



Integrated planning Tool of grassland management

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LIFE Viva Grass LIFE13 ENV/LT/000189

2018

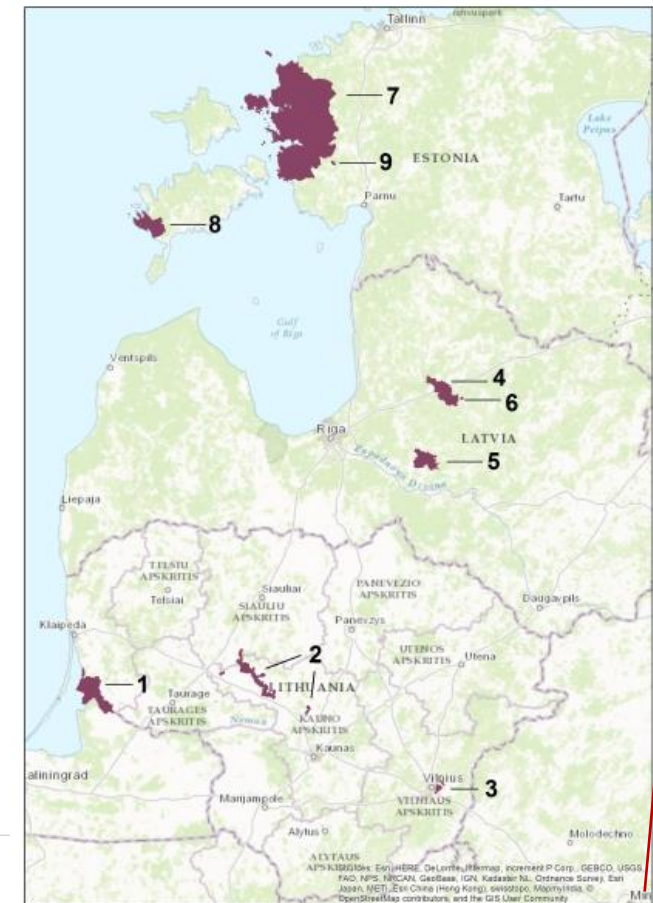
www.vivagrass.eu

About the LIFE Viva Grass project

- ✓ Title – “Integrated planning tool to ensure viability of grasslands”
- ✓ Funding programme: EC LIFE+ Environment
- ✓ Duration – ca. 5 years (June 2014 - April 2019)
- ✓ 9 cases study areas in Lithuania, Latvia and Estonia

- ✓ Partners (14):

- **Co-ordination:** BEF-LT (Lead partner); BEF-LV; BEF-EE
- **Scientific and technical support:** University of Latvia, Estonian University of Life Science, JSC Hint-Baltic, Institute of Environmental Solutions
- **Case study representatives:**
 - LT: Pavilniai and Verkiiai Regional Park; Dubysa Regional Park; Silute District Municipality
 - LV: Cēsis municipality, Farm “Kalnāju ferma”
 - EE: Lääne-Saare municipality, Farm “Saare Rantso”



LIFE Viva Grass

General objective:

- ✓ to support maintenance of biodiversity and ecosystem services provided by grasslands, through encouraging ecosystem-based approach to planning and viable grassland management

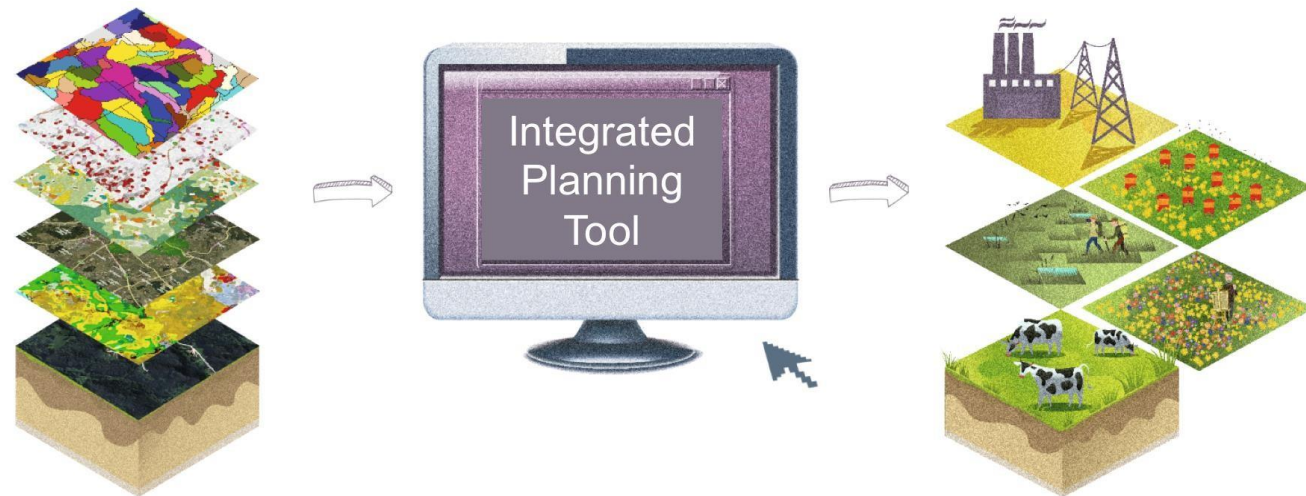
The major task:

- ✓ development of an integrated planning tool
 - > to operationalize the concept of ecosystem services (ES) into decision making and enhancing grassland related ecosystem service supply



Viva Grass tool

- ✓ a **spatially explicit decision support tool** for land-use planning and sustainable management of agroecosystems
- ✓ **main functions:**
 - › mapping and assessment of agro-ecosystem services from local to national level;
 - › grassland management recommendations
 - › multi-criteria decision support for planning



Viva Grass Integrated Planning Tool

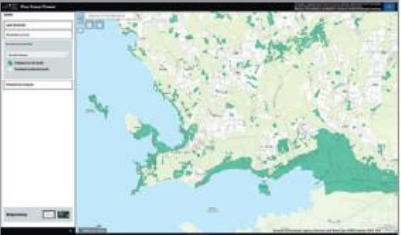


3 modules



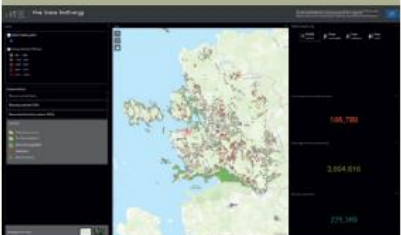
Data products of the Tool

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

- Viva Grass basemap
- Viva Grass data management tools
- Derivative data products
- Contextual data related to ecosystem service assessment

Viva Grass Viewer

- ✓ Data on national level:
 - >
 - > VivaGrass overview – data aggregated in 5 ×5 km grid cells
 - > Percentage of permanent grasslands
 - > ES bundles and trade-offs
 - > Cold/hot spots of ES supply

Layers

- Natura2000 Sites
- VivaGrass overview
 - Percentage of permanent grasslands from all agricultural land
 - 0 - 5
 - 5 - 35
 - 35 - 50
 - 50 - 80
 - 80 - 100

Agricultural land use

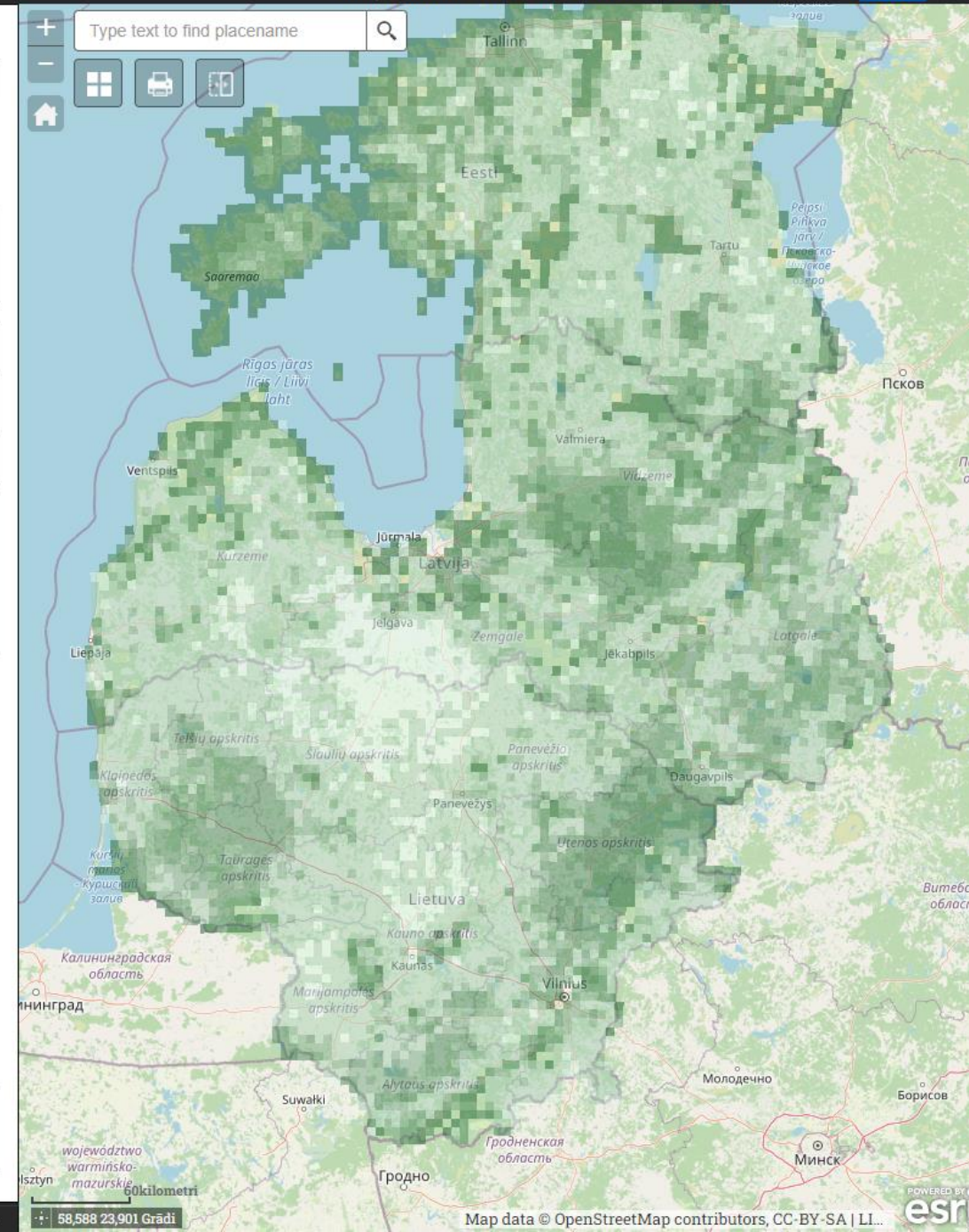
Ecosystem services

Bundles and tradeoffs

Hotspots and coldspots ⓘ

Hotspot-coldspot ES

No data in visible map extent. Please zoom in and/or pan to see data




Viva Grass Viewer

✓ Data on farmland field level :

- › agriculture land use type
- › ecosystem services
- › bundles and trade-offs
- › cold/hot spots



✓ Assessment of land-use change impact

✓ Recommendation on most appropriate management



Viva Grass Viewer

The project "Integrated planning tool to ensure viability of grasslands" (LIFE Viva Grass)
 No LIFE13 ENV/LT/000189 is co-financed by the EU LIFE+ Programme,
 Ministry of Environment of the Republic of Lithuania, Administration of Latvian...

Layers

- Protected areas
- Natura2000 Sites
- VivaGrass overview

Agricultural land use

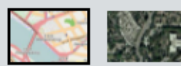
Ecosystem services (i)


Fodder

- 0: N.A.
- 1: very low productivity of grass biomass (<1 t/ha)
- 2: low productivity of grass biomass (2-3 t/ha)
- 3: moderate productivity of grass biomass (4-7 t/ha)
- 4: high productivity of grass or crop biomass (8-9 t/ha)
- 5: very high productivity of grass or crop biomass (>10 t/ha)


Bundles and tradeoffs

Hotspots and coldspots

Background map: 



57,117 24,945 Grādi

Map data © OpenStreetMap contri... 

Land use block information (i)

Location: **Siguldas novads, Latvia**

Land use type: **7. Cultivated grassland on gentle slope, high land quality**

Natura 2000 habitat code:

Bundle / Ecosystem service (i)

ES value change when applying land use change:

| | | |
|-----------------------------|---|-----|
| Production | Reared animals and their outputs | 4.5 |
| | Fodder | 4.0 |
| | Biomass-based energy sources | 3.5 |
| | Weathering processes/soil fertility | 3.0 |
| | Cultivated crops | 2.5 |
| Habitats | Herbs for medicine | 2.0 |
| | Maintaining habitats | 1.5 |
| | Global climate regulation | 1.0 |
| | Pollination and seed dispersal | 0.5 |
| Soil | Control of erosion rates | 3.0 |
| | Chemical condition of freshwaters | 3.5 |
| | Bio-remediation | 3.0 |
| | Filtration/storage/accumulation by ecosystems | 2.5 |
| Cultural ecosystem services | Educational | 1.0 |
| | Cultural heritage | 1.0 |
| | Aesthetics | 1.0 |
| | Physical and experiential interactions | 1.0 |

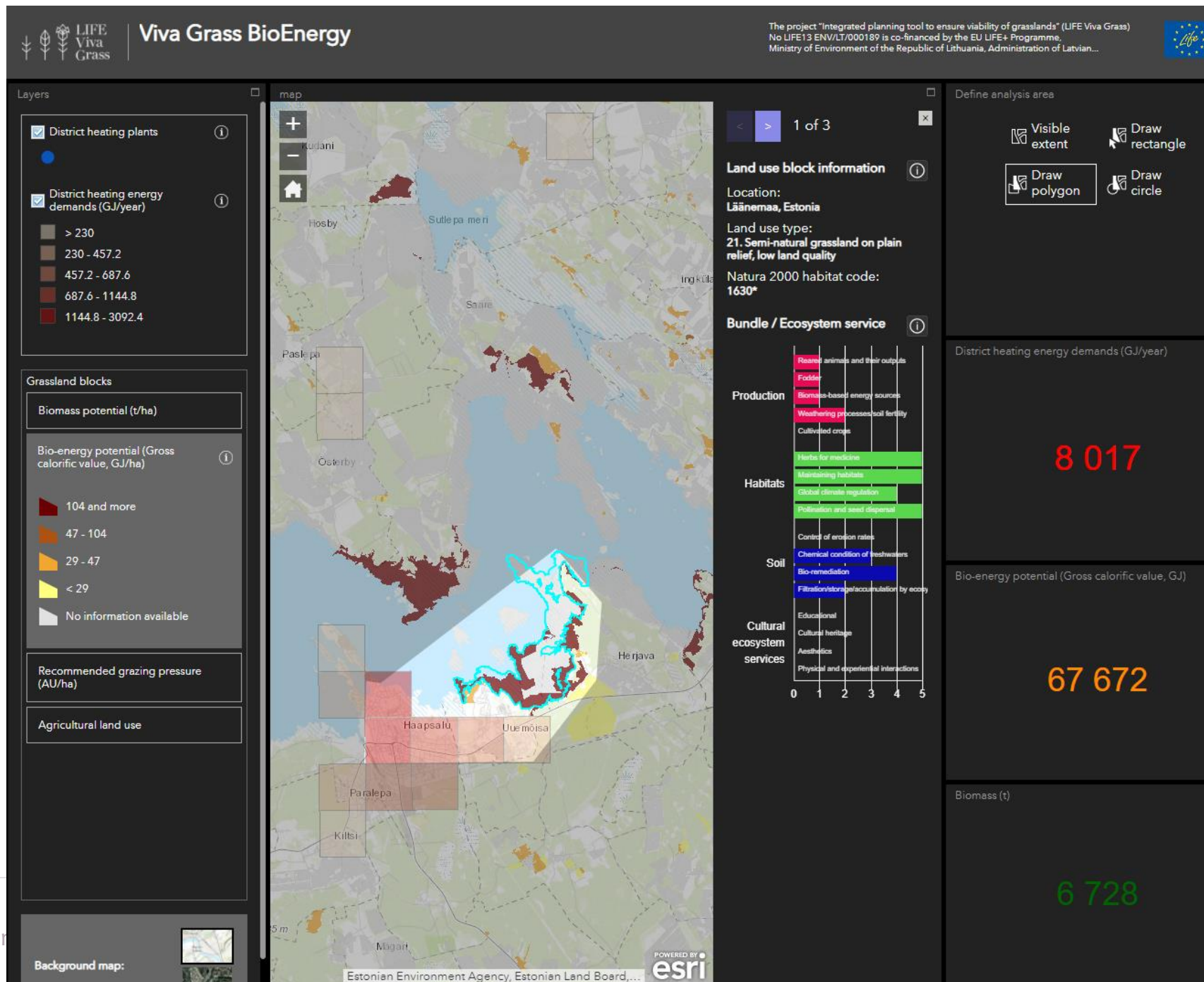
Recommendations: (i)

The most appropriate management is intensive grazing or obtaining grass biomass from 8 to 9 t/ha. There are a low biological diversity value and low capacity to retain soil quality. Grassland have quit important role of control of erosion, therefore recommended for use management methods without deep soil treatment.



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Viva Grass BioEnergy



✓ Data on the level of farmland field/ selected polygon:

- > Biomass potential (t/ha)
- > Bio-energy potential (GJ/ha)
- > Recommended grazing pressure
- > District heating energy demand



LIFE Viva Grass

Viva Grass Planner

- ✓ Requires registration and GIS skills
- ✓ Suitable for various planning contexts:
 - Multi-criteria analysis (user defined attributes and weights)
 - Prioritisation
 - Categorization
 - Allows data uploading & downloading

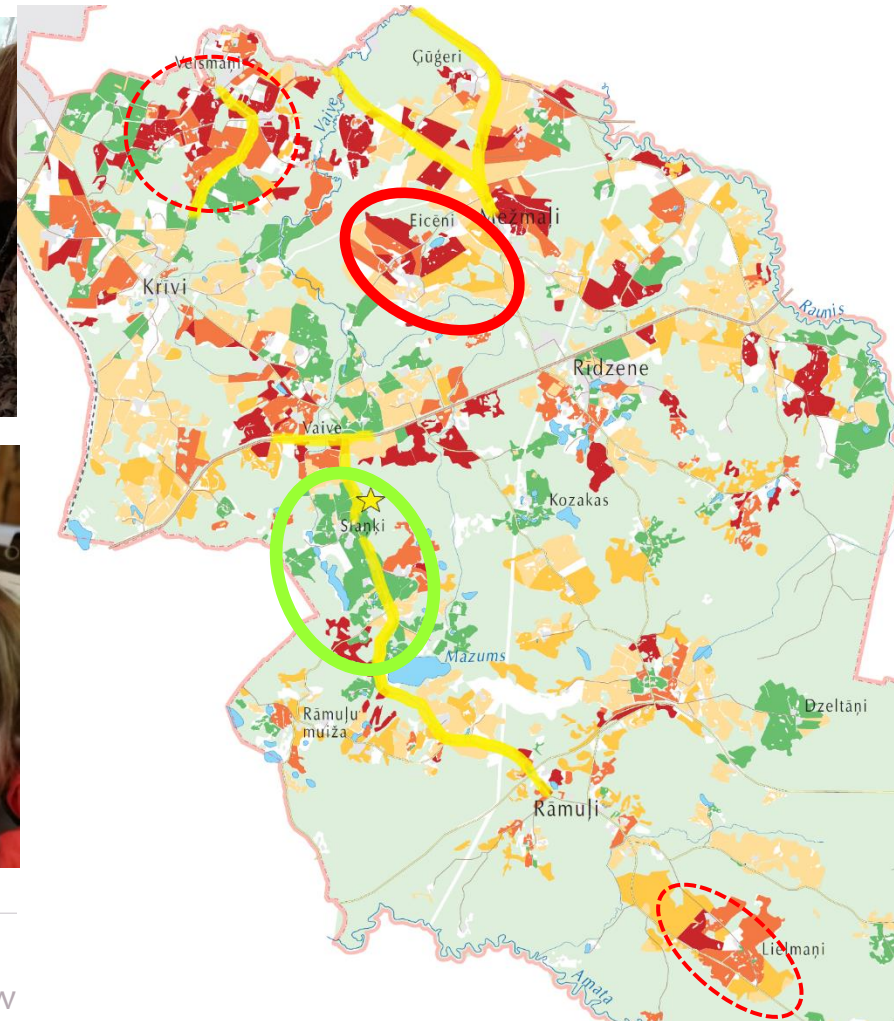
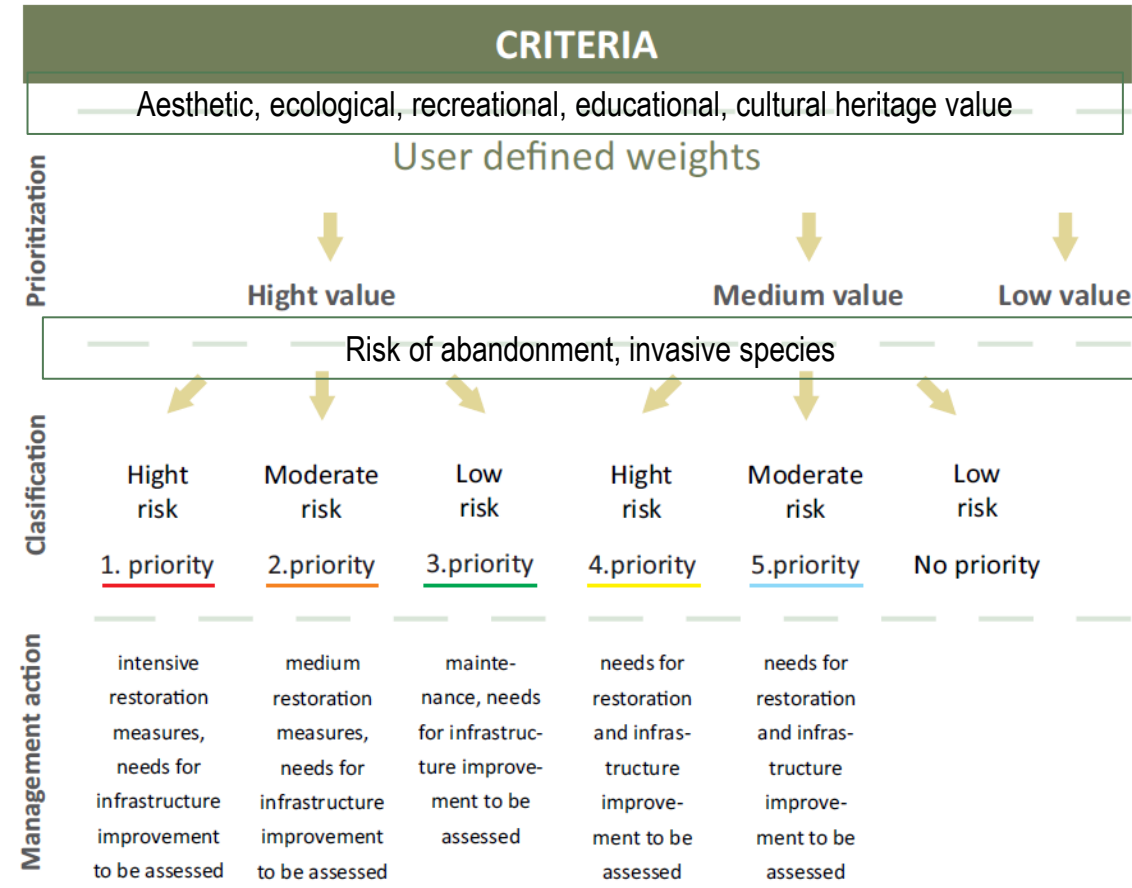
The screenshot shows the Viva Grass Planner interface. The top navigation bar includes 'Layers', 'Prioritization', 'Classification', 'Print', and 'Settings'. The main map area displays a spatial filter with 'No filter' and an 'Add new object' button. The left sidebar shows the 'Prioritization attribute weight' section with 5080 features selected and a warning that analysis will slow down the browser. The 'Define weight of selected fields' section lists attributes and their weights: Educational CS (12), Cultural heritage CS (22), Aesthetics CS (25), Physical CS (18), and ekopot2 (23). A legend below shows priority score ranges: 0.22 - 0.65 (983), 0.15 - 0.22 (872), 0.1 - 0.15 (1047), 0.1 - 0.1 (0), and 0 - 0.1 (2040). The bottom section contains a data table with columns for EDUCATIONAL CS, CULTURAL HERITAGE CS, AESTHETICS CS, PHYSICAL CS, EKOPOT2, INDEX, RANK, BLOCK ID, GRASSLAND CATEGORY, REARED ANIMALS AND, FODDER ESS, and BIOMASS-BASED ENER.

| EDUCATIONAL CS | CULTURAL HERITAGE CS | AESTHETICS CS | PHYSICAL CS | EKOPOT2 | INDEX | RANK | BLOCK ID | GRASSLAND CATEGORY | REARED ANIMALS AND | FODDER ESS | BIOMASS-BASED ENER |
|----------------|----------------------|---------------|-------------|-----------|-------|------|----------|--------------------|--------------------|------------|--------------------|
| (0-5) 12% | (0-5) 22% | (0-5) 25% | (0-5) 18% | (0-4) 23% | | | | | | | |
| 0 | 3 | 5 | 1 | 4 | 0.65 | 1 | 0 | 21 Semi-natural... | 1 | 1 | 1 |
| 0 | 3 | 5 | 1 | 4 | 0.65 | 2 | 0 | 25 Semi-natural... | 1 | 1 | 1 |
| 5 | 4 | 3 | 5 | | 0.63 | 3 | 3557 | 21 Semi-natural... | 1 | 1 | 1 |
| 5 | 4 | 3 | 5 | | 0.63 | 4 | 4152 | 2 Cultivated... | 4 | 4 | 3 |
| 5 | 4 | 3 | 5 | | 0.63 | 5 | 7484 | 12 Permanent... | 3 | 2 | 2 |
| 5 | 4 | 3 | 5 | | 0.63 | 6 | 11482 | 11 Permanent... | 2 | 2 | 1 |
| 5 | 4 | 3 | 5 | | 0.63 | 7 | 10575 | 12 Permanent... | 3 | 3 | 2 |
| 5 | 4 | 3 | 5 | | 0.63 | 8 | 11468 | 11 Permanent... | 2 | 2 | 1 |
| 5 | 4 | 3 | 5 | | 0.63 | 9 | 11406 | 11 Permanent... | 2 | 2 | 1 |



Viva Grass Planner applications: landscape management planning in Cēsis municipality

✓ Prioritisation of areas for landscape restoration and maintenance



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Viva Grass Planner applications: planning of Green infrastructure in Lielupe river basin

- ✓ Prioritisation of areas for GI (buffer stripe) restoration
- ✓ Classification rule based on the set of agro-ecological conditions

VERY HIGH PRIORITY

Arable land and cultivated grasslands on organic soils and inside flood risk zone

HIGH PRIORITY

Arable land and cultivated grasslands inside flood risk zone

MEDIUM PRIORITY

Arable land and cultivated grasslands on organic soils near the rivers

LOW PRIORITY

Arable land and cultivated grasslands near the rivers

EXISTING GREEN INFRASTRUCTURE

Semi-natural and permanent grasslands near the rivers (possible subdivision by agro-ecological conditions)

Viva Grass Planner

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Layers Prioritization Classification Calculation more

Esri World Geocoder

Spatial filter: 36531.49 ha Add new object

Show only filtered grasslands

Warning! 2105 objects selected! Analysis will slow down your web browser.

| Color Name | Count | Expression | Edit | Del |
|--------------------|-------|--|------|-----|
| Existing GI | 198 | (natcat = 'sn' OR natcat = 'p') AND ua1 > 0 | Edit | Del |
| Very high priority | 4 | (natcat = 'arb' OR natcat = 'c') AND ua2 > 0 AND soilcat = 'organic' | Edit | Del |
| High priority | 164 | (natcat = 'arb' OR natcat = 'c') AND ua2 > 0 | Edit | Del |
| Medium priority | 46 | (natcat = 'arb' OR natcat = 'c') AND ua1 > 0 AND soilcat = 'organic' | Edit | Del |
| Low priority | 256 | (natcat = 'arb' OR natcat = 'c') AND ua1 > 0 | Edit | Del |

Add...

Save classification rule

Download

Start new

Land use blocks Prioritization Context data: User data Import shp

Map data © OpenStreetMap contributors, CC-BY-SA | Life



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Transferability of the good practice

- ✓ Tool applied by other users/projects in the Baltic States, e.g.:
 - › «ENGRAVE» for green infrastructure planning
 - › «Land-Sea-Act» for ecosystem service mapping
 - › University of Latvia to support study process (in courses of landscape ecology and natural capital)
 - › Estonian National MAES process “ELME” use its tools and modules for national level ES mapping
- ✓ Tool can be adapted for countries outside the Baltic region, if required data are available:
 - › data from Integrated Administration and Control System (IACS) of payments to farmers
 - › soil maps (typology used in the Eastern Europe, including land quality assessment index)
 - › digital elevation model
- ✓ All information about the tool and its modules, data products, methodology for data aggregation and creation of basempa, etc. available at: <https://vivagrass.eu/integrated-planning-tool/>



Thank you!



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