Evaluation of RDP environmental impacts in Czech Republic: lessons learnt from the Annual Implementation Report in 2019

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HOW TO DEMONSTRATE RDP ACHIEVEMENTS AND IMPACTS: LESSONS LEARNED FROM THE EVALUATIONS REPORTED IN THE AIRS SUBMITTED IN 2019. 11-12 DECEMBER 2019. SEVILLA (SPAIN)

Outline

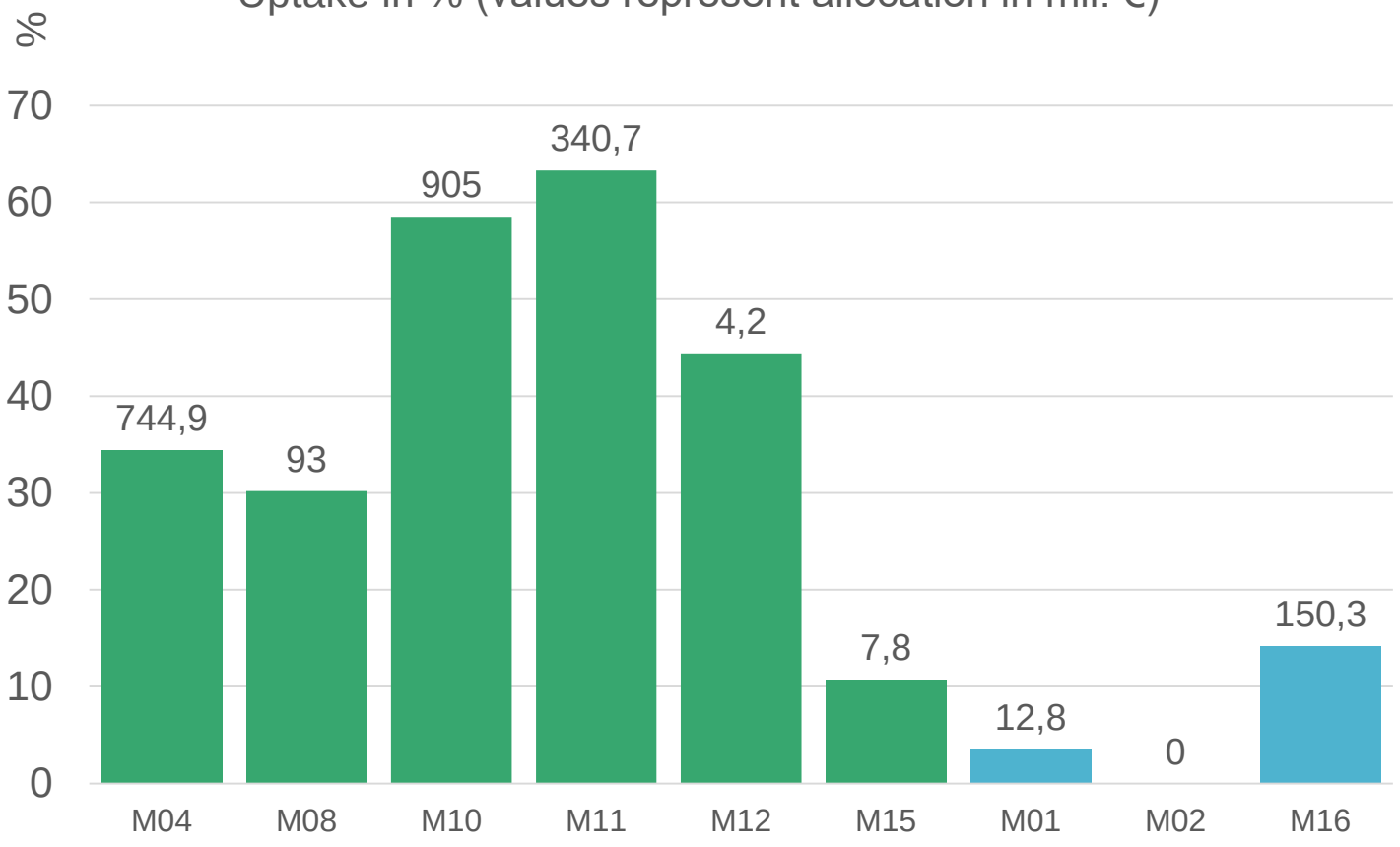
- Background
- Approach used to answering the CEQs 26 and 28
- Short summary of methodology, its limitations and findings
- Recommendations for the RDP ex post evaluation in 2023

Background

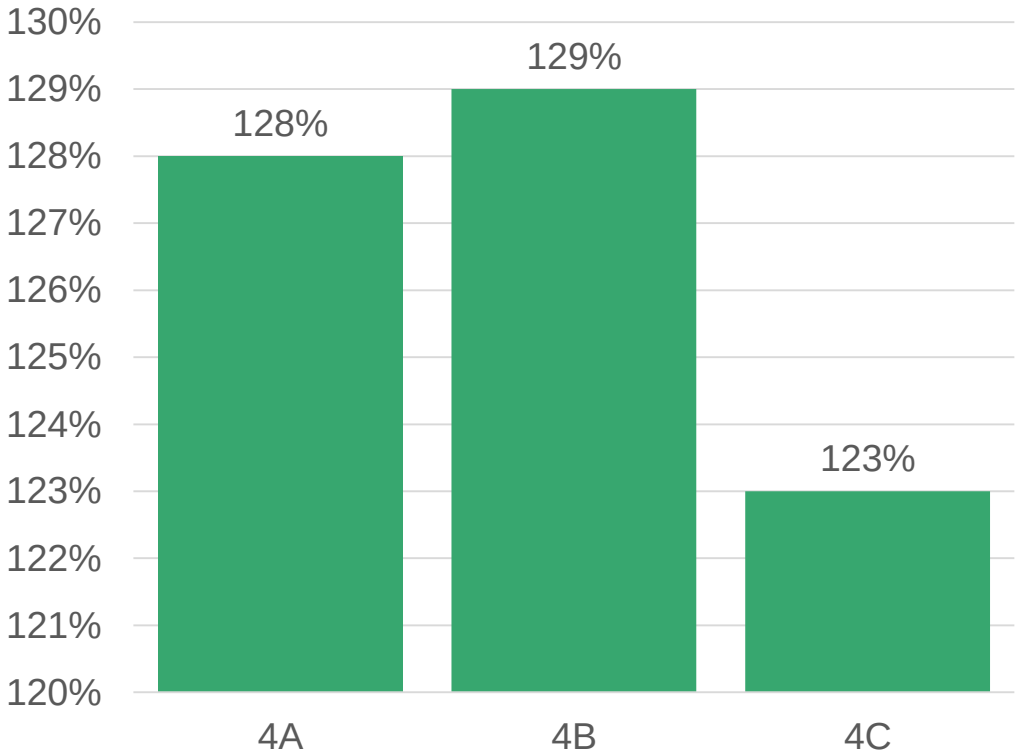
- Environmental measures on arable land: M10 – M13; relevant indicators I.08 – I.13
- Cumulative allocation over 2 billion €; about 57,5 % of total CZ RDP budget allocation
- Satisfactory levels of uptake (45 – 63 % by the end of 2018)
- Very good progress of implementation – all measures already reached their target values of area under commitments

Level of uptake in Priority 4 by 31.12.2018

Uptake in % (values represent allocation in mil. €)



Affected area / commitments in % of 2023 target values

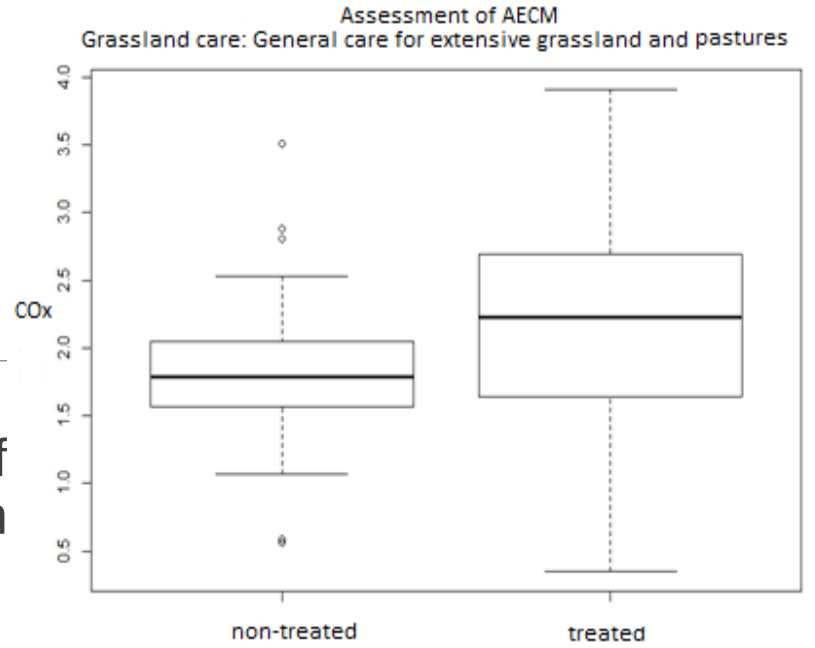


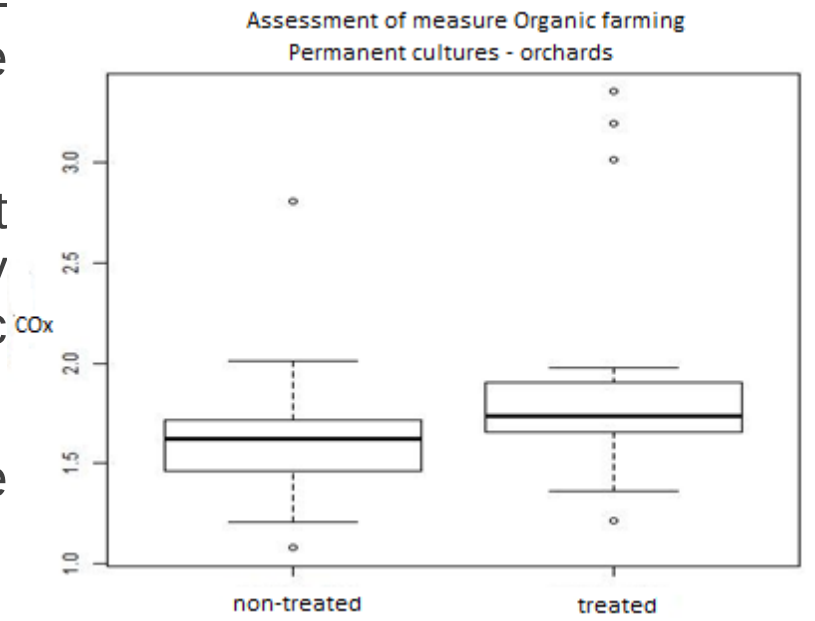
Approach to selected impact indicators used to answer CEQs 26/28

Judgment Criteria	Indicator	Methods	Data
Biodiversity and ecosystems services have been restored.	- Farmland Bird Index (I.08) - Population trends of selected bird species	- DID + pairing - failed - ad-hoc pairing - failed - case study	- Data from FBI collection - ad-hoc data – case study
The content of organic carbon in soils has increased.	Soil organic matter in arable land (I.12).	Simple pairing based on key characteristics (prevailing culture); statistical analysis (two-sample t-test)	Data from agro-chemical soil testing – provided by Central Institute for Supervising and Testing in Agriculture; SOC 0-20cm
Soil loss by water has been reduced	- Soil erosion by water (I.13) - Soil erodobility factor - Cover management factor - Support practice factor	Model-based counterfactual design	- GIS data - Hydrological model based on digital terrain model - 'BPEJ' data (valuated pedo-ecological unit) - Rain erodibility factor (CHMI)

SOC (I.12)

- **Combination of GIS and statistical analysis** → 16 134 ha of supported area and 143 979 ha comparison group with known data on COx (0-20 cm), incl. historic data
- **Pairing** – based on prevailing culture and management title – micro level, management with proven statistical significance ($p < 0,05$) aggregated → macro-level analysis
- **Results:** 0,3 – 0,6 p.p. difference of COx percentage, net effect of RDP is about 4 g COx/kg soil – land covered by relevant RDP commitments is significantly richer in organic matter (is „more alive“)
- **Approach replicable in ex-post**, time variable may also be included (DiD?)





Soil erosion by water (I.13)

- Applied model approaches for creation of counterfactual – model calculated how much soil would have been lost had the supported managements been not put in place
- No upscaling or extrapolation necessary – results accurate
- Model – USLE formula; calculated in 2 variants, varying in estimation of C-factor (‘strict’ and ‘mild’)
- **Average net effect of RDP**: 4,639 – 4,757 tonnes of soil / ha / year – i.e. soil that would have been lost due to water erosion had the relevant managements supported by RDP been not in place
- Approach fully replicable and robust; for ex-post evaluation, historic data could be also factored

Farmland bird index (I.08)

- Available data: FBI calculation, relevant model
- 1st tested approach: pairing of transects in areas predominantly treated / non treated based on prevailing culture (arable land vs. grasslands), apply model to construct trends – failed, no suitable pairs (either non-treated arable land or treated grasslands)

  (for that reason also naïve comparison not applicable – no baseline existing)
- 2nd tested approach: ad-hoc pairs, qualitative analysis and upscaling by expert estimates – failed, no pairs with statistical significance created.
- Only possible approach: case study with ad-hoc data
- **Results:** trends of bird populations constant or slightly increasing at supported farm (applying ecological agriculture managements), whereas decline on national level.

Limitations

- I.08: key limitation is missing data on treated arable land and untreated grasslands – pairing and netting is not possible
- I12:
  - Low statistical significance (p values) by AECM/Organic farming titles with lower coverage
  - Analysis done at micro level – extrapolations when estimating the effect of whole RDP
- I13: The C factor (critical for our model) is to a large extent arbitrary, based on literature. Consequently, the net effect is rather an interval not a clear-cut result (one number)

Recommendations for the RDP ex post evaluation in 2023

- I.12 and I.13 can be replicated without any specific additional data requested
  - Possible upgrades: fine-tuning of models, adding time factor…

- I.08 – *ad hoc* data collection is recommended to assess the effects on biodiversity in ex-post:
  - At least 16 pairs of observation locations should be established, monitoring running for at least 2 – 3 years
  - Pairing on the basis of prevailing culture, proximity of natural habitats, physical characteristics, etc.

Thank you

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Further information:

- http://eagri.cz/public/web/mze/venkov/program-rozvoje-venkova/prv-2014-2020/hodnoceni-a-monitoring/hodnoceni/strednedobe-hodnoceni-prv-2014-2020-v-1.html (summary of mid-term evaluation, in CZ and EN)
- http://eagri.cz/public/web/mze/venkov/program-rozvoje-venkova/prv-2014-2020/hodnoceni-a-monitoring/vyrocni-zpravy/vyrocni-zprava-za-rok-2018-soubor.html (AIR 2019, only CZ)