Evaluation of RDP effects on biodiversity and emissions in Slovenia.

Lessons learned from the enhanced Annual Implementation Report in 2019

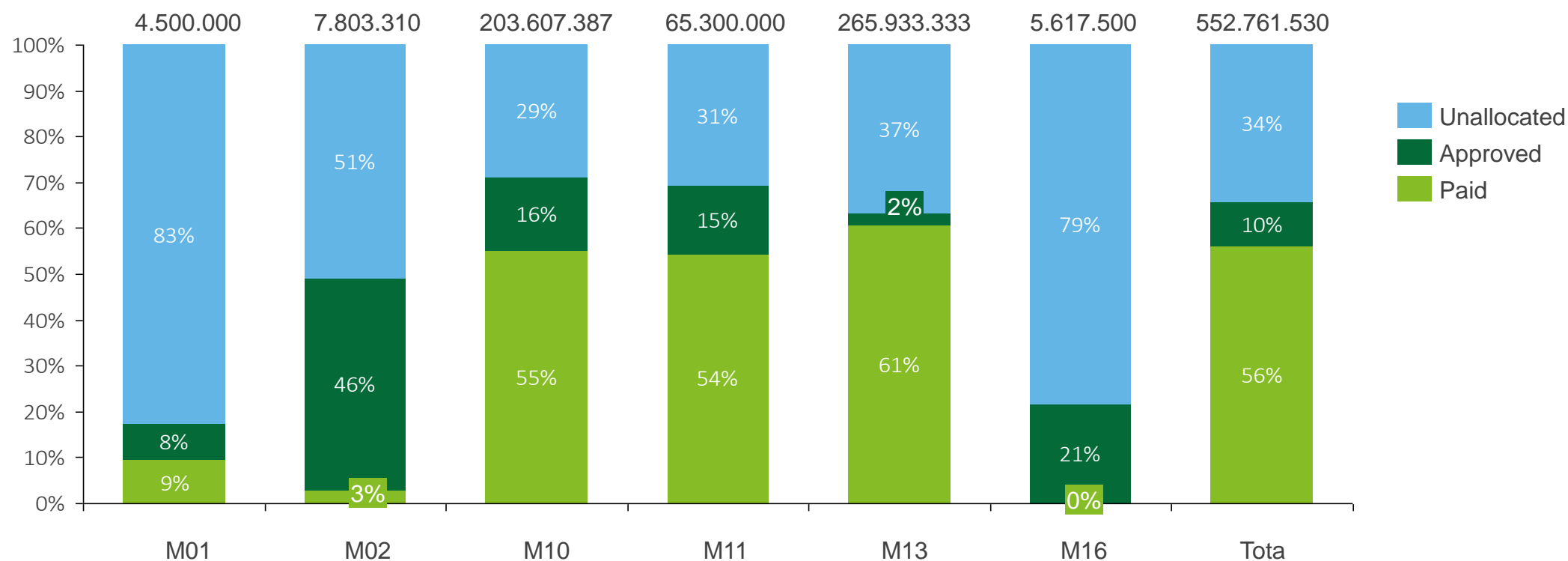GREGOR SKENDER

EVALUATOR

DELOITTE SLOVENIA

Outline

- Background

- Approach used to answer the CEQ

- Short summary of the main findings

- Limitations

- Recommendations for the RDP ex post evaluation in 2023

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Planned and realized funding by Priority

Priority 4 (primary contribution)

**Priority 5 –** not programmed, therefore no measures with primary contribution!

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Approach used to answer CEQ #8

Judgment Criteria	Indicator	Methods	Data
Biodiversity on contracted land has been restored, preserved and enhanced	R7 / T9: % UAA contracted for biodiversity/landscape	Ministry methodology	Implementation data on M10 and M11 (panel data)
	I.08: Farmland Bird Index (FBI)	Combined Propensity Score Matching + verification via secondary sources based on Boosted Regression Trees (BRT)	FBI raw spatial data FBI report
	Share of spatial measures supporting biodiversity, of which target operations, operations preserving the landscape and operations with indirect effect	Spatial analysis (without overlaps	Implementation data on M10 and M11 (GIS)
	Population of Crex Crex specimens on contracted land	Linear regression model	FBI panel data

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Short summary of the main findings

In terms of overall coverage with measures contributing the restoration, conservation and improvement of biodiversity the evaluation found that:

- Overall level of coverage is satisfactory

- Requirements under M10 are too broad to enable direct effect on biodiversity (with the exception of target measures)

- Involvement in target M10 operations is not satisfactory (<50%)
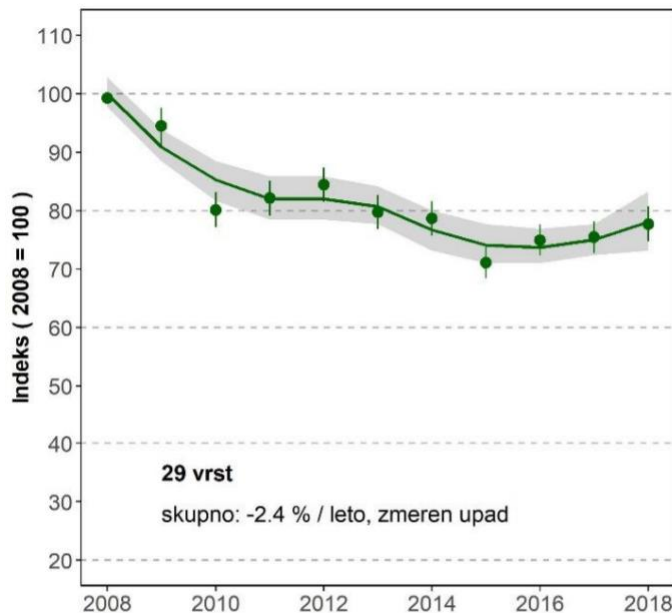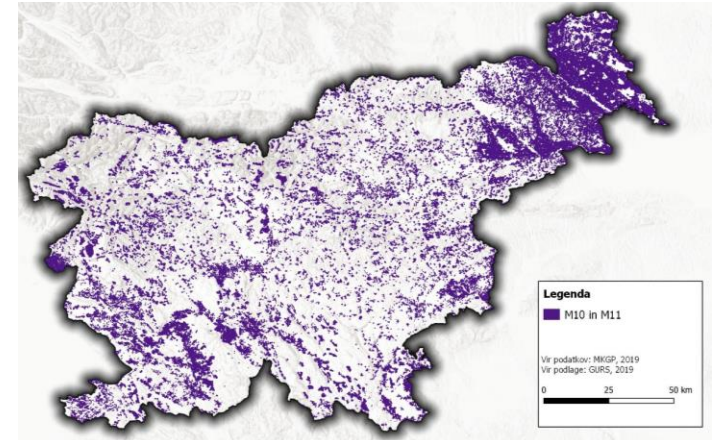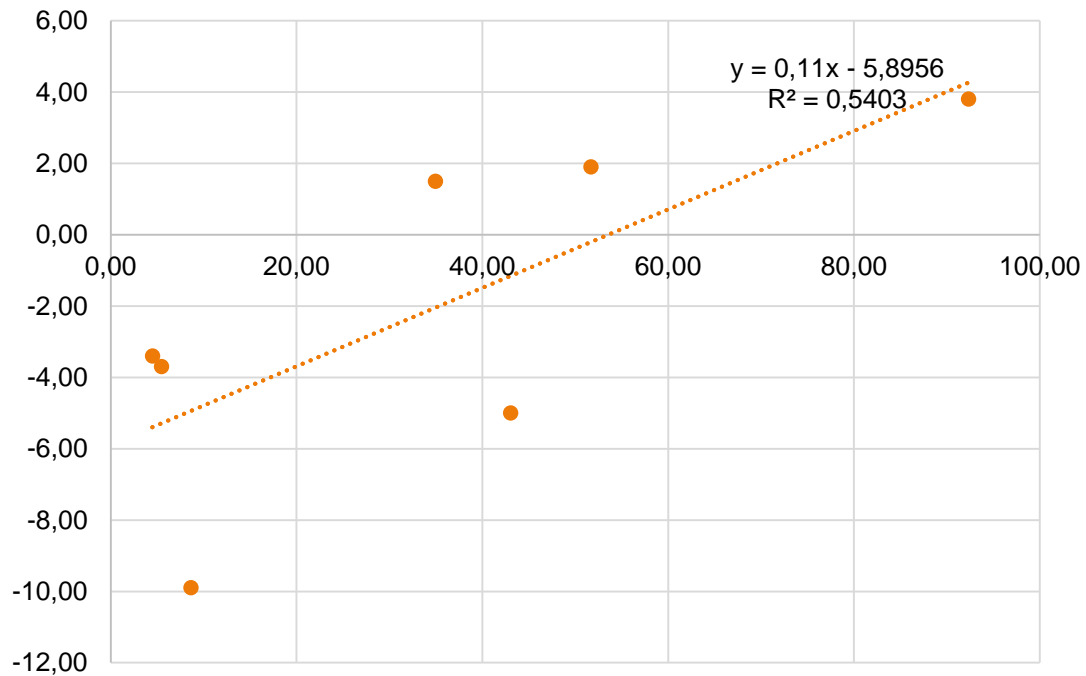

FBI-related analysis showed that:

- Signs of trend stabilization
- Direct RDP impact on the index value not statistically significant
- Other factors have a much stronger effect than M10 and M11 operations (particularly landscape)
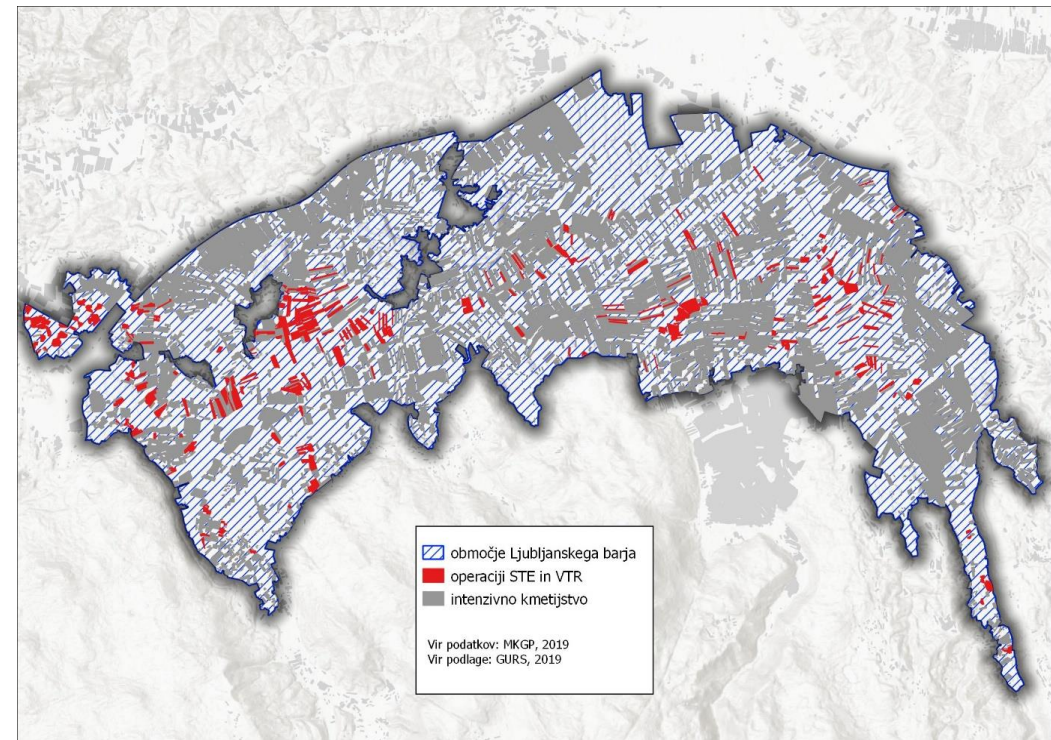
Other findings:

- High level of awareness from the side of beneficiaries
- Positive correlation between Crex Crex population and target operations (VTR_KOS & STE_KOS)
- Insufficient financial attractiveness of target operations

Micro analysis of FBI data

% of involvement in M10 target operations and population change for selected areas

$y = 0{,}11x - 5{,}8956$
$R^2 = 0{,}5403$

Target operation (VTR_KOS & STE_KOS) vs. Intensive land use on Ljubljansko barje

- območje Ljubljanskega barja
- operaciji STE in VTR
- intenzivno kmetijstvo

Vir podatkov: MKGP, 2019
Vir podlage: GURS, 2019

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Main limitations of the approach

- Small sample & diversity of the landscape makes it difficult to extrapolate (only 15 comparable plots identified in control / test group – this can be an issue in small countries)

- Extreme geographic and biological diversity (Slovenia is among the European countries with the biggest diversity of flora and fauna)

- Overlapping implementation periods (2007-2013 & 2014-2020) with similar operations aimed at protecting biodiversity (impossible to delimitate impacts) – this is why it was tested in smaller areas and positive correlations found between target operations and targeted species population

- Monitoring data (FDI & butterflies) not adapted to the requirements of RDP evaluation

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Recommendations for the RDP ex post evaluation in 2023

- Increased financial attractiveness of target operations for the preservation of biodiversity under M10

- Less strict entry conditions for certain operations (e.g. preservation of hedges, which are currently limited only to the control layer in the Land Parcel Identification System)

- Targeted environmental monitoring missions dedicated to RDP interventions

- Ad-hoc evaluation projects aimed at assessing the programme impact on biodiversity (i.e. outside of the overall RDP evaluation)
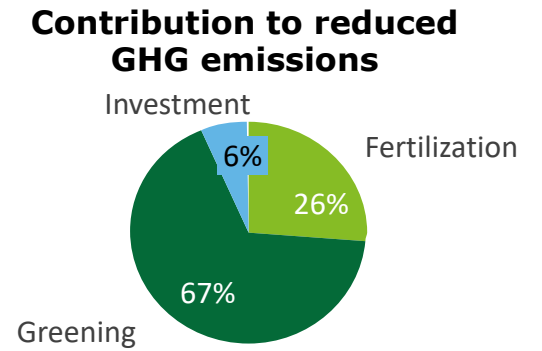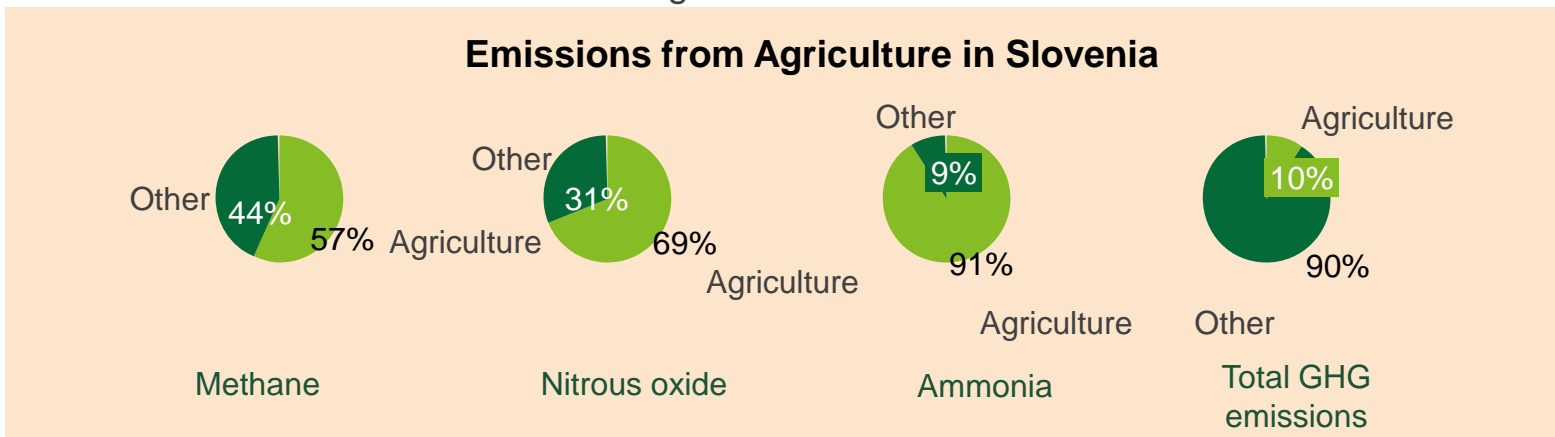
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Approach used to answer the CEQ #14

Judgment Criteria	Indicator	Methods	Data
Reduced GHG and ammonia emissions from agriculture	R17/T18 -% of agricultural land under management contracts targeting reduction of GHG and/or ammonia emissions	Spatial analysis (relevant M10 and M11 requirements on lower ammonia and GHG emissions)	Implementation data
	R18: Reduced emissions of methane and nitrous oxide	IPCC (2006) & EEA/EMEP (2016) methodology – own analysis for the calculation of the contribution of M10 requirements (fertilization with low emissions, „greening") and investments under M04	Implementation data, Environmental agency's indicators, calculations by the Agricultural Institute of Slovenia (subcontractor)
	R19: Reduced ammonia emissions	EEA/EMEP (2016) methodology – own analysis for the calculation of the contribution of M10 requirements (fertilization with low emissions, „greening") and investments under M04	Implementation data, Environmental agency's indicators, calculations by the Agricultural Institute of Slovenia (subcontractor)
	Structure of GHG and ammonia emissions	Descriptive approach	National statistics
	Share of fields included in Nmin analysis (incl. Hops), sowing plants for „green fertilization", greening of arable land, sowing non-winter honey crops, organic farming (grassland / arrable land), low-emmisison organic fertilization (incl. Hops and grasslands), livestock rearingin areas of occurrence of large carnivores, mountain pasture,…	Basic univariate statistics	Implementation data

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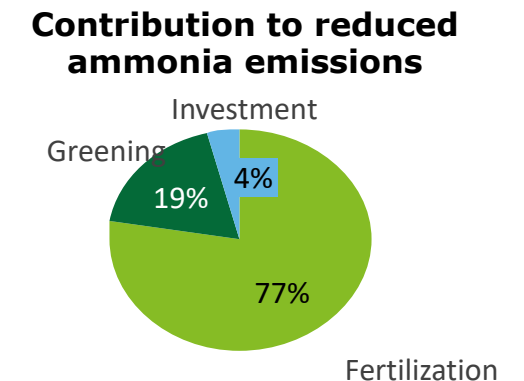
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Short summary of the main findings

On the basis of the scope of the implementation of measures, and expert judgement of the measure contribution factors, the following has been established:

1. Although through secondary effects, the RDP has significantly contributed to the reduction of nitrous oxide and ammonia emissions
2. Innovative approaches contributing to reduced emissions of nitrous oxide and ammonia in Slovenia, supported through the programme, mainly in new fertilization techniques on arable land
3. Small contribution also from investment into technological upgrades to stables as well as investment in manure storage or facilities
4. Low take-up of these new technique on grasslands
5. The RDP failed to frame adequate measures to reduce methane emissions from livestock
6. There is little interest to invest into small and micro biogas plants that could reduce methane emissions from livestock manure storage facilities

Contribution to reduced GHG emissions

Investment
6%
Fertilization
26%
Greening
67%

Total: -7,077 t CO2 eq.

Emissions from Agriculture in Slovenia

Other 44% 57%
Methane

Other 31% 69% Agriculture
Nitrous oxide

Other 9% 91%
Agriculture
Ammonia

Agriculture 10% 90% Other
Total GHG emissions

Contribution to reduced ammonia emissions

Greening Investment
19% 4%
Fertilization
77%

Total: -283 t

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Example of a calculation of investment contribution to N_2O and NH_3 emissions

Technological upgrading of stables

Storage construction

Storage coverage

Direct and indirect NH3 emission reduction

Direct and indirect N2O emission reduction

Total contribution

Učinek investicij		Tehnološke posodobitve hlevov	Ureditev skladišč	Pokritje skladišč	skupaj
Zmanjšanje NH3 neposredno (t)		4,577754		4,236666	8,814421
Zmanjšanje NH3 prek zmanjšanja porabe mineralnih gnojil (t)		0,11	2,07	0,10	2,281053
Zmanjšanje skupaj (t)		4,687084	2,070542	4,337847	11,09547
Emisije skupaj		16815,01	16815,01	16815,01	
Zmanjšanje %		0,027874	0,012314	0,025797	0,065986
Zmanjšanje N2O - neposredno (t ekv CO2)		-17,654			-17,654
Zmanjšanje N2O prek zmanjšanja porabe mineralnih gnojil (t ekv CO2)		22	422	21	464,4968
Zmanjšanje skupaj		4,609181	421,6299	20,60375	446,8429
Emisije skupaj (t)		1687693	1687693	1687693	
Zmanjšanje %		0,000273	0,024983	0,001221	0,026477

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Main limitations of the approach

- P5 was not programmed in Slovenia, therefore no actual monitoring data was available

- Dependent on expert judgements of factor values (e.g. emissions per m^3, ha^2)

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Recommendations for the RDP ex post evaluation in 2023

- Strict conditioning may result in less interest from farmers to implement measures on grasslands - this will affect the results of the ex post evaluation

- There is a need to reduce such strict conditioning and popularize some measures, especially those that required maximum reach possible – with potential longer-term impact

- Sample monitoring of the effectiveness of investments in reducing GHG & ammonia emissions (given that P5 was not programmed in Slovenia)

- Reporting by beneficiaries

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Thank you

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