



Mapping ecosystem services tradeoffs Urbanisation as a driver of changes in ecosystem services demand and supply in the Mediterranean basin

Part 1

- Supply -

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Objective: identify the impact of urbanisation in the Mediterranean region on both ecosystem services supply from the surrounding environment of an urban area and changes in the per capita demand from citizens.

Material and methods

- Selection of 3 European and 2 North African cities based on changes in population numbers and changes in surrounding land cover.
- Define the boundaries of urban areas and the surrounding rural area.
- Identify the land cover changes in the area surrounding the city between 1990-2006.
- Determine the qualitative changes in 31 ecosystem services using the latest table of Stoll *et al.*, 2014.

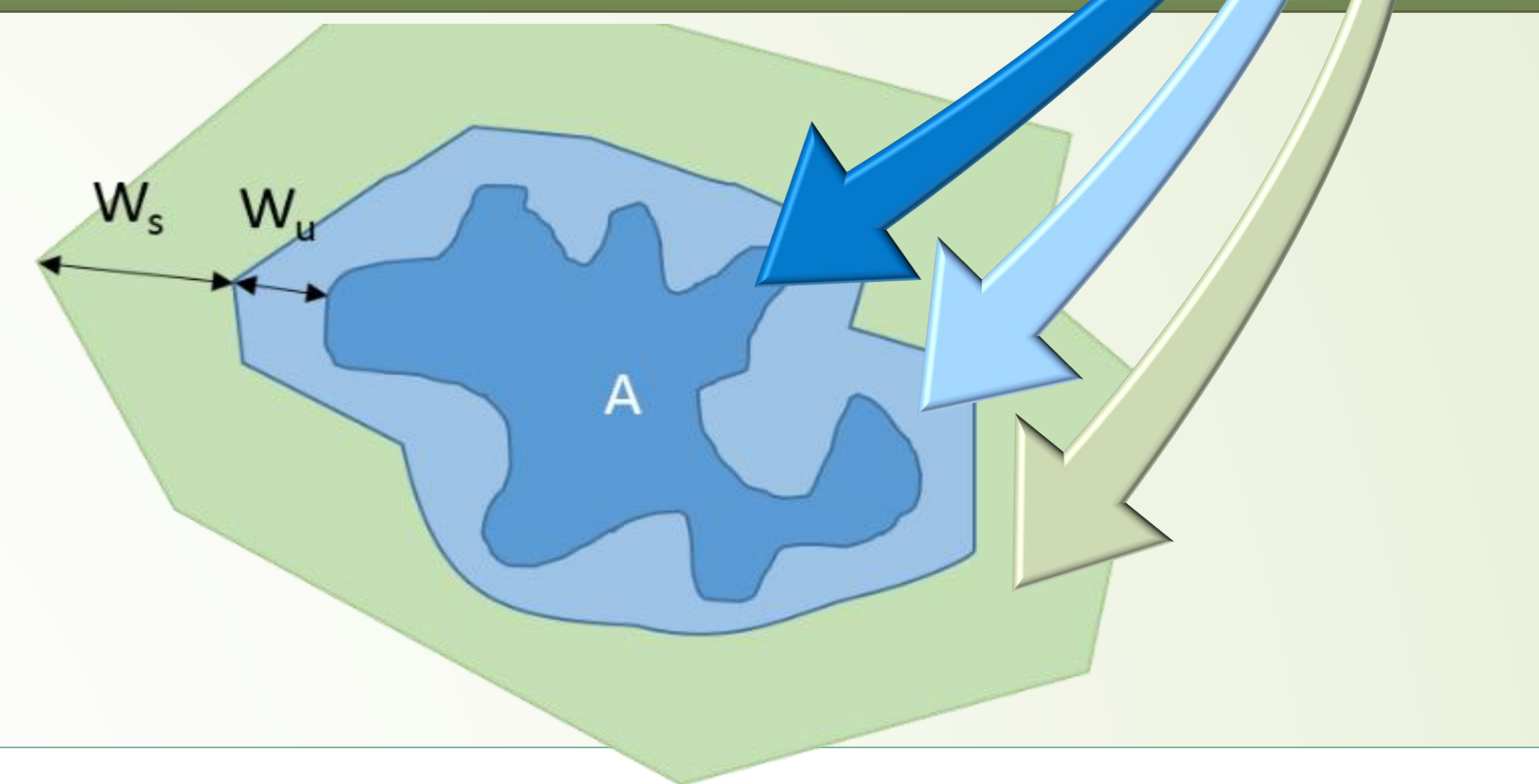
	Europe	North Africa
Cities	Florence, Madrid, Marseille	Rabat, Tunis
(A) Urban area	Urban agglomerate	
(W _u) Buffer urban area	W _u =0.25√A	(Kasanko et al, 2006)
(W _s) Buffer surrounding rural area	W _s =1.50√A	(Kasanko et al, 2006) 15 km for supply of food, energy and water (Kroll et al, 2012)
Land use change GIS data base	Corine Land Cover (1990 and 2006)	GlobCorine (2006)
Spatial data sets	100 m	300 m

Land use

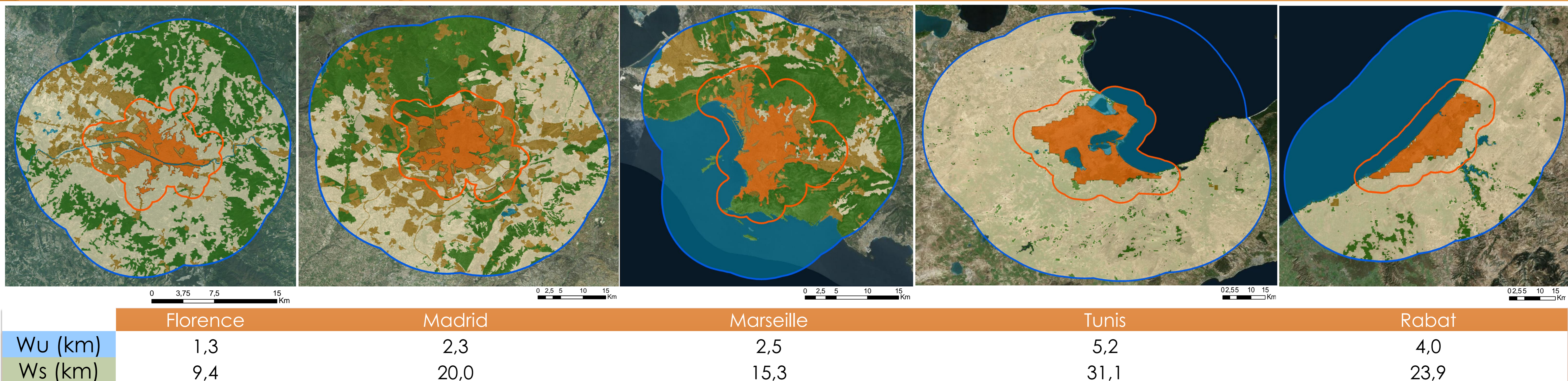
- Agricultural areas
- Artificial surfaces
- Forest and semi natural areas
- Water bodies
- Wetlands

Buffer

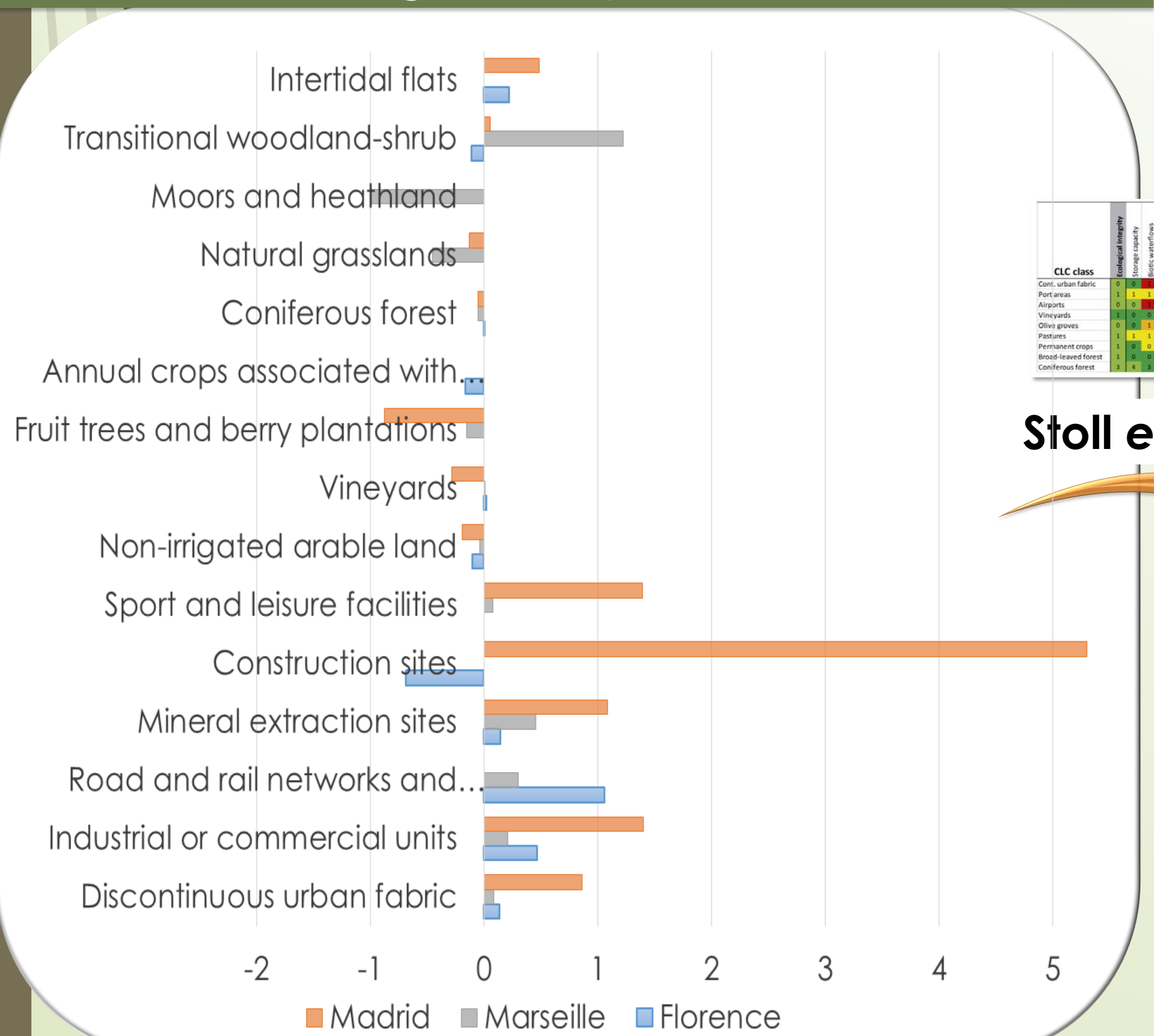
- Urban area
- Surrounding urban area



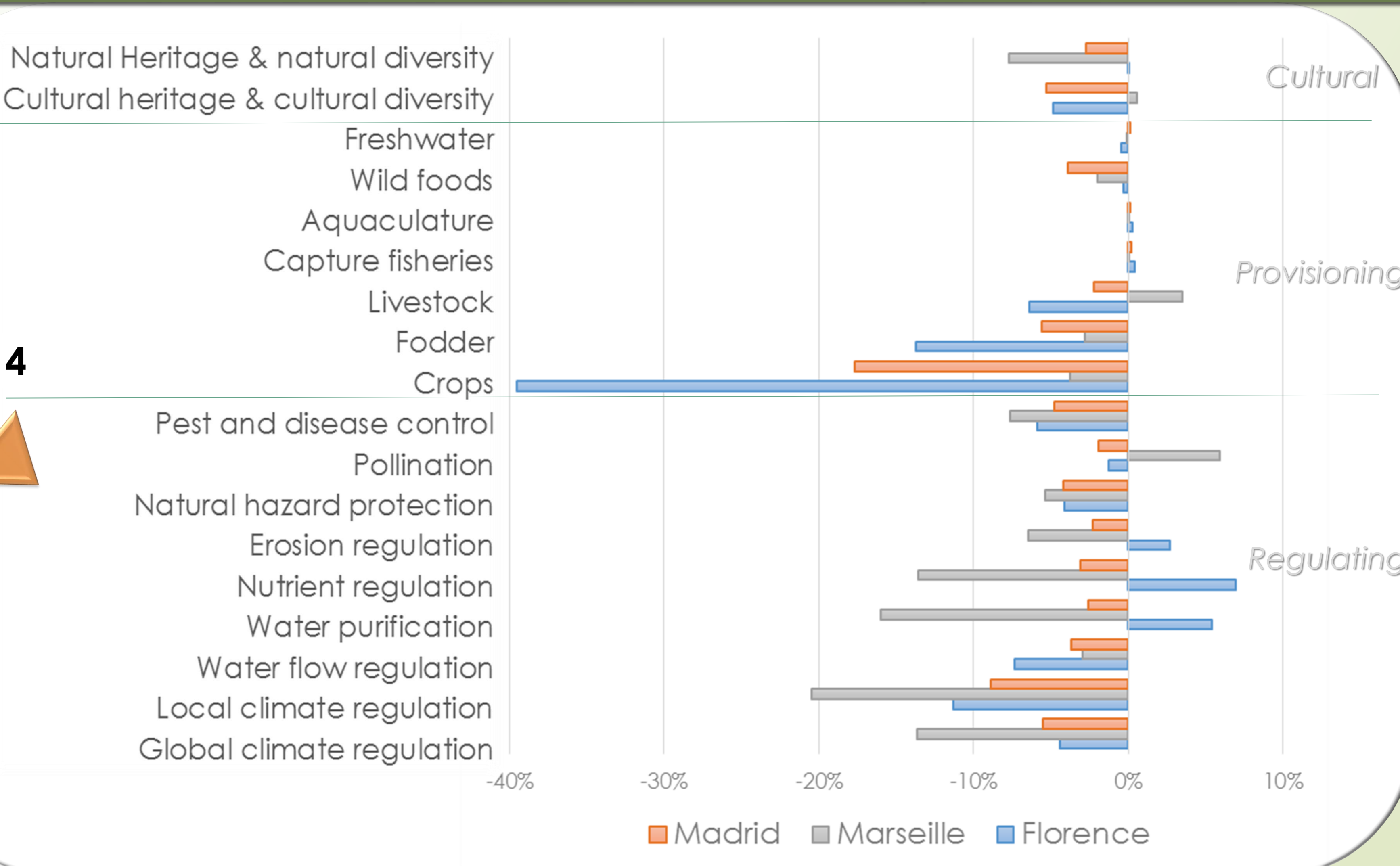
Results



Identification of land cover changes in the area surrounding the city between 1990-2006



Determination of qualitative changes in ecosystem services using the latest table of Stoll *et al.*, 2014



Stoll *et al.*, 2014

Kasanko, M., Bondeau, J.L., Lavalle, C., McCormick, N., Demicheli, L., Sagris, V., Brezger, A. 2006. Are European cities becoming dispersed? A comparative analysis of 15 European urban areas. *Landscape and Urban Planning*, 77: 111-130.
 Kroll, F., Müller, F., Haase, D., Fohrer, N. 2012. Rural-urban gradient analysis of ecosystem services supply and demand dynamics. *Land use Policy*, 29: 521-535.
 Stoll, S., Frenzel, M., Burkhard, B., Adamescu, M., Augustaitis, A., Baebler, C., Bonet F.J., Carranza, M.L., Cazacu, C., Cosor, G.L., Diaz-Delgado, R., Grandin, U., Haase, P., Hämäläinen, H., Loke, R., Müller, J., Stanisci, A., Staszewski, T., Müller, F. 2015. Assessment of ecosystem integrity and service gradients across Europe using the LTER Europe network. *Ecological Modelling*, 295: 75-87.