



Evropski kmetijski sklad za razvoj podeželja:
Evropa investira v podeželje



Use of a GIS-based method for assessment of contribution of RDP to biodiversity, with focus on measure 214

Mojca Hrabar, Oikos, Slovenia

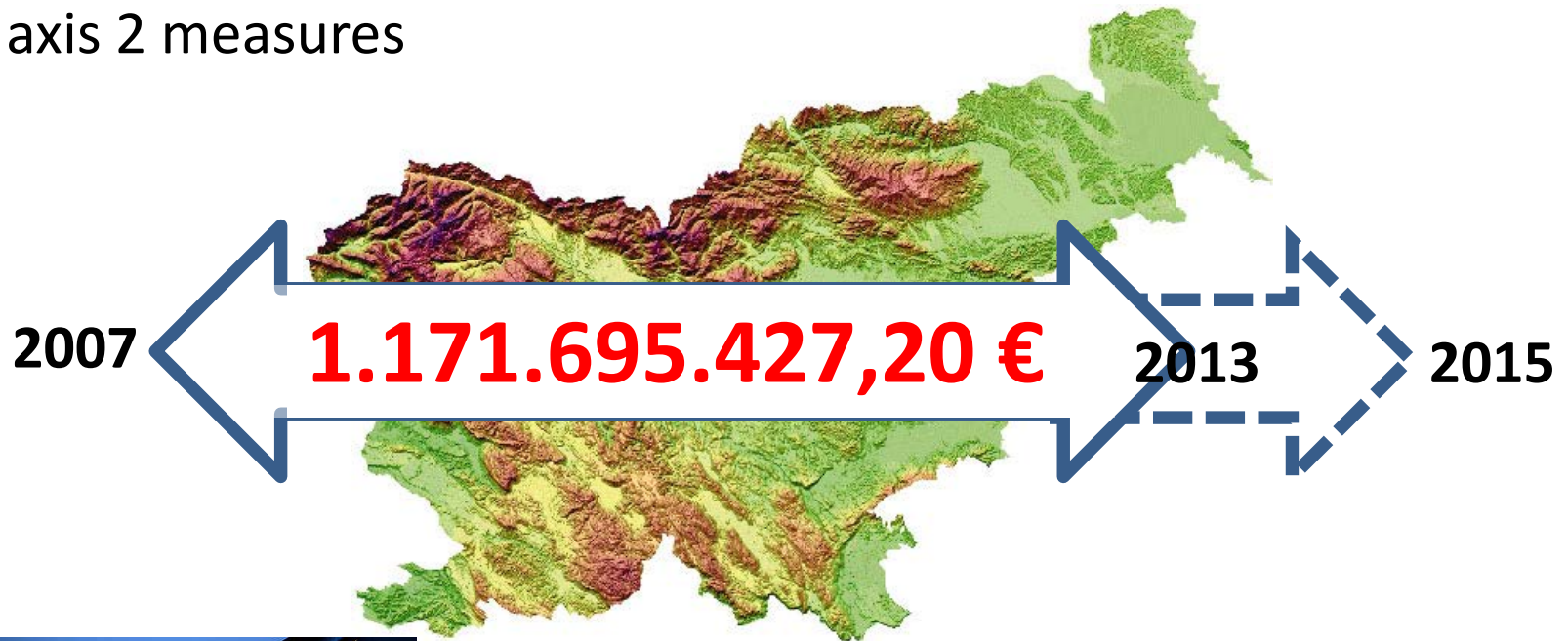
Good Practice Workshop “Methods for Assessing
Impacts of Rural Development Programmes 2007-
2013”, 4-5 July 2016 Palermo (ITALY)

Contents

- *Brief presentation of the context of RDP 2007-2013 for Slovenia*
- *Presentation of GIS-based method for assessment of contribution of RDP to biodiversity, with focus on measure 214*
- *Data requirements, strengths and weaknesses of the proposed methodology*
- *Discussion on the method and potential for further use*

Programme evaluated: Rural Development Programme of Slovenia 2007-2013

- 21 measures in total, more than 50% of funding dedicated to axis 2 measures



Context of evaluation

- started in January 2016, **to be finished in November 2016**
- **Current stage:** an interim report submitted
- **Period evaluated:** 1 January 2007 – 31 December 2015
 - Few exceptions, e.g. measure 214: 31 December 2014 due to data availability
- **Basis:** Capturing the Success of Your RDP: Guidelines for the Ex Post Evaluation of 2007-2013 RDPs, June 2014
- **No specific focus** of evaluation,
- **Evaluation criteria** have **built on the mid-term evaluation** and its evaluation questions from CMEF
 - Impacts on biodiversity were an important feature
- **My role:** team leader, in charge of evaluation of axis 2

Context of evaluation

- **Farming in Slovenia:**

- Mostly small family farms (average: 6,6 ha UAA),
- relatively extensive farming and mixed farming systems
- Intensive farming concentrated in the plains



<http://www.activeslo.com/pohodniska-destinacija.asp?ID=119>



<http://maribor-pohorje.si/druzinska-kmetija-leber-vracko.aspx>

Context of evaluation

- **Slovenia is a biodiversity hotspot:**
 - natural factors, such as diverse terrain, karstic features, migratory routes,...
 - Socioeconomic factors, such as type of farming, population patterns,...

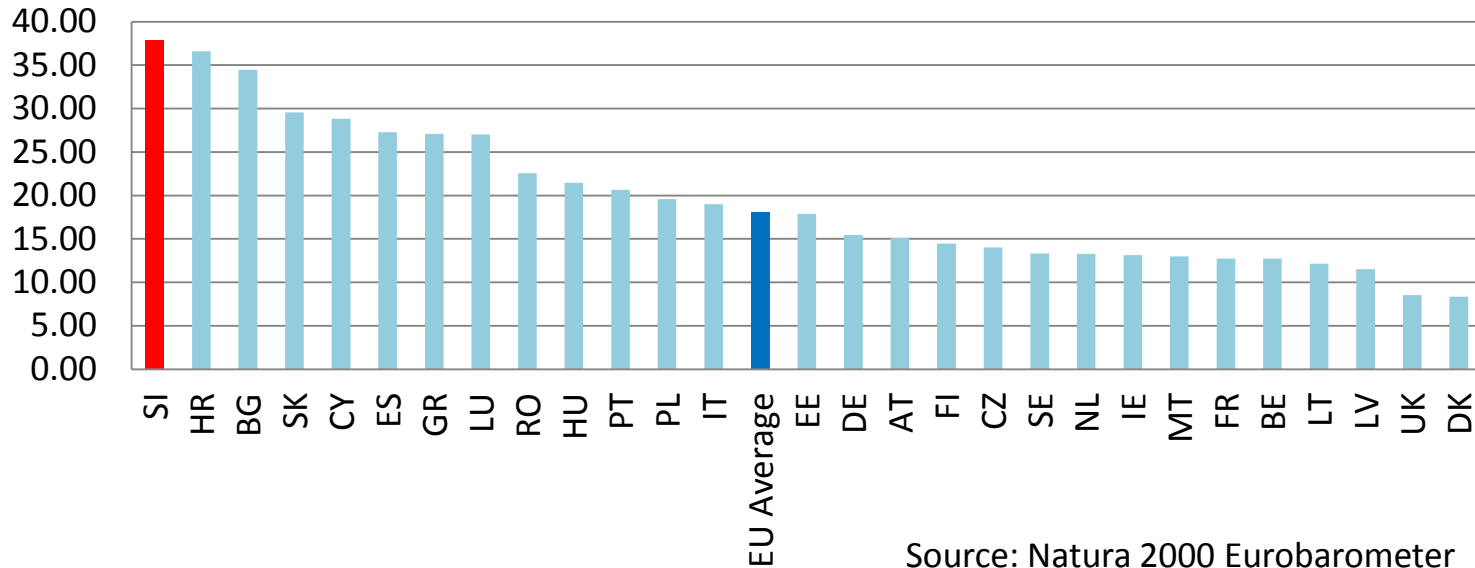


<http://www.dedi.si/dediscina/8-skocjanske-jame>



<http://www.ljubljanskobarje.si/ljubljansko-barje/vlazni-travniki>

Proportion of Natura 2000 in Member States (% of area)



Source: Natura 2000 Eurobarometer



<http://www.ljubljanskobarje.si/>



<http://www.slovenia-trips.com/eng/natural-sights/trip/1095/Velika-planina>

Evaluation: where does biodiversity come in?

- In terms of natural resources of Slovenia, biodiversity conservation is an important aspect of ex-post evaluation of RDP.
- There are **evaluation questions** related to biodiversity:

	Abbr.	Evaluation Question
Progr. related	EQ 3	To what extent has the RDP contributed to protect and enhance natural resources and landscape including, biodiversity and HNV farming and forestry?
Measure related	EQ 16	How and to what extent has the measure contributed to improving the environmental situation?
Specific (set by MA)	SEQ 9	How has RDP 2007-2013 contributed to the strategic objectives of Slovenian Agricultural Policy as enshrined in the Resolution on the strategic orientation of Slovenian agriculture and food industry by 2020 „Ensure food for tomorrow“?
	SEQ 11	What is the total area of UAA in areas of high nature value (HNV) at the level of Slovenia and at the level of implementation of the RDP?

Evaluation: where does biodiversity come in?

- evaluation criteria have built on the mid-term evaluation and its evaluation questions from CMEF

EQ	Evaluation Criteria
EQ 3	The programme promoted conservation of biodiversity . In addition, it promoted conservation and development of farming and forestry systems of high natural value and traditional agricultural landscapes.
EQ 16	Measures 211 and 212 have contributed to protection of rural areas and environmental improvement (HNV, shrub encroachment). Agri-environment measures (214) have contributed to protection and possibly to improvement of habitats and biodiversity.
SEQ 9	Strategic Objective "Sustainable use of production potentials and provision of public goods related to agriculture" entails biodiversity, too. The answer will be provided on the basis of data for and answer to EQ 3 and some other EQs. No additional evaluation criteria.
SEQ 11	The answer will be provided on the basis of data for and answer to EQ 3, there are no additional evaluation criteria.

Method of assessment of contribution of Measure 214 to conservation of biodiversity (EQ16)

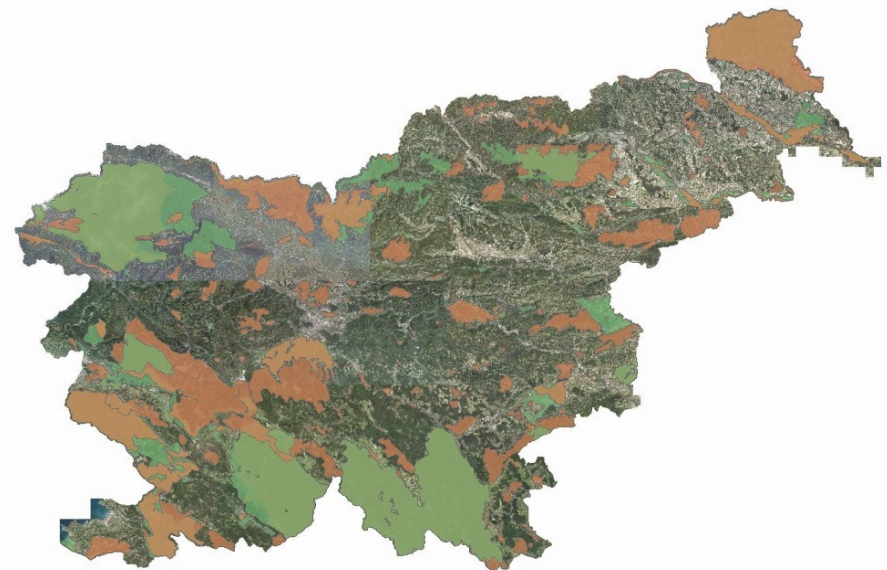
- **Approach:** a combination of theory-based, qualitative and quantitative techniques using GIS
- **Assumption:** some of the 214 submeasures directly support biodiversity, other indirectly. Contribution can be assessed by analysing measure implementation and comparing it to biodiversity data.
- **Sampling frame:** 2007-2014
 - Data for 2015 were not available yet
 - Availability of data for 2004-2007 period?
- **Indicators from RDP monitoring:**
 - Number and % of agricultural holdings participating in certain submeasures of the measure
 - Net area and % of areas under the selected submeasures

**What were the key steps for
assessment of contribution of
Measure 214 to conservation of
biodiversity (EQ16)?**

1. Literature review of information on nature conservation and agriculture in Slovenia

Which species, habitats are most affected by agriculture?

- **Monitoring data** on HNV and Birds Farmland Index
- **Data of IRNSC** - Institute of Republic of Slovenia for Nature Conservation (IRSNC), including Natura 2000 reports and GIS data
- **Data of Management Authorities of Protected Areas**



Natura 2000 sites in Slovenia

Natura site ID	Natura site name	Species/HT Code	Species/Habitat Type Name
SI3000046	Bela Krajina	6510	Lowland hay meadows (<i>Alopecurus pratensis</i> , <i>Sanguisorba officinalis</i>)
SI3000168	Črna dolina pri Grosuplju	1065	<i>Euphydryas aurinia</i>

Example of selected habitat type and species in Natura 2000 sites

2. Analysis of data on implementation of Measure 214

- **23 submeasures:** review of their characteristics and the criteria for their implementation
 - 7 in Group I: Reducing negative impacts of agriculture on the environment
 - 10 Group II: Conservation of natural resources, biodiversity, soil fertility and traditional cultural landscape
 - 6 in Group III: Conservation of protected areas
- **Identification of submeasures that do not significantly contribute to biodiversity - „scoped out“:**
 - Submeasures from Group I because of only weak indirect effect (crop rotation, greening of arable land, integrated agriculture, fruit growing, viticulture, horticulture and organic farming)
 - Submeasure Sustainable livestock breeding from Group II because of no contribution or even negative impact (overgrazing)

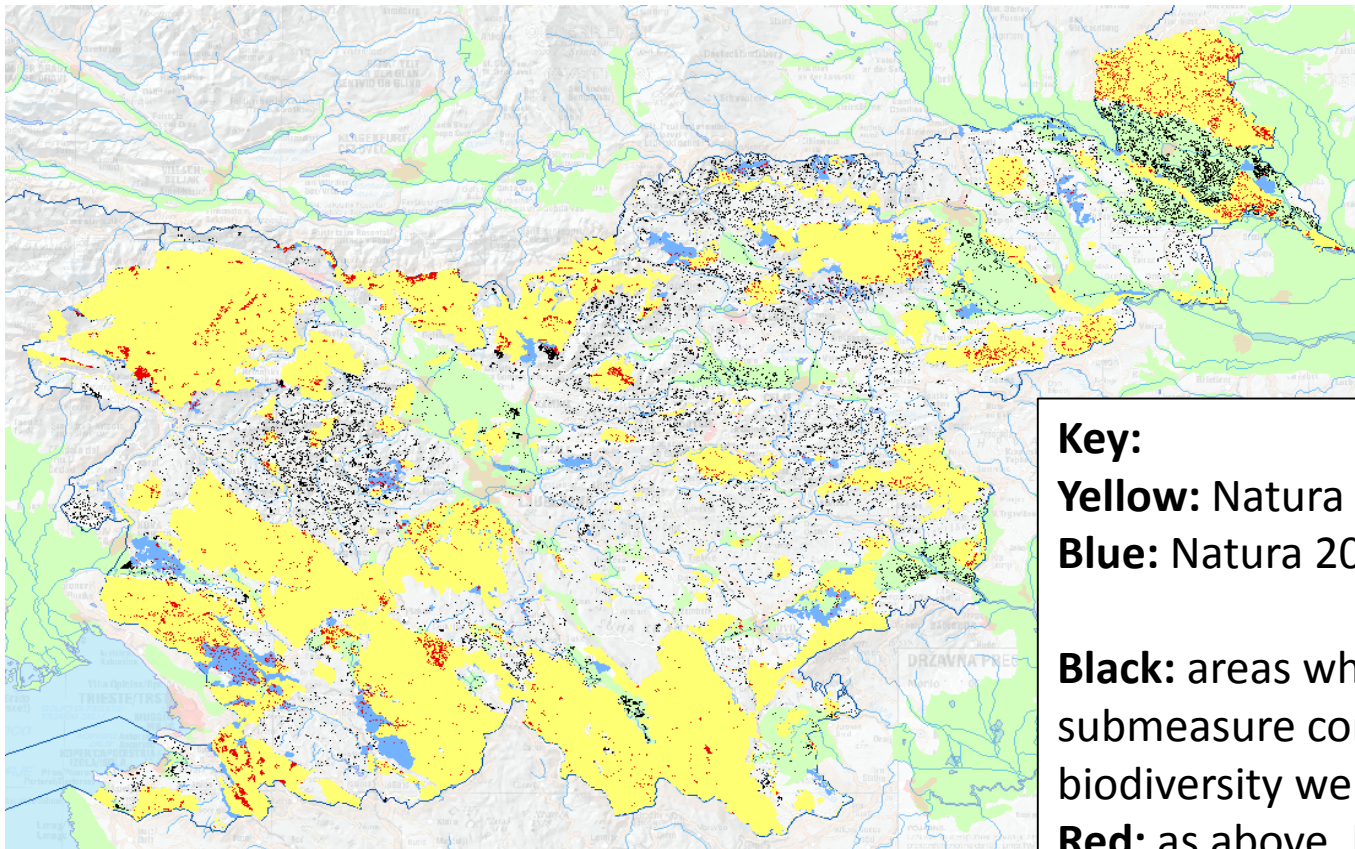
2. Analysis of data on implementation of Measure 214

II / 1	Mountain pastures
II / 2	Mowing of steep meadows
II / 3	Mowing of humpy meadows
II / 4	Meadow orchards
II / 5	Steep vineyards
II / 6	Raising autochthonous and traditional breeds of domestic animals
II / 7	Production of autochthonous and traditional agricultural plant varieties
II / 9	Preservation of extensive grasslands
II / 10	Preservation of extensive karst pastures
III / 1	Livestock farming in core areas of large carnivores
III / 2	Conservation of special grassland habitats
III / 3	Conservation of grassland habitats of butterflies
III / 4	Conservation of litter-raking forests
III / 5	Conservation of humid extensive meadows as habitats of birds in Natura 2000

- **Submeasures II/6, II/7** focus on conservation of genetic resources. **Other submeasures in Group II** are general, focused on preventing shrub encroachment and intensification of farming, thus keeping extensively managed agricultural land.
- Submeasures in **Group III** are most specific, targeting selected species/habitats.

2. Analysis of data on implementation of Measure 214

- GIS analysis of LPIS data of recipients: where have these submeasures been implemented?



Key:

Yellow: Natura 2000 sites

Blue: Natura 2000 expansion in 2013

Black: areas where at least one of the submeasures contributing to biodiversity were implemented

Red: as above, but in Natura 2000 sites

3. Comparison of data on submeasures and nature conservation

- Are areas under selected submeasures higher in biodiversity compared to similar areas, are there less changes?
- have measures been implemented in areas where most needed? Has there been any change in the populations of selected species?
 - GIS data on measure implementation from LPIS and IRSNC data on Natura 2000 species and habitats („distribution zones“)
 - Review of IRSNC data on Natura 2000 monitoring, FBI index

4. Case studies

- further analysis of potential contribution of measure to biodiversity
- Selection of **2 areas with detailed and repeated habitat mapping**: Ljubljansko barje, Goričko – both also protected areas
- Ljubljansko barje might also provide an insight into external impacts on policy success (establishment of protected area in late 2008)



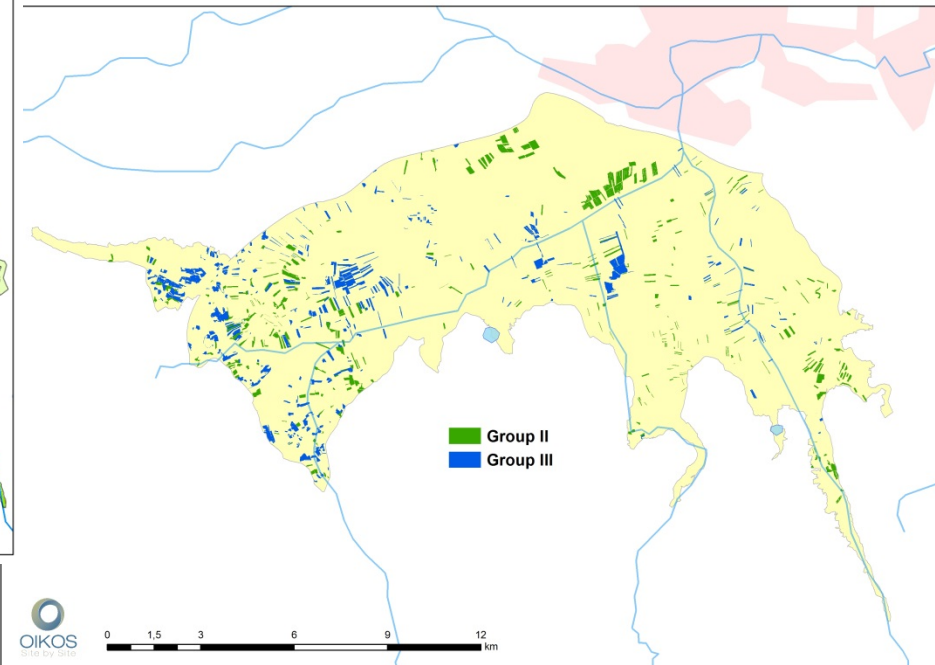
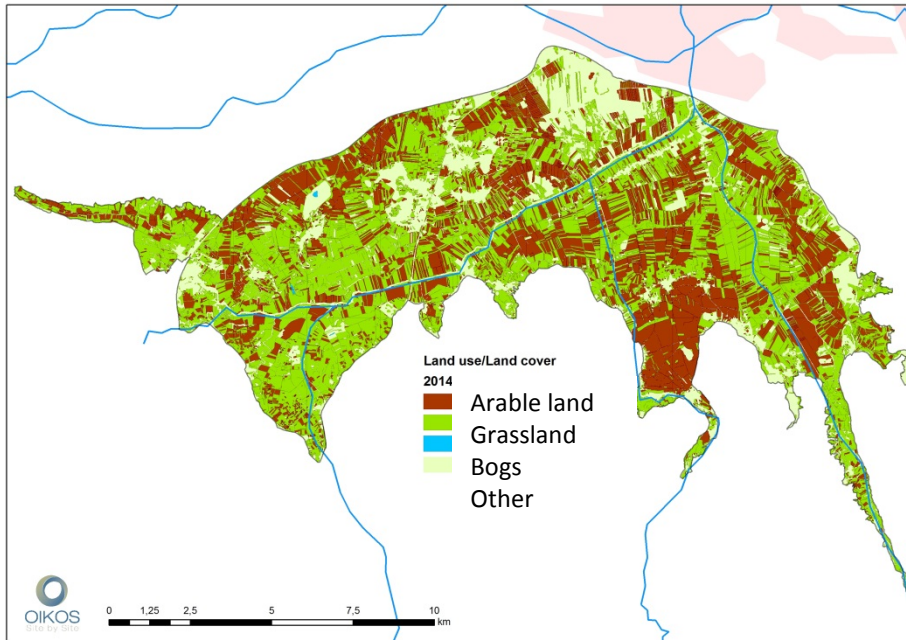
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<http://www.ljubljanskobarje.si/en/ljubljana-moors/the-ljubljana-moors>

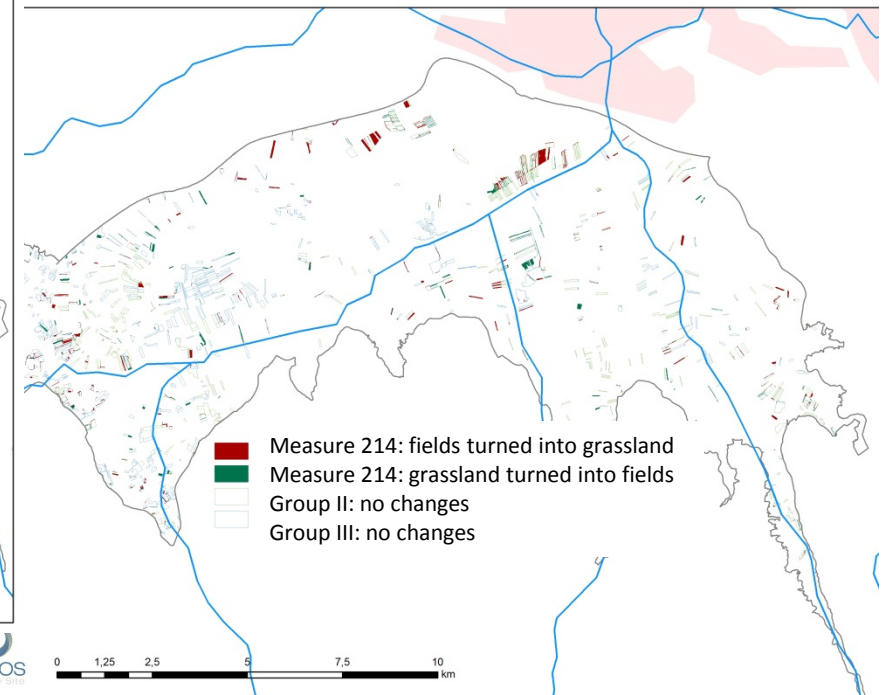
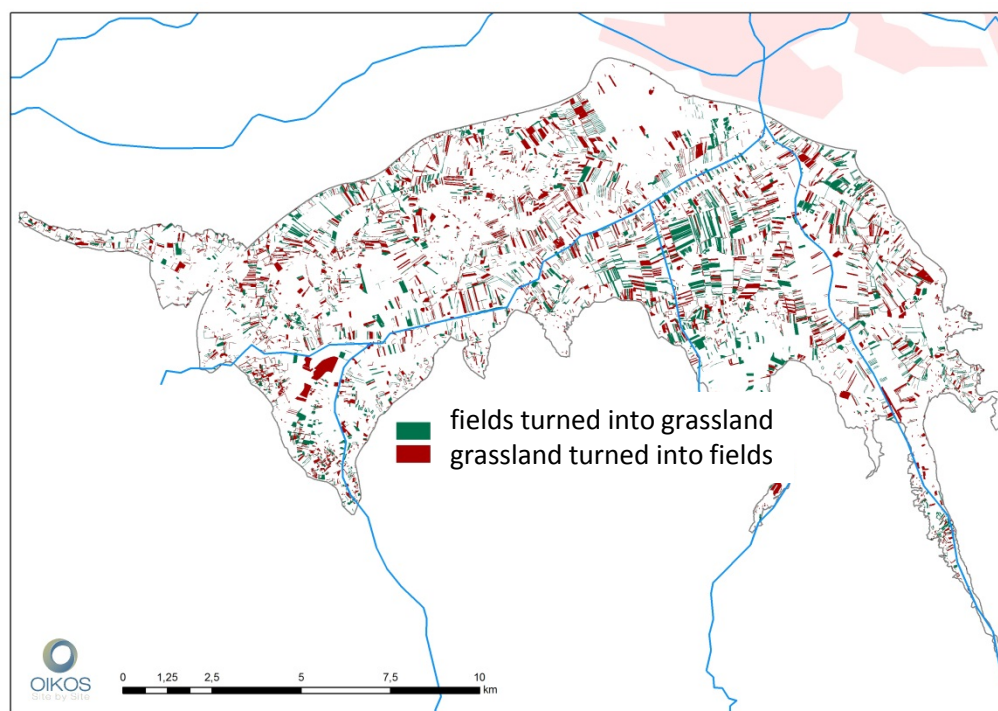
4. Case studies: Ljubljansko barje (Ljubljana Moor)

- Mostly meadows and fields of poor soil quality, interspersed with hedges and woodland
- Map of land use
- Overview of areas in submeasures contributing to biodiversity 2007-2014: quite scattered
 - ownership,
 - Physical condition



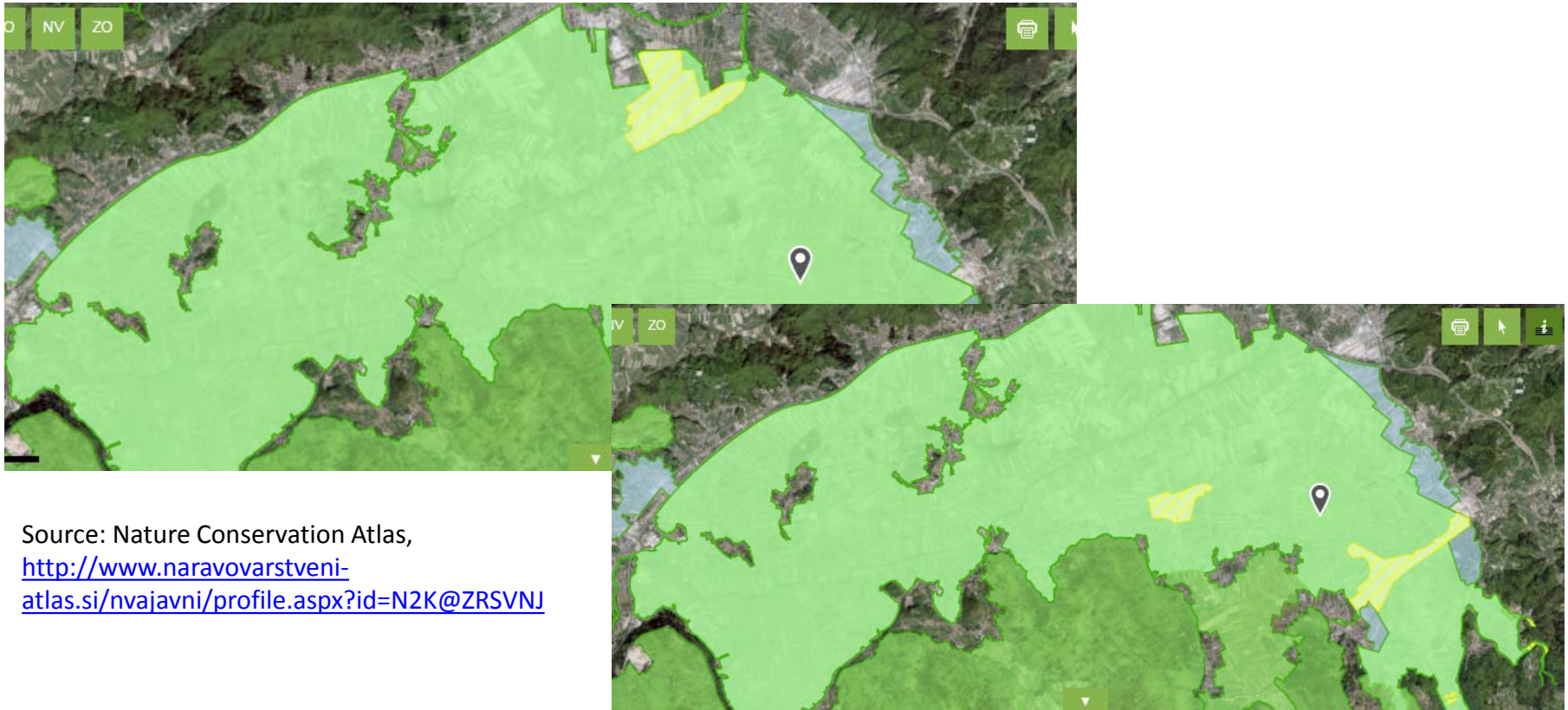
4. Case studies: Ljubljansko barje (Ljubljana Moor)

- Changes in land use and thus habitat quality
 - Changes in areas under selected agri-environmental submeasures mostly occurred before joining the scheme: conversion mostly to grassland ⇒ higher biodiversity



4. Case studies: Ljubljansko barje (Ljubljana Moor)

- Next step: comparison of submeasure data, land use data and data on key species
 - Example: *Crex crex*, *Coenonympha oedippus*



Source: Nature Conservation Atlas,
<http://www.naravovarstveni-atlas.si/nvajavni/profile.aspx?id=N2K@ZRSVNJ>

5. Consultation

- **Focus groups with the stakeholders:** after the GIS analysis (June) and a follow-up before finalising the evaluation report (September)
 - MA, PA, IRSNC, contractors of Natura 2000 monitoring, HNV and FBI monitoring, Managing Authorities of Protected Areas, NGOs
- **Possibly a survey among the recipients** on the observed effects as well as technical aspects of implementation (administration, payment level, feasibility of the requirements)

Data & Information sources

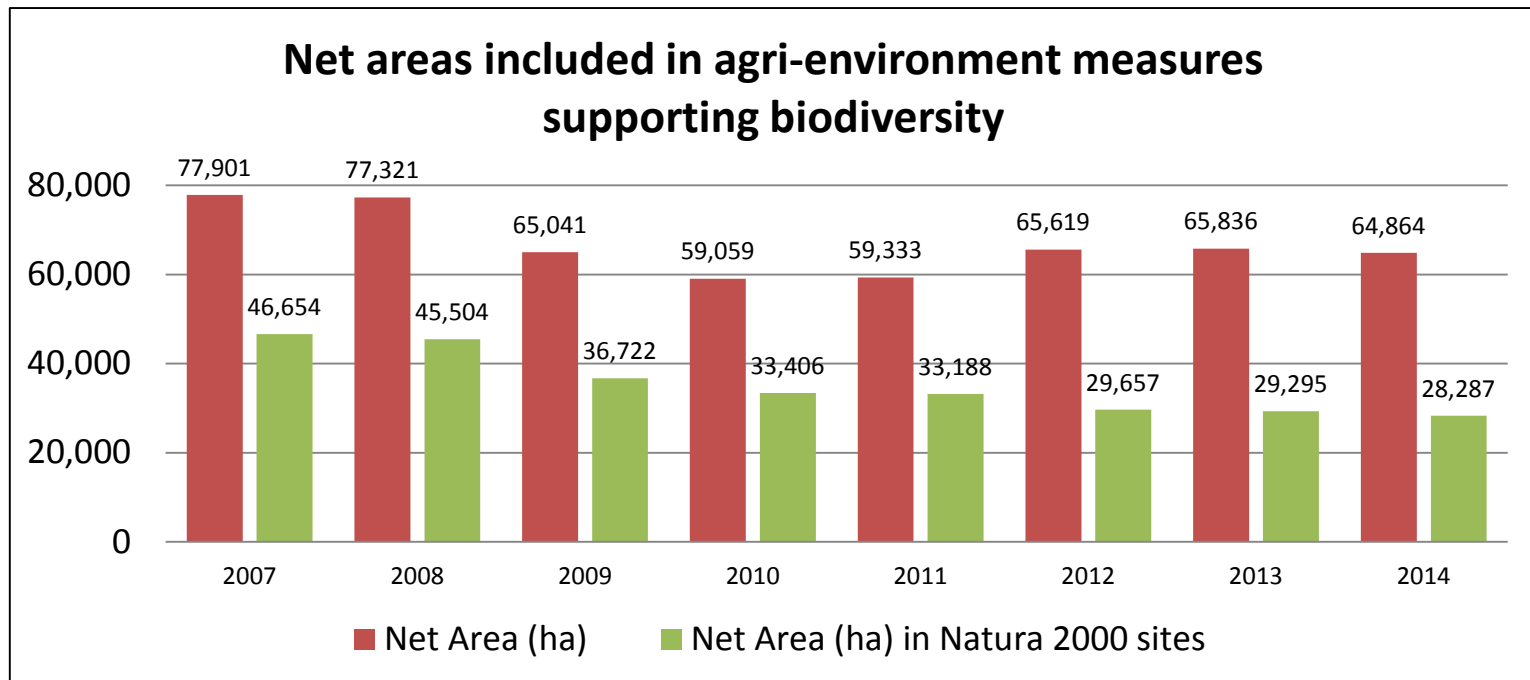
- **Key: GIS data**
 - LPIS of the PA
 - Natura 2000 species and habitats distribution by IRSNC
 - Land use mapping data performed every 3-4 years
- **Data that can be joined with GIS**
 - Natura 2000 data monitoring under the umbrella of IRSNC
 - Monitoring of payments, violations by PA

Data & Information sources

- **Very positive experience:** data sharing between MA, PA and IRSNC is excellent
 - Administrative part (application, justification) is minimal
 - Formatting adjusted to the evaluator's needs
 - Quality of data and level of detail is increasing
- **Challenges**
 - Poor time series, differences in time series of data,
 - inconsistencies in quality of data on species distribution,
 - A lot of data: suitable computing and human capacity is needed,
 - Strain on PA human resources to provide timely support.

Major findings

- Number of recipients and **total area under the measures decreased gradually in Natura 2000 sites**
 - Largest decrease after the recipients from the old programme who joined in 2004 finished their 5-year obligation
 - Decrease was largest in more demanding submeasures (Group III)



Major findings

- **Majority of agri-environment measure was implemented through quite general submeasures**, such as sustainable livestock farming, which often had no effect or might have been even harmful ⇒ to be checked using same approach
 - Quite high payments, little and simple obligations
 - Grazing, early mowing had negative effect on species and habitats targeted by other submeasures
- **Populations of highly specialised species show decline** despite the measures
 - Other factors, including socio-economic trends, fragmentation, weather etc.
 - Time lag in the effects of farming?

Strengths of the method used

- **Potential for counterfactuals:** combining country-level data on Natura 2000 and LPIS could enable comparison between areas under a submeasure and those that are not.
- Builds on **nature conservation data** and can **inform both agricultural policy and nature conservation policy**
 - Natura 2000 Management Plans
 - Protected Area Management Plans

Strengths of the method used

- Use of **3 well-structured monitoring databases**
 - Potential for further integration of databases, combining them with some other
 - Accuracy increases with improved monitoring methods and data capture
- **Sustainability:** obligation for EU-level reporting ensures quality of data and monitoring for years to come.
- Method can be used any time, in any context provided that databases are built and GIS software is available and is thus well transferable.

Weaknesses of the method used

- **Potential for counterfactuals:**
 - the results could simply not be robust enough and data could provide evidence on too small scale to be scaled up without large errors.
 - spatial distribution of farming / proximity to the areas monitored in Natura 2000: could be a problem in countries with low amount of Natura 2000 or Protected Areas
- **Data processing** is demanding in terms of processing power and time
- Reliance on **monitoring databases**
 - quality is important
 - not all the data may be available in other countries (e.g. land use mapping)

Weaknesses of the method used

- Tries to capture the effect of the measure, but **does not net out other effects** (pillar I, other changes)
- **Natura 2000** data were used as a **proxy for biodiversity**, though biodiversity is important also outside of these areas
 - In Slovenia, Natura 2000 largely corresponds also to the Protected Areas and contains all areas with significant biodiversity
 - Biodiversity is important also on local scale, outside of Natura 2000 areas

Lessons & recommendations on the application of the method

- The method could be used to **answer at least partially some evaluation questions:**
 - **EQ16:** contribution to biodiversity conservation. Similar approach (comparison of areas entered the measures with land use/abandonment of arable land) can be used for assessment of contribution of measures 211, 212 and fully answer the question.
 - **EQ3:** the assessment of contribution to biodiversity conservation can be used as part of the answer as biodiversity is one of the natural resources
- **Cooperation of different authorities in charge of monitoring is necessary for:**
 - Planning – setting monitoring priorities to maximise results for everyone
 - Compatibility

Lessons & recommendations on the application of the method

- **Good and easily compatible databases** should be established
 - GIS information
 - Monitoring information
- **Combination of information from various sources** is essential
- **Case studies** help to increase level of detail and obtain different points of view.
- In the new programming period, the method could be used also for monitoring the contribution of Pillar I.

Open issues to be discussed

- The method could be used in a similar way for assessment needed for EQ 3:
 - LPIS data of the investment-focused measures (121, 125 to some extent 112) could be used and the contribution largely extrapolated depending on the type of farming
- How to net out the effects of Pillar I?
- How to net out the effects of other measures and other factors that influence biodiversity?
 - Habitat fragmentation due to land use planning decisions
 - Water management
 - Creation of new protected areas (Ljubljansko barje)

Many thanks!
Any questions?

Mojca Hrabar

mojca.hrabar@oikos.si

tel. +386 31 860 687

