URBAN SMS Soil Management Strategy

CENTRAL EUROPE COOPERATING FOR SUCCESS.

EUROPEAN UNION EUROPEAN REGIONAL DEVELOPMENT FUND

ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

Bodenbewertung für urbanes Bodenmanagement - Ergebnisse aus dem Projekt Urban SMS

St. Florian, 6.Oktober 2011

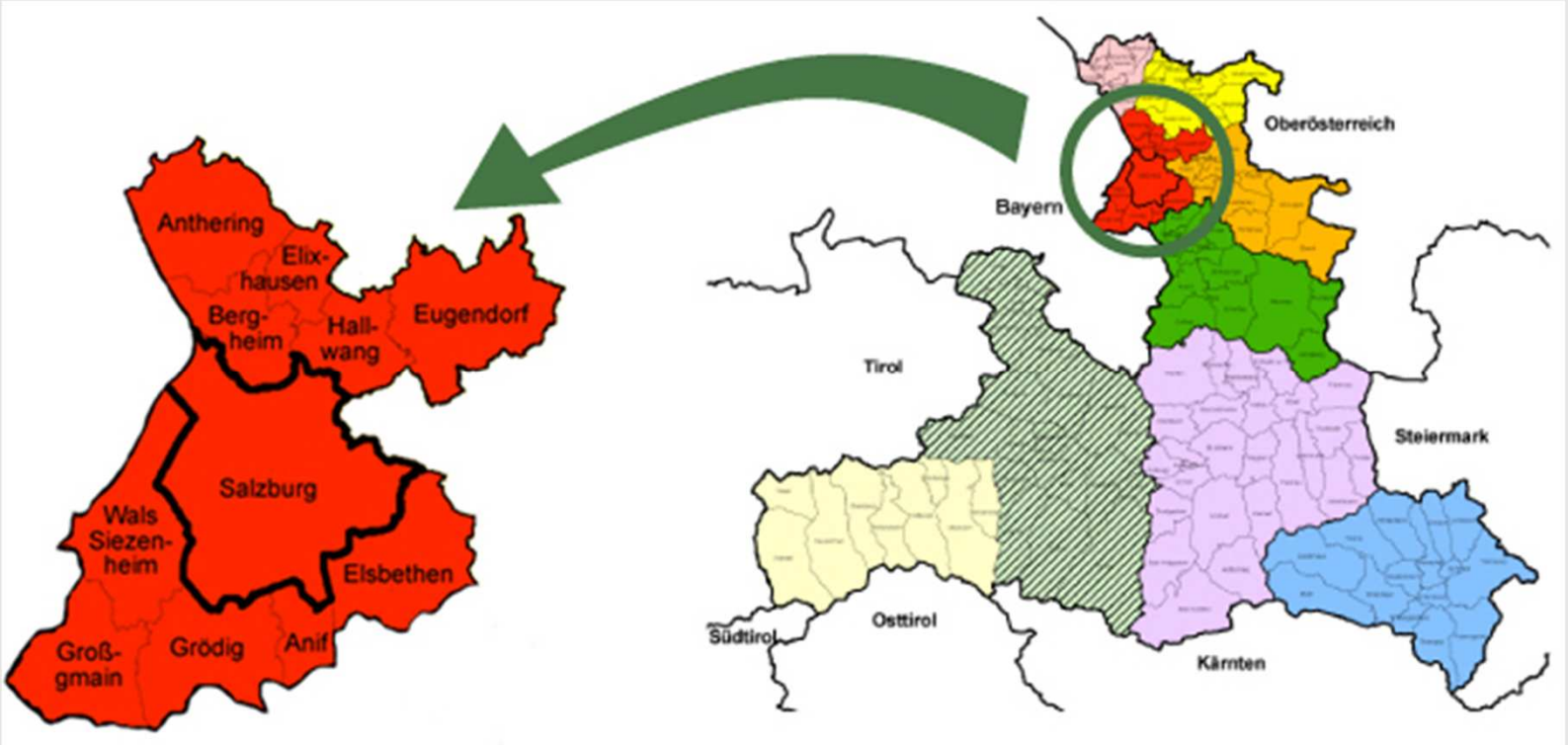
Project goals

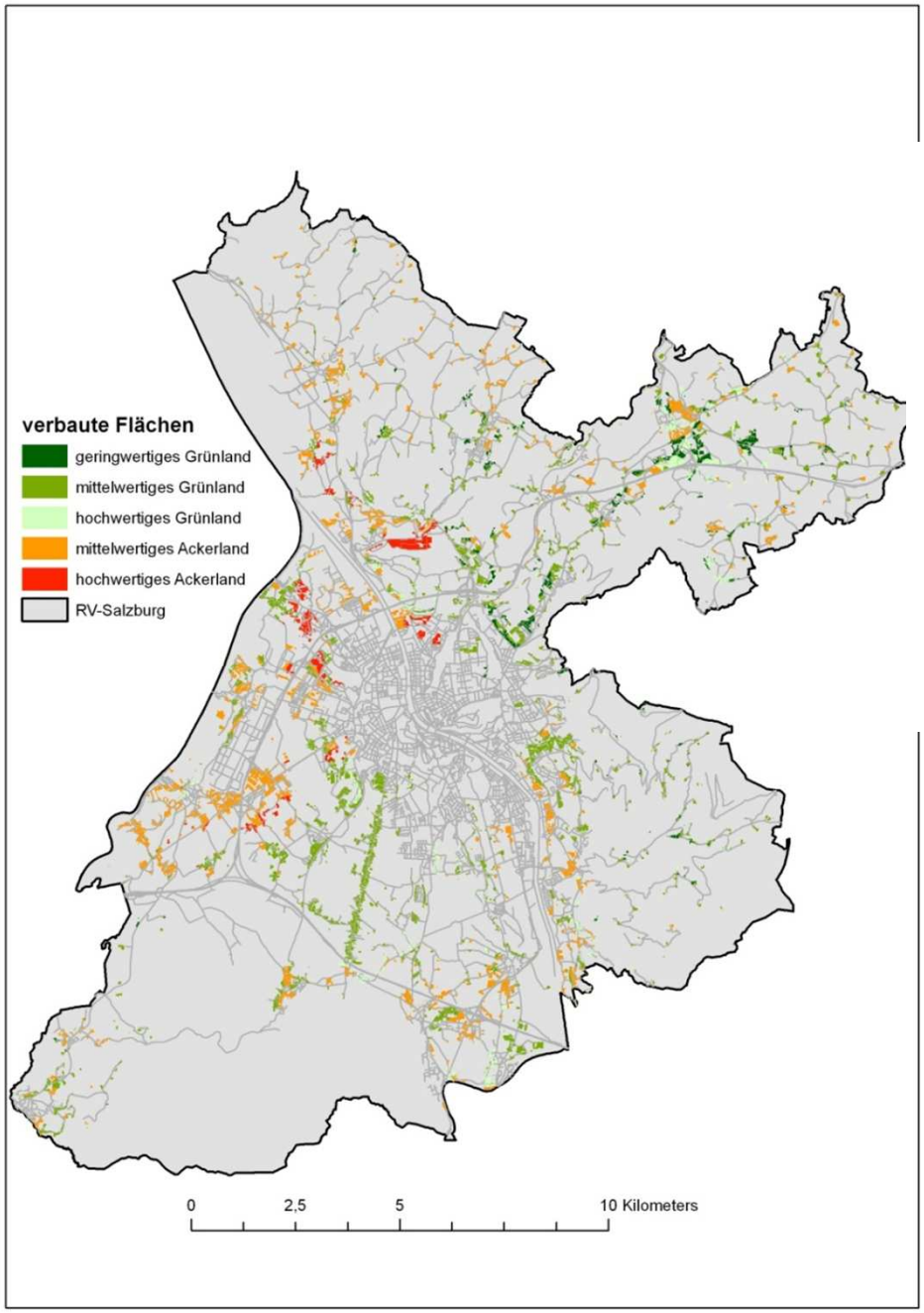
- Reduction of soil consumption (rate) / soil sealing
- Sustainable use of soils / soil functions
- Preventive orientation of soil management in spatial planning
- Maximization of benefit for society and environment

Evaluation tools

- Ecosystem Soil Quality tool
- Agricultural Soil Quality tool
- Soil Contamination tool
- Loss of Soil Resource tool
- Sealing Rate tool
- Water Drainage tool
- Connectivity tool
- Proximity tool

Test region Salzburg - RVS





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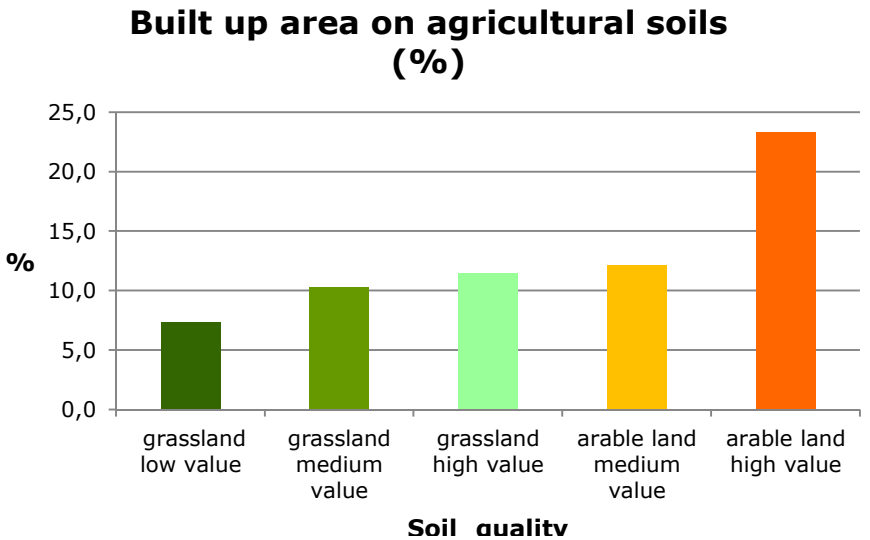
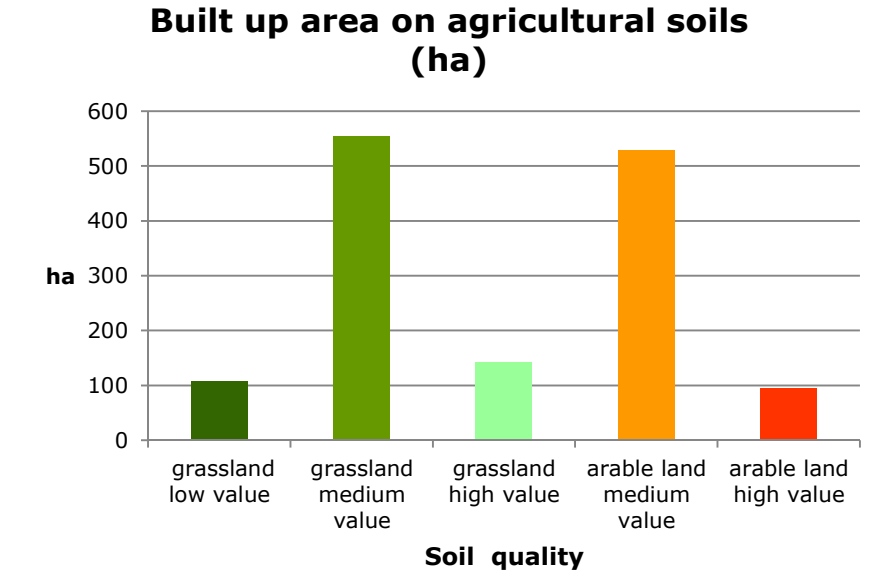
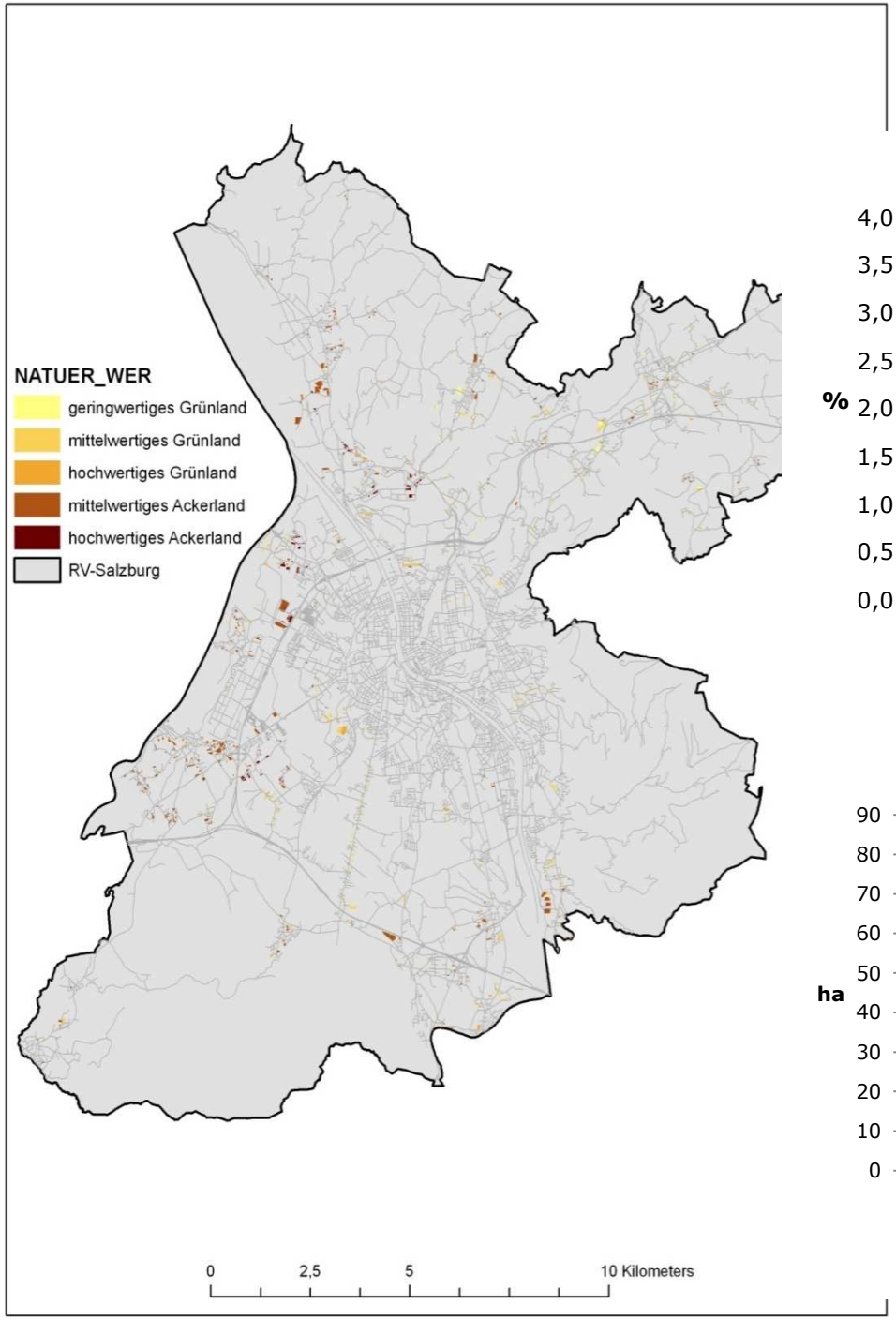
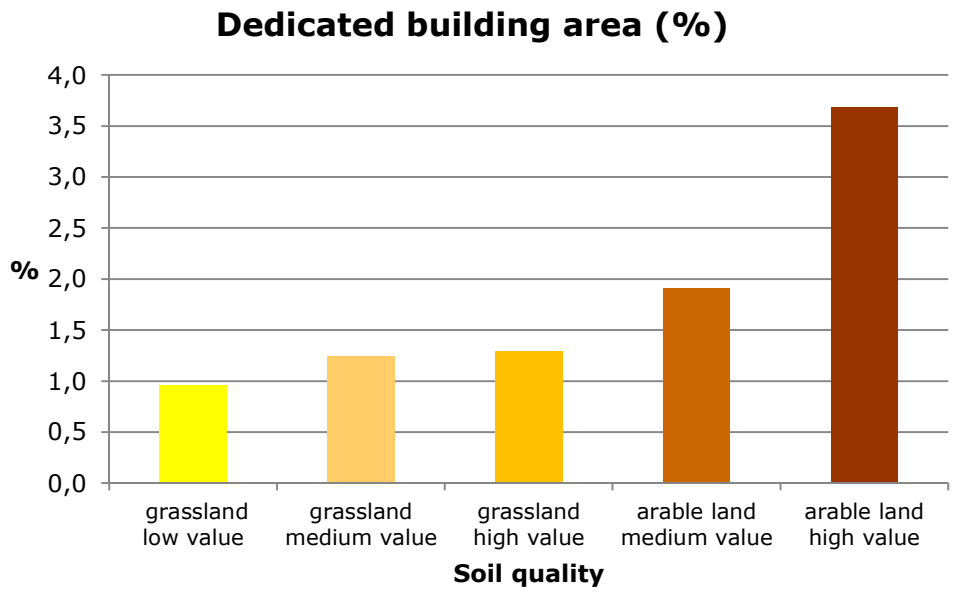
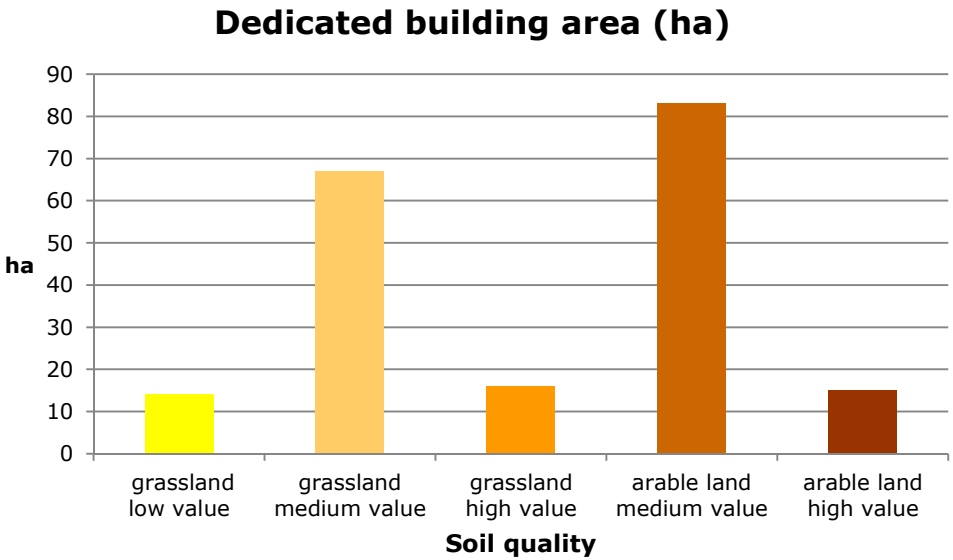


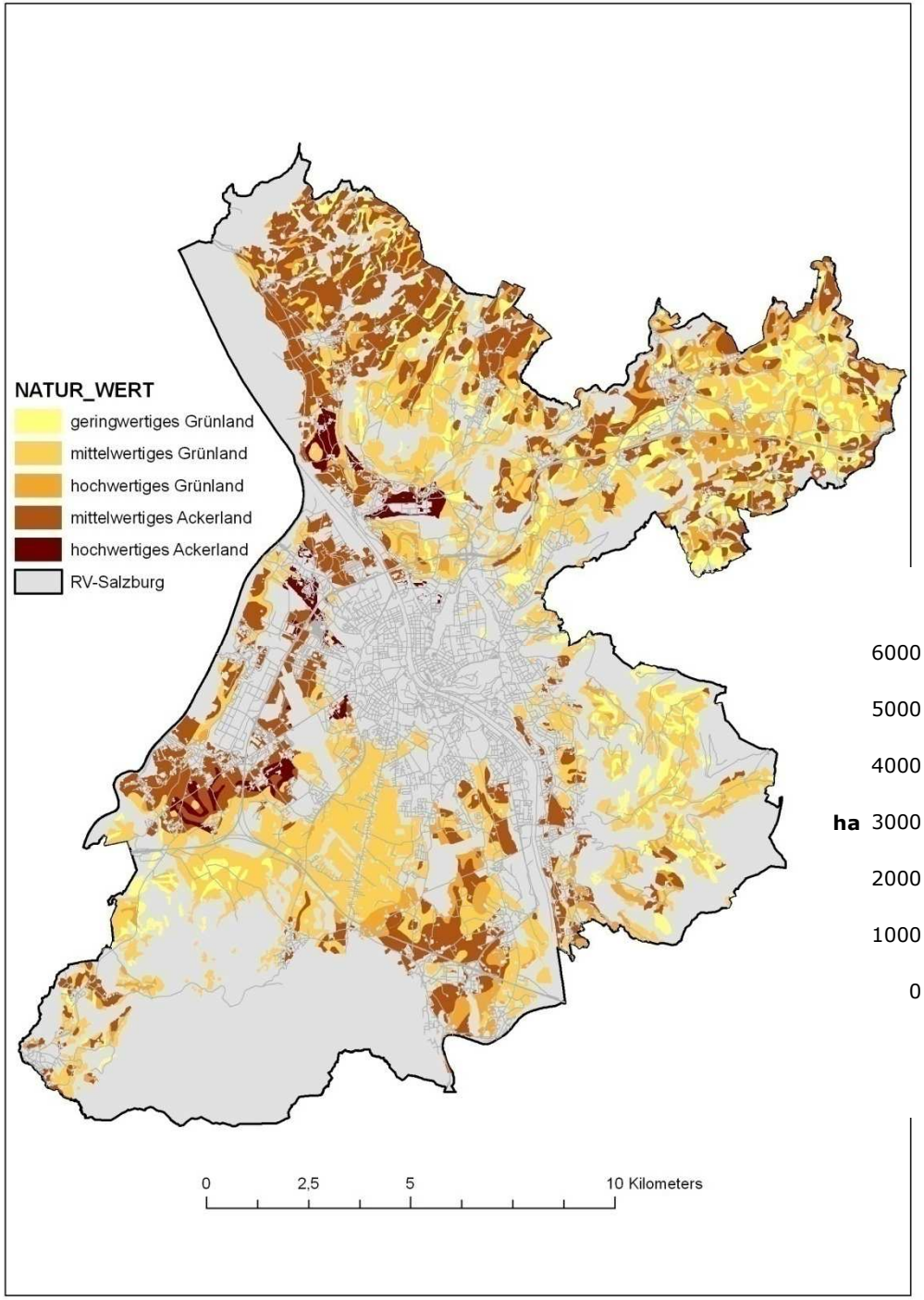




ENVIRONMENT AGENCY AUSTRIA **umweltbundesamt**

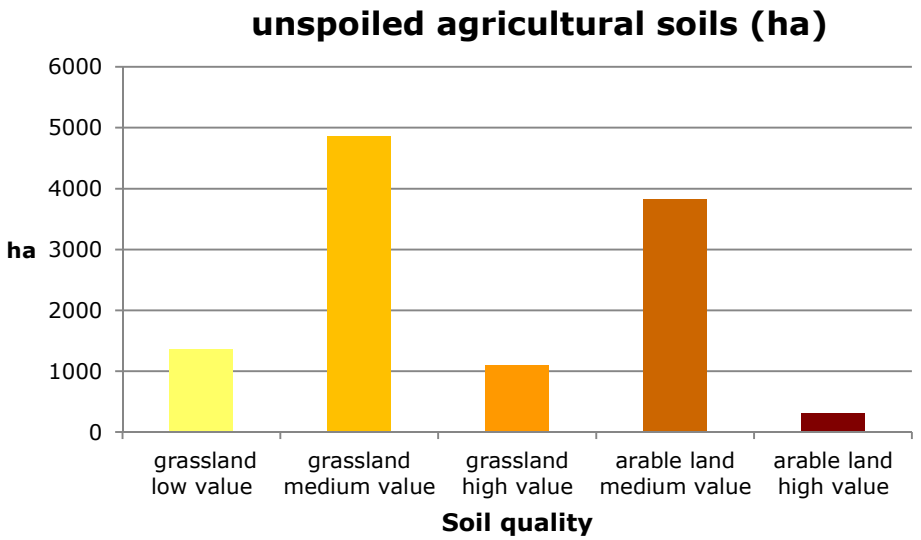






ENVIRONMENT AGENCY AUSTRIA umweltbundesamt

Soil still under agricultural use!



Classification of soil data

Tools	*Single parameters*	*Weight*	*Good (1)*	*medium (2)*	*bad (3)*
			very good (1)	*good (2)*	*medium (3)*
Ecosystem soil quality (ESQ)	soil organic matter content class - topsoil	2	>4 (Forest > 6)	2-4 (Forest 4-6)	<2 (Forest <4)
	soil pH class - topsoil	2	5-7	3,5-5; 7,0-8,0	<3.5; >8,0
	topsoil depth (m)/ rootable depth	3	>30	10-30	<10
	soil texture class	3	15 < clay < 25	5 < Clay < 15 or 25 < clay < 40	clay ≥ 40; clay ≤ 5 and silt ≤ 55%;
	soil contamination class - based on **SCFood**	3	1	2	3
	nutrient status class	2			

- Guidelines for appropriate fertilization
- Expert knowledge and literature (Blum et. al 1989)
- Austrian Standard ON L1075 – guideline values for heavy metals in soils

Data preparation ESQ

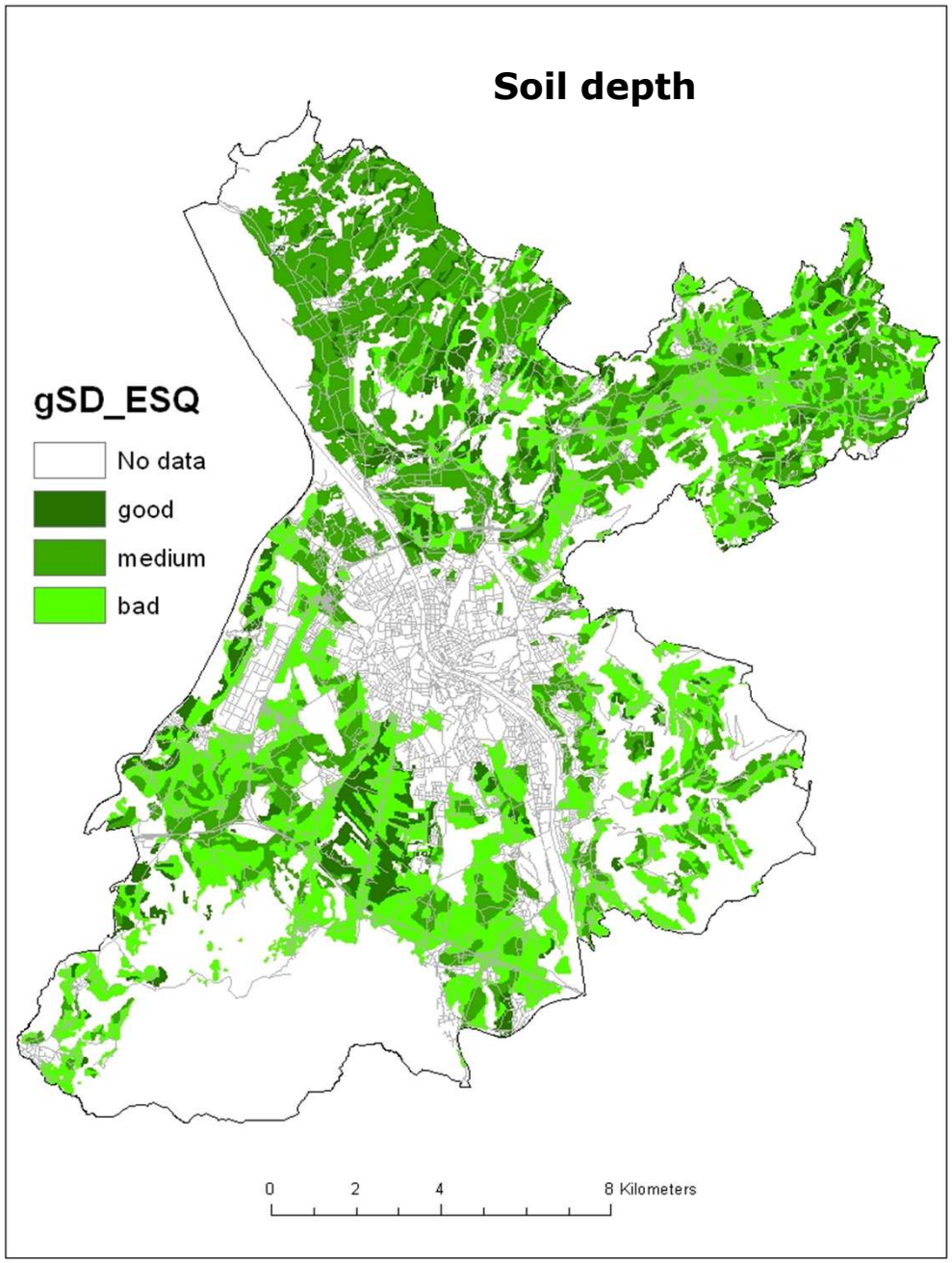
Data source:

Agricultural soil map

1:25,000

- raster 5 m
- raster 10 m

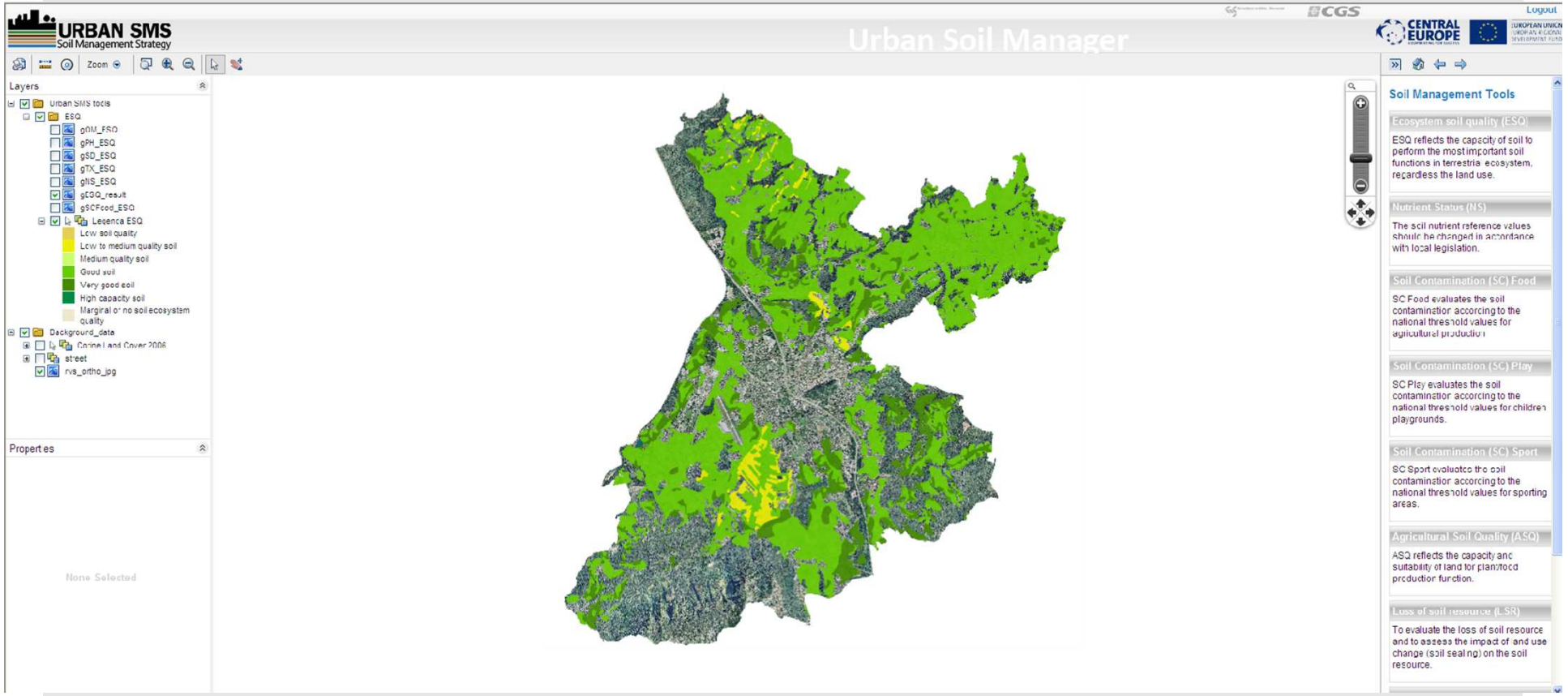
upper soil horizon - first 5 to 25 cm for pH, SOM, soil texture



Layer of classified input parameter
Humus, pH,…

RVS – Test area

Tool selection
ESQ
ASQ
…



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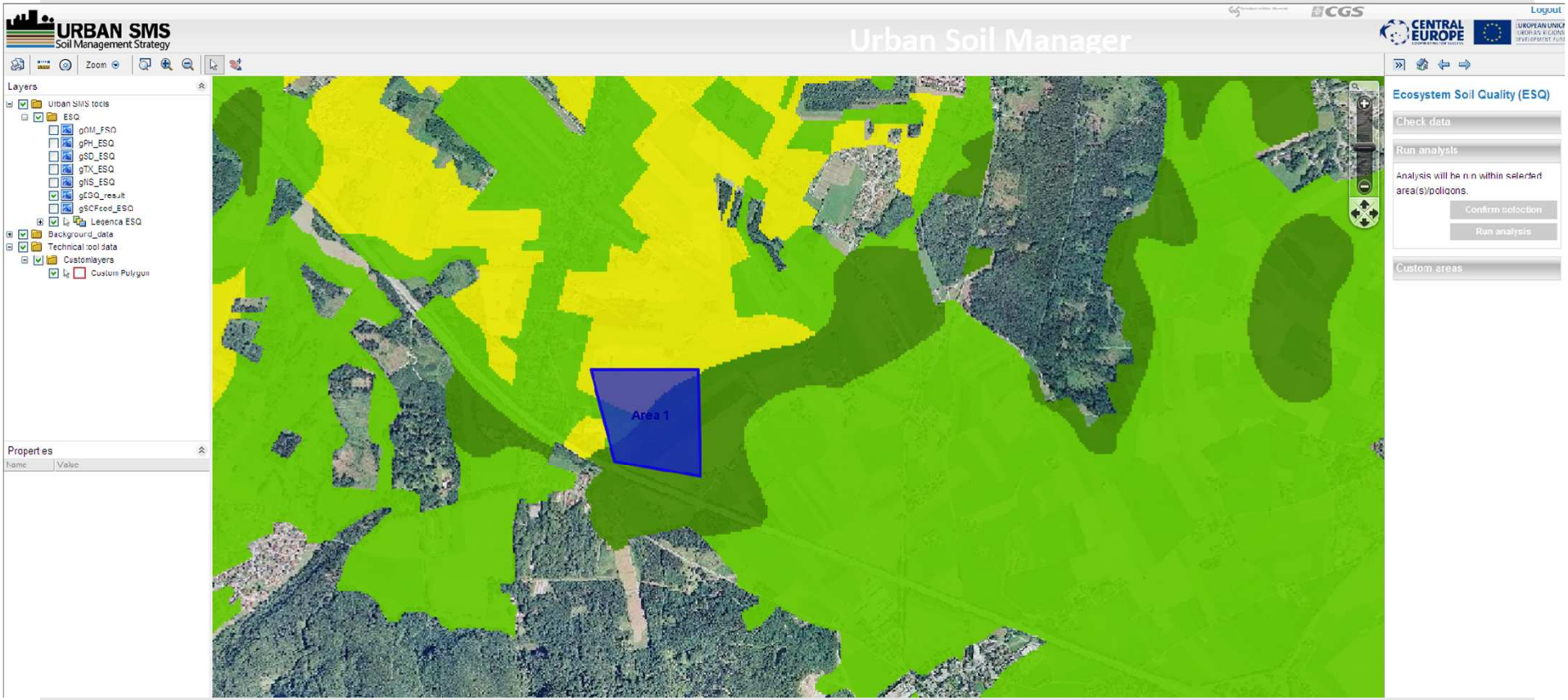
Area selection



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Soil Management Strategy

Analysis report ESQ

I. Class values

Min: 3; Max: 6; Average: 4,93; Standard deviation: 1,25

II. Summary - class area values

Class description	Null value	Marginal or no soil ecosystem quality	Low soil quality	Low to medium quality soil	Medium quality soil	Good soil	Very good soil	High capacity soil
Class		1	2	3	4	5	6	7
Area 1				5,54 ha		1,75 ha	9,88 ha	

III. Summary - area class statistics

I. Class values

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III. Summary - area class statistics

Class description	Min class value	Max class value	Avg class value	Total soil area
Area 1	3	6	4,93	17,17 ha

IV. Interpretation

Class value	Class description
1	No ecosystem value land. Suitable for urban expansion. In case of soil contamination, reconsider the urban land use and / or take remediation actions.
2	Marginal ecosystem value land. Changes to urban land use recommendable.
3	Low to medium quality soil
4	Medium quality soil
5	Good soil
6	Very good soil
7	Best capacity soil within the area. Need to be protected. Sealing avoided.

Lessons learned

- Soil experts are needed to classify and raster data properly
- Layers with classified soil parameters must be prepared by for the local application of the evaluation tools
- Consultation with local soil experts is recommended
- Software application only suitable for planners as Web service
- Results provide an overview about soil quality and the location of the areas of different soil quality
- Helpful basis for steering spatial planning towards suitable areas for specific land use

Kontakt & Information

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