



Estonian case study – Evaluation of agri-environment schemes' biodiversity objective

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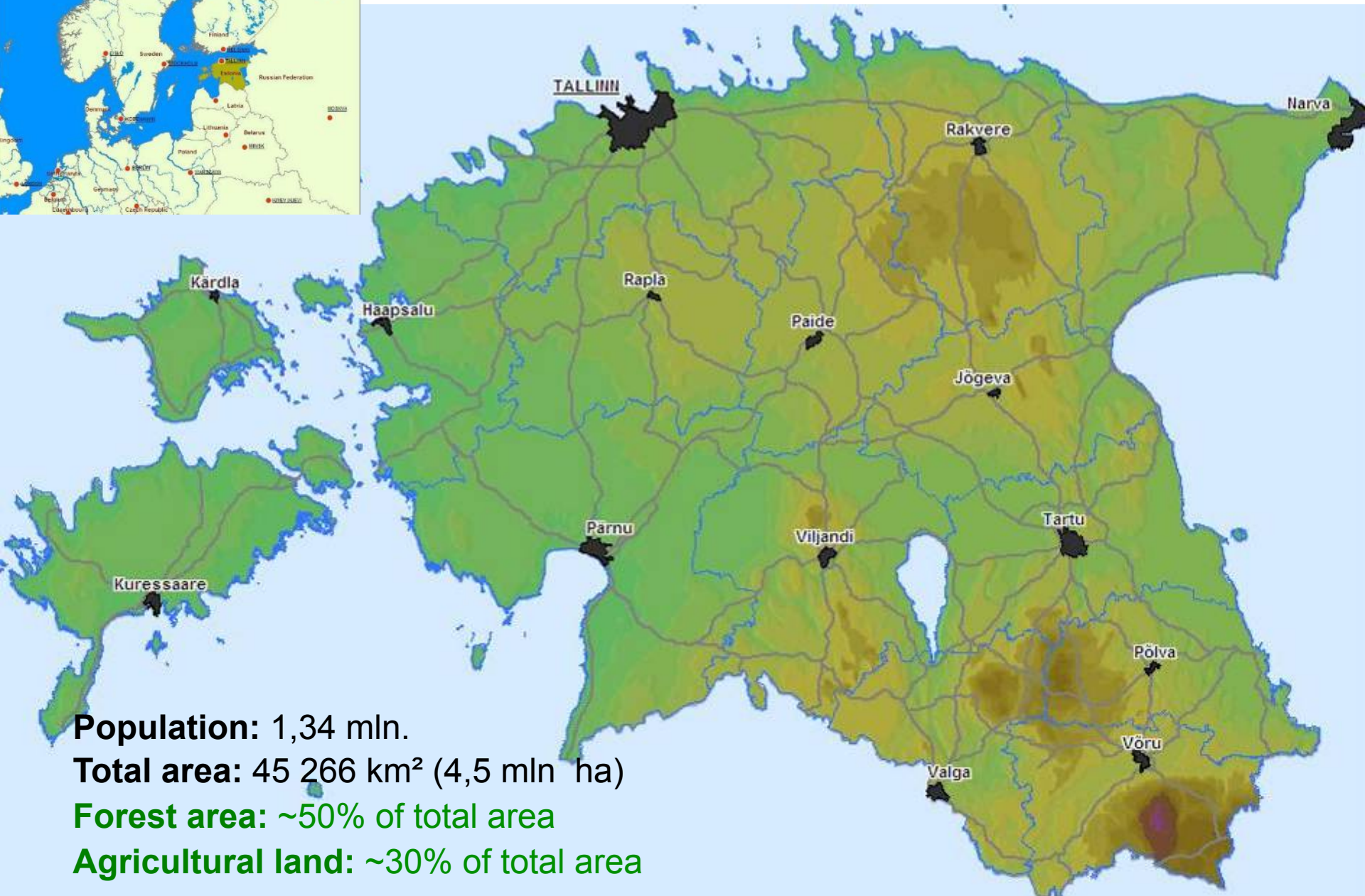
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Introduction



ESTONIA



Population: 1,34 mln.

Total area: 45 266 km² (4,5 mln ha)

Forest area: ~50% of total area

Agricultural land: ~30% of total area

RDP 2007-2013 evaluation in Estonia

- Mid-term and ex-post evaluation – public procurement
- Two ongoing evaluators:
 - **1., 3. and 4. axes** - Estonian University of Life Sciences → contract-based (2009 - 2016)
 - **2. axis** - Agricultural Research Centre (ARC) → a state agency within the jurisdiction of the Ministry of Rural Affairs
 - **National procedures** for co-operation, information flow and reporting
 - **Financing evaluation activities:** RDP Technical Assistance (TA) measure

Evaluation of environmental impacts is quite specific and it is problematic to identify the impacts with one year



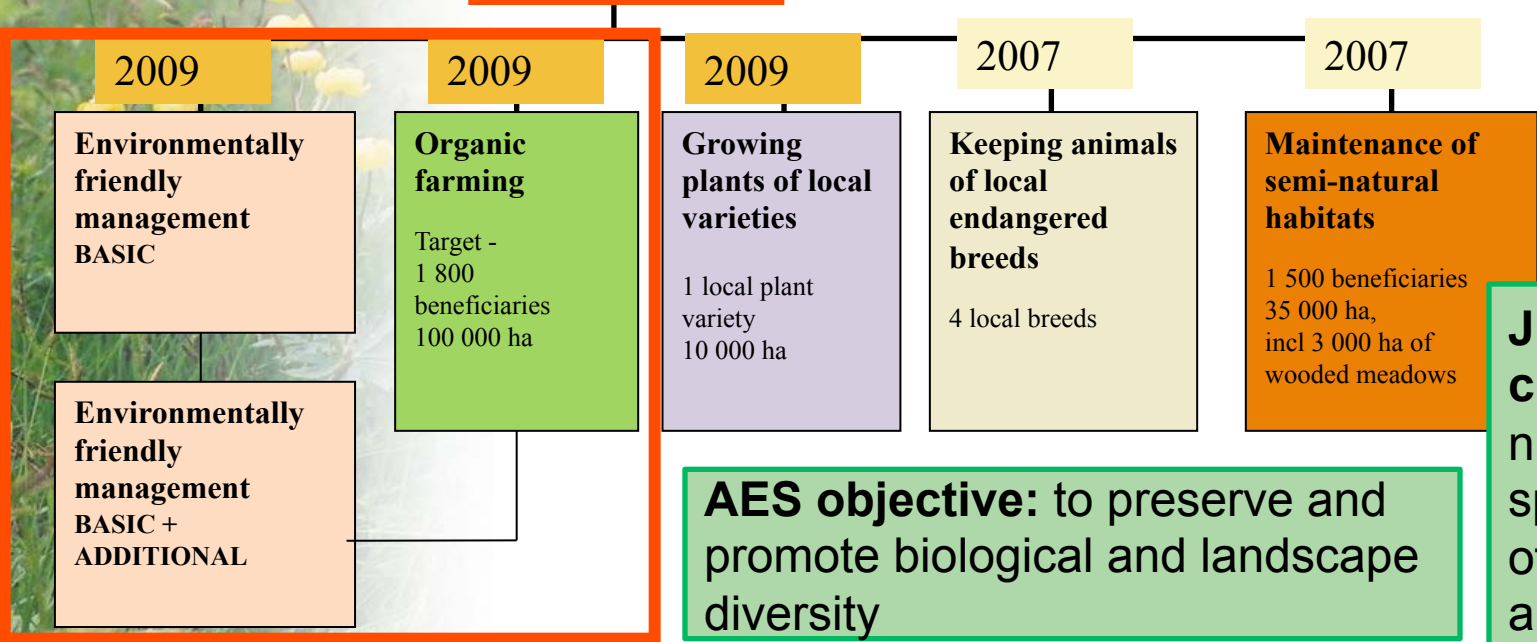
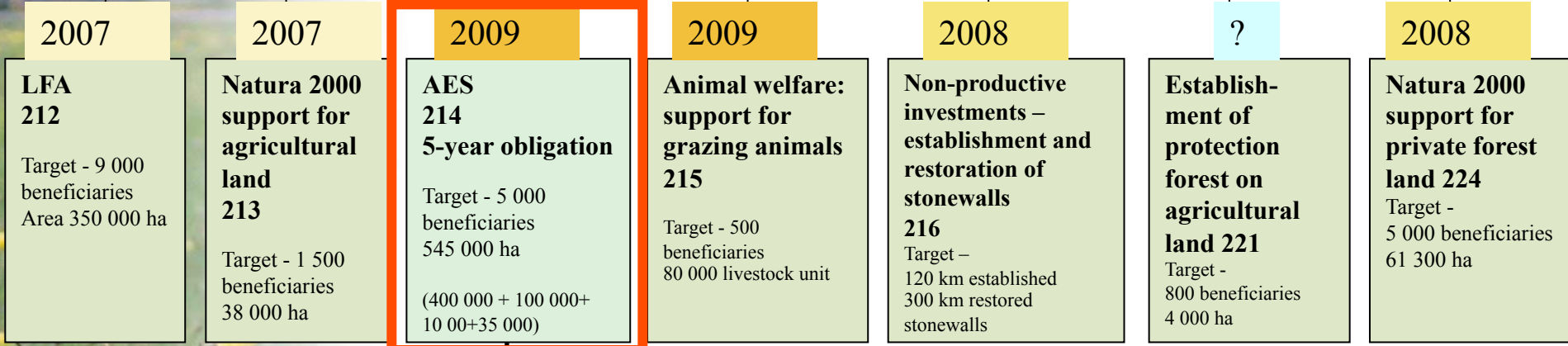
Ongoing evaluation is contributing to mid-term and ex-post evaluation

What is being assessed?



Estonian RDP 2007-2013 Axis 2

RDP 2007-2013 AXIS 2 – IMPROVING THE ENVIRONMENT AND THE COUNTRYSIDE



EFM

OF

AES objective: to preserve and promote biological and landscape diversity

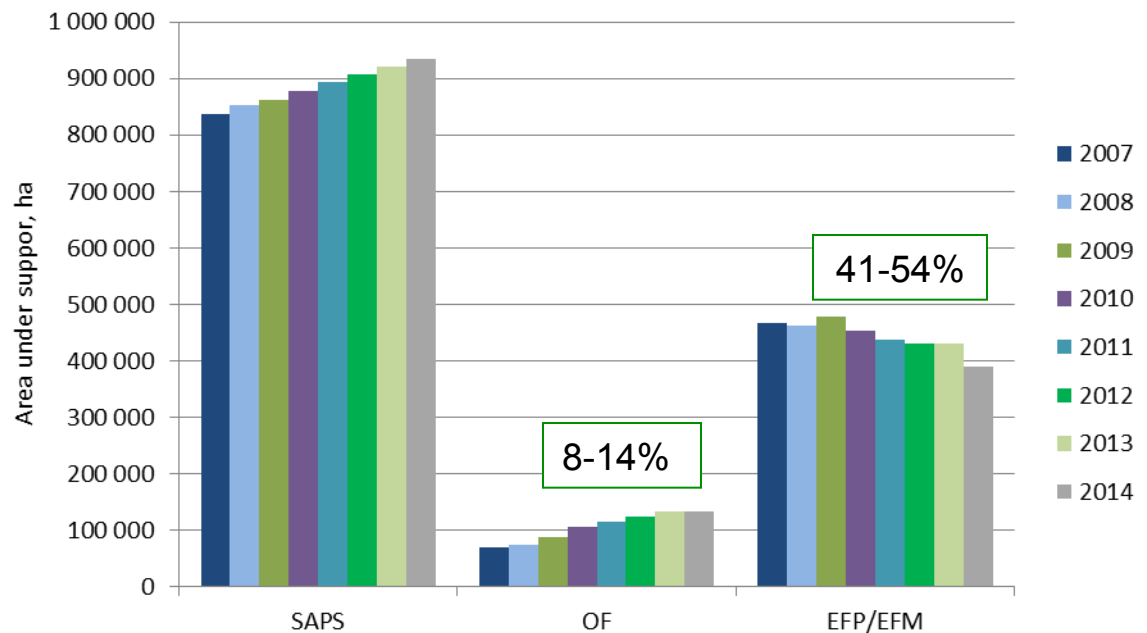
AES impact indicator: to halt the loss of biodiversity

Challenge to evaluate



Judgement criteria: the number and species richness of farmland birds and bumblebees is stable or increasing

The area of SAPS, EFP/EFM and OF 2007-2014



OF requirements:

- Certified according to the Estonian Organic Farming Act
- Requirements for organic plant production and for organic animal husbandry
- Compulsory trainings

EFM requirements which at least indirectly could favour biodiversity:

- Compulsory trainings – raising awareness
- Crop-rotation
- 30% under winter vegetation
- 15% leguminous crops
- 15% certified seed
- 2–5 m wide grassland strip with perennial vegetation or other kind of landscape element between the field and public road
- Preservation of cultural heritage sites and other valuable landscape elements
- No glyphosates from the time of emergence of cultivated plants until harvesting

**How is the
assessment carried
out?**



Five topics for the evaluation of AES

Evaluation data is collected through existing databases, farm visits and through special studies on indicators

SOIL

- Soil organic matter and soil fertility
- Soil fertility (pH, K, P)
- Soil nutrient dynamics

WATER

- Nutrient balance
- Pesticide use
- Water quality

LANDSCAPE

- Change in the landscape structure in terms of point, linear and area elements
- General upkeep (visual appearance) of the farm

BIODIVERSITY

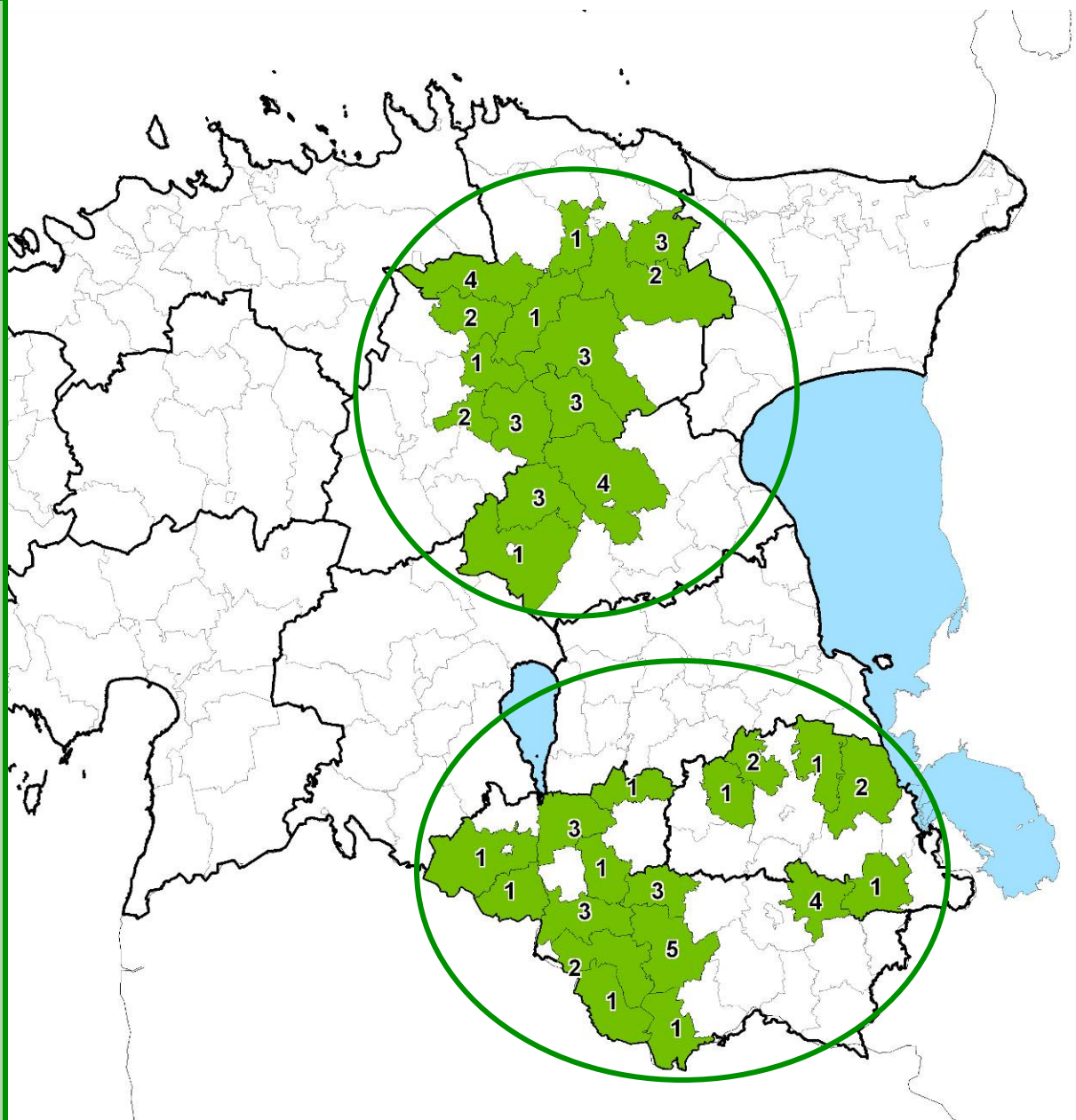
- **Farmland birds**
- **Bumblebees**
- Earthworms, soil microbes
- Vascular plants

SOCIO-ECONOMY

- Family farm income
- Share of organic products sold as “organic”
- Environmental awareness

Bumblebees and farmland birds monitoring areas 2009/2010-2014/2015

- 66 monitoring areas/farms
- One monitoring area = fields under monitoring that belong to one farmer
- 2 different regions (33 farms in both)
- Farms with 3 different support schemes:
 - 22 organic farms (OF)
 - 22 environmentally friendly management farms (EFM)
 - 22 single area payment scheme (SAPS) farms
- AES application in the previous period
- Monitoring on arable land
- Average size of the field and land parcel in the rural municipality
- The size of the farm
- The possibility to locate a 1 km bird monitoring transect as a straight line on the land of one farmer



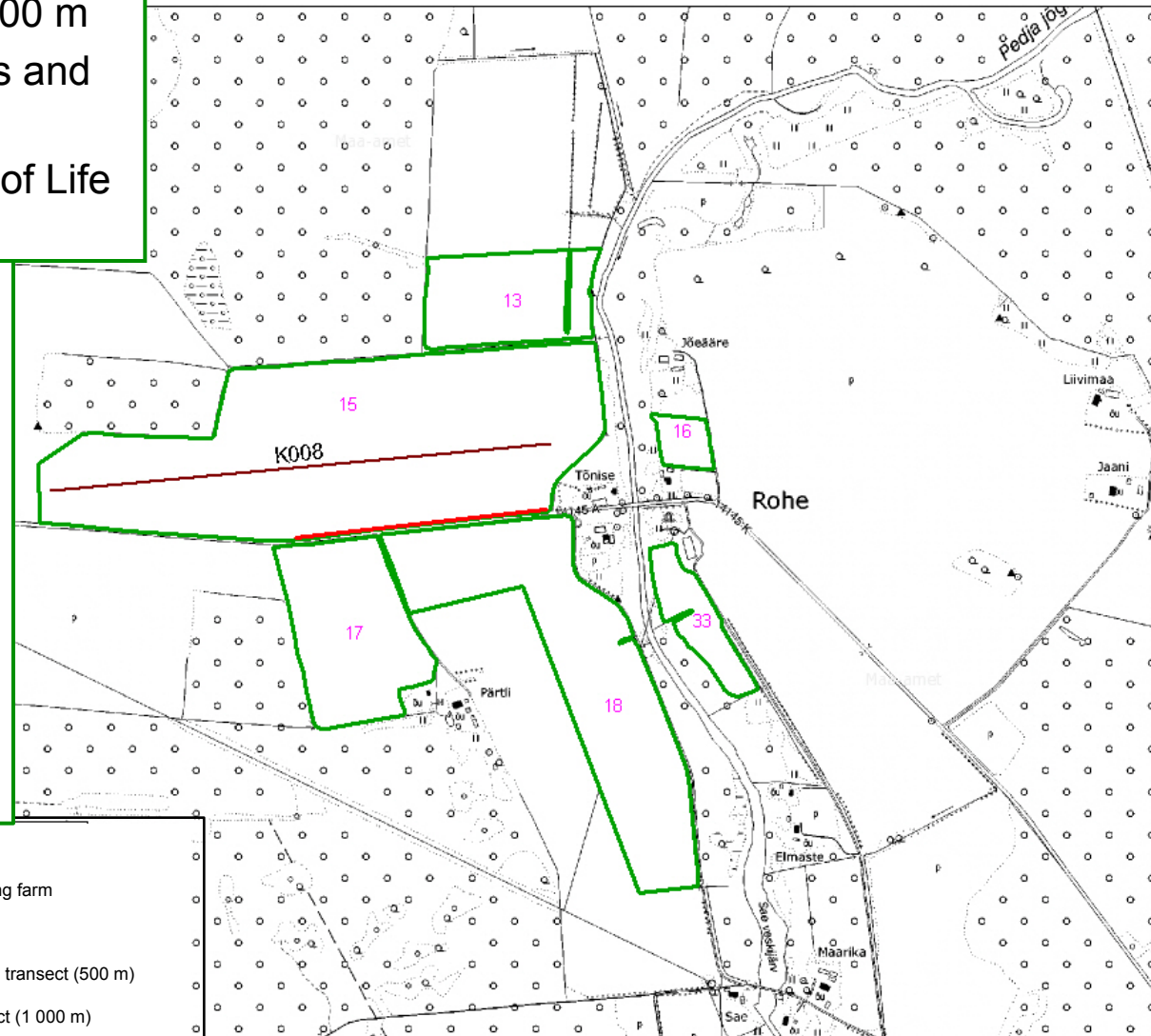
Monitoring methodology

Bumblebees monitoring:

- Started 2006 but introduced monitoring sample since 2009
- 66 monitoring farms each year
- Transect method (3 x June-August), transect width 2 m and length 500 m
- Bumblebee abundance, species and flower density are noted down
- Field work: Estonian University of Life Sciences

Farmland birds monitoring:

- Started 2006 but introduced monitoring sample since 2010
- 66 monitoring farms each year
- Transect method (3 x April-June)
- Breeding bird species and their abundance are noted down
- Field work: Estonian Ornithological Society



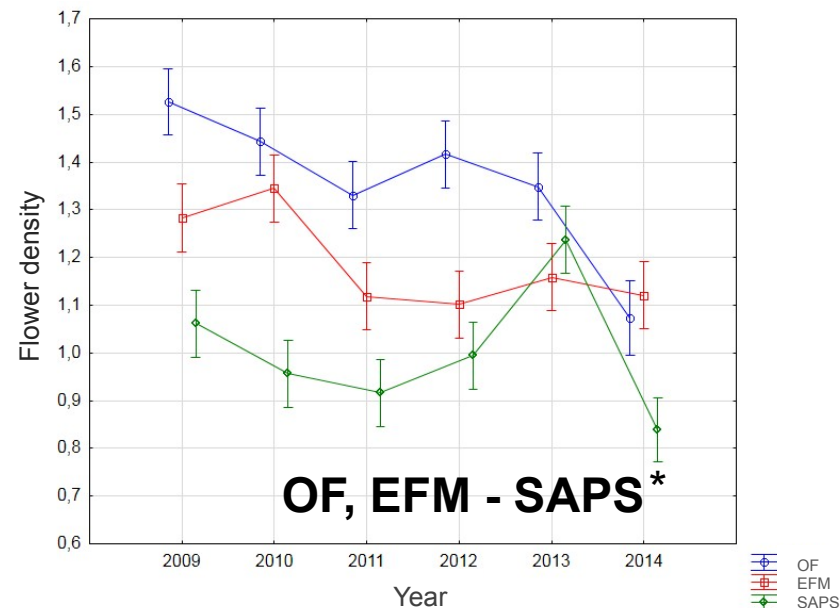
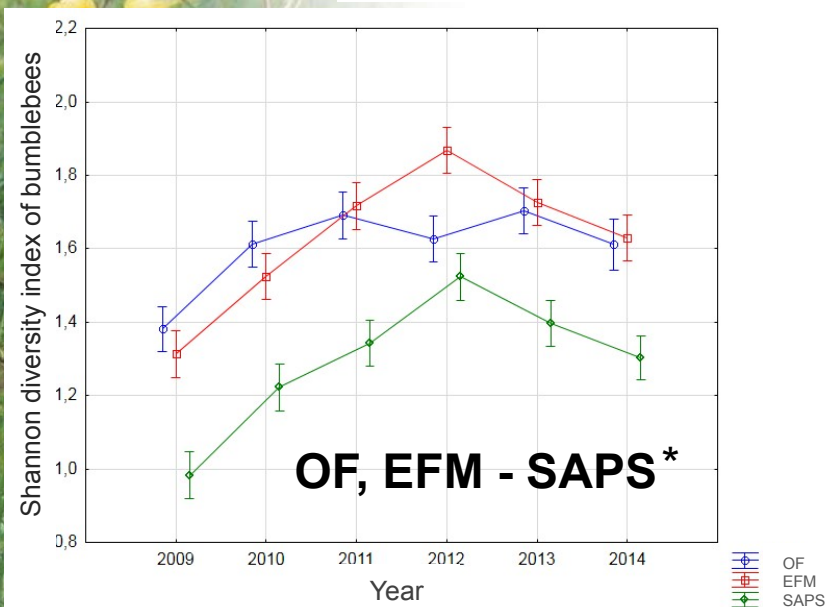
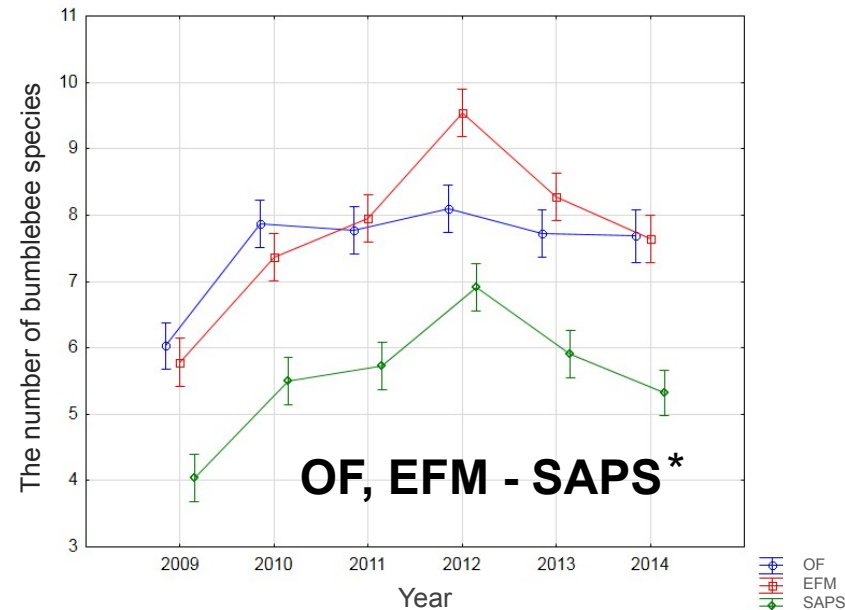
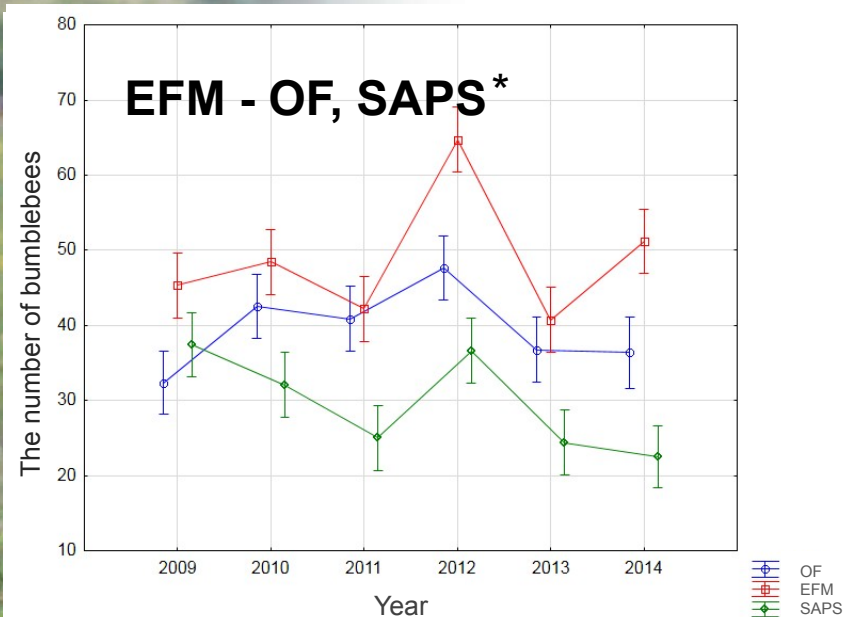
**What are
the
outcomes?**



Annual report from ARC to MA

- Deadline: every year 1st of April
- Results of studies, evaluation of measures
 - Interpretation and recommendations
 - In the evaluation of measures the main results of studies are included
- MA can use:
 - Different figures, maps and tables
 - Results to adapt RDP policy design
 - Results to show the relevance of requirements
- Dissemination of results by ARC:
 - Info days for MA, paying agency, advisors, farmers – better understanding
 - Articles, brochures
 - Feedback to farmers in the biodiversity monitoring sample

Main results of bumblebees monitoring



* The indicator was significantly higher in farms with support type that is on the left side of the hyphen

Additional analyses for bumblebees

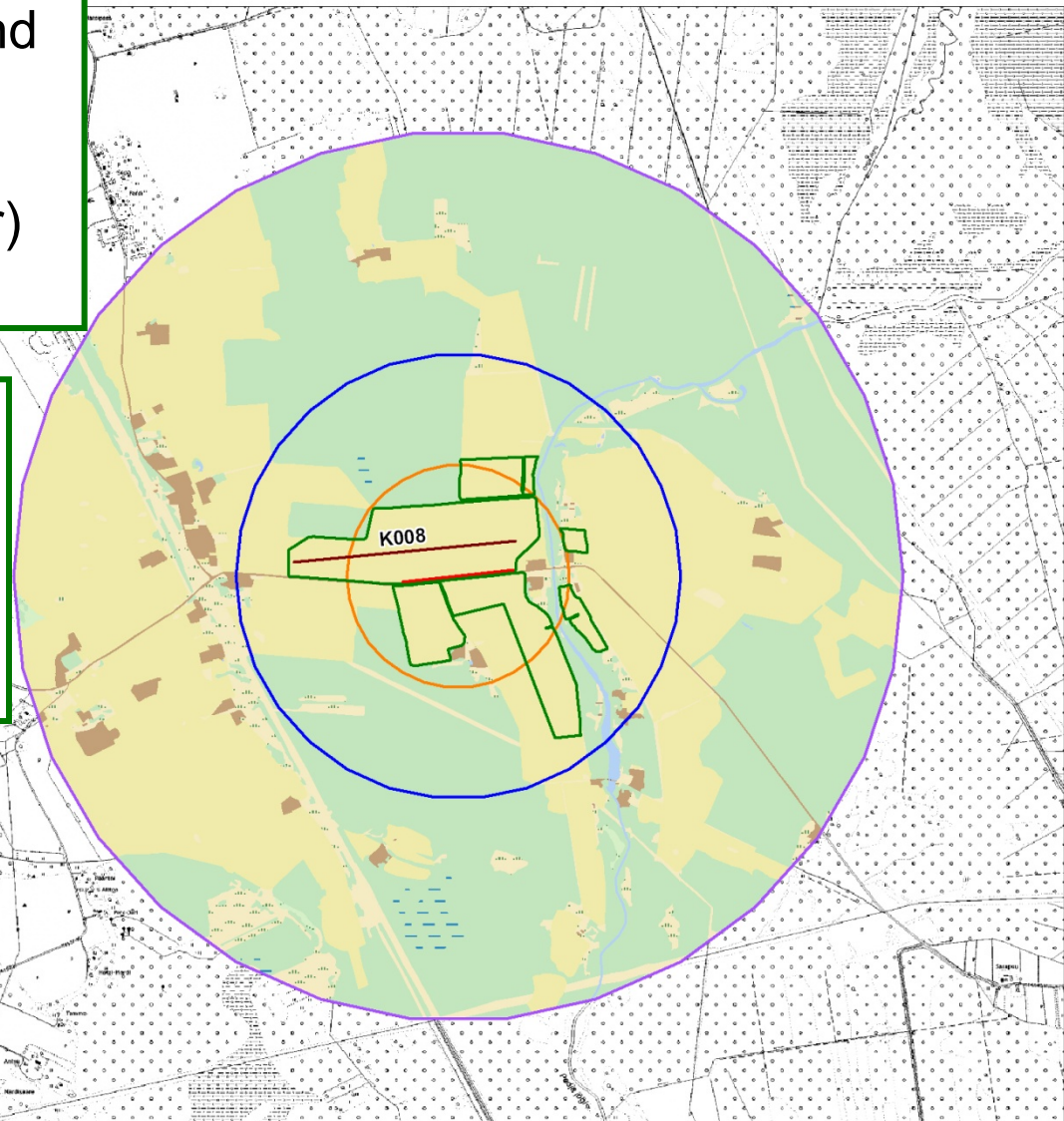
Data of Estonian National Topographic Database

Estonian National Topographic Database:

- Area objects (e.g. % of forest and agricultural land in the buffer)
- Line objects (e.g. the length of ditches and tree lines in the buffer)
- Landscape indices

In addition other analyses:

- study on plant species visited by bumblebees in 2014
- study on pesticide application on monitoring fields



Key strengths and weaknesses of the approach



Key strengths of the approach

- Data series from the beginning of the programme
- Counterfactual (SAPS) included
- Different regions included
- Evaluation of different taxonomic groups included – may react differently
- Interpretation of the results + recommendations
 - Additional analyses to interpret the results
- Communication with different stakeholders

Weaknesses of the approach

- Broad and shallow scheme (EFM) – even longer data series needed than five years to identify changes (also because of the time lag)?
- The manager of the field(s) may change
- Arable land may change into permanent grassland
- Selection bias?
- Expenses every year
- How to differentiate impact of measures from other confounding factors?
 - Landscape context
 - Activities on monitoring fields
 - Activities and support type of adjacent fields
 - High variability between farms within the same support type
 - Farmers attitude
 - Weather conditions
 - Impact of other RDP measures
 - General situation in agriculture
 - Problems with taking into account confounding factors:
 - Problems with getting all the necessary data
 - The trade-off of including too many factors into analysis
 - Not enough knowledge in statistics

Recommendations for MA and evaluators



Recommendations to MA

- Evaluation of environmental impacts should be considered during the whole programming period, if possible then foresee it already in programme preparation phase (ongoing evaluation)
- Need to guarantee data availability from paying agency and different databases for evaluation activities
- Expenses every year – RDP Technical Assistance (TA) measure?
- Communication with (ongoing) evaluators

Recommendations to evaluators

- Experts needed
- Data collection from the beginning of the programme
- Principles for selecting the monitoring farms
- Counterfactual needed
- Data analysis skills
- Additional background data and analyses needed to interpret the results – e.g. landscape, info about activities in the field etc
- Simple and understandable language
- Summaries and recommendations on base of the evaluation activities
- Dissemination of the results and communication with different stakeholders

Thank you for attention!

