

Assessing geospatial indicators designed to support practice-based biodiversity certificate monitoring

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Case studies

UC5 - United Kingdom

Solution: Integrated catchment management
Project owner: WRT

UC4 - Slovenia

Solution: Species rich grasslands
Project owner: Pratensis

UC3 - Romania

Solution: agroecological practices
Project owner: ICEADR

UC2 - France

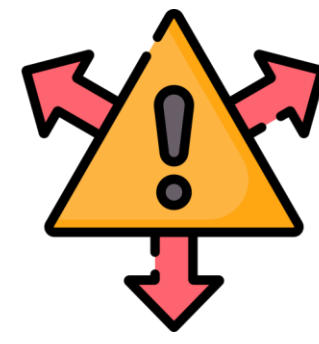
Solution: Regenerative agriculture
Project owner: ASOI

UC1 - Italy/Austria

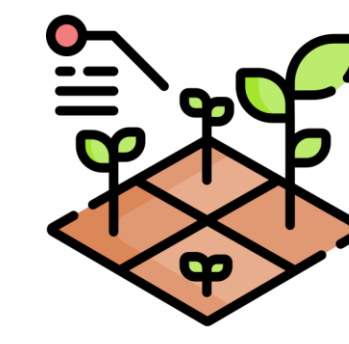
Solution: Sustainable alpine forests management
Project owner: JSC One

Objectives of Bio-Capital

Mobilising investments for the conservation and restoration of biodiversity through the implementation of innovative financial solutions and advanced geospatial analytics



Early and consistent monitoring enhance crisis management



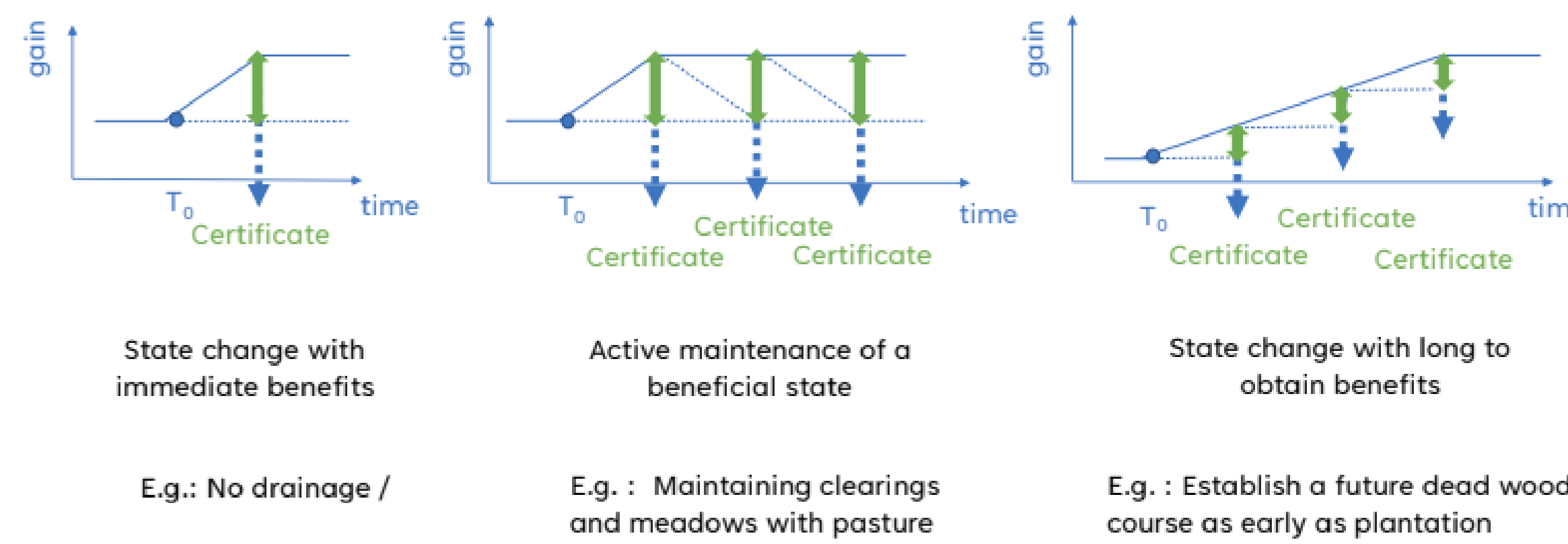
Enhance conservation and restoration project and financing



Insurance validation and support of Nature Restoration Law

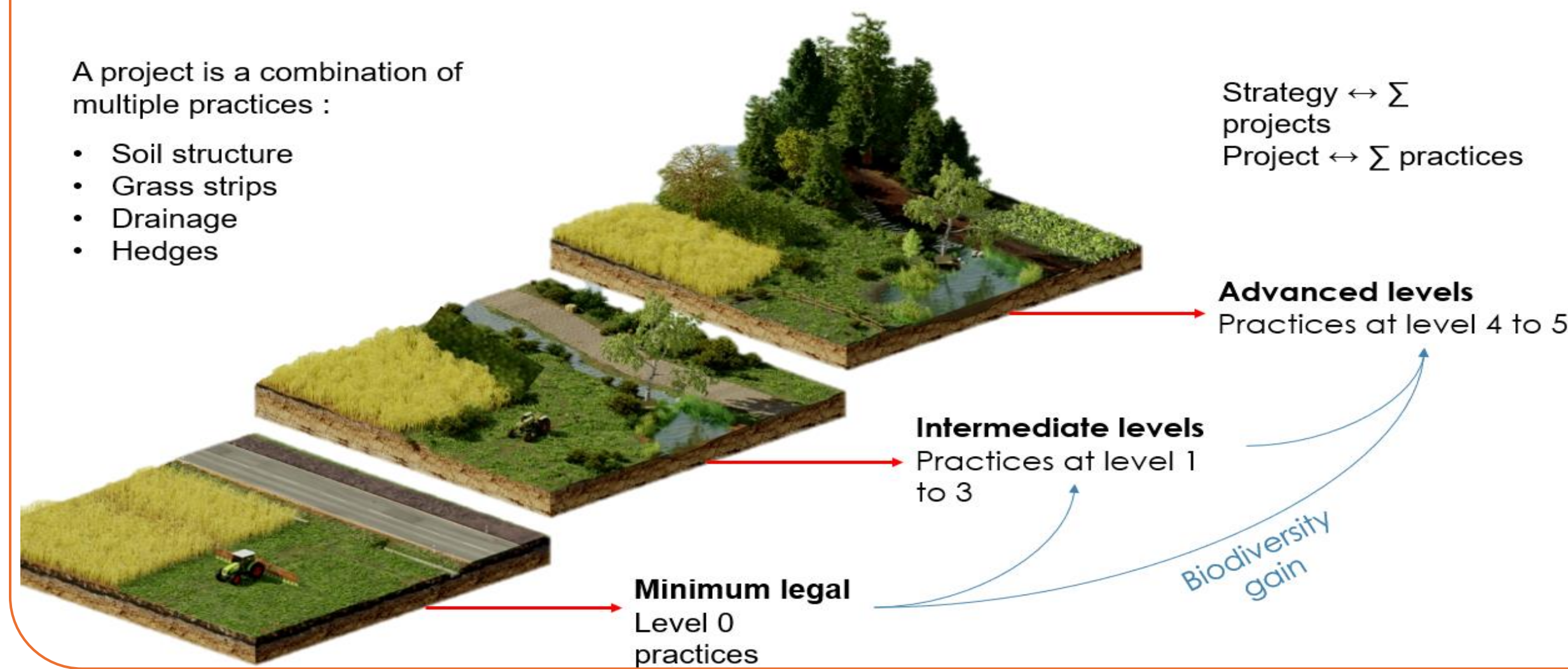
Biodiversity certificates

POSSIBLE USE CASE



A project is a combination of multiple practices :

- Soil structure
- Grass strips
- Drainage
- Hedges



Concept

Biodiversity certificates represent a measured and evidence-based unit of positive **biodiversity uplift**.

- **Contribution-based** approach covering conservation and restoration efforts.
- **No offsetting** (biodiversity loss is not always replaceable).
- Specific to each **socio-ecosystem** (no competition between different ecosystems).
- General framework that can be locally adapted by **stakeholder**.

Prototyping

Biodiversity certificates use **51 nature positive taxonomy** of practices as primary building blocks.

Taxonomy of practices are defined across cumulative levels from 0 (baseline) to 4 or 5 (high ambition), based on expert consensus of "**Puzzling diversity**" project.

Feasibility analysis of practices monitoring through geospatial analysis

Methods

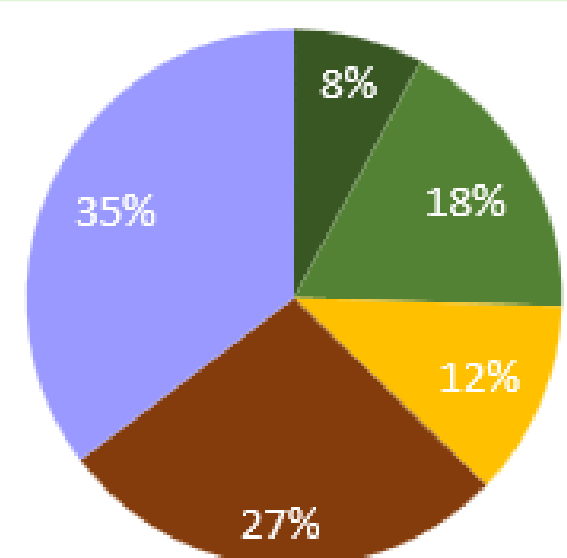
Practices are grouped by **ecosystem types**, then selected and ranked on each use case by local stakeholder to construct a restoration plan.

Remote sensing data and derived products are assessed to determine their **readiness level** for monitoring each practice.

Example - parcel size

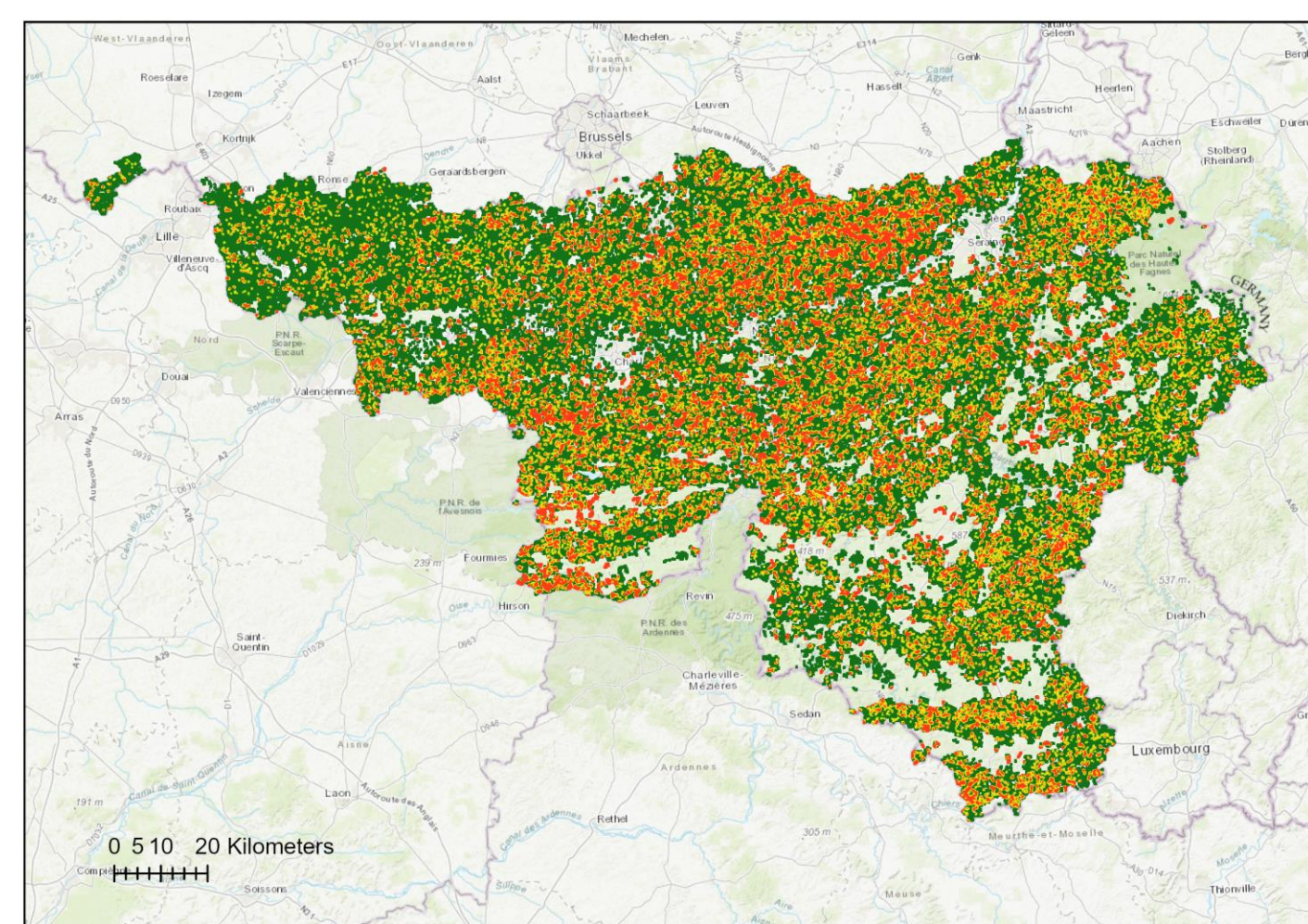
The **Deep Learning plot delineation** shows strong agreement with LPIS reference data, suggesting its potential as an alternative mapping approach in regions where LPIS is unavailable (RMSE = 0.129).

Key findings

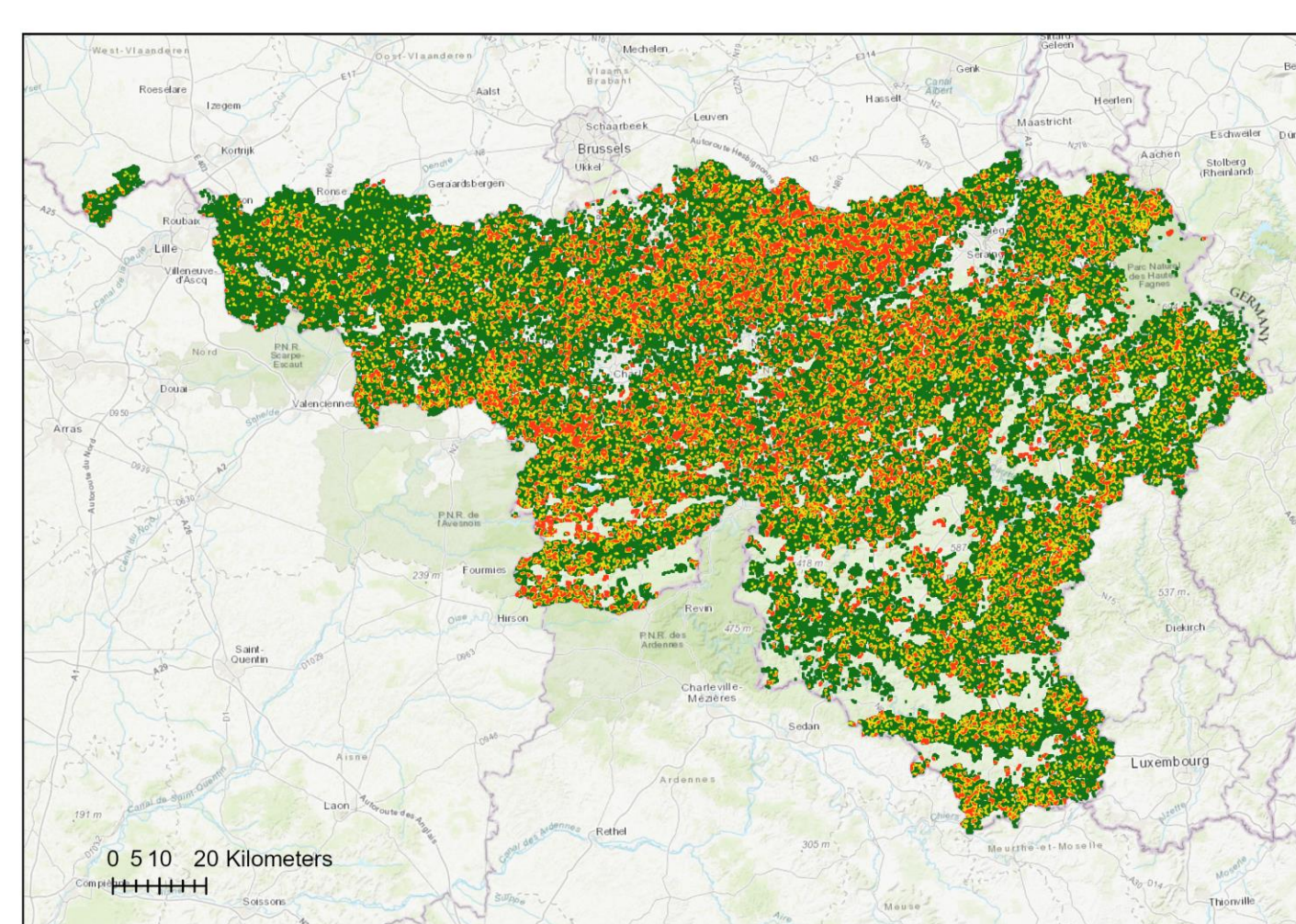


- Based on operational products
- Feasible, but with some analysis
- Not cost effective
- Not feasible
- Limited thematic detail

Year 0 indicator using remote sensing-plot size



Year -1 indicator from LPIS-plot size



Reduction in plot size (excluding grassland)

5	At the farm level, a maximum of 20% of the UAA consists of large parcels.
4	At the farm level, a maximum of 30% of the UAA consists of large parcels.
3	At the farm level, a maximum of 40% of the UAA consists of large parcels.
2	At the farm level, a maximum of 60% of the UAA consists of large parcels.
1	At the farm level, a maximum of 70% of the UAA consists of large parcels.
0	At the farm level, a maximum of 80% of the UAA consists of large parcels.

Synthesis

Forest

Cropland

Riparian corridor

Grassland

Based on operational products

Feasible, but with some analysis

Limited thematic detail

Not cost effective

Not feasible

Certification component	Top level	Main associated outcome from NRR	Certification component	Top level	Main associated outcome from NRR	Certification component	Top level	Main associated outcome from NRR	Certification component	Top level	Main associated outcome from NRR
Trees with dendromicrohabitats	10 trees/ha with dendromicrohabitats	Art 12 :Standing deadwood	Reduce impact of harvesting	No night harvesting, cutting bars > 15cm	Art 11 (3) :Farmland bird index	Noise reduction	Noise <40db	Art 11 (3) :Farmland bird index	Grazing regime	0.1-0.3 LU/ha, conservation grazing	Art 10 :Pollinator population
Deadwood	30m ³ /ha	Art 12 :Standing and lying deadwood	Fertilization	100% of fertilization for diversified organic source.	Art 10 :Pollinator population	Ponds	Healthy pond network	Art 11 (3) :Farmland bird index Art 11 (2) :Share of agricultural land with high-diversity landscape feature	Pollinator forage	Year-long continuity	Art 11 (2) :Share of agricultural land with high-diversity landscape feature
Number of strata	Four vertical strata	Art 12 :Share of forest with uneven-aged structure	Synthetic herbicide	Complies with organic farming	Art 10 : Pollinator population	Water connectivity	Remove all obstacles	Art 9 :Restoration of natural connectivity	Mowing regime	1-2 cuts/year, not before mid-June	Art 10 :Pollinator population Art 11 (3) : Farmland bird index
Natural regeneration	90% of area regenerated with natural regeneration	Art 12 :Share of forest dominated by native tree species	Intraplot agroforestry	More than 8 species, more than 100 trees per ha	Art 11 (2) : Share of agricultural land with high-diversity landscape feature Art 13 : planting additional trees	Riparian zone	Structurally diverse riparian zone	Art 11 (2) :Share of agricultural land with high-diversity landscape feature			
			Temporary grassland	Maintained 5 years	Art 11 (2) :Stock of organic carbon in mineral soils						