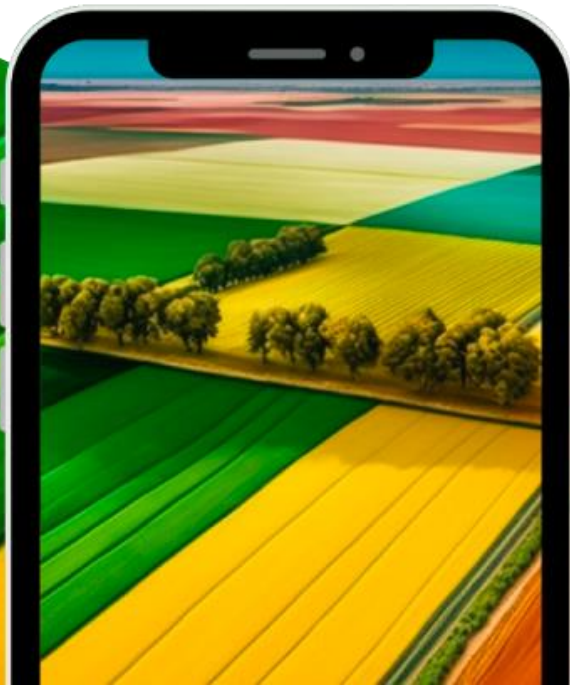




Euroopa Maaelu Arengu
Põllumajandusfond:
Euroopa investeringud
maapiirkondadesse

Inspection Mechanisms and Remote Monitoring



Martynas Rimgaila
Advisor of the Direct Support Control Unit
National Paying Agency

1 BILLION EURO PER YEAR



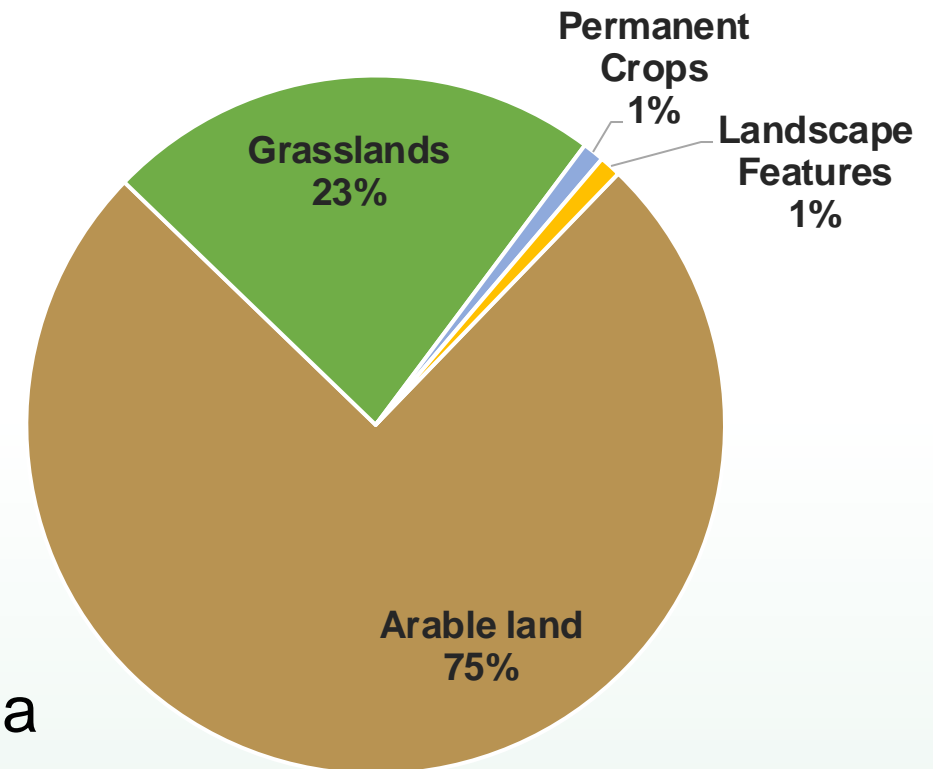
www.nma.lt



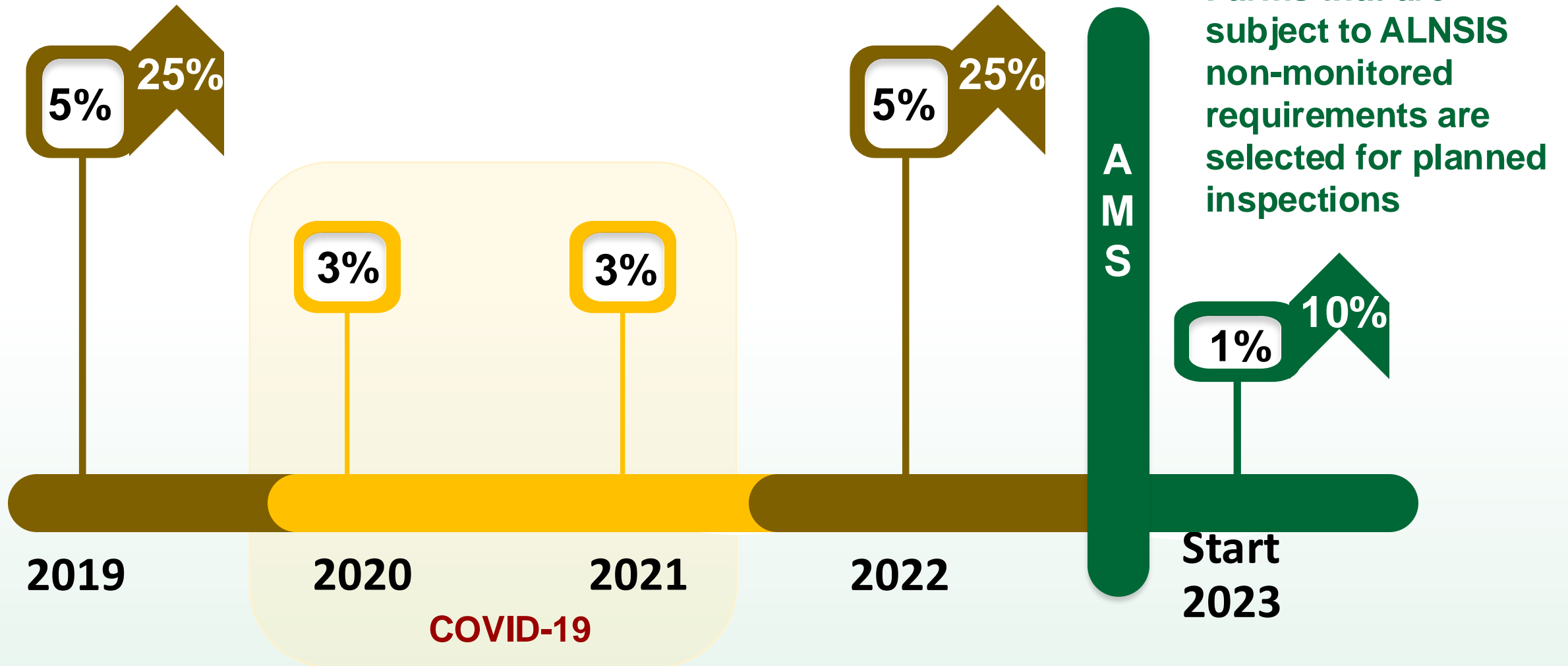
In 2024

- Total declared area – 2 913 000 ha
- 1 214 000 parcels
- Average declared parcel size – 2,4 ha
- 113 000 farmers: 54% male, 45% female, 1% companies
- 2% organic farms, 6% young farmer scheme
- Average age 57 years
- 68% farms <10 ha, 21% - 10-50 ha, 11% > 50 ha

Agricultural land distribution



CONTROL RATE IN LITHUANIA





SENTINEL SATELLITE DATA FOR MONITORING

 esa



0 days 00 hours 00 minutes
Sentinel-2 constellation:
summer solstice

AREA MONITORING SYSTEM OBJECTIVES



AMS
Area Monitoring System



THE MONEY OF THE UNFAIR WILL GO TO THE HONEST



EARLY WARNINGS OF POSSIBLE MISTAKES



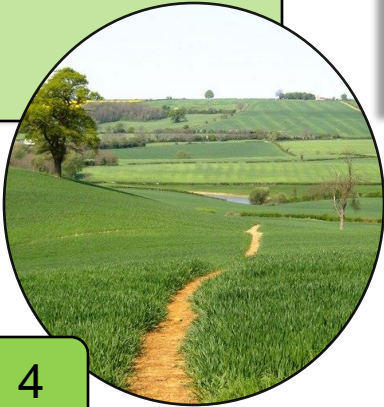
SAVE RESOURCES FOR FIELD INSPECTIONS



FULFILLING REGULATORY REQUIREMENTS

AMS USECASES

Land cover



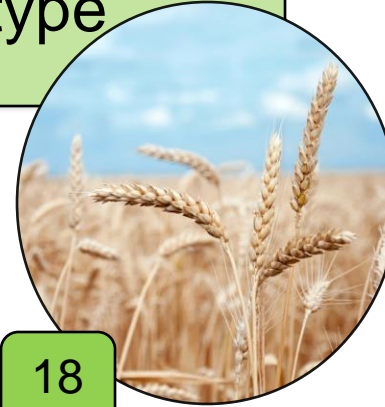
4

Grassland mowing



1

Crop type



18

Fallow land tillage



1

Results are provided every 10 days from June to October and can be viewed at the field level on the Paying Agency's Information Portal

99% accuracy based on data from the field

AMS TRAFFIC LIGHTS

Result value	Parcel
Result date 2024-07-17	
Not confirmed yet	Yellow
Compliant	Green
Non-compliant – before deadline	Orange
Non-compliant- after deadline	Red



IMPACT FOR FARMERS



Reminder about not completed activities: 2024:

- 4 003 fields not cultivated before June 30
After reminder **82% of the fields were cultivated**

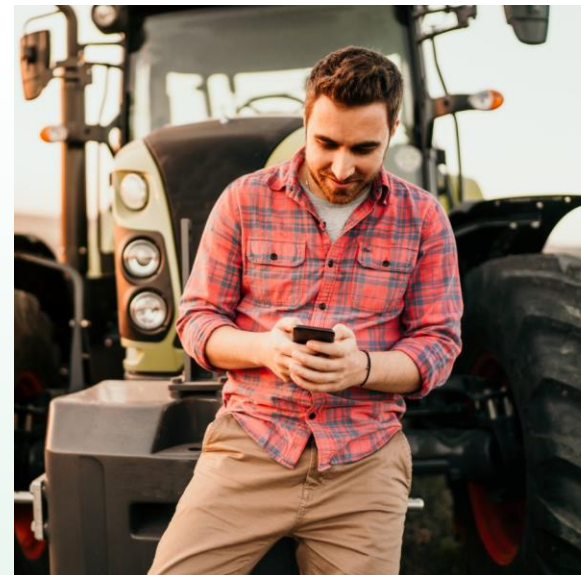
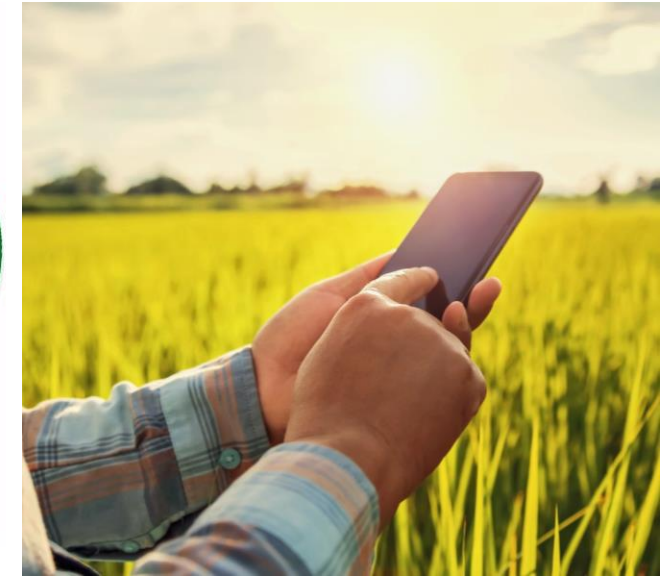
Reminder about not completed activities 2024 :

- 2 259 fields not mowed before July 31
 - After sending the first reminder **93% of the fields were mowed**
- 1477 fields not mowed before August 10
 - After reminder **78% of the fields were mowed**



GEOTAGGED PHOTOS

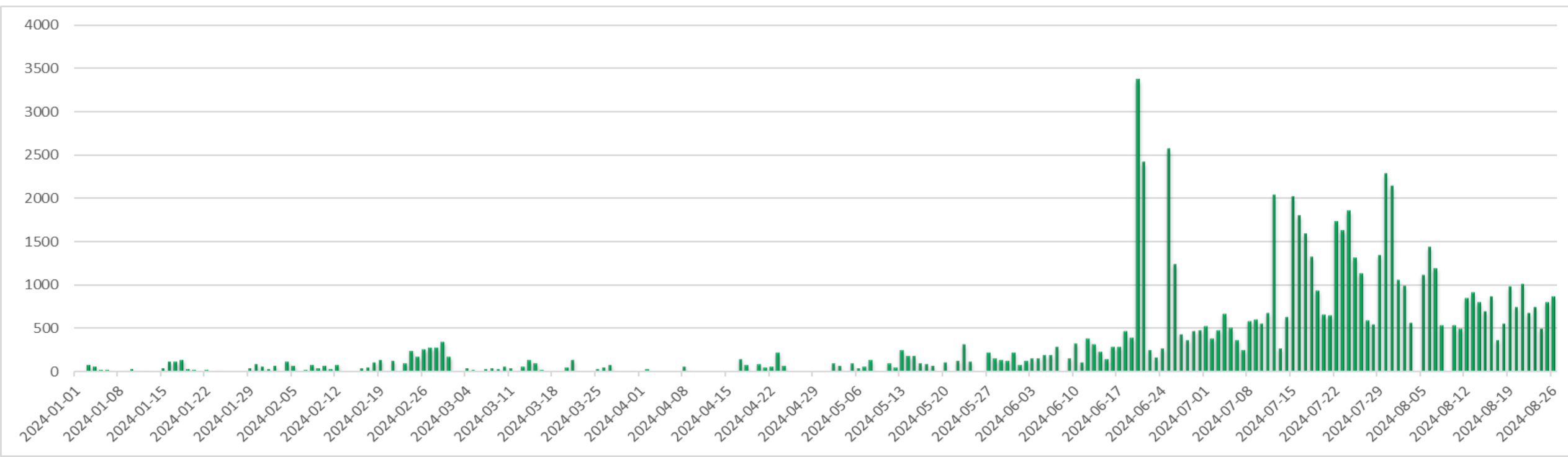
- **38 000 users**
- User Distribution: iOS 25%, Android 75%
- Verification Tools:
 - Image and Metadata (Geo) Verification
- Farm Management & Support:
 - Maps layers related to farming
 - Advisory Support for Farmers
- Risk and Compliance Checks:
 - 100% Checks for High-Risk Interventions
- Promotion & Support:
 - Media Promotion
 - Detailed Instructions & FAQ
 - Feedback and Response Mechanisms



RECEIVED PHOTOS

38 000 users:

- 90 000 geotagged photos received in 2024 so far
- Average 337 photos per day starting from 2024-01-01
- Record 3370 photos per day (June 20)



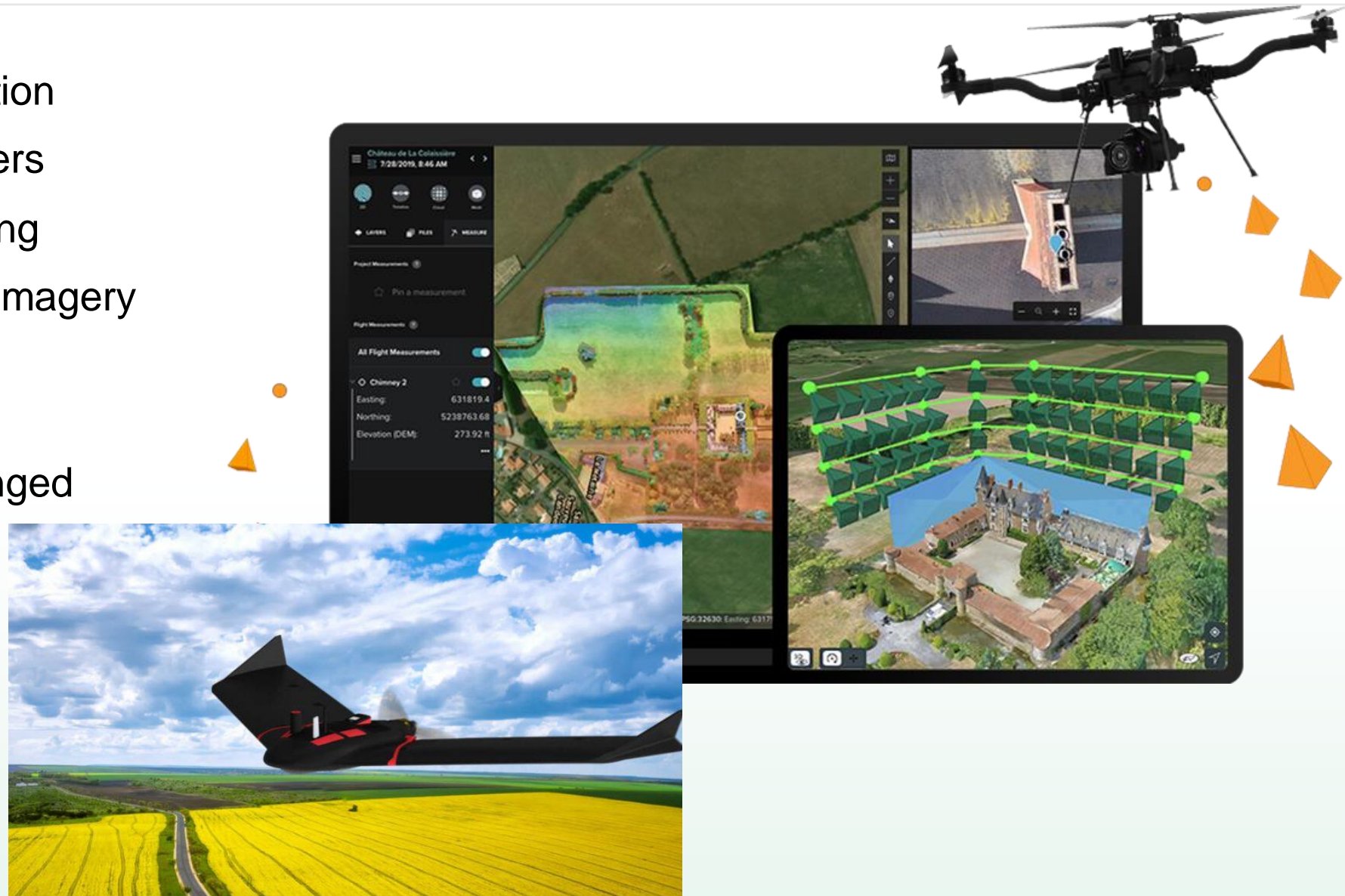
GEOTAGGED PHOTOS – MYTHS

- Farmers won't photograph
- They don't know how to upload
- They are too busy with farming
- Farmers not willing to share the data
- Farmers are not loyal
- Farmers are not collaborative
- Farmers don't need it
- It's the Paying Agencies' duty



DRONES

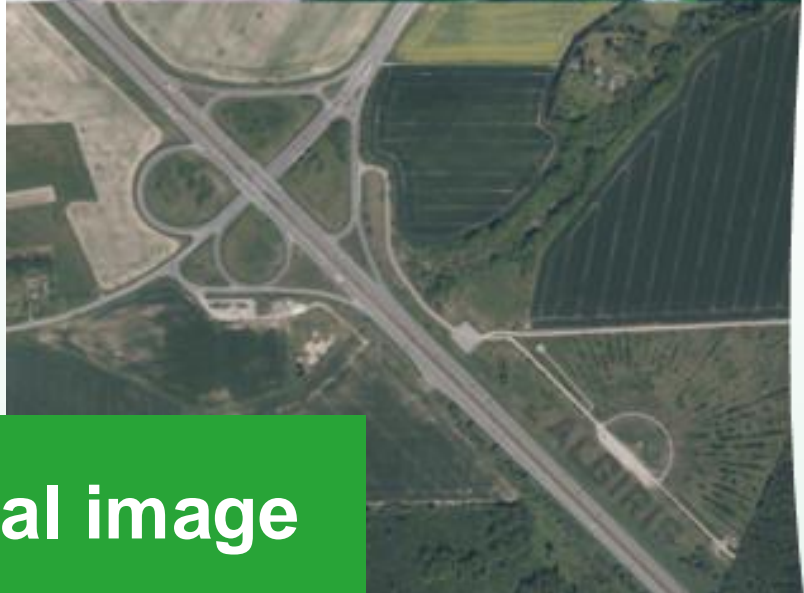
- In-situ visits optimization
- Inspection area clusters
- Orthoimagery capturing
- On-the-Fly SiteScan imagery processing
- Asbestos roof control
- Copters and fixed winged drones eBee



DEEPLY RESOLVED IMAGERY



**Super/ Deep
1m resolution
S2 image**



Areal image



All territory 2 times a year



October and April



A deep neural network model increases the spatial resolution of Sentinel-2 from 10 meters to 1 meter



Input data for automated field delineation
Background map in e-application, NMA
Agro mobile app and other systems as additional layer



AUTOMATIC BOUNDARY DELINEATION



New layers in GSA and
Geotag app since
2023:
1m deeply resolved
Sentinel-2 image
Delineated boundaries



What next after Area Monitoring System?



- Identification and monitoring of floods, draughts and forest fires
- Identification of land areas affected by soil erosion
- Assessment of soil moisture
- Assessment of crop damages (due to summer storms and other)
- Calculation of crop yield zones and forecasting of yield

Projects (platforms, based on Sentinel data):

- The Recovery and Resilience Facility Fund “AMS 2.0”
- ESA "GTIF BALTIC"
- ESA "EO-BALP", platforms 1 and 2
- HORIZON 2020 "EIFFEL", platform 1



AREA & CLIMATE CHANGE MONITORING SYSTEM



ForestRadar

Bookmarks

Forest plots

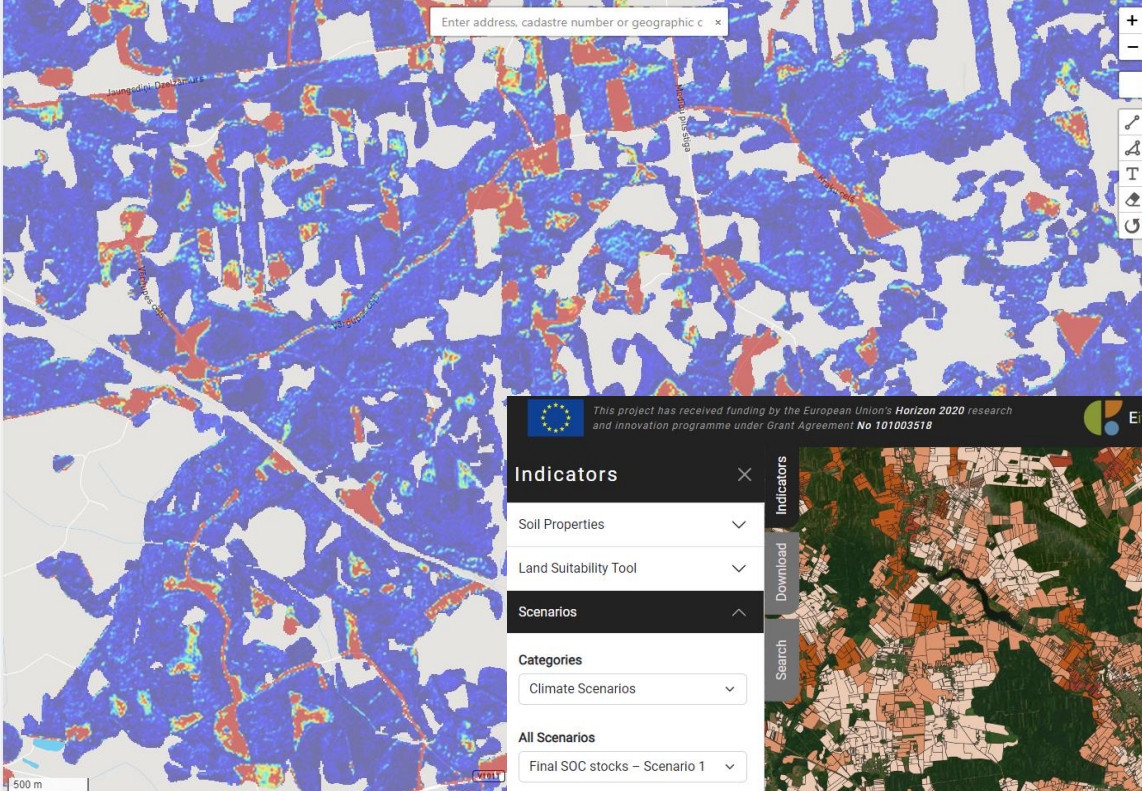
Layers

Layers

- Agricultural field blocks More
- Land cadastre More
- Administrative division More
- ForestRisk excessive water (2022) More
- ForestRisk excessive water (2023) More
- ForestRisk forest anomaly from UAV (2023) More
- ForestRisk forest anomaly from S2 (2022) More
- ForestRisk forest anomaly from S2 (2023) More
- Fire danger More
- Wind risk More
- Satellite map More
- Othophoto map (true color) More
- Othophoto map (infrared) More
- Terrain More
- Topographic Map More

500 m

Enter address, cadastre number or geographic c



This project has received funding by the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 101003518

Effel – Carbon Monitoring System for Lithuanian Soils

About the Project Give us Feedback! Powered by Soil Data Cube

Indicators

- Soil Properties
- Land Suitability Tool
- Scenarios

Categories

- Climate Scenarios

All Scenarios

- Final SOC stocks – Scenario 1

Description:

This map represents the projected SOC stocks (in t/ha) in 2042, considering an increase in temperature by 2 °C (pessimistic)

Opacity

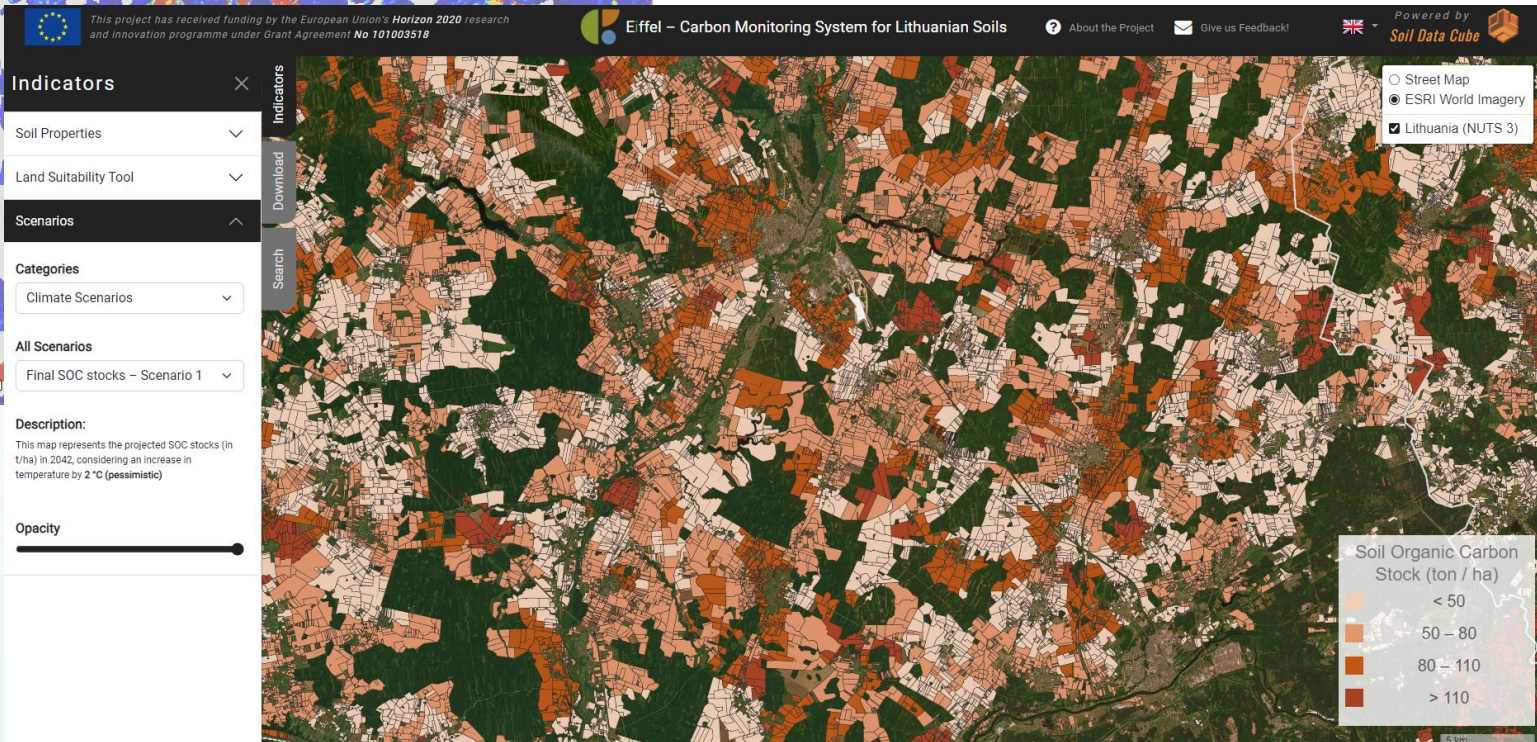
Search Download Indicators

Street Map ESRI World Imagery Lithuania (NUTS 3)

Soil Organic Carbon Stock (ton / ha)

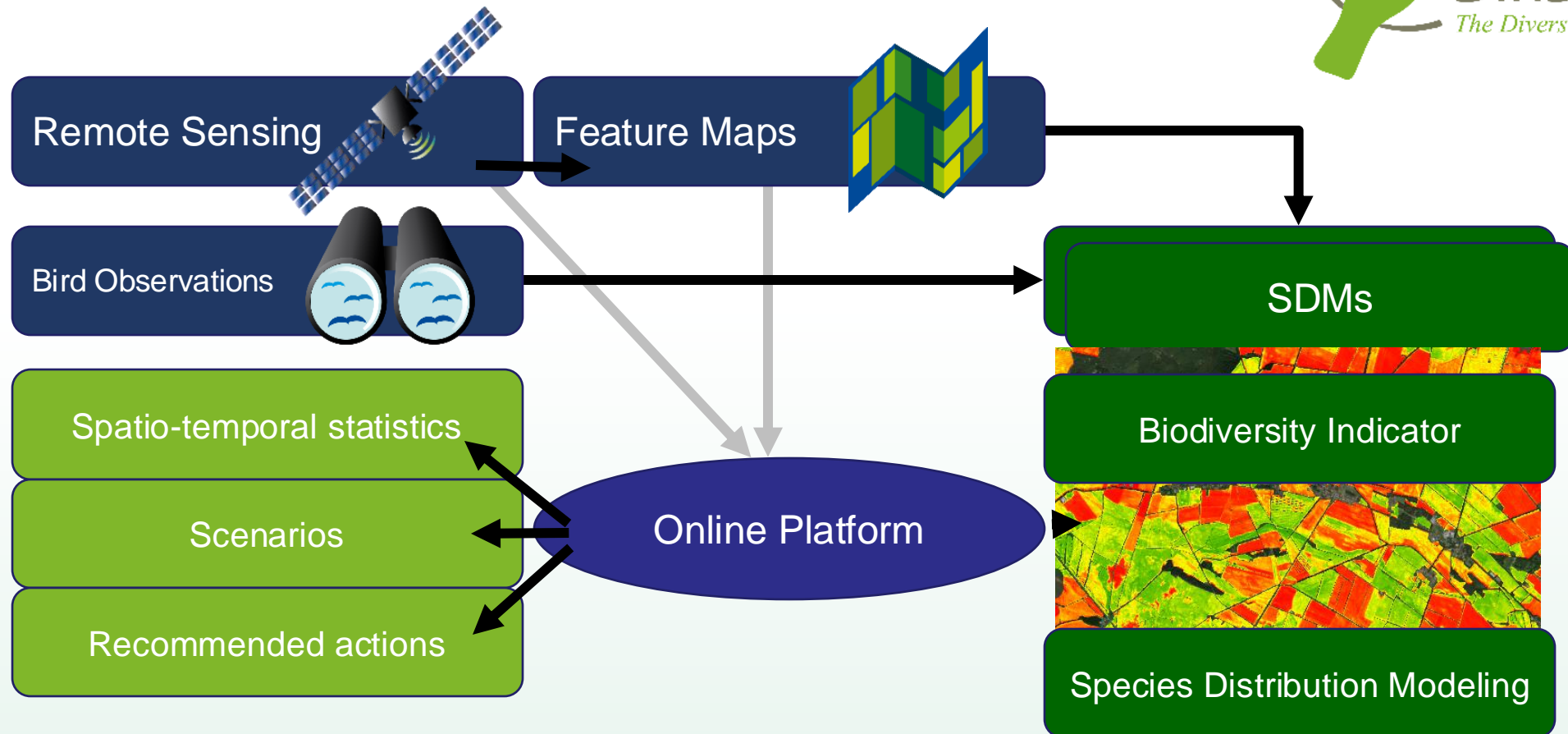
- < 50
- 50 – 80
- 80 – 110
- > 110

5 km



AREA MODELING & MONITORING SYSTEM

- HORIZON EUROPE “BIRDWATCH”
- VIDEO & BIRDS



AREA MODELING & MONITORING SYSTEM

BirdWatch Regional

Parcels for Compliance check

- Parcel 1
- Parcel 2
- Parcel 3

Background WMS

- OSM
- Google Earth Images

Holding ID Search

XXXX

Selected Parameters

- Coverage of non-productive area
- Coverage of shrubberies
- Coverage of trees

Parcel Statistics

Category	Value
Habitat Suitability	~75
Coverage Non-Productive Area	~35

- What is the current state of habitat suitability on my parcels?
- Which agri-environmental interventions could help me improve habitat suitability on my parcels?

BirdWatch Farmer

Timeline/Years

- 2022
- 2023

Background WMS

- OSM
- Google Earth Images

Parcel ID Search

DEBBL1473

Parcel Information Input (Farmer)

Size in ha: 51.2

Crop type: Arable/Winter wheat

Hedges: 0,1 ha

Catch crop: none

Yield in t/ha: 60

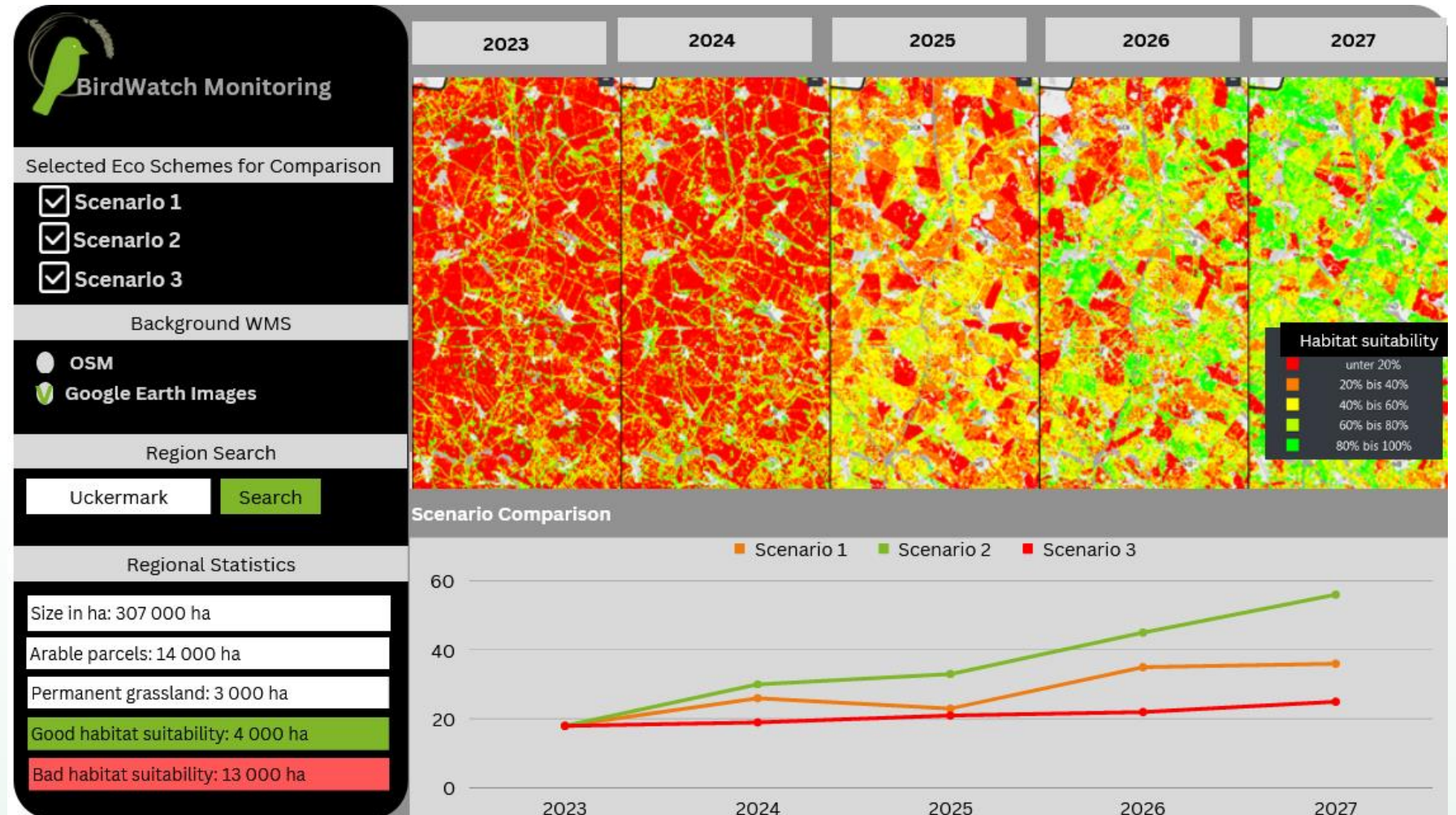
Suggestions for Habitat Suitability Optimisation

		current value	potential		
	Catch crops	Hedges	Buffer strips	Revenue per ha	Suitable habitats in %
1	sweet pea	0,1 ha 0,3 ha	0,2 ha 0,7 ha	1000 €	17% +35%
2	buckwheat	0,1 ha 0,5 ha	0,2 ha 1,1 ha	1800 €	17% +50%
3	xxx	0,1 ha xxx ha	0,2 ha xxx ha	xxx €	17% +XX%

- Which of the agri-environmental interventions is most feasible for me?
- What could be the financial outcome when I implement a specific intervention?

AREA MODELING & MONITORING SYSTEM

- What is the current state of habitat suitability in the region?
- How has habitat suitability of a region developed over the years?
- Which agri-environmental interventions could help improve habitat suitability and where would be the higher impact?
- Which and where eco-schemes have been applied and how have they impacted the habitat suitability?

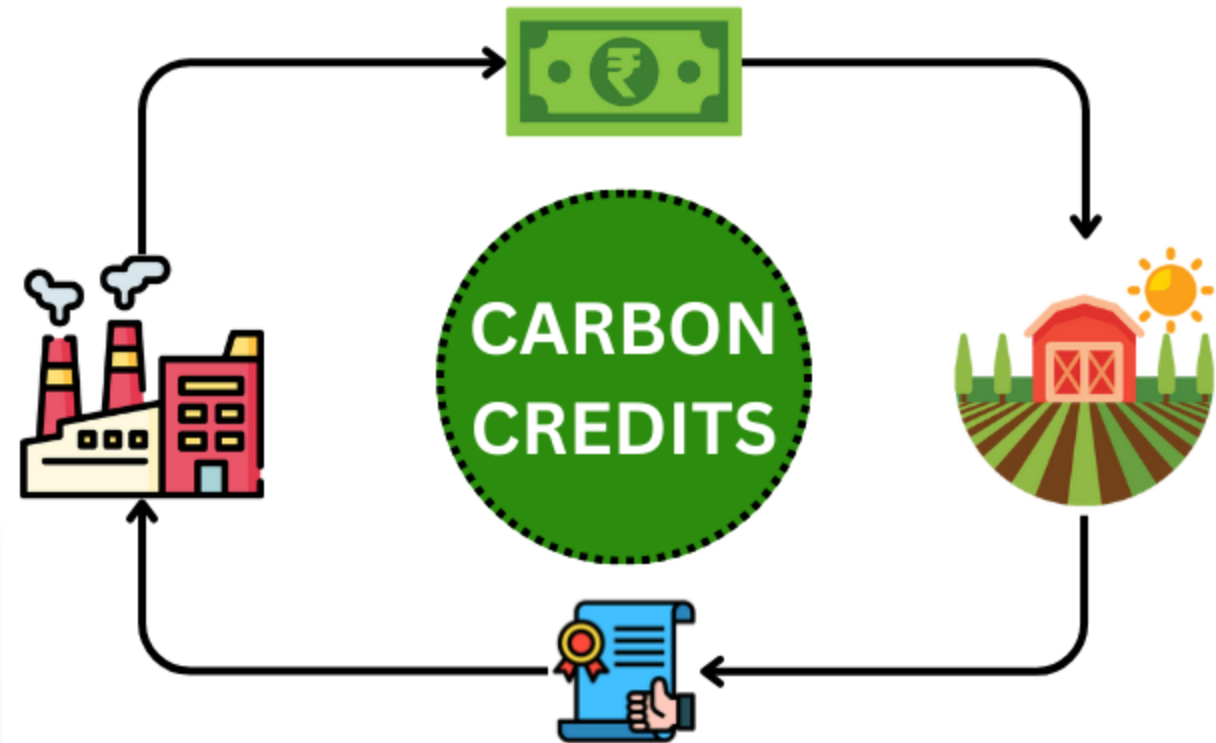


AREA MONITORING & CARBON CREDITS SYSTEM

- LIFE “GREEN FARM FOR LIFE”



- **Improve GHG Reporting in Agriculture:** Develop and test accurate methods for assessing and reporting greenhouse gas (GHG) emissions at farm, regional, and national levels.
- **Create a Carbon Certification Framework:** Design and pilot a national system for carbon absorption certification, including a Carbon Register for tracking GHG balance and data management.
- **Involve Policymakers and Stakeholders:** Work with policymakers to shape Lithuania’s GHG assessment and carbon removal strategy, setting future regulations, processes, and incentives for farmers.



Co-funded by
the European Union



AGRO DIGITIZATION STRATEGY & PLATFORMS

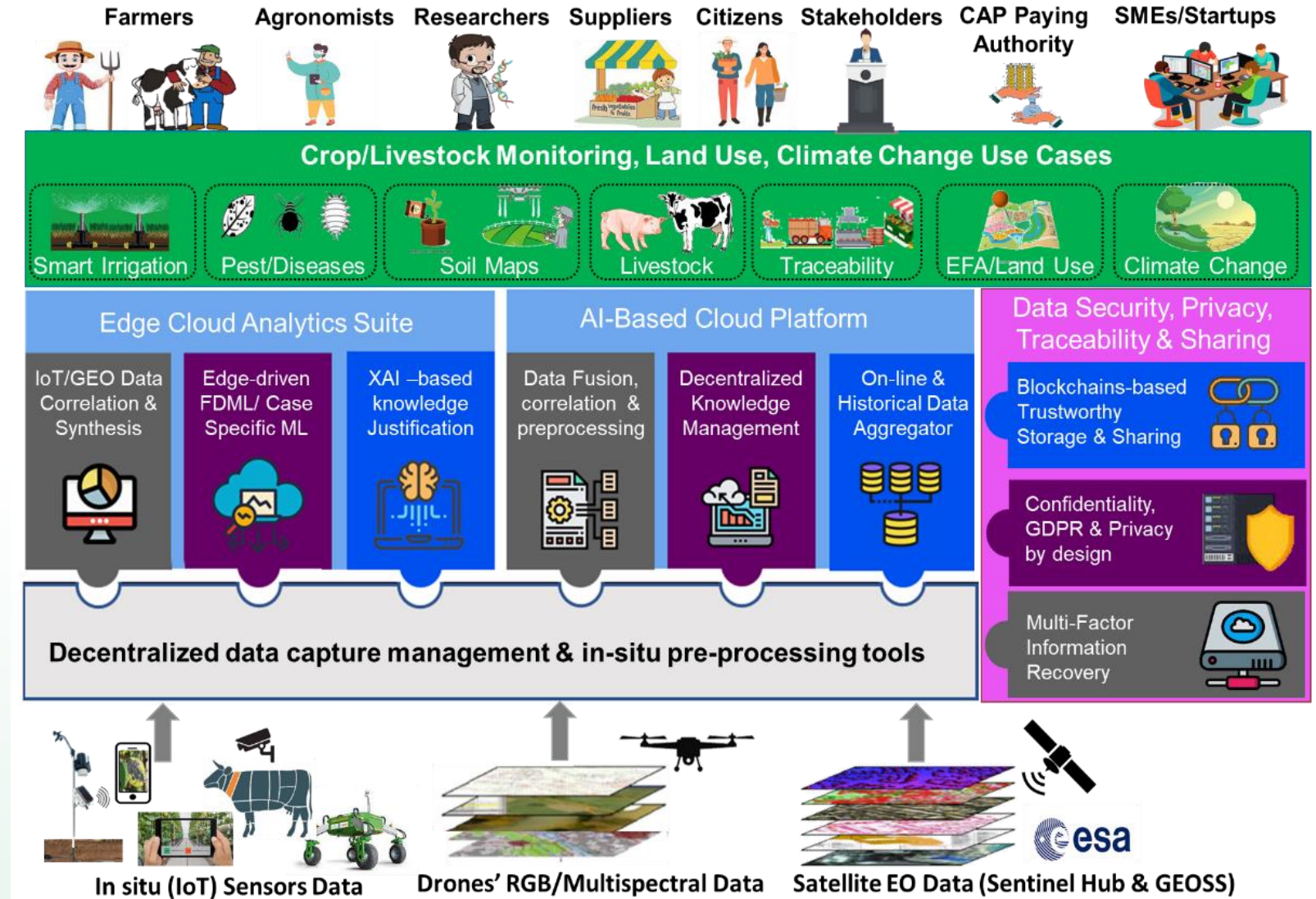
- HORIZON EUROPE “AGRIDATAVALUE”



AgriDataValue



**INTERREG
EUROPE
“AGRI-MAP”
Agricultural Policy
Roadmap for Digitization,
Innovation, Growth and
High-Tech Automation**



National Paying Agency under the
Ministry of Agriculture

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