

Soil quality and land evaluation

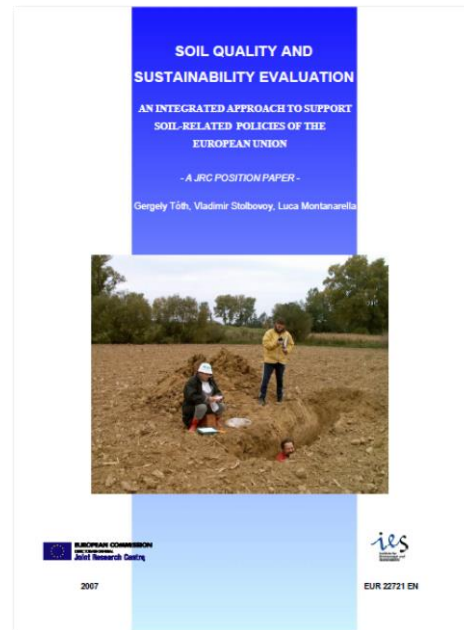
Talajminősítési rendszer

Tóth Gergely
Joint Research Centre
Sustainable Resources Directorate

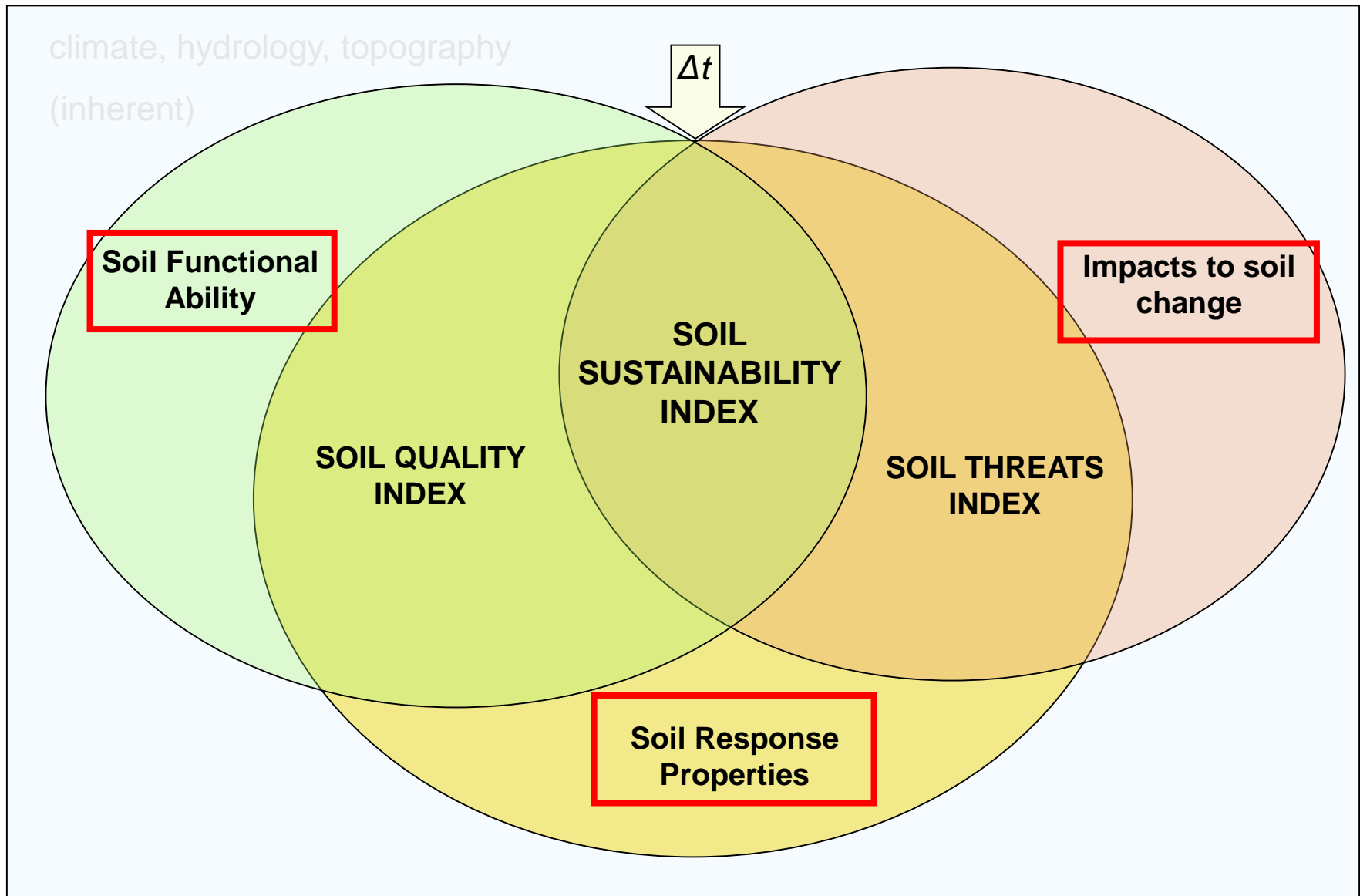


Soil quality

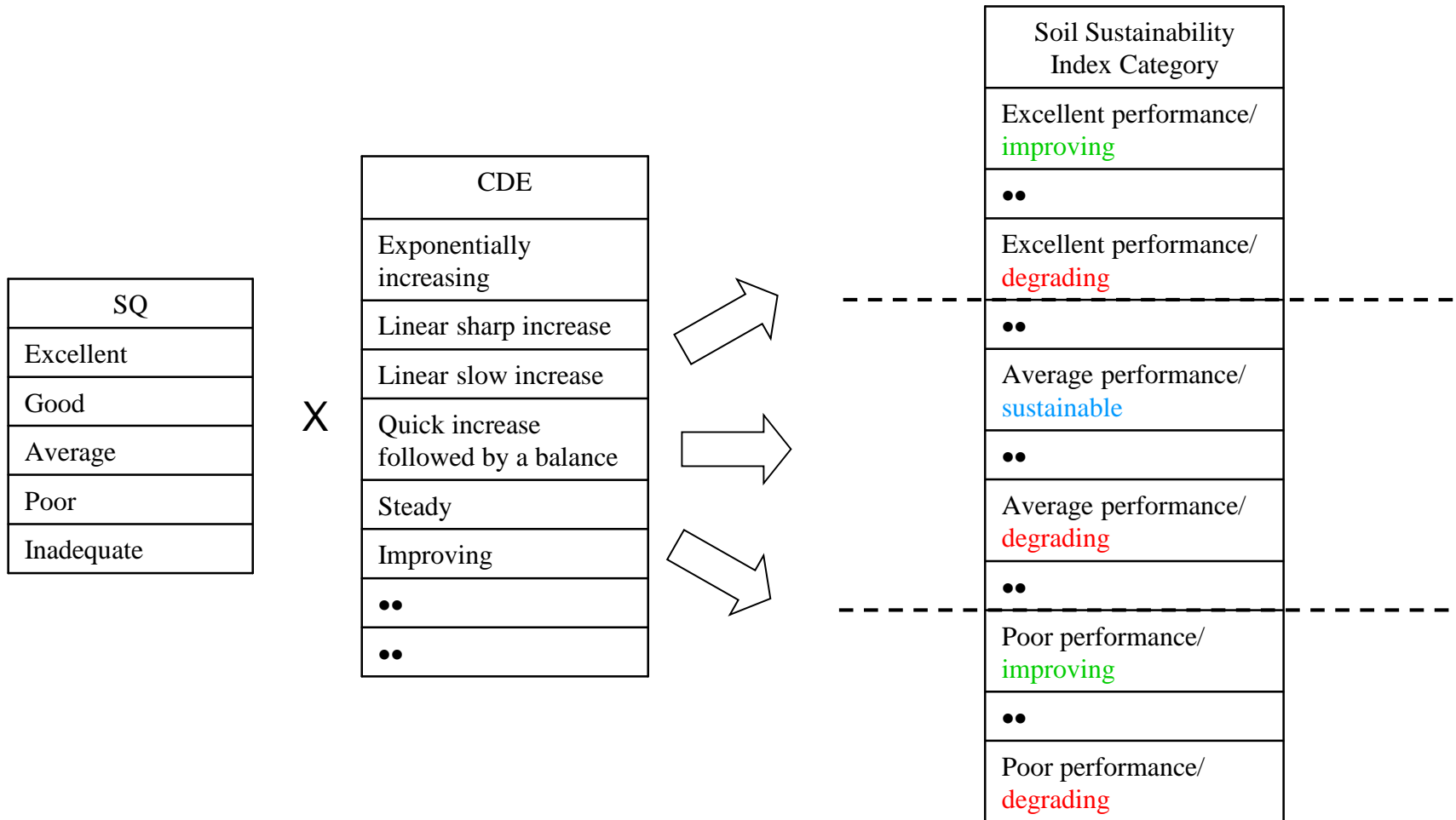
„**Soil quality** is an account of the ability of soil to **support ecosystem services** through its capacities to **perform its functions** and **respond** to external influences.”



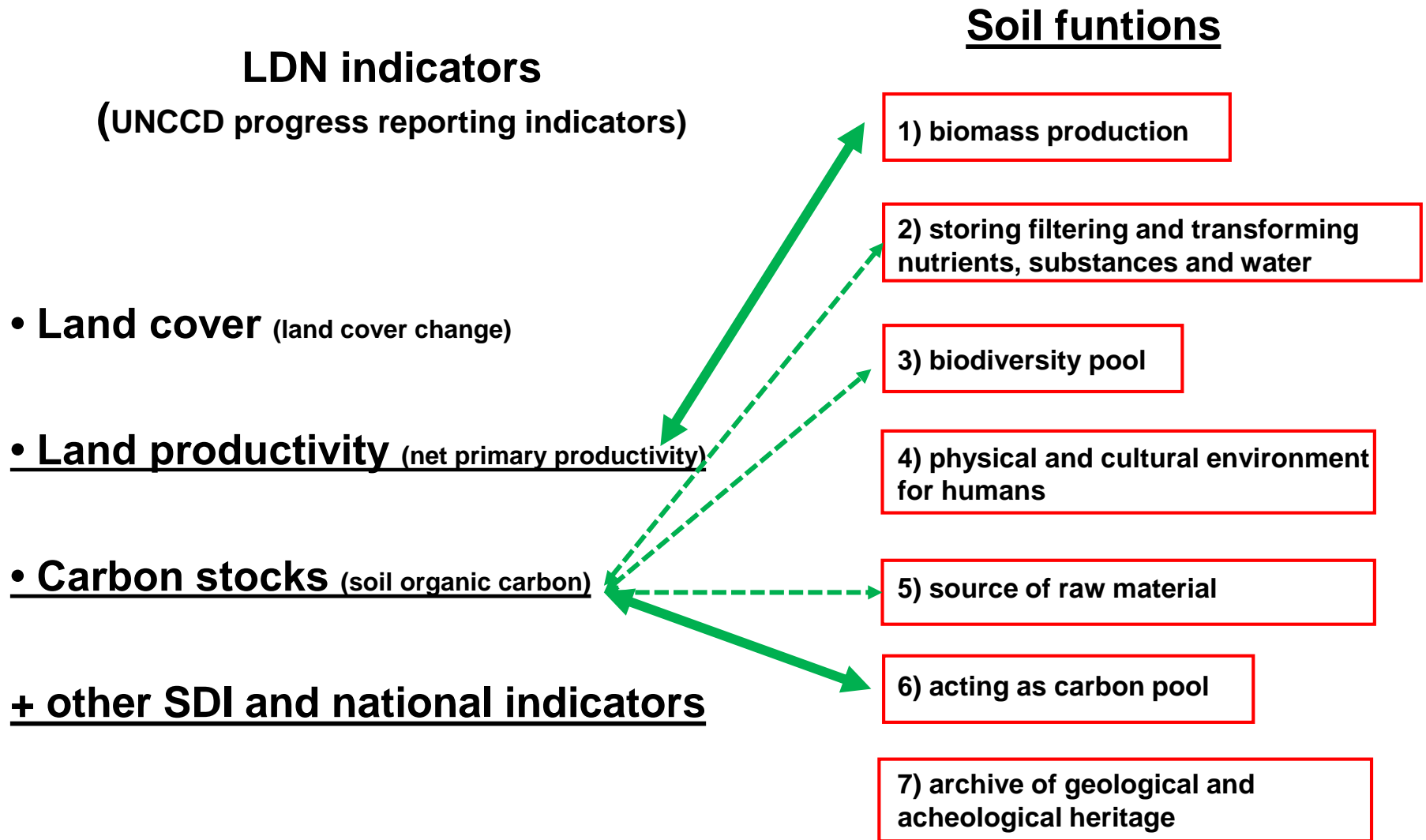
Clusters of soil sustainability



Components and categories of Soil Sustainability Index



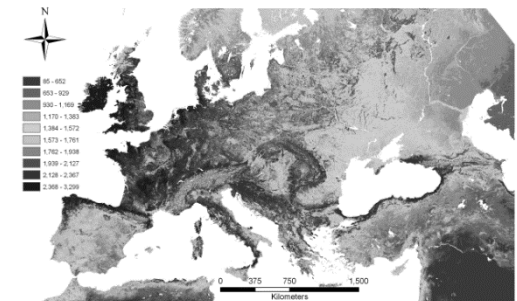
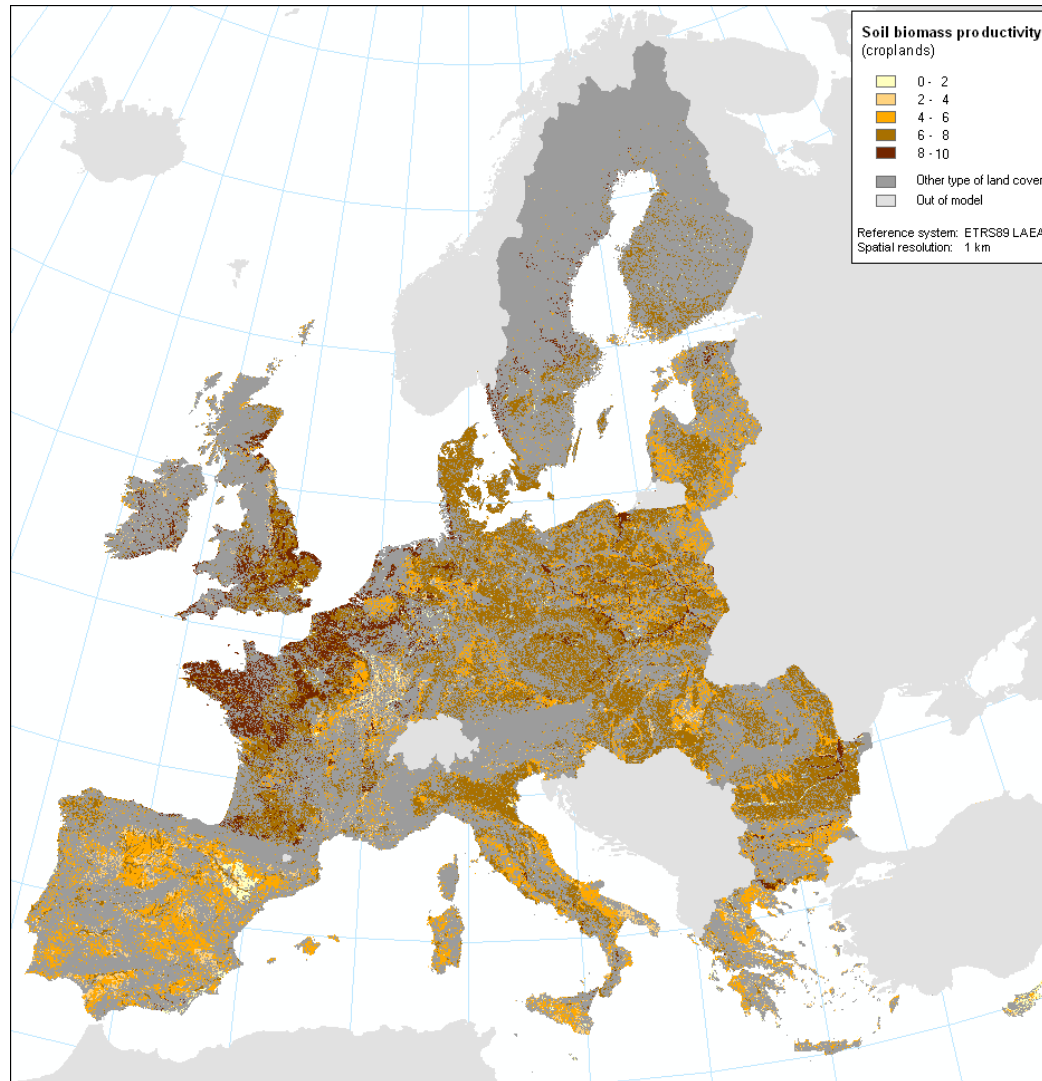
Soil functions and land degradation neutrality



Cropland productivity in the EU

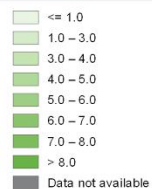
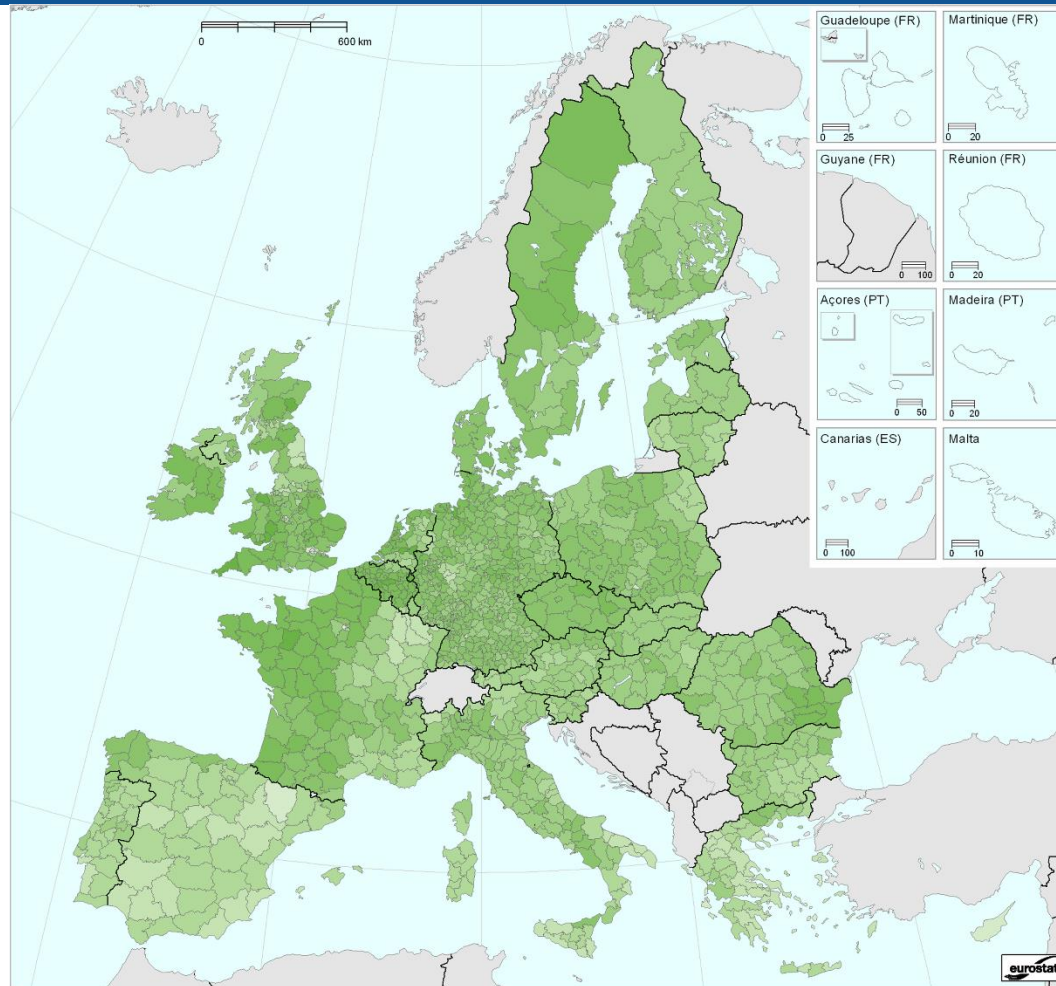
“Counterbalancing is managed within the same land type.

A land type is distinguished by vegetation class and land potential.” (UNCCD – SPI, Sept. 2016)



Adjusted $R^2 = 0.74$

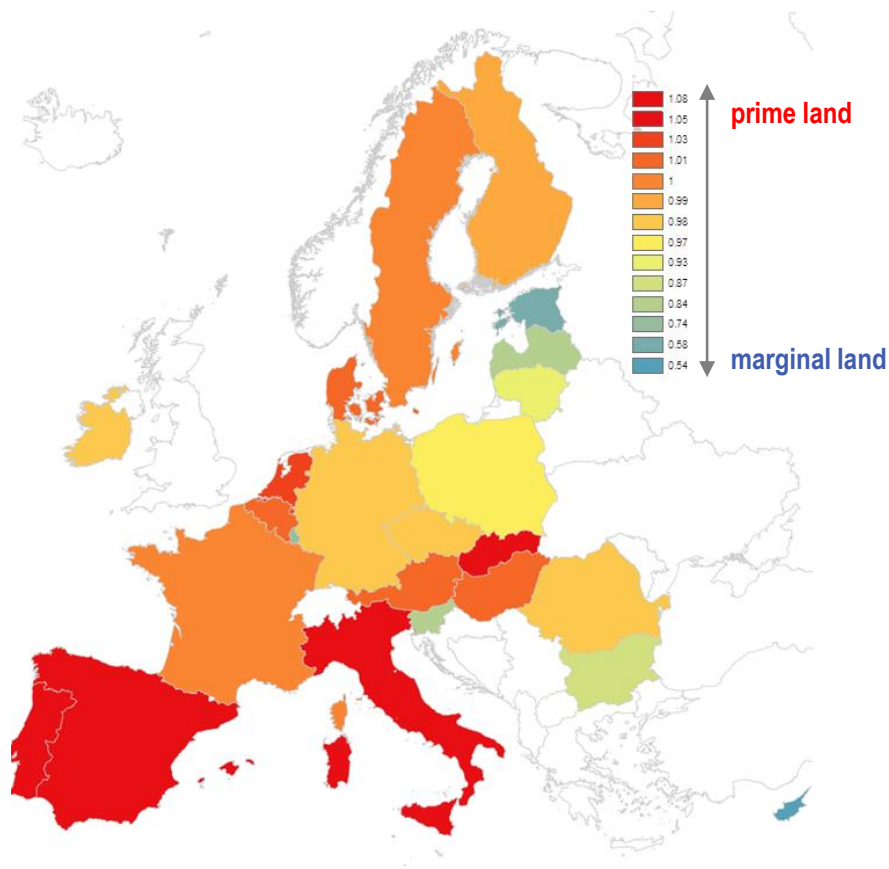
Cropland productivity in the EU



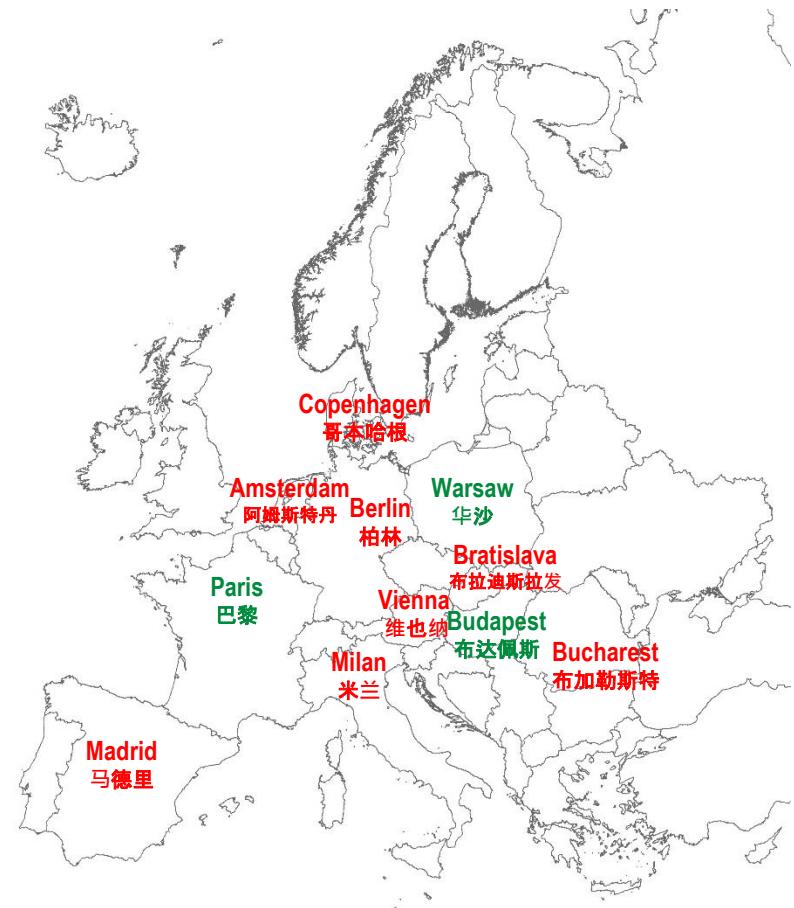
Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
Cartography: Eurostat, European Commission
Source: Joint Research Centre, European Commission

Quality of lost cropland

in EU member states

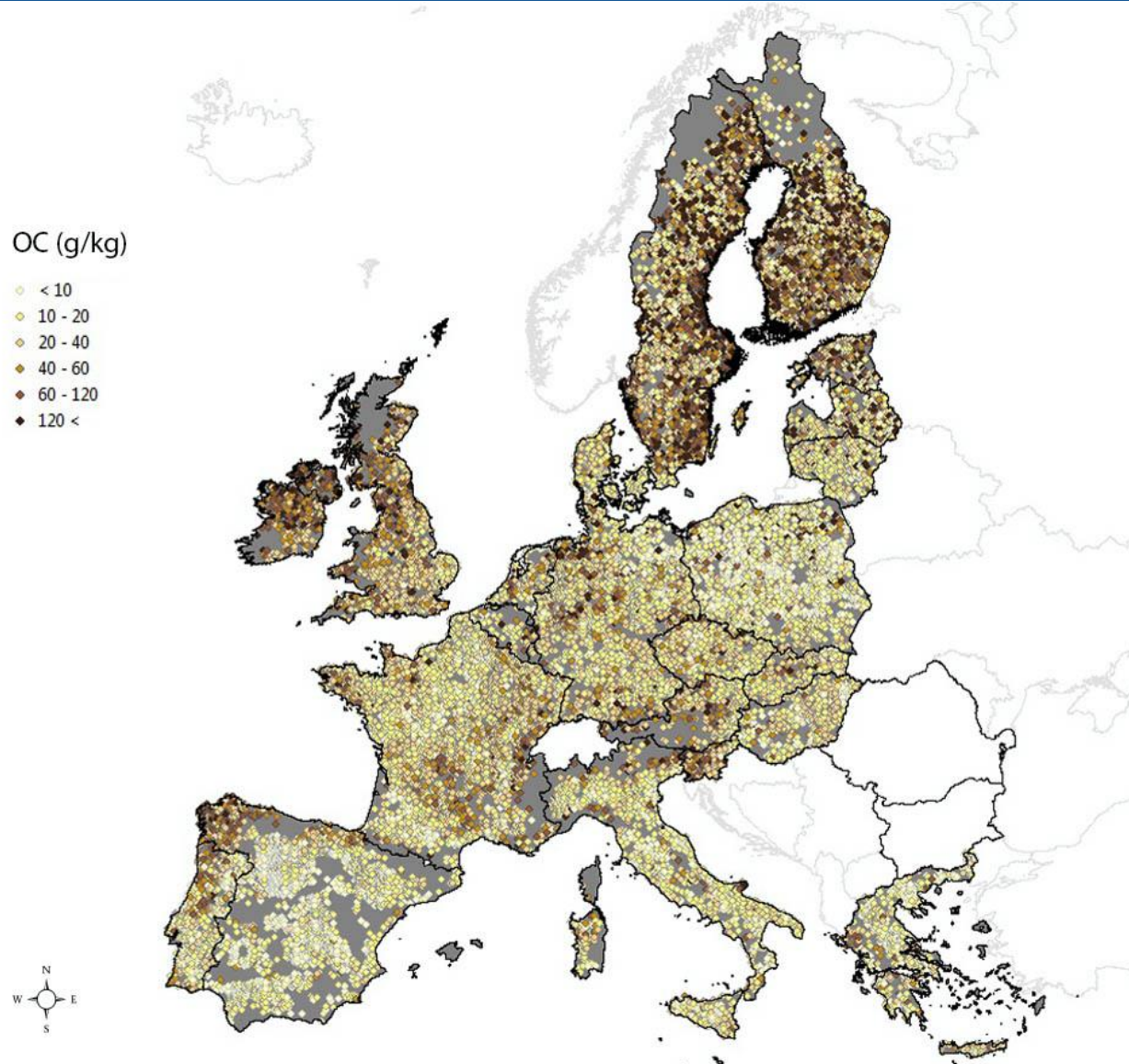


in some metropolitan areas

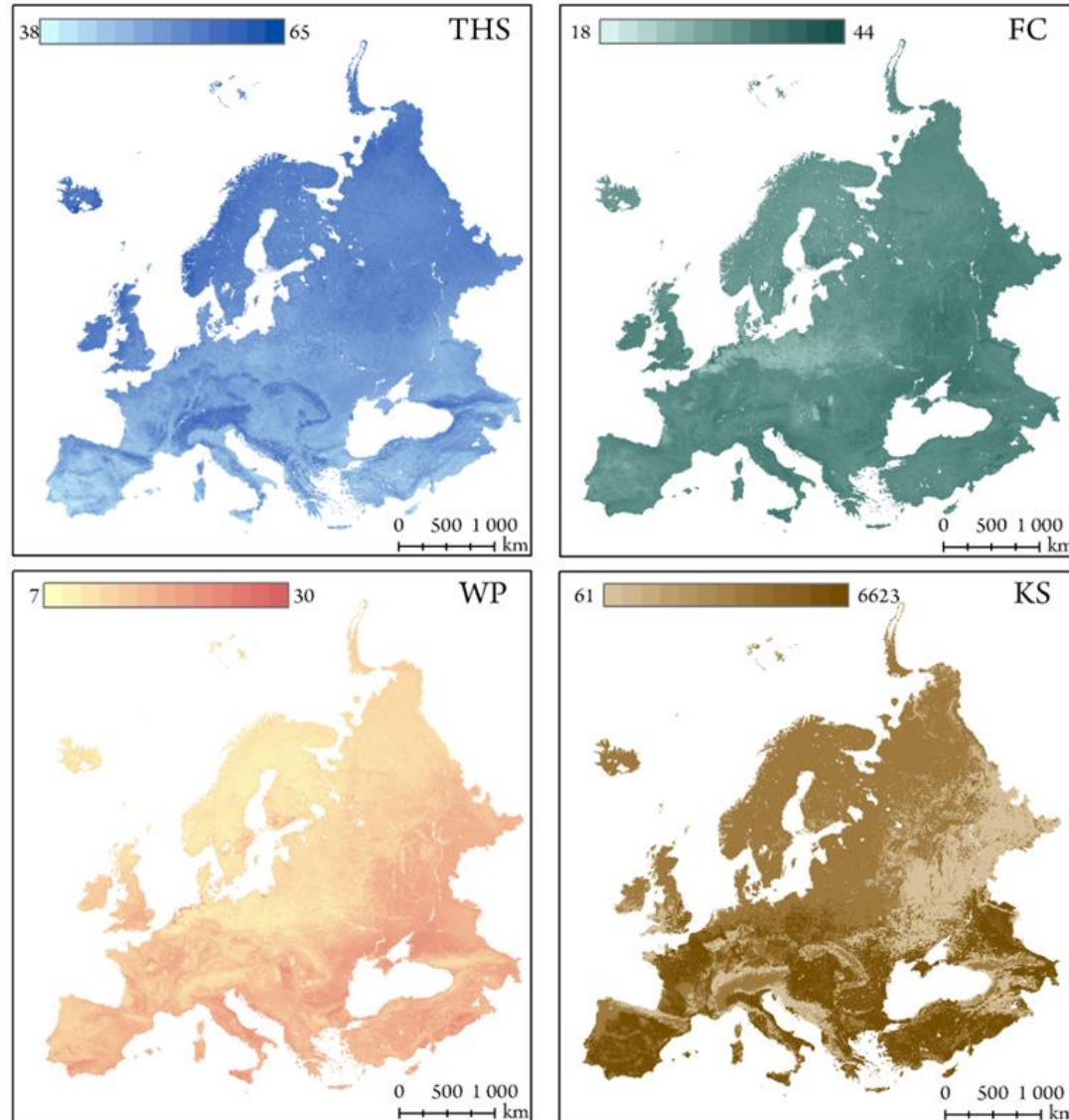


Organic carbon concentration

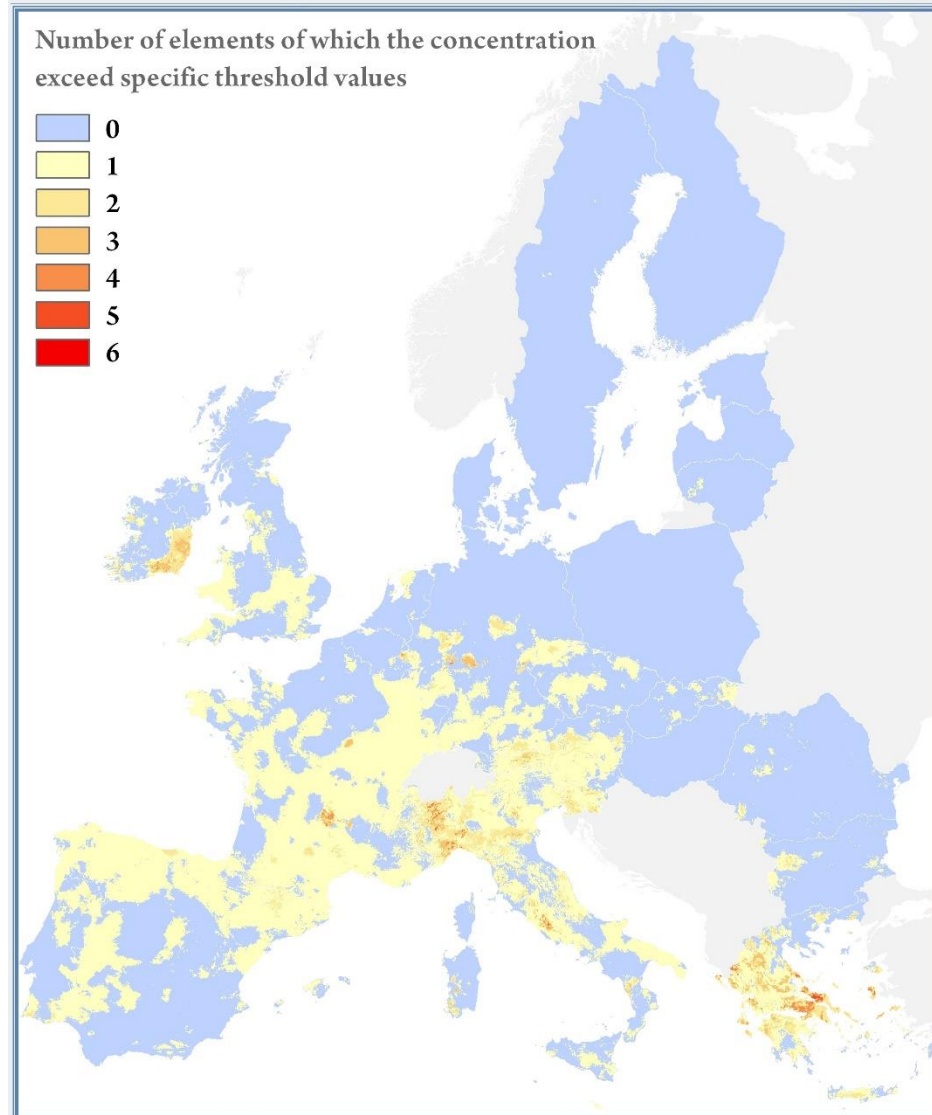
(at LUCAS topsoil 2009 sites)



Water retention and conductivity



Heavy metals concentration in soils of the EU



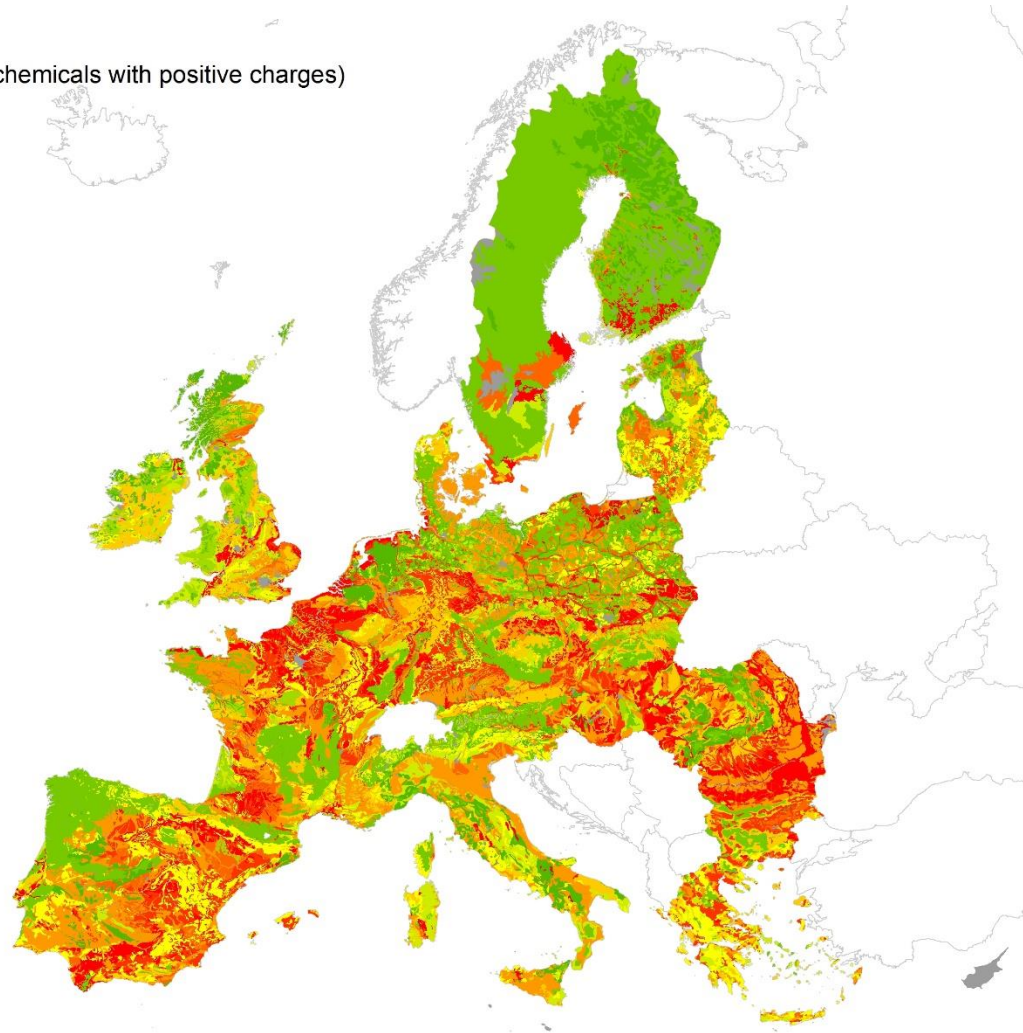
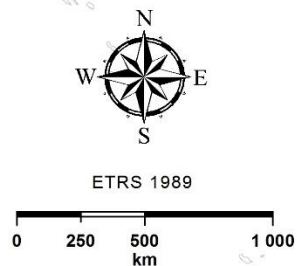
(SDI 12.4-2. ??

Annual average levels of contaminants in soil)

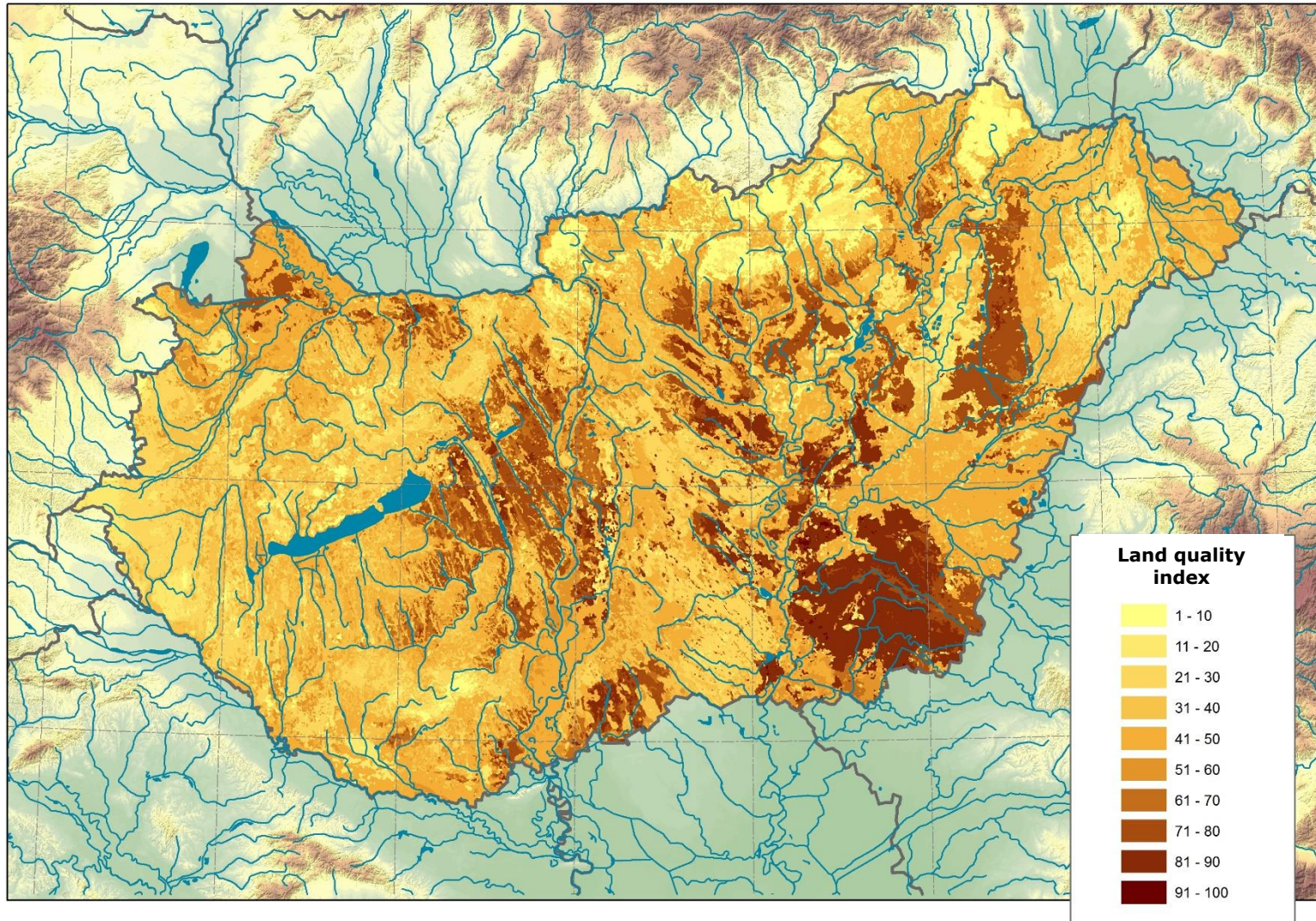
Storing and filtering substances

Cation filtering capacity
(elements in cationic form and organic chemicals with positive charges)

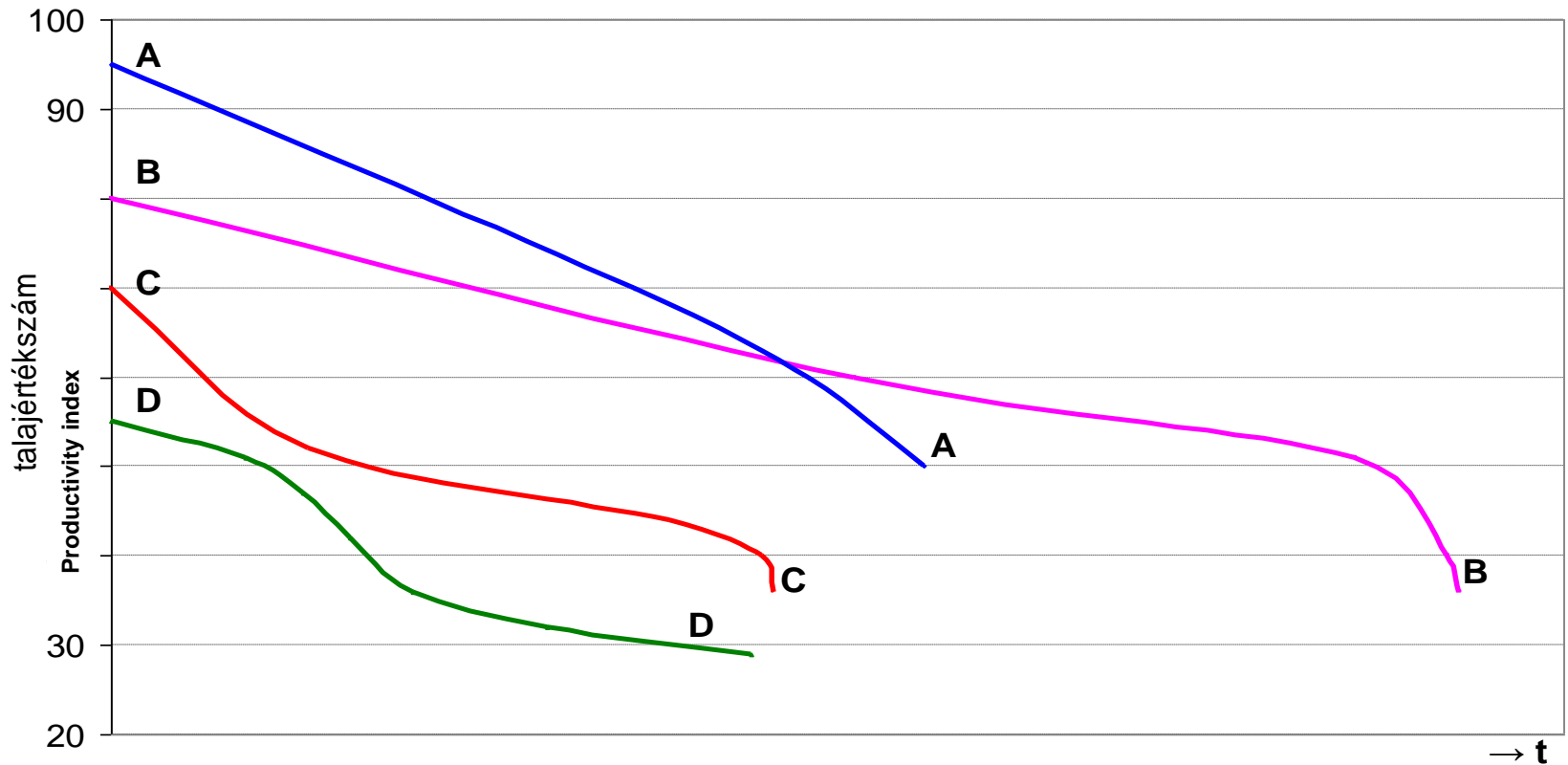
Legend



Land productivity in Hungary



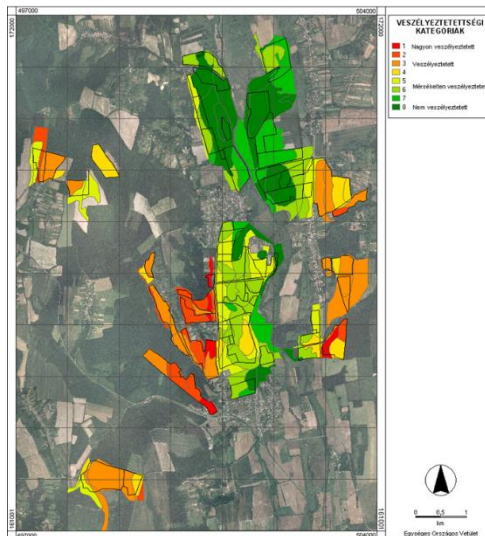
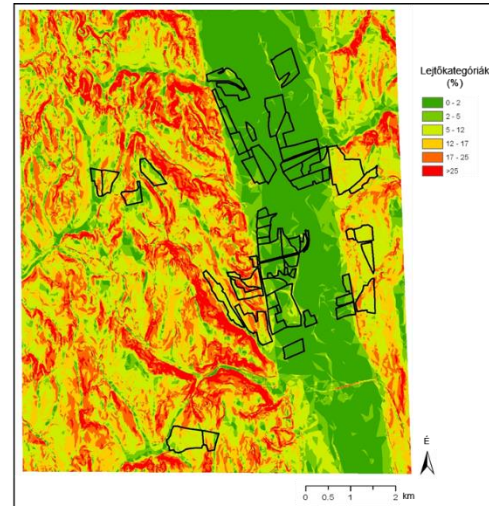
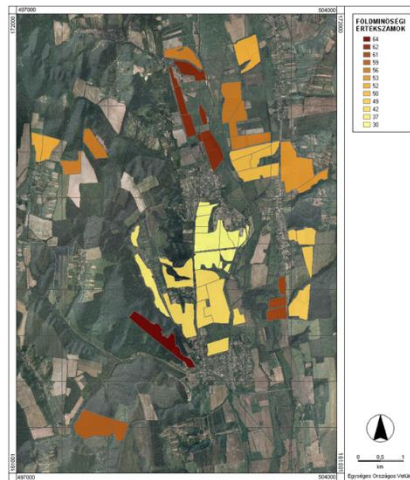
Rate of erosional soil productivity loss on different soils to assess sustainability of soil use



A) Chernozem on loess B) cambisol on loess C) luvisol D) rendzina on dolomite

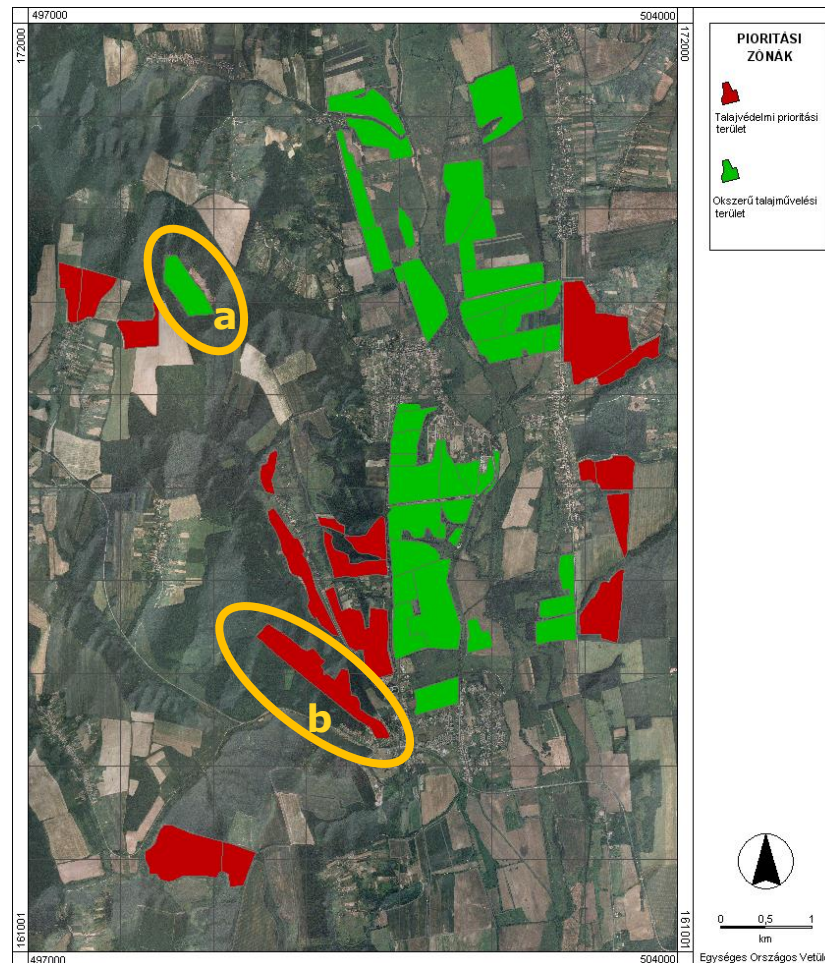
Resilience assessment: the capacity of the land use system to continue to deliver the same ecosystem services in face of disturbance; its adaptive capacity, its likely trajectory under anticipated stressors and shocks, such as climate change, and proximity to known thresholds; (UNCCD-SPI 2016)

Land productivity and erosion: optimisation of land use



Soil quality, land management and land degradation neutrality

delination of priority zones



SDI 15.3-1. Trends in land degradation

SDI 15.3-2. Land/soil under sustainable management

„To maintain or enhance land-based natural

Magyar Tudomány

A Magyar Tudományos Akadémia folyóirata. Alapítva: 1840

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Thank you !

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Preservation of cultural artefacts and buried materials in soil

