas by planting of bushes and trees*. 8 out of 14 objectives are specific for a single unit.

In the following part the results of policy evaluation and land cover change analysis are presented for each landscape unit separately.

Goriška brda:

The changes of the land use in Goriška Brda are of a small scale. The most notable one is an increase of the traditional orchards and the olive groves areas. So the 5th landscape objective for this unit has been met. Shrinking of the fields and meadows is a trend similar to many other parts of Slovenia, while the reduction of the forest area is less common. It should have been further verified whether this shrinkage happened in the cloughs or elsewhere, to see whether this process contradicts the 4th

Table 3: Evaluation results for Goriška Brda
Preglednica 3: Rezultati vrednotenja za Goriška Brda
Tabella 3: I risultati della valutazione per Collio Goriziano

Goriška Brda	Cultural landscape objectives					
Policy measures	Preserve the small scale land-division with vineyards Plant trees around the houses (Mediterranean conifers, fruit trees) Plant trees along the roads on ridges and specific (symbolic) places Preserve forests in cloughs Preserve orchards					
	1	2	3	4	5	agr
Preservation of permanent grassland	+	o	o	o	o	o/+
Preservation of pastures	+	o	o	o/-	o	o
Preservation of traditional orchards	+	+	o	o	+	+
Preservation of landscape features (trees, shrubs, hedges…)	+	+	+	o	+	+
Preservation of landscape features (geomorphology, terraces…)	+	o	+	+	+	+
aggregate	+	o/+	o/+	o	+	+

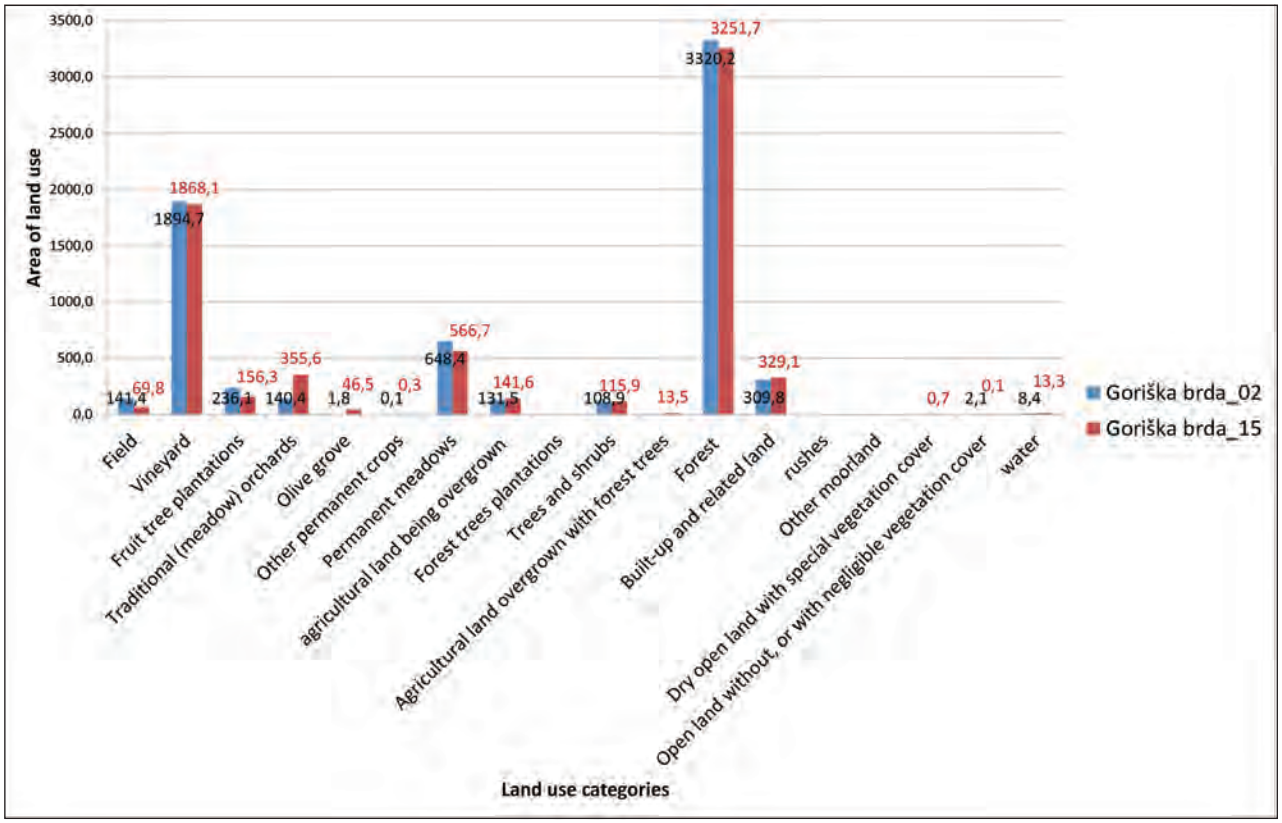
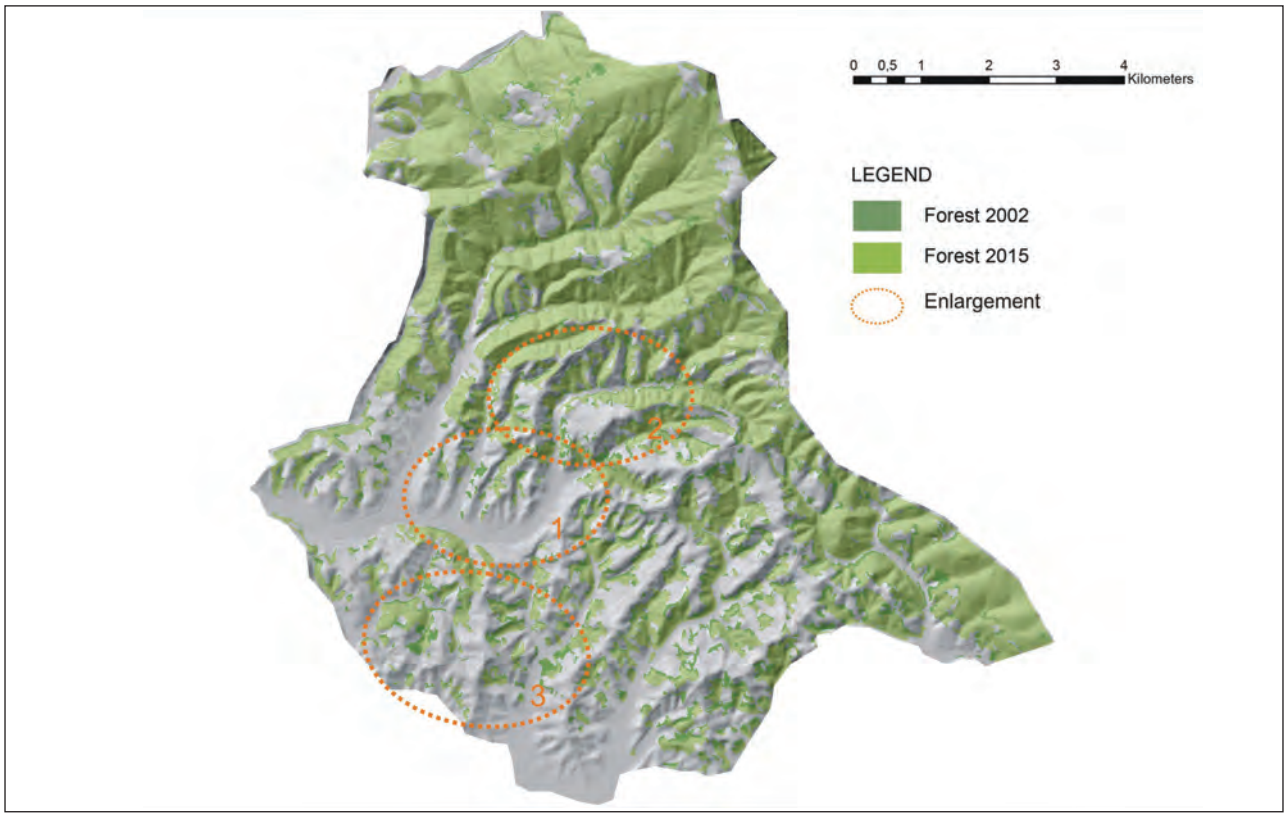
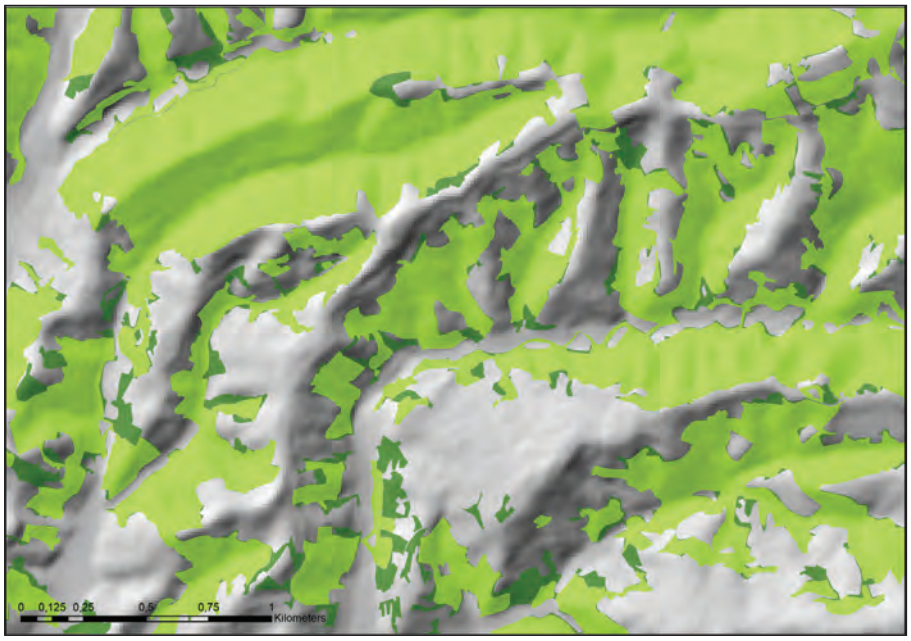


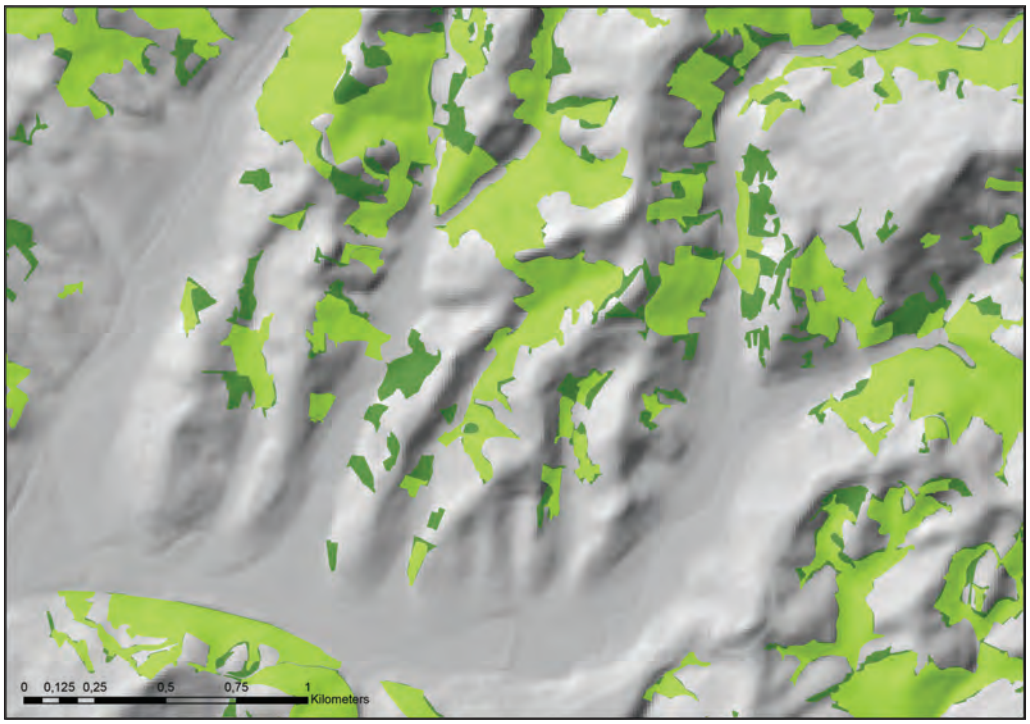
Chart 1: Area of the actual land use categories in the coastal region Goriška brda, comparison between the years 2002 and 2015
Grafikon 1: Površina kategorj dejanske rabe v Goriških brdih, primerjava med leti 2002 in 2015
Grafico 1: La superficie delle categorie di uso effettivo in Collio Goriziano, un confronto tra il 2002 e il 2015



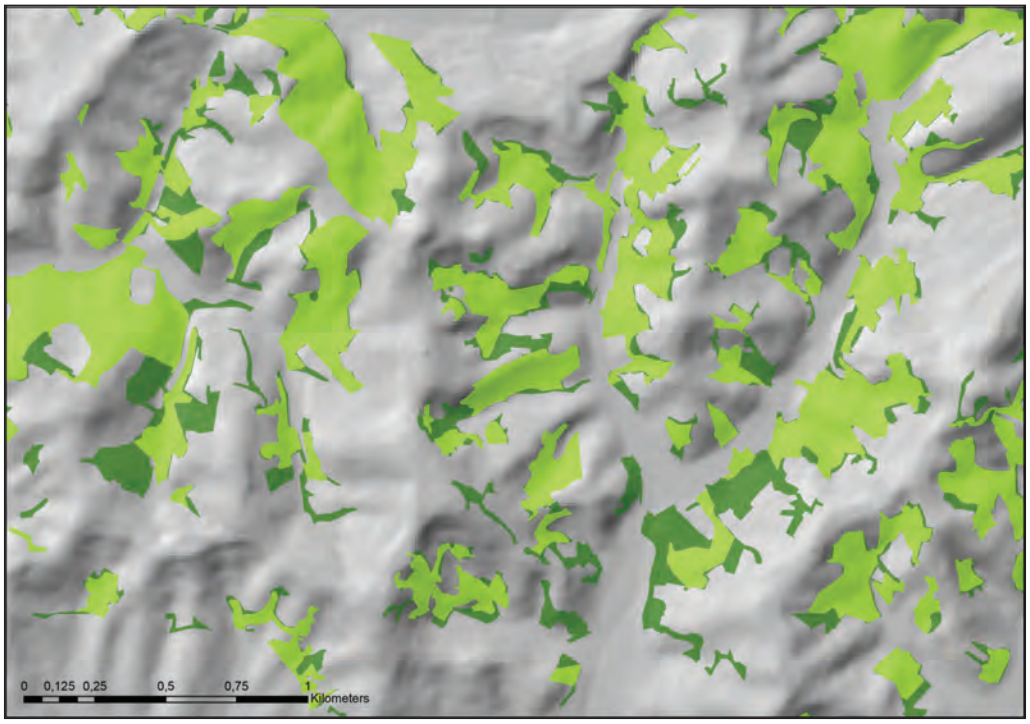
Picture 4: Detailed analysis of change in the forested areas in the Gorška Brda region
Slika 4: Podrobnejša analiza sprememb v površini gozda v Goriških Brdih glede na teren
Immagine 4: Un'analisi più dettagliata dei cambiamenti della superficie forestale del terreno in Collio Goriziano



Povečava 1
Enlargement 1
Allargamento 1



Povečava 2
Enlargement 2
Allargamento 2



Povečava 3
Enlargement 3
Allargamento 3

Table 4: Evaluation results for Goriška ravan
Preglednica 4: Rezultati vrednotenja za Goriško ravan
Tabella 4: I risultati della valutazione per Pianura goriziana

Goriška ravan	Guidelines referring to cultural landscape			
Policy measures	Preserve the rocky outlook on Skalnica and Sveta gora slopes Manage orchards and vineyards Revitalize regulated streams			
	1	2	3	aggr
Preservation of permanent grassland	o	o	o	o
Preservation of pastures	o	o	o	o
Preservation of traditional orchards	o	+	o	+
Preservation of landscape features (trees, shrubs, hedges…)	o	+	+	+
Preservation of landscape features (geomorphology, terraces…)	+	+	o	+
aggregate	+/-	+	o/+	+/-

landscape objective. An example of possible approach for a more detailed analysis is provided in pictures 4 (Enlargement 1-3), which present shadowed digital terrain model overlayed by forested areas in 2002 and 2015.

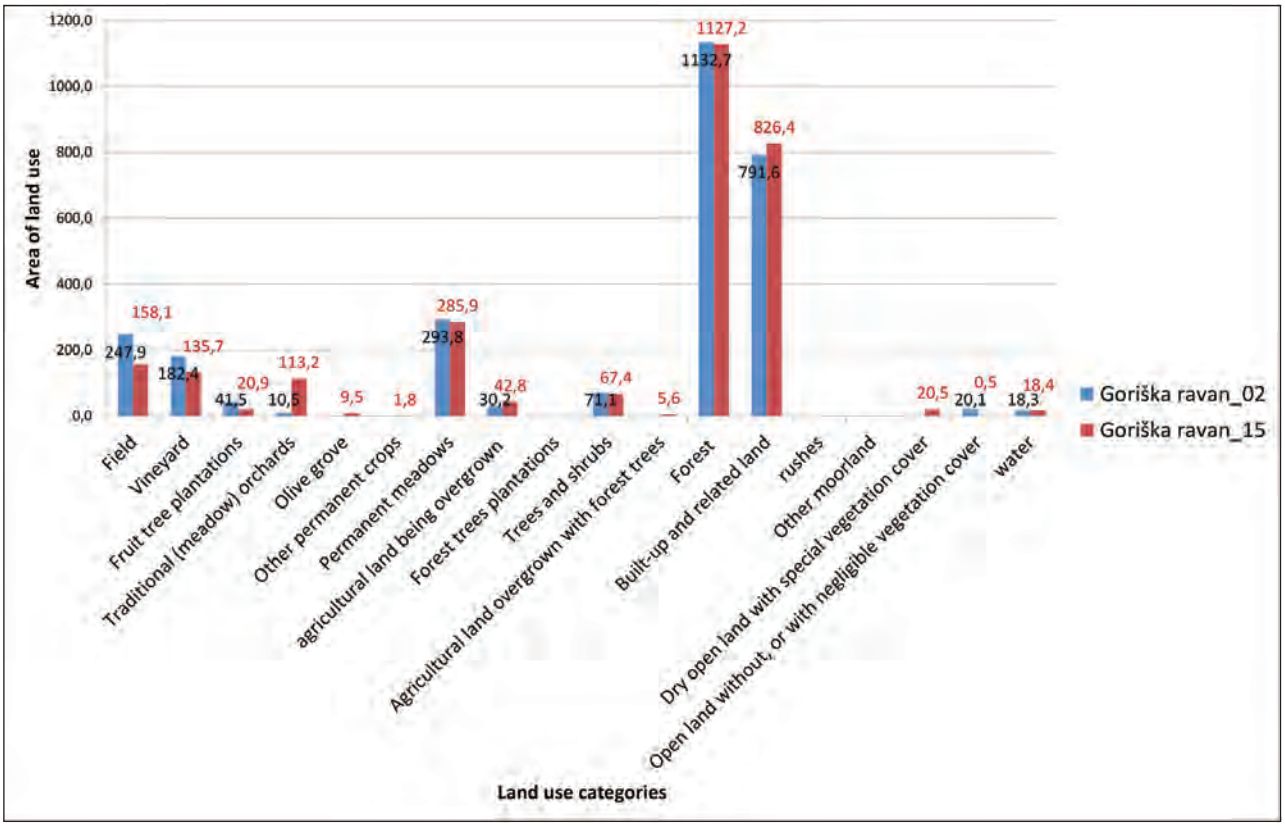


Chart 2: Area of the land use categories in the coastal region Goriška ravan, comparison between the years 2002 and 2015
Grafikon 2: Površina kategorij dejanske rabe na Goriški ravni, primerjava med letoma 2002 in 2015
Grafico 2: La superficie delle categorie di uso effettivo nella Pianura goriziana, un confronto tra il 2002 e il 2015

Some deviations are the result of a more detailed mapping in 2015. The northern part of the region is more hilly and overgrown with forests, while in the central and southern part of the region forest is fragmented in patches. Some patches in these areas are grubbed up or have entirely disappeared within ten years (Picture 4, Enlargement 2 and 3). It can not be concluded that this is the case for the forest in cloughs, but in some cases partial grubbing up of the forest in cloughs is visible (Picture 4, Enlargement 1). Despite the very strong wine producing tradition of the region, the area of vineyards has also reduced a little.

Two of the observed policy measures targets some of those changes. »Preservation of permanent grassland and pastures«, which has been in place already for some time now, obviously did not achieve the results in this region. »Preservation of the landscape features« (trees, shrubs, hedges…) measure matches the landscape objective; however the objective is more specific, these feature should appear around the houses, along the roads, on ridges and specific (symbolic) places, and not (as could be the case) due to decrease of fields and vineyards. The landuse results show that trees and shrubs area has (marginally) increased. Detailed location of these increases as well as tree species would be required for the evaluation of this finding, but in any case this trend could not be attributed to the policy measure as it has not yet been operational.

Goriška ravan:

The main changes of the land use in the coastal region Goriška ravan are strong decrease of fields and vineyards, and high increase of traditional (meadow) orchards. Built-up land has also increased. These trends contradict landscape objective (2) as far as vineyards are concerned. The difference in the trends between these two categories (vineyards and orchards) could be the result of policy measures, but we would need additional data to prove this. The first and last objectives are too specific to be related to overall landuse data, but the policy measured do not contradict them.

Vipavska dolina:

Fields, vineyards and permanent meadows in Vipavska dolina decreased, while orchards and forest area increased. As this is one of the most intensively used agricultural areas in Slovenia, these changes should not be considered negative. They are also congruent with the landscape objectives; which have a strong emphasis on the preservation of natural environment (riverbeds, vegetation) or even its revitalization (meliorated areas, regulated streams). Again, for a concluding evaluation, the detailed sites of these changes would have to be known. The decrease of vineyards could be considered negative, increase of the orchard positive in the view of the objective to revitalize and reconstruct orchards and vineyards. EU policy measures are targeted at the intensively used cultural landscapes, so they could in general be viewed as positive.

Kras:

Although the category »agricultural land being overgrown« has decreased, other changes indicate that Kras

Table 5: Evaluation results for Vipavska dolina
Preglednica 5: Rezultati vrednotenja za Vipavsko dolino
Tabella 5: I risultati della valutazione per Valle del Vipacco

Vipavska dolina	Guidelines referring to cultural landscape					
Policy measures	Revitalize and reconstruct orchards and vineyards Preserve the natural riverbeds, including the occasional ones Preserve the natural growth on steep slopes and in the cloughs Revitalize meliorated areas (Vipavska dolina, Šempasko polje) Revitalize regulated streams					
	1	2	3	4	5	agr
Preservation of permanent grassland	o	o	o/-	+	o	o/+
Preservation of pastures	o	o	o/-	o	o	o
Preservation of traditional orchards	+	o	o	o	o	o/+
Preservation of landscape features (trees, shrubs, hedges…)	+	+	o/+	+	+	+
Preservation of landscape features (geomorphology, terraces…)	+	+	+	+	o	+
aggregate	+	o/+	-/+	+	+	+

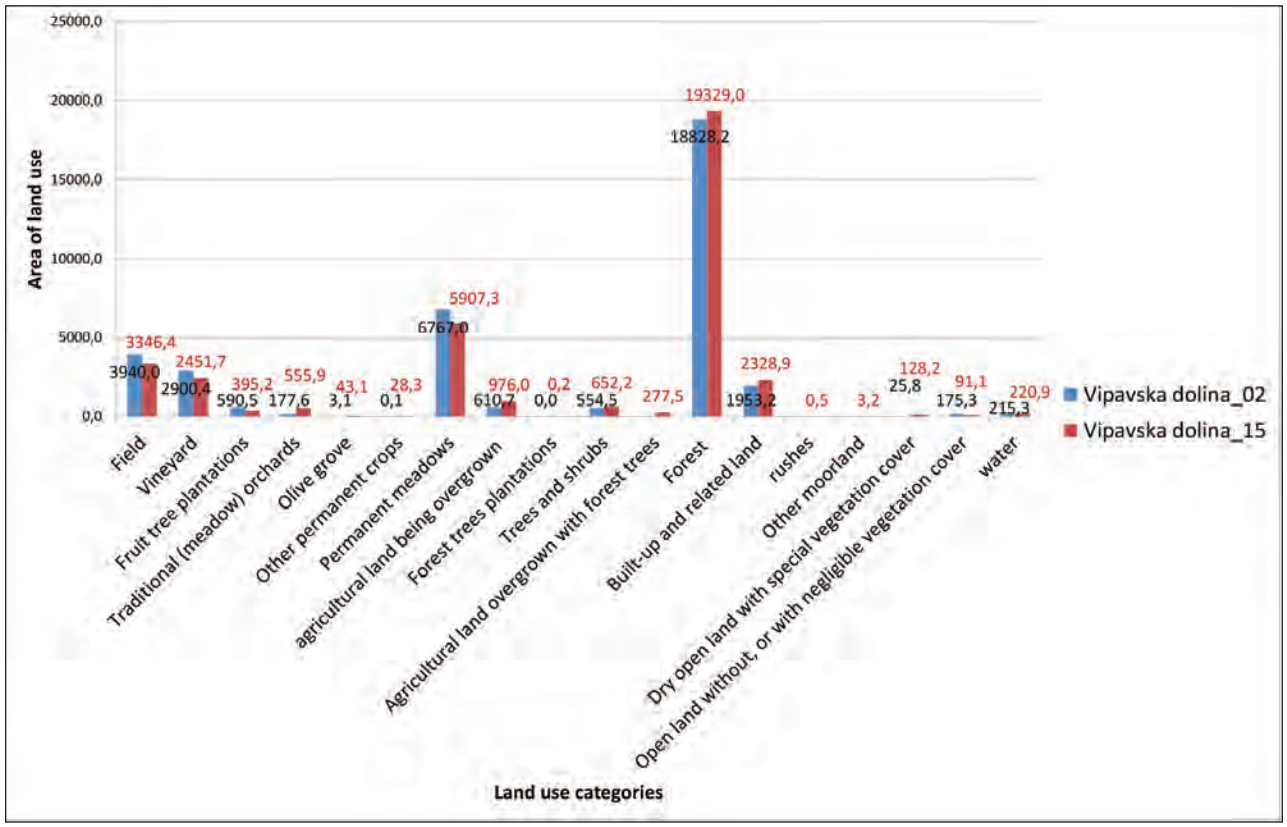


Chart 3: Area of the actual land use categories in the coastal region Vipavska dolina, comparison between the years 2002 and 2015
Grafikon 3: Površina kategorij dejanske rabe v Vipavski dolini, primerjava med leti 2002 in 2015
Grafico 3: La superficie delle categorie di uso effettivo nella Valle del Vipacco, un confronto tra il 2002 e il 2015

Table 6: Evaluation results for Kras
Preglednica 6: Rezultati vrednotenja za Kras
Tabella 6: I risultati della valutazione per Carso

Kras	Guidelines referring to cultural landscape				
Policy measures	Prevent the spontaneous reforestation to preserve of typical vegetation of Kras Maintain vine and fruit growing, animal husbandry to protect pastures and meadows including stone walls Control the meliorations to comply with traditional landscape (e.g. avoid filling the potholes with stones) Preserve fields in the pothole bottoms				
	1	2	3	4	agr
Preservation of permanent grassland	+	+	+	o	+
Preservation of pastures	+	+	o/+	o	+
Preservation of traditional orchards	+	+	o	o	+
Preservation of landscape features (trees, shrubs, hedges…)	+	+	+	o	+
Preservation of landscape features (geomorphology, terraces…)	o	+	+	o	+
aggregate	+	+	+	o	+

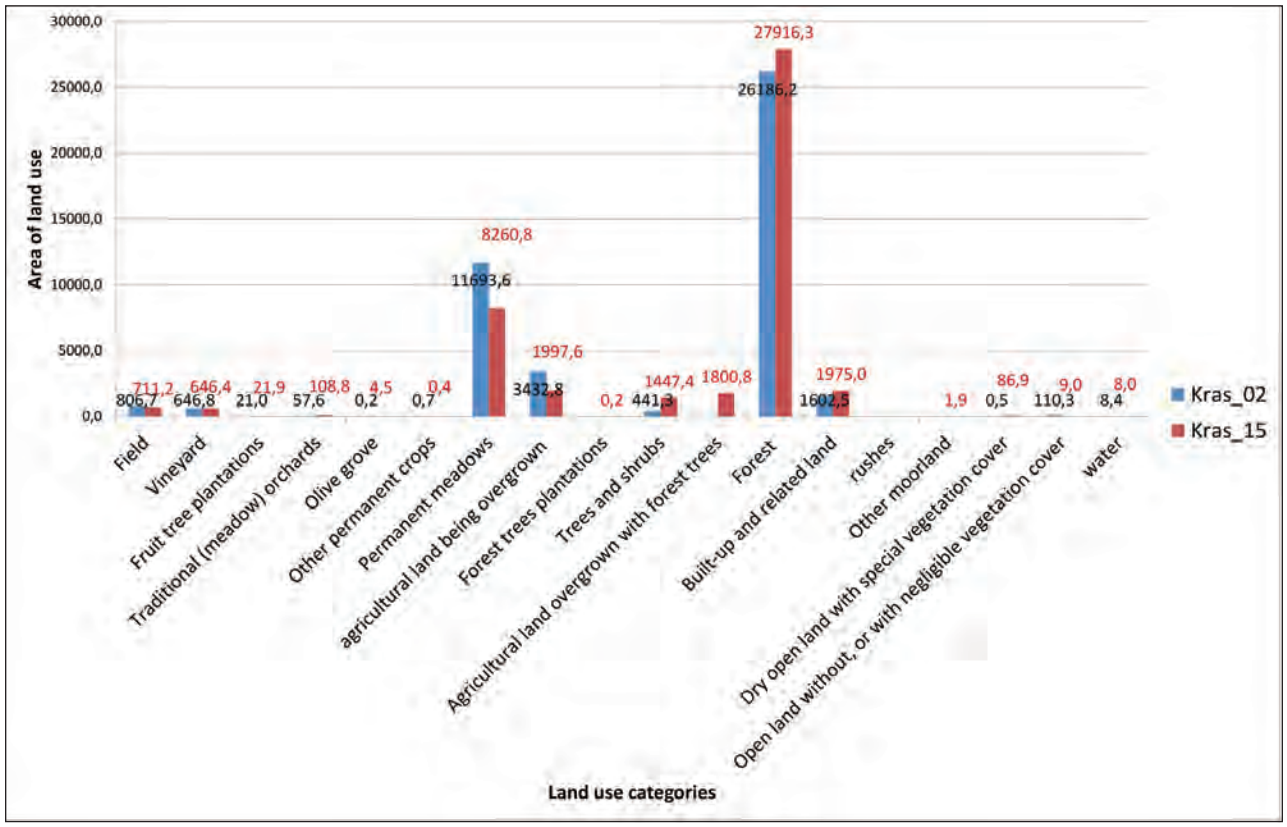


Chart 4: Area of the actual land use categories in the coastal region Kras, comparison between the years 2002 and 2015
Grafikon 4: Površina kategorj dejanske rabe na Krasu, primerjava med letoma 2002 in 2015
Grafico 4: La superficie delle categorie di uso effettivo sul Carso, un confronto tra il 2002 e il 2015

Table 7: Evaluation results for Slovenska obala
Preglednica 7: Rezultati vrednotenja za Slovensko obalo
Tabella 7: I risultati della valutazione per Costa slovena

Slovenska obala	Guidelines referring to cultural landscape				
Policy measures	Leave the abandoned terraces on north slopes to natural overgrowth to prevent erosion Preserve the terraces on southern slopes with traditional "cultura mista" Preserve the natural (cliffs, coast) and cultural (saline fields) landscape Revitalize regulated streams				
	1	2	3	4	agr
Preservation of permanent grassland	o/-	o	o	o	o
Preservation of pastures	-	o	o	o	o/-
Preservation of traditional orchards	o/-	+	o	o	o/+
Preservation of landscape features (trees, shrubs, hedges…)	o	+	o	+	+
Preservation of landscape features (geomorphology, terraces…)	-	+	+	o/+	+/-
aggregate	-	+	o	+	+/-

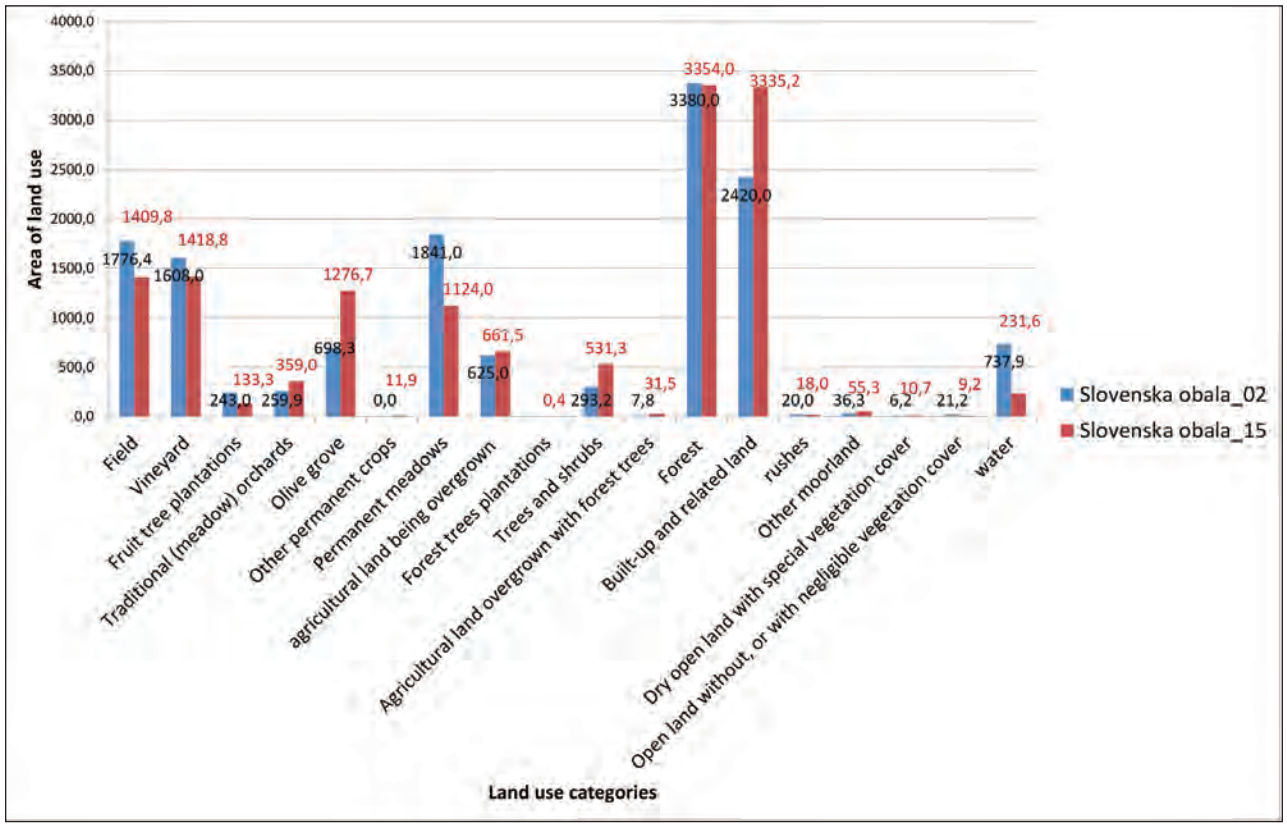


Chart 5: Area of the actual land use categories in the coastal region Slovenska obala, comparison between the years 2002 and 2015
Grafikon 5: Površina kategorj dejanske rabe v regiji Slovenska obala, primerjava med leti 2002 in 2015
Grafico 5: La superficie delle categorie di uso effettivo nella regione della Costa Slovena, un confronto tra il 2002 e il 2015

is still undergoing the process of the overgrowing of the agricultural land by forest. These changes include the decrease of the permanent meadows area and increase of the forest area and »trees and shrubs« and »agricultural land overgown with forest trees«. The first landscape objective is therefore not met. Small increase of the orchards and stable area of vineyards is congruent with the second objective. The last two objectives can not be assessed from the land use data. All the evaluated policy measures are in general in favor of stated landscape objectives, but have until now obviously not been effective.

Slovenska obala:

In contrast to the areas in the hinterland, the area adjacent to the coast is characterized by intensive building processes. The major agricultural categories, fields, grassland as well as vineyards decreased accordingly, while orchards and olive groves increased. The landscape objectives for this region are very specific, so the effect of these processes would have to be verified on site. Some of the policy measures could also contradict these objectives, especially the one requiring abandonment of intensive use on the northern, erosion prone slopes.

Slovenska Istra:

Forest is the prevailing feature in Slovenska Istra, and it further increased in the observed period. Unlike in the rest of the units, fields as well as olive groves also increased. On the other hand the area of the permanent meadows decreased for more than half of the area in 2002. So the general objective of upkeeping the agricultural land has been only partly achieved. For the assessment of other objectives more detailed data would be needed. The measures targeting grassland preservation should have beneficial effect in this region, but have until now obviously not had the desired effect. Similar to the Slovenska obala unit, the policy measures which aim towards cultivation could contradict the proposed abandonment of use on the northern, erosion prone slopes.

Table 8: Evaluation results for Slovenska Istra
Preglednica 8: Rezultati vrednotenja za Slovensko Istro
Tabella 8: I risultati della valutazione per Istria Slovena

Slovenska Istra	Guidelines referring to cultural landscape					
Policy measures	Preserve the features of karstic edge Prevent the abandonment of agricultural land Preserve the typical vegetation along the streams (upper Rizana) Revitalize the meliorated agricultural areas with planting of the bushes and trees along the main lines in landscape (paths, property borders, terraces) Leave the abandoned terraces on steep slopes to natural overgrowth to prevent erosion					
	1	2	3	4	5	agr
Preservation of permanent grassland	o	+	o	o/+	o	o/+
Preservation of pastures	o	+	o	o	-	+/-
Preservation of traditional orchards	o	+	o	o/+	o/-	o/+
Preservation of landscape features (trees, shrubs, hedges…)	o	o	+	+	o	+
Preservation of landscape features (geomorphology, terraces…)	+	o/+	+	+	-	+/-
aggregate	o	+	+	+	-	+/-

DISCUSSION AND CONCLUSIONS

Integration of polices in the horizontal and vertical dimension has come to the front of the desired approach for better governance in the EU. Integration of the nature conservation – biodiversity objectives into agricultural policy measures is an example of horizontal integration. However, as these policy measures also directly target cultural landscapes, it is necessary for them to also observe landscape diversity. Therefore, the vertical integration should also be considered. The TIA approach, which was used in this paper to analyse the potential impacts of EU policy measures on regional (local) level indicated the potentials and also barriers of evaluating in the multilevel contexts. The use of map analysis, which disclosed the change in landuse during the last decade, was useful to explain the contemporary trends and helped to relate the relevance (although not the actual cause-effect relation) of policy measures in each of the observed regions.

Although there are common trends threatening landscape diversity in Slovenia; such as intensification of land cultivation on the one hand and its abandonment and forest overgrowth on the other; there are considerable differences on the regional and local scales. The landscape character as well as trends observed in the landuse change data differ considerably among the six units included in the analysis. The landscape diversity in the six landscape units of the Slovenian coastal regions is reflected in different landscape objectives. Vipavska dolina is characterized by intensive adgricultural land use, which already led to degradation of landscape and biodiversity. In this respect it is the most similar to an »average« European agricultural region, and would profit from extensification of agricultural practices. Kras is very different as it is still undergoing agricultural land abandonment and overgrowing. Here the support for revitalizing traditional agricultural practice would be beneficial for revitalizing (agri)cultural landscape. Slovenska obala is specific for being under strong development pressures, therefore agricultural land and specifically its natural features should be protected effectively.

The majority of the policy measures were assessed - as expected – positive, although there are also some ambiguous scores. Landuse data were useful for the interpretation and argumentation for the assessment. For example landscsape objectives call for preservation of both the orchards and vineyards in most of the observed units. The difference in trends (increase for the former and decrease for the latter) could be attributed to the fact that there is a policy instrument targeting orchards, but not a specific one for the vineyards. The measure »preservation of permanent grassland and pastures« targets some of the observed changes in a favourable way. However, as these measures have been in place already for some time now, they obviously did not achieve the results (in Kras, Goriška Brda and Slovenska Istra units). There are also measures where negative impacts could be expected; i.e. all measures supporting further cultivation may contradict with the landscape objective re-

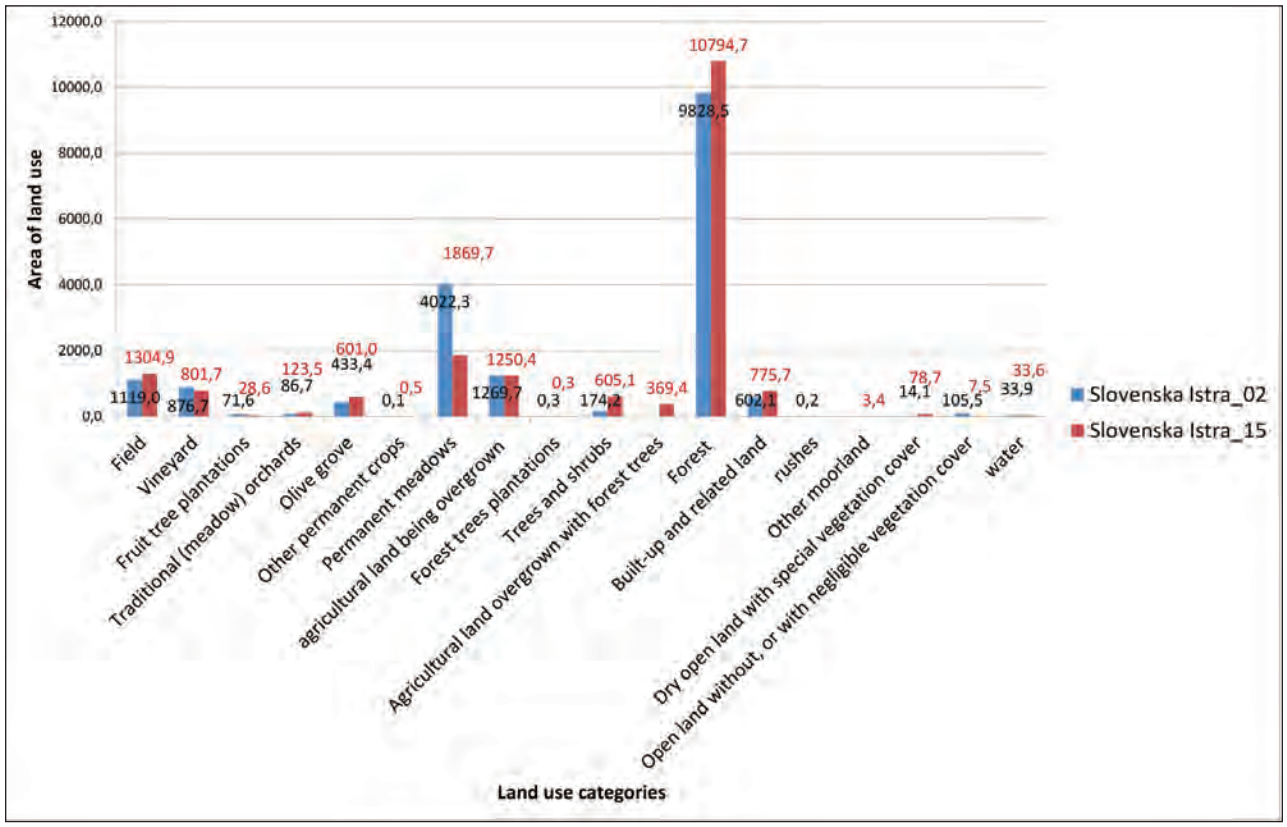


Chart 6: Area of the actual land use categories in the coastal region Slovenska Istra, comparison between the years 2002 and 2015
Grafikon 6: Površina kategorj dejanske rabe v Slovenski Istri, primerjava med letoma 2002 in 2015
Grafico 6: La superficie delle categorie di uso effettivo in Istria Slovena, un confronto tra il 2002 e il 2015

quiring abandonment of intensive use on the northern, erosion prone slopes in Slovenska obala and Slovenska Istra units. For some of the objectives, which refer to specific land feature (i.e. Preserve the rocky outlook on Skalnica and Sveta gora slopes, Preserve fields in the pothole bottoms, Preserve the features of karstic edge), it was difficult to assess the relevance of policy measures. Also the landuse data analysis was at this stage too general to allow for concluding coments.

The question of landscape objectives; i.e the reference for the evaluation seems to be a pertinent one in the policy development. The analysed policy documents consider the desired state of cultural landscape as static; either in its present state or even a reconstruction of some near-past state. For the nature conservation objectives, this reference state is 2004, the year when Slovenia accessed EU. The refusing to accept landscape change can be explained by the meanings invested in landscapes which come to represent symbolic value and important element of individual and collective identity (Golobič, Kučan, 2004). Change of a symbol's appearance requires people to »reinvent« own identities. This view is against the inherent dynamism of landscape. Also, similar to fast changing, the »frozen landscape« which prohibit people to interact with them, lose their capacity to be carriers of identity. Marusic et al claim that »preserving of cultural landscape is not maintaining its present form but rather maintenance of the balance and vitality of its functions« (Marusic et al, 1998, p.66). Instead of standards, trying to hit the »moving target« of a vital and sustainable landuse seem the best approach for achieving landscape quality.

This dynamics and dependence of landscape patterns from the socio-economic and political conext can be illustrated by an example from the Krkavče village in observed region, provided by Ažman Momirski and Matej Gabrovec (Ažman Momirski, Gabrovec, 2014). They described several phases in the development of terraced landscapes: in the 19th century, at the time of Austro-Hungarian monarchy, winegrowing was in the forefront; in the 20th century, agriculture was redirected from Mediterranean cultures to crop husbandry; the Yugoslavia era was typical of the abandoning and overgrowing of farming areas; and after 1991, at the time of Slovenia, market-oriented olive production has taken the lead. The latter trend was confirmed in our research,

with olive groves as the only agricultural land use category, which increased in all analysed landscape units.

This contribution presents an approach for analyzing the policy impacts in a multilevel context. While several concluding answers could not be given at this stage, the test indicates that such an analysis is useful for providing feedback to be used in the policy development cycle. In particular, the method would have to be supplemented by a more detailed map analysis, field work and interviews with stakeholders (i.e. agricultural consultants) to enable better support for cause-effect conclusions.

POTENCIALNI VPLIVI POLITIK EU NA RAZNOLIKOST KULTURNE KRAJINE: PRIMER SLOVENSKIH OBALNIH KRAJIN

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POVZETEK

Kljub pomenu kulturne krajine za nacionalno in lokalno identiteto v Sloveniji nimamo politike, ki bi izrecno in koherentno obravnavala razvoj in varstvo krajin. Zato tudi ni instrumenta, ki bi usklajeval vplive različnih predpisov, predvsem s področij kmetijstva in varstva narave, na krajino. Večina teh politik je zasnovana na ravni Evropske unije, pri njihovem prenosu na nacionalno raven pa niso bile ocenjene posledice za pestrost slovenskih krajin. V prispevku je uporabljen pristop ocene prostorskih učinkov (Territorial impact assessemnt – TIA), na primeru vpliva ukrepov kmetijske politike z naravovarstvenimi cilji na raznolikost kulturne krajine v šestih krajinskih enotah slovenske obalne regije. Njihova velika krajinska pestrost je upoštevana v obstoječih (neformalnih) smernicah za upravljanje, ki so bile uporabljene kot referenčni okvir za vrednotenje učinkov. Pričakovani učinki evropskih ukrepov so pozitivni v tistih dveh krajinskih enotah, kjer so bodisi intenzifikacija bodisi procesi zaraščanja že zmanjšali krajinsko pestrost. V ostalih štirih enotah so pričakovani vplivi težko napovedljivi in lahko vključujejo tudi negativne posledice.

Ključne besede: Evropske politike, varstvo narave, skupna kmetijska politika, pestrost kulturne krajine, presoja učinkov na prostor

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