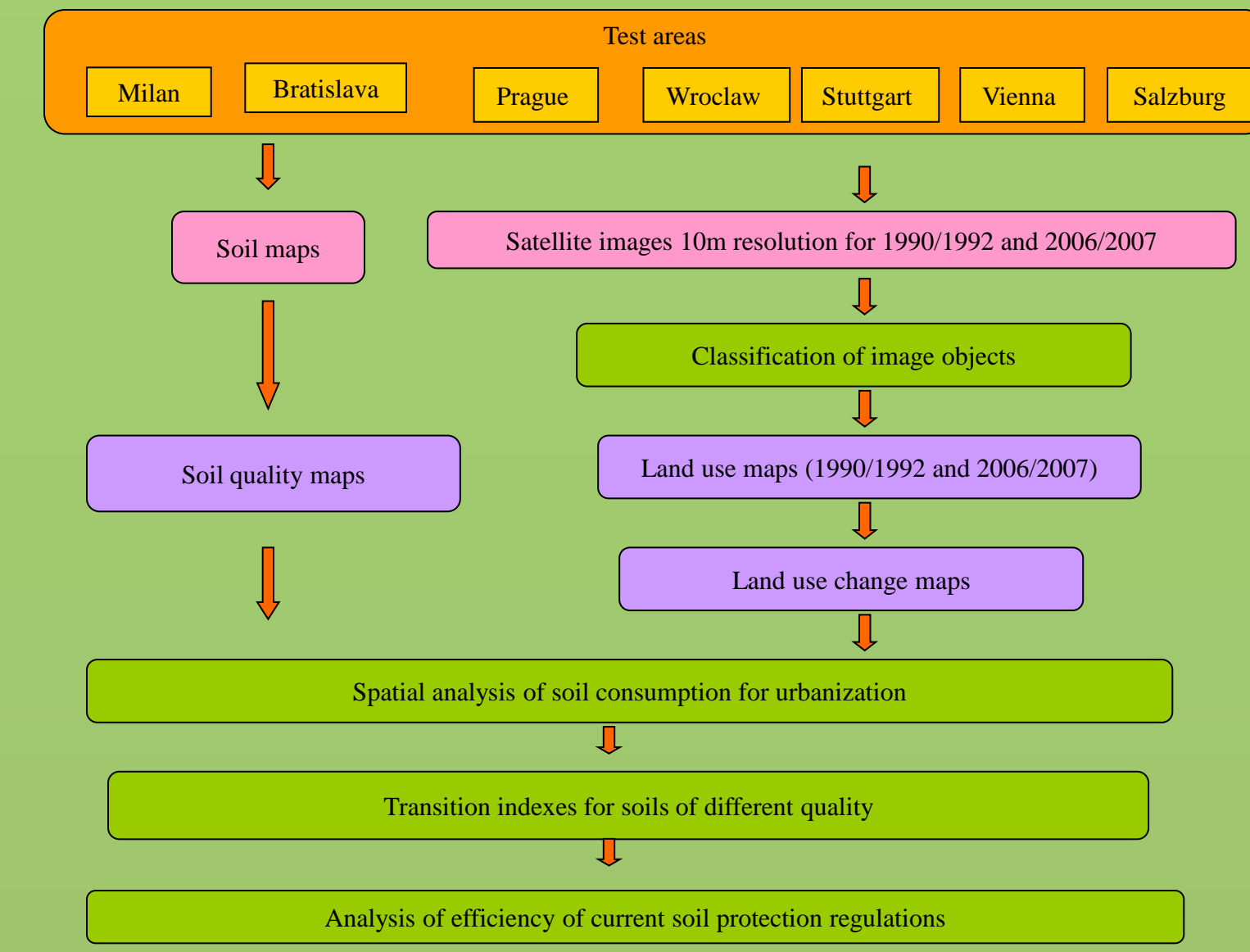


Soil protection needs in urban areas

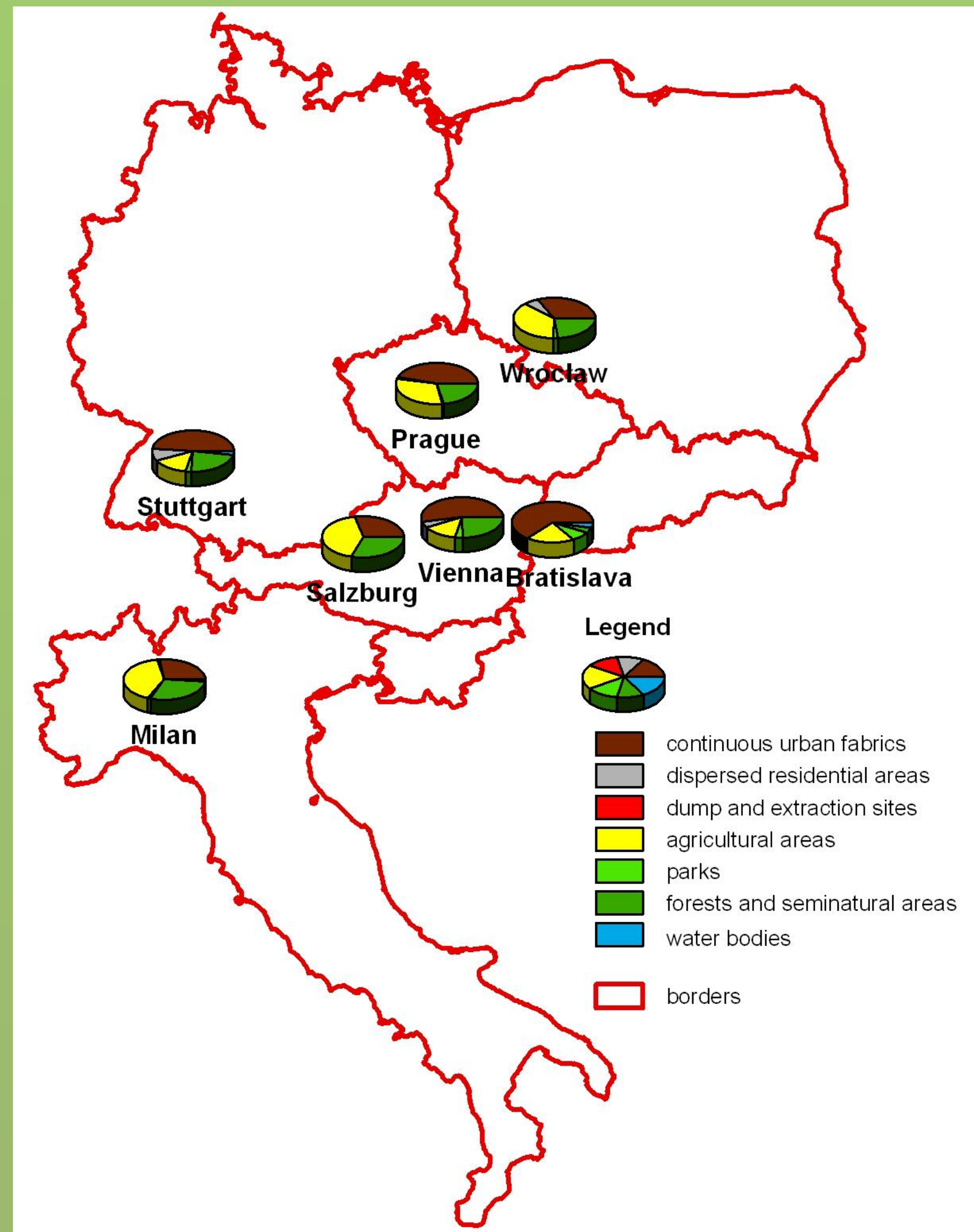
Previous understanding of soil role in the ecosystem, has been reduced to its production function, strictly related to agricultural and forestry sectors. Little attention has been paid to a role of soil to functioning of urban ecosystems including soil effects on microclimate and life conditions. Protection of the most valuable urban soil habitats, characterized by high water and heat capacity, high fertility and biological activity is motivated by the role of these surfaces in forming quality of environment in urban areas. One of measurable effects of loss of best quality soil habitats in urbanization process is poor species composition of green areas, which are sensitive to degradation related to drought and pollution absorption. Furthermore, poor vegetation characteristic for low quality soils produce limited amounts of oxygen and has poor ability to prevent soil wind erosion. Buffering function of soils with high water retention capacity is also important for accumulation of water from intensive surface flows - this ability protects against flooding.

Assessment of soil protection efficiency – objective, approach

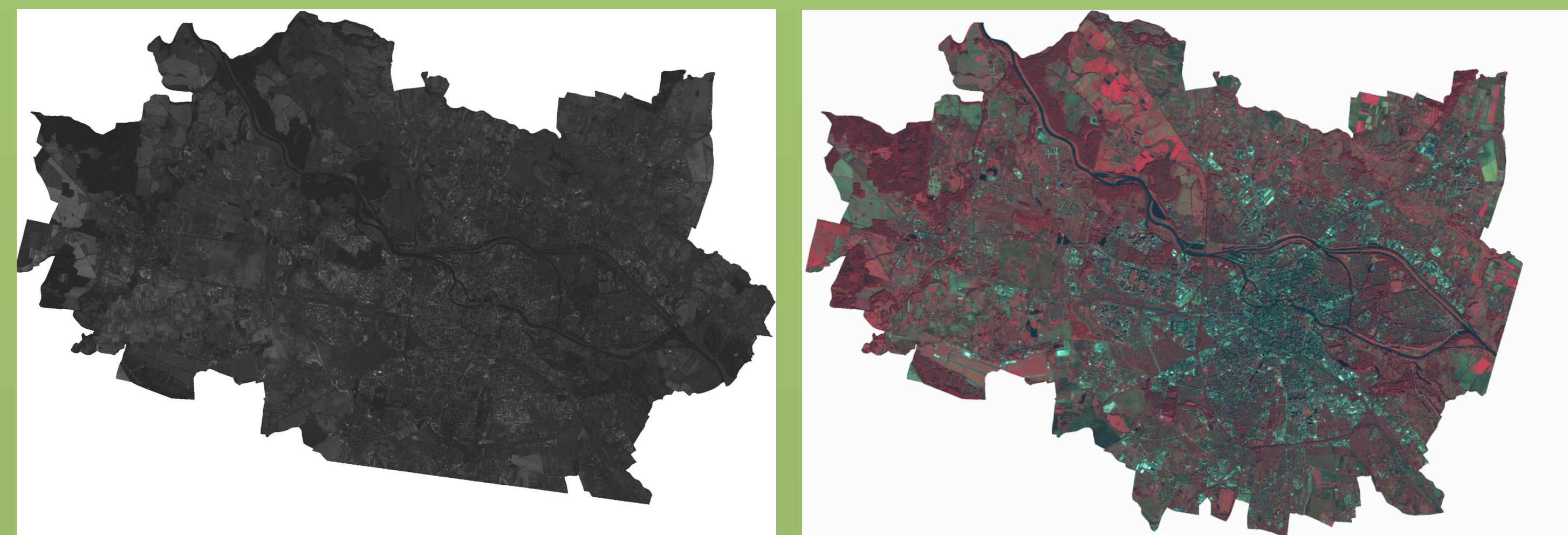
The objective of the analysis was to assess efficiency of current soil management regulations in terms of protection of most valuable soils. The following cities served as test areas: Wrocław, Stuttgart, Bratislava, Prague, Milan, Salzburg, Vienna. The approach involved development of land use change maps based on consistent satellite image data, analysis of land use change trends within 15 years period and subsequent assessment of valuable soils' consumption for urban expansion as an indicator of soil protection efficiency.



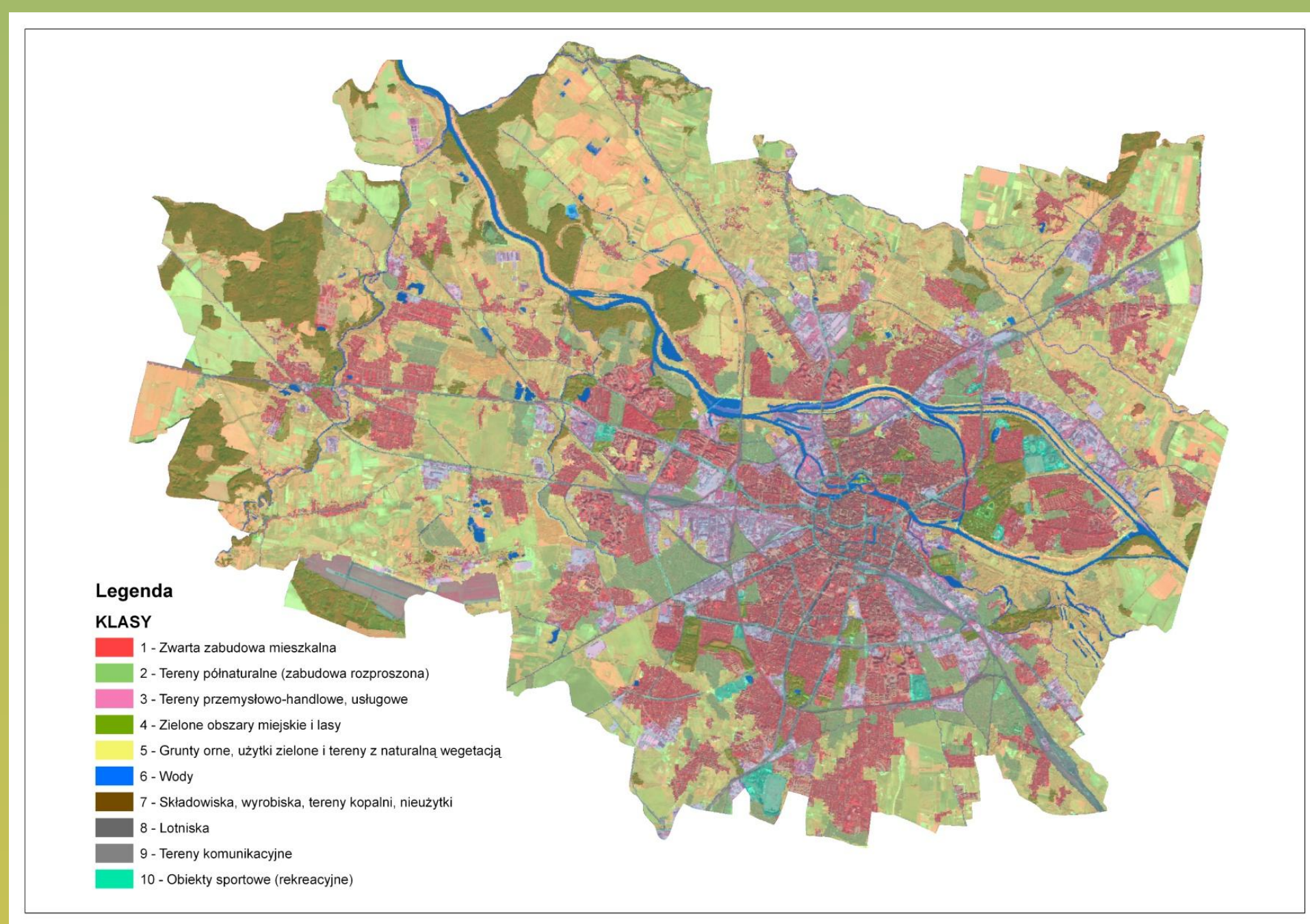
Methodology of soil protection efficiency assessment



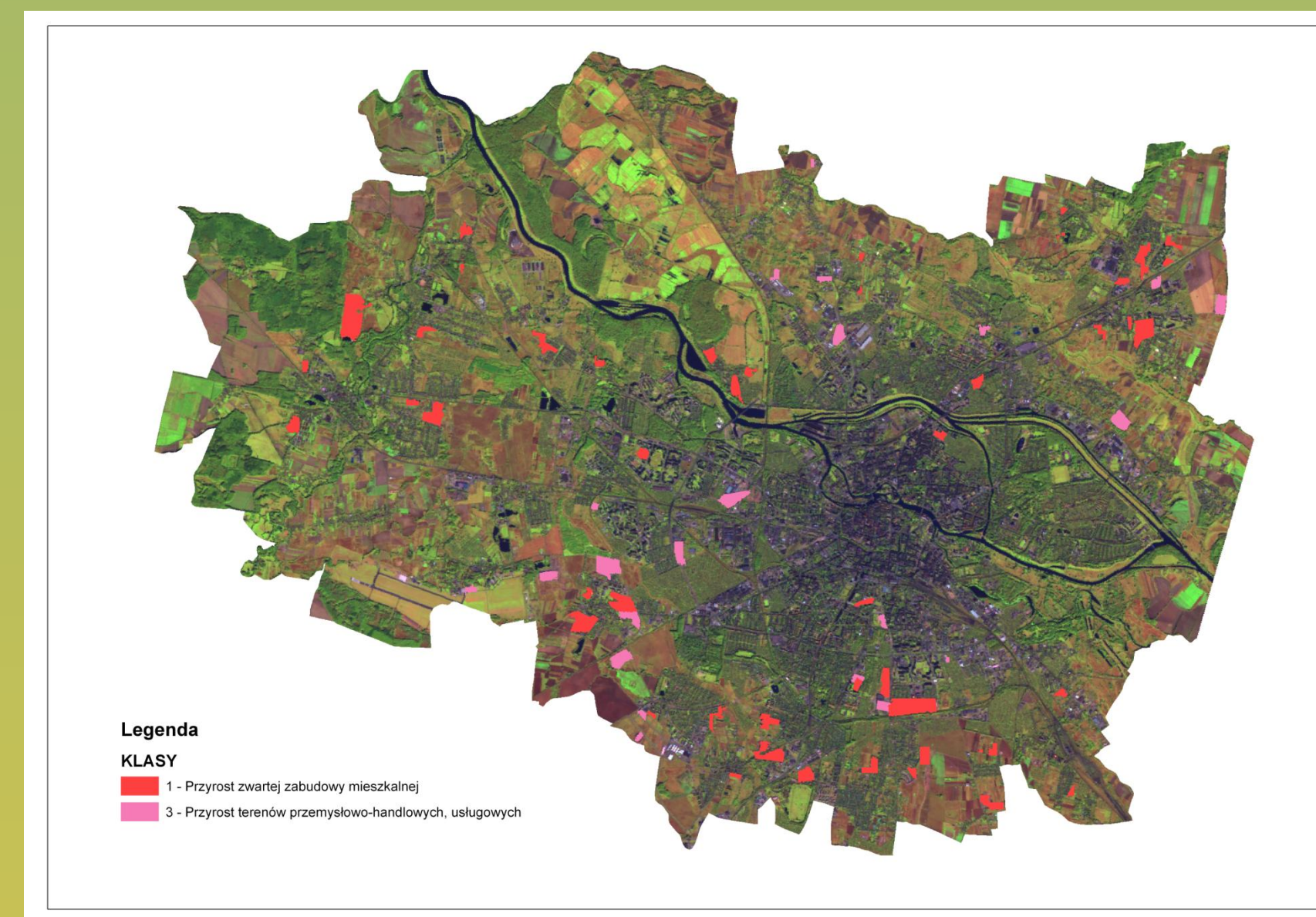
Land use structure in pilot areas



SPOT satellite images of Wrocław – 1991 (left) and 2006 (right)



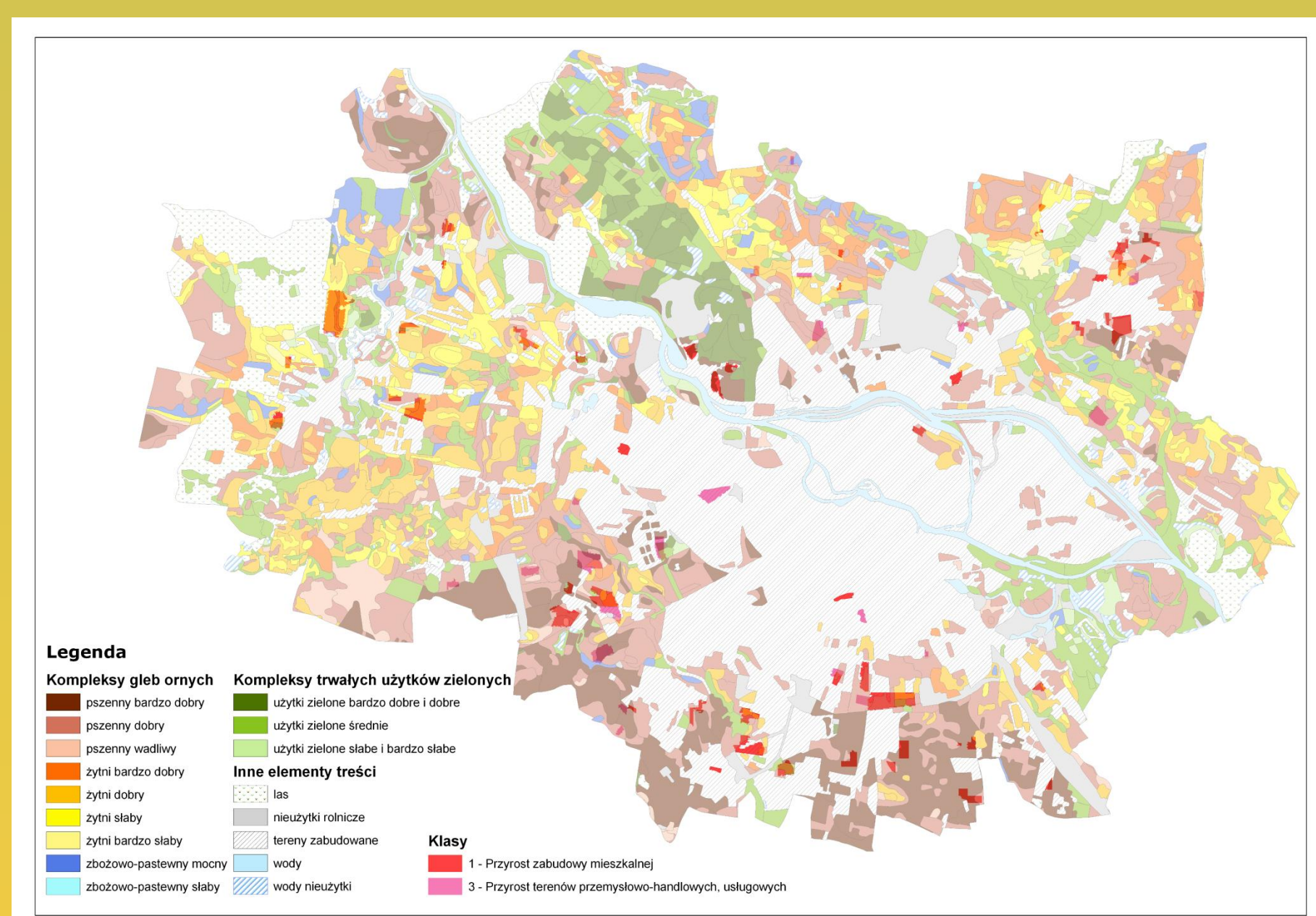
Land use map of Wrocław for 2006



Areas sealed in Wrocław within 1991 – 2006 period

Tabela

Summary of land use changes in Wrocław



Urban sprawl information on soil map

Tabela - Indexes for transition of soils of different quality into sealed area for Wrocław

Summary for 7 test areas

Area sealed within 15 y period was 160 – 900 ha

Mostly arable lands were consumed in urbanisation process, except Wrocław and Stuttgart where seminatural lands were sealed

Most of new urbanized areas are residential fabrics, except Bratislava and Vienna

High quality soils have not been efficiently protected in Wrocław, Prague, Vienna, Salzburg and Stuttgart

The most valuable soils are protected in Bratislava