Viva Grass Tool application for planning of green network and protected area management

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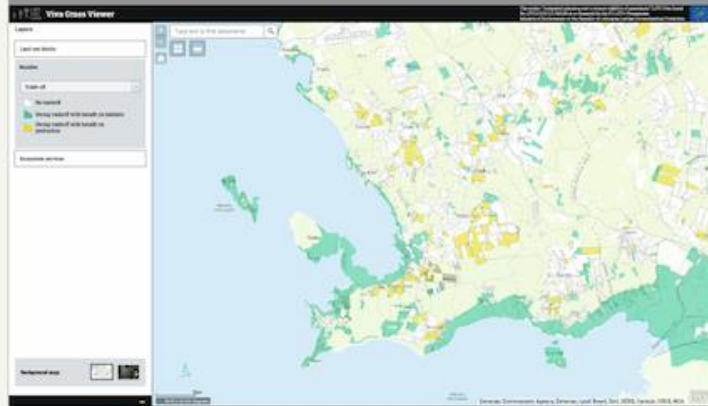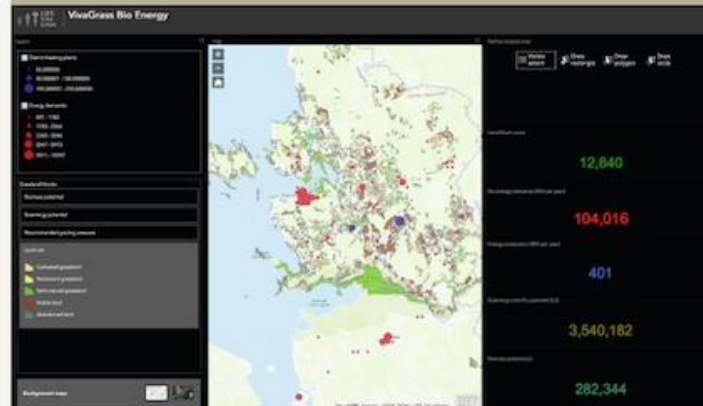# VIVA GRASS INTEGRATED PLANNING TOOL
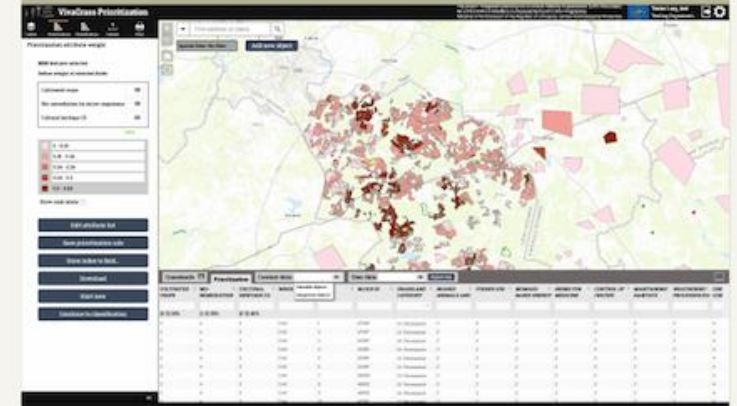
VIVA GRASS VIEWER

For all of us
To understand grasslands'
ecosystem services and their
spatial distribution

VIVA GRASS BIOENERGY

For farmers & planners
To support grassland
management decisions
related to bioenergy

VIVA GRASS PLANNER

For planners
To support grassland
management decisions by
prioritization of different
ecosystem services

Categories of Ecosystem Services

Provisioning services

Products directly used by people

Food:
➢ Crops, wild plants, tea, honey etc.
➢ Reared and wild animals and their outputs

Materials:
➢ Timber, hey, fibbers, herbs for medicine etc.
➢ Genetic material

Energy:
➢ Biomass for energy

Regulating services

Related to the way ecosystems regulate environmental media or processes

Mediation of waste, toxics and other nuisances
➢ Filtration, accumulation

Mediation of flows
➢ Erosion control and water flow maintenance

Maintenance of nature processes
➢ Lifecycle and habitat maintenance;
➢ Water conditions, soil formation, climate control etc.

Cultural services

Related to the cultural or spiritual needs of people

Physical and intellectual interactions
➢ Recreation
➢ Educational and scientific value
➢ Landscape, cultural heritage

Spiritual, symbolic interactions
➢ Symbols and traditions
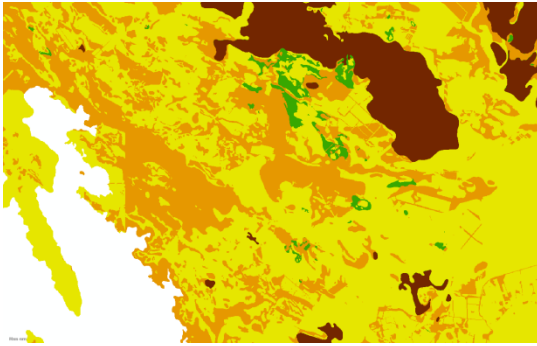➢ Existence and bequest value
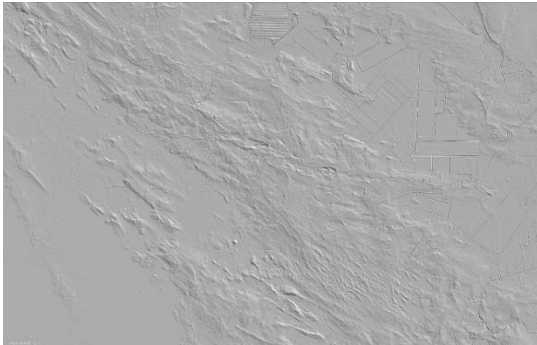
Grassland classes & mapping units

Land quality

> Low land quality
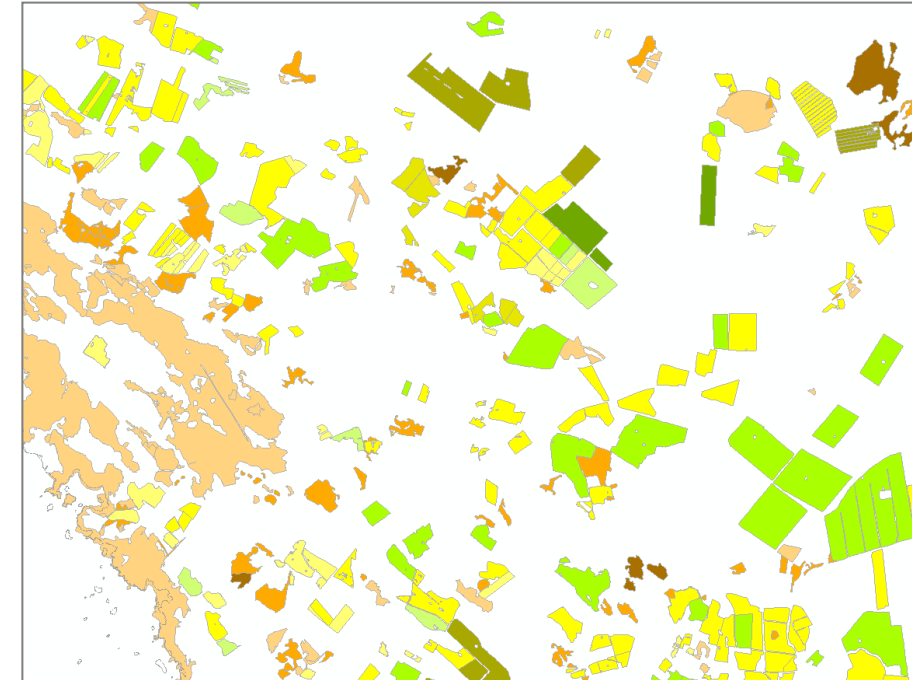> Medium land quality
> High land quality
> Organic soils

Slope

> Plain relief
> Gentle slope
> Steep slope

Management intensity

> Cultivated grassland
> Permanent grassland
> Semi-natural grassland
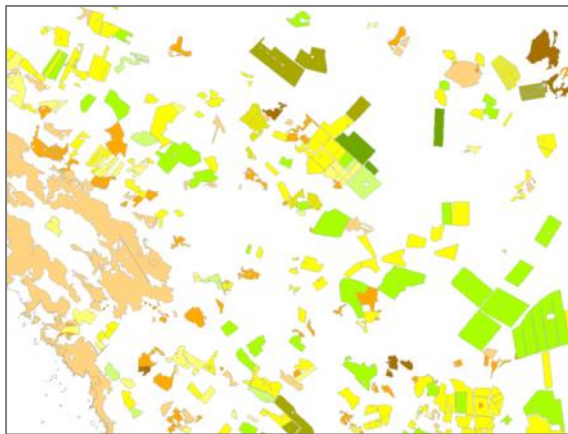
> 36 possible grassland classes
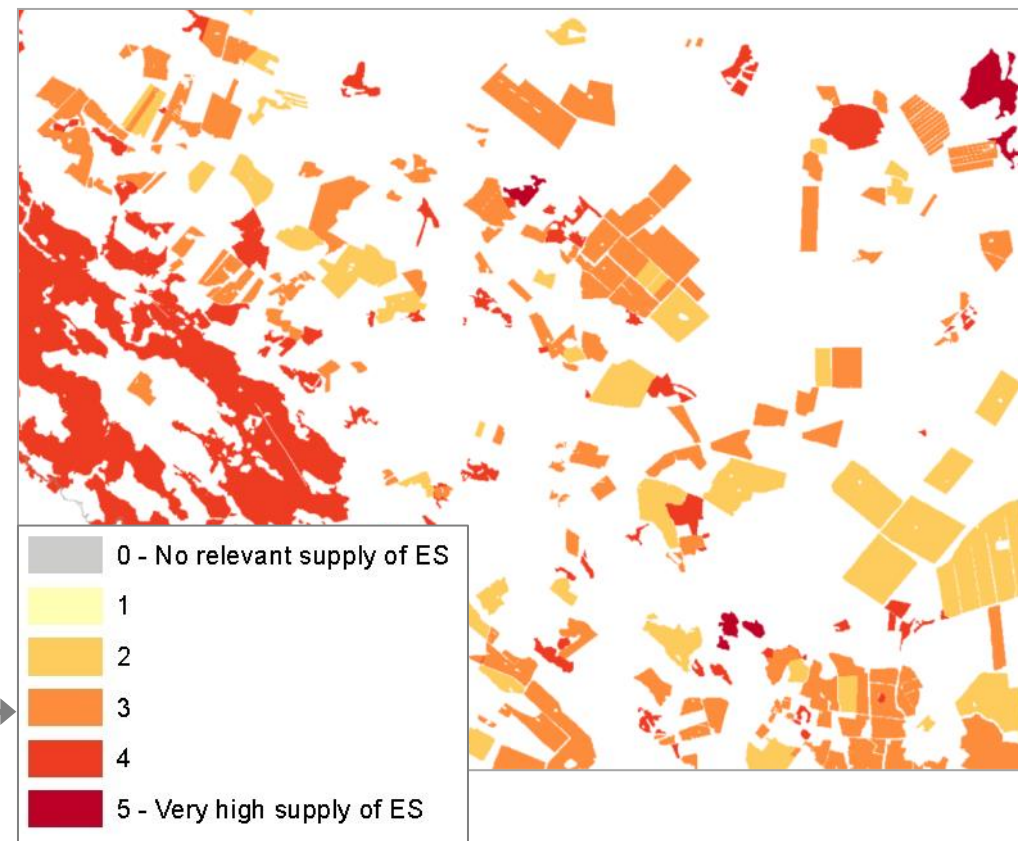> Additional 10 arable land classes

MAPPING UNIT!!!!!!

Grasslands types map

Matrix for expert-based assessment

Land category		Provisioning				
		Cultivated crops (t /ha per year)	Reared animals and their outputs Number of animals units (n/ha)	Fodder Standing stock (t /ha per year)	Biomass-based energy sources Standing stock (t /ha per year)	Herbs for medicine (number of species/1m2)
1.	Cultivated grassland on plain relief, low soil fertility	0	3	2	2	1
2.	Cultivated grassland on plain relief, medium soil fertility	0	4	3	3	1
3.	Cultivated grassland on plain relief in, high soil fertility	0	5	4	4	1
4.	Cultivated grassland on plain relief, organic soils	0	4	3	3	1
5.	Cultivated grassland on gentle slope in low soil fertility	0	3	2	2	1
6.	Cultivated grassland on gentle slope, medium soil fertility	0	4	3	3	1
7.	Cultivated grassland on gentle slope, high soil fertility	0	5	4	4	1
8.	Cultivated grassland on gentle slope, organic soil	0	4	3	3	1
9.	Cultivated grassland on steep slope low soil fertility	0	3	2	2	1
10.	Cultivated grassland on steep slope, medium soil fertility	0	4	3	3	1

ES supply capacity map

- 0 - No relevant supply of ES
- 1
- 2
- 3
- 4
- 5 - Very high supply of ES

LIFE Viva Grass

ES category	Provisioning					Regulation & Maintenance								
	Cultivated crops (t /ha per year)	Reared animals and their outputs Number of animals units (n/ha)	Fodder Standing stock (t /ha per year)	Biomass-based energy sources Standing stock (t /ha per year)	Herbs for medicine (number of species/1m2)	Bio-remediation by micro-organisms, plants and animals; Indicator: ???	Filtration/storage/accumulation by ecosystems; Indicator: Soil capacity to store/accumulate nutrients (Kg ha⁻)*	Control of (water) erosion rates Slope steepness (degrees, o), content of soil particle size – sand, silt, clay (%)	Pollination and seed dispersal; Indicator: Diversity and occurrence of insects pollinators (number of species and nuber of	Maintaining habitats for plant and animal nursery and reproduction; Indicator: Number of species per 1 m2 (except	Weathering processes/soil fertility Nutrients available for plant uptake by most important soil texture classes	Chemical condition of freshwaters Absobption of nutrients in soil	Global climate regulation Carbon sequestration in vegetation and soils
Cultivated grassland on plain relief, low soil fertility													
Cultivated grassland on plain relief , medium soil fertilty													
Cultivated grassland on plain relief in, high soil fertility													
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Cultivated grassland on steep slope low soil fertility													
Cultivated grassland on steep slope, medium soil fertilty													
Permanent grassland on plain relief in, low soil fertility													
Permanent grassland on plain relief , medium soil fertilty													
Permanent grassland on plain relief, high soil fertility													
Permanent grassland on plain relief, organic soils													
Permanent grassland on gentle slope, low soil fertility													
Permanent grassland on gentle slope , medium soil fertilty													

0 – No relevant supply of ES / 5 – very high-maximum supply of ES
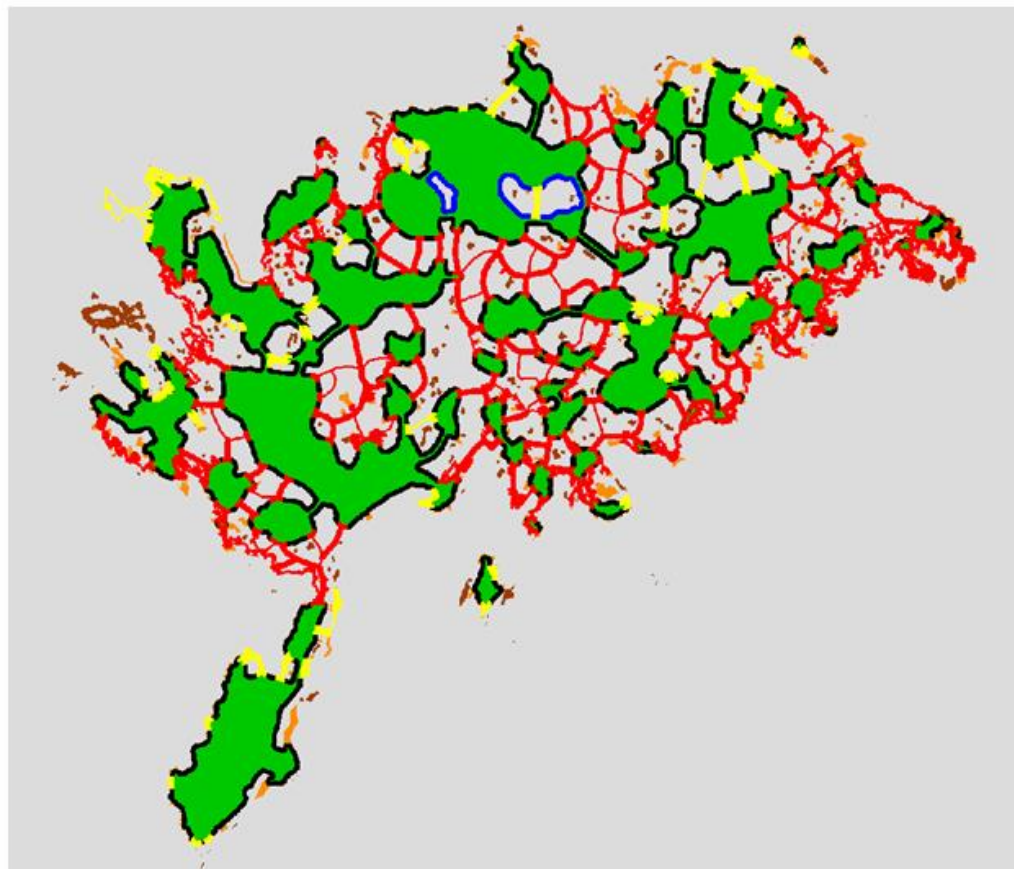
Example: Assessment of grasslands for expansion of green network in Saaremaa, Estonia (LIFE Viva Grass project)

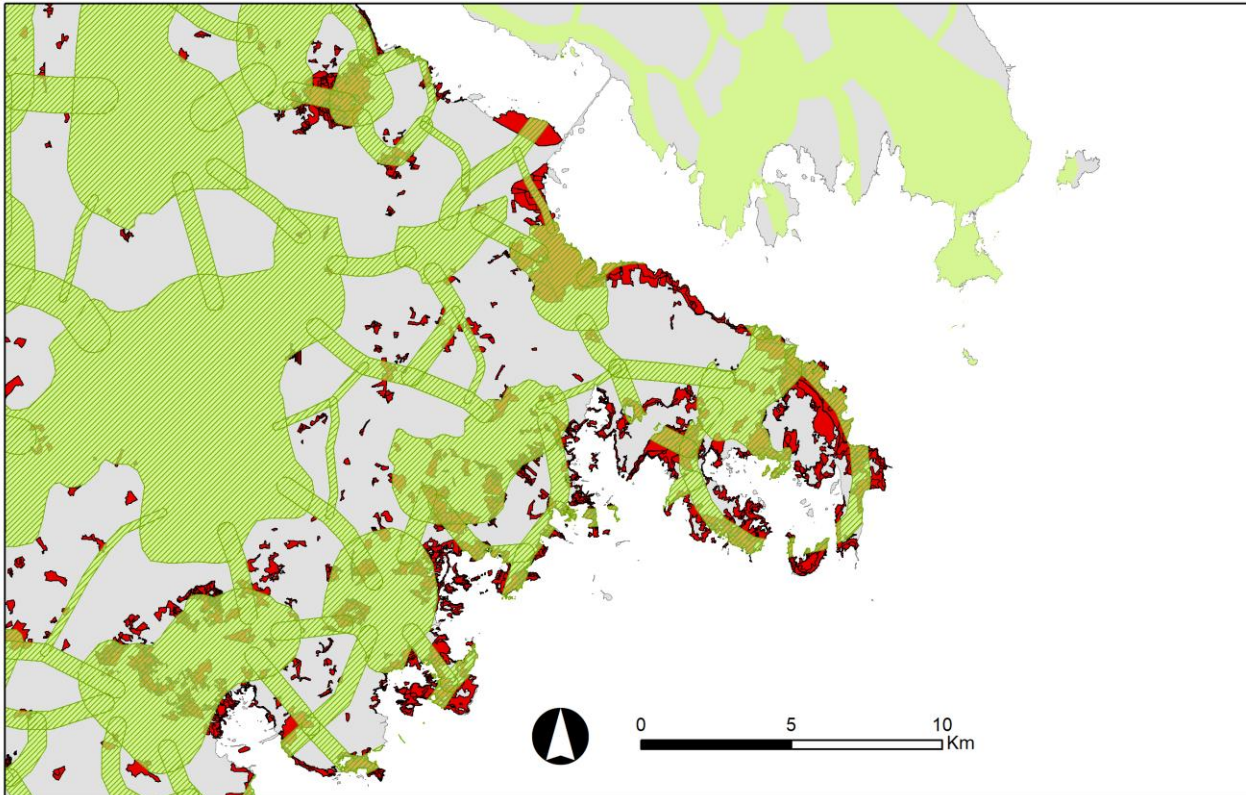Assessment of grassland within existing GN
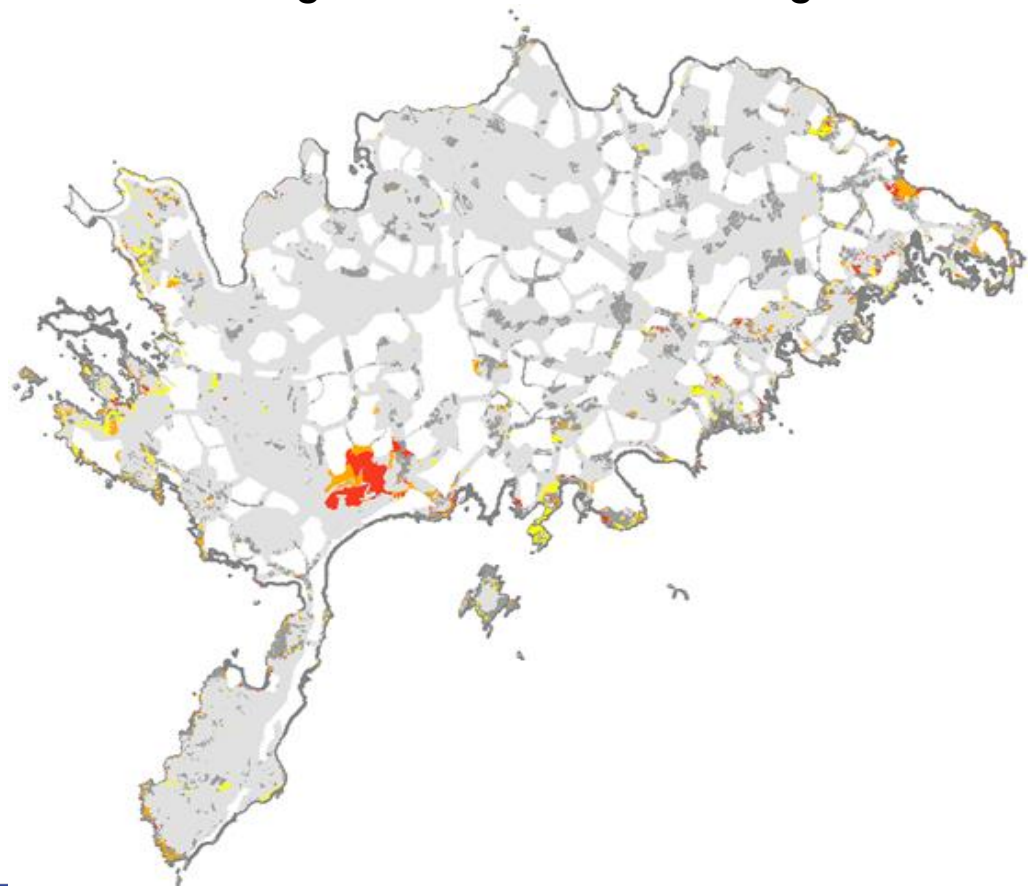
Assessment of grassland outside of existing GN

1. Guide planners into the adoption of GN in rural municipality General Plan

2. Stress the role of grasslands in GN (delivery of ES, conservation status)

3. Conflict detection

4. Scenario-based

› **Grasslands in the Habitats Bundle**

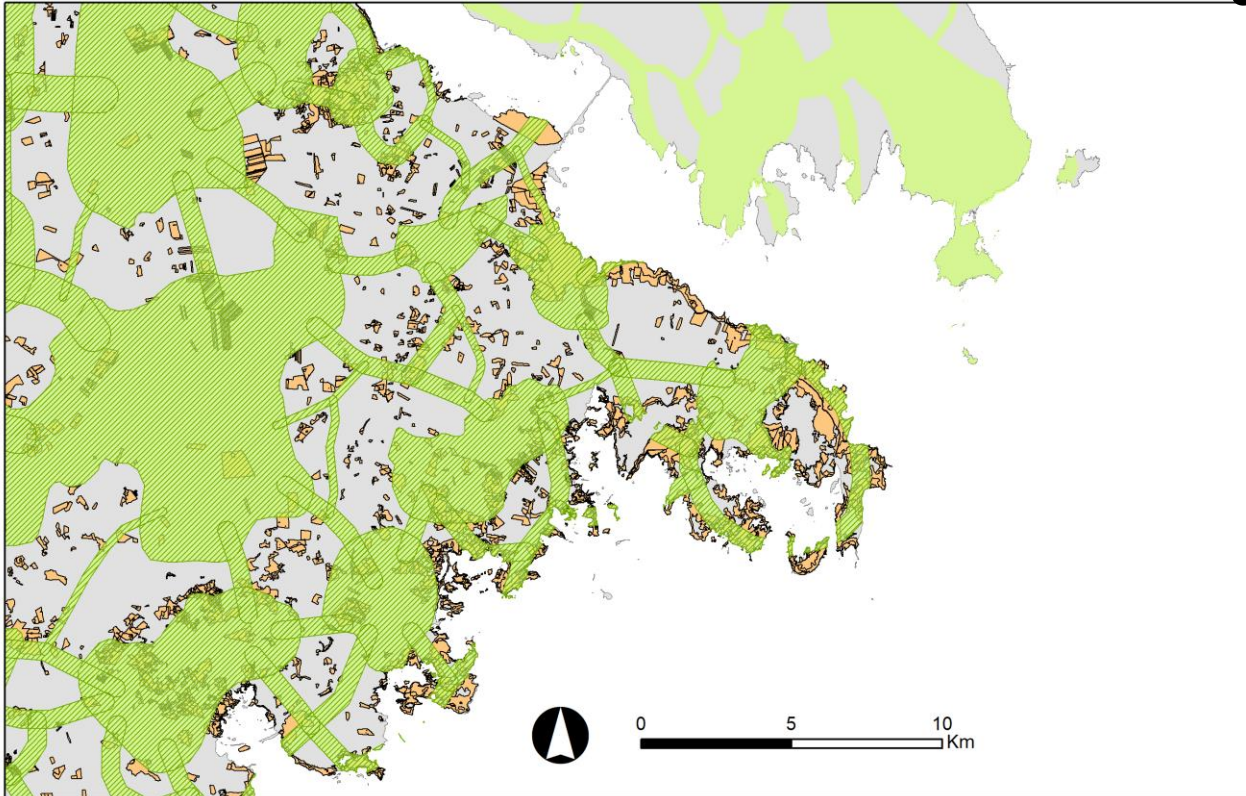|	
Pollination and seed dispersal	↑
Maintaining habitats	↑
Global climate regulation	↑
Herbs for medicine	↑
Control of erosion rates	↑
Chemical condition of fresh waters	↑
Bio-remediation	↑
Filtration/storage/accumulation	↑
Soil fertility	↑
Fodder	↔
Biomass based energy sources	↔
Reared animals and their outputs	↔
Cultivated crops	↔

› **Grasslands in the Habitats Bundle**
› **Grasslands intersect protected species areas**

Pollination and seed dispersal	⬆
Maintaining habitats	⬆
Global climate regulation	⬆
Herbs for medicine	⬆
Control of erosion rates	↑
Chemical condition of fresh waters	↑
Bio-remediation	↑
Filtration/storage/accumulation	↑
Soil fertility	↑
Fodder	↔
Biomass based energy sources	↔
Reared animals and their outputs	↔
Cultivated crops	↔
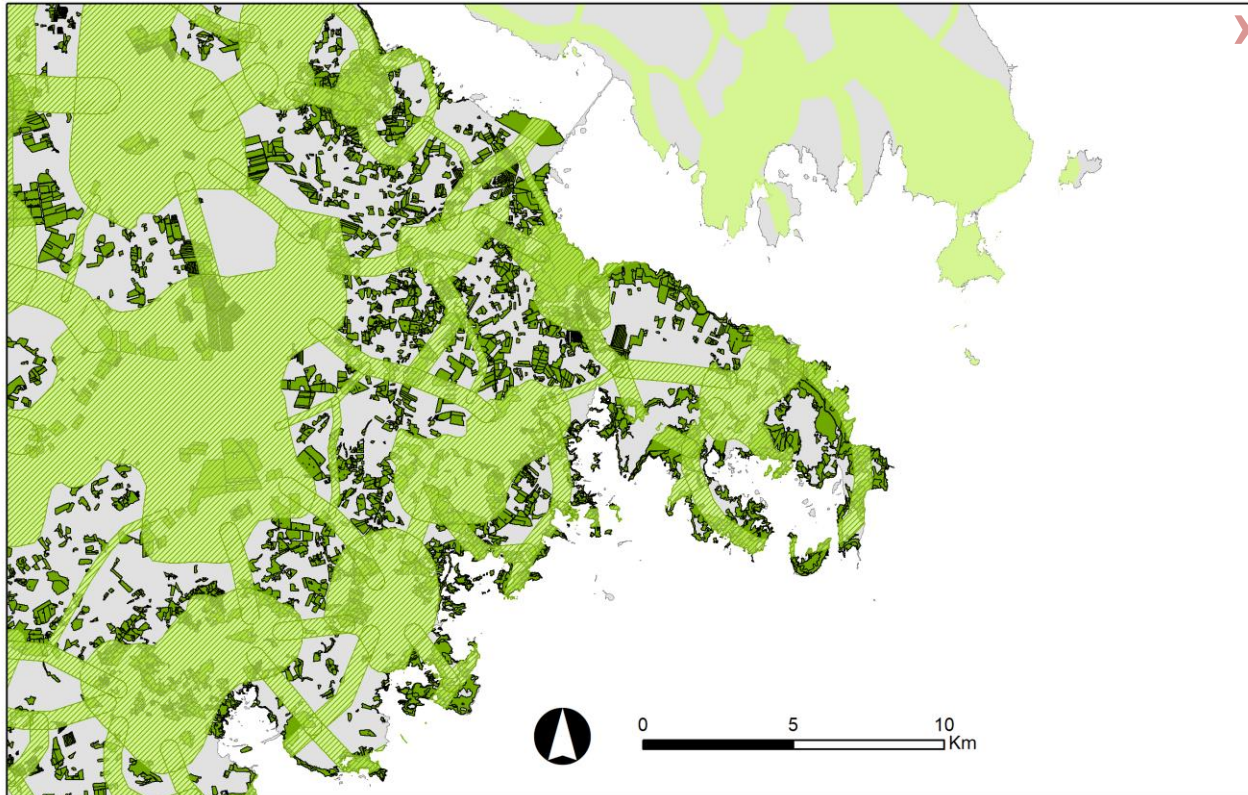
› **Grasslands in the Habitats Bundle**
› **Grasslands intersect protected species areas**
› **Grasslands in Soils bundle**

Pollination and seed dispersal

Maintaining habitats

Global climate regulation

Herbs for medicine

Control of erosion rates

Chemical condition of fresh waters

Bio-remediation

Filtration/storage/accumulation

Soil fertility

Fodder

Biomass based energy sources
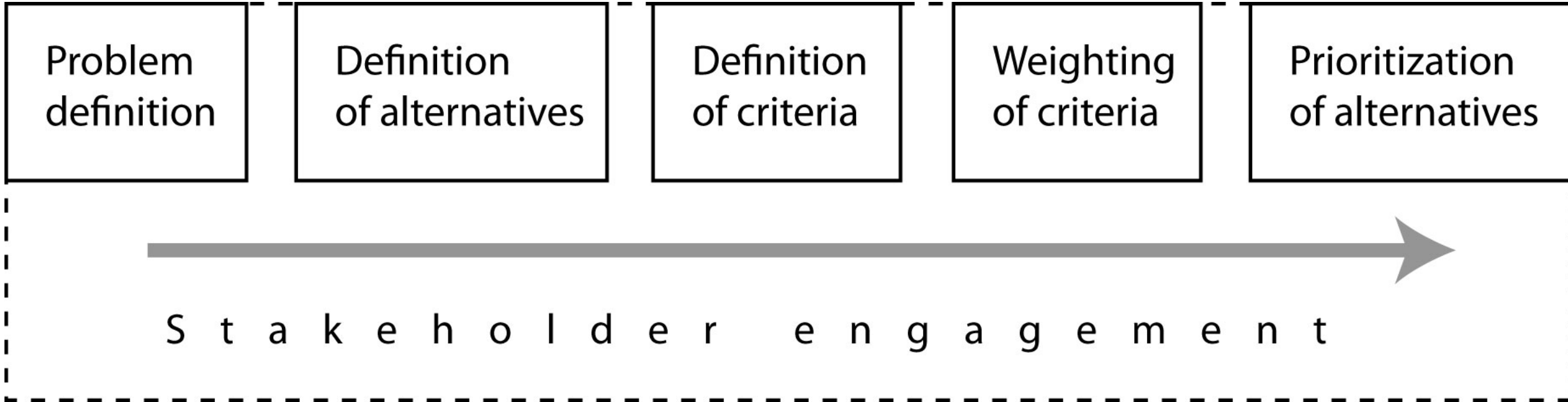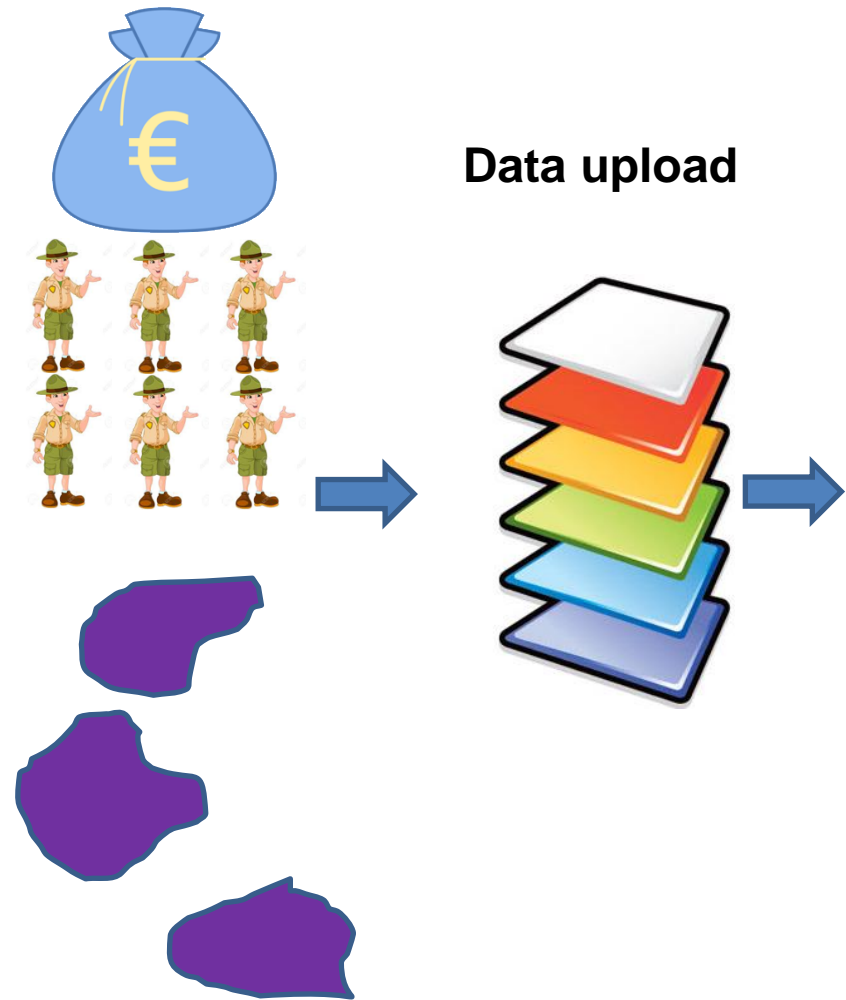
Reared animals and their outputs

Cultivated crops

| Problem definition | Definition of alternatives | Definition of criteria | Weighting of criteria | Prioritization of alternatives |

Stakeholder engagement

Setting priorities for grassland management in the protected areas

Data upload

Choosing priority criteria:
- **Species number and importance;**
- **Conservation status of the area;**
- **Ecosystem services (e.g. potential for tourism);**
- **Infrastructure availability;**
- **Management frequency needs;**
- **Risk of abonnement;**
- **Area importance to local community;**
- **Economic viability preconditions**
- **...**
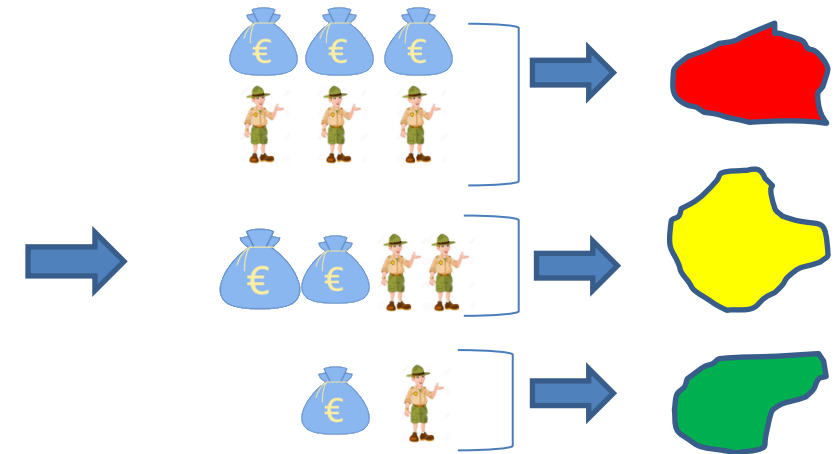
Thank you!

Questions and comments

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