

8.38 Land composition

Project Name: MAVES (Mapping, Assessment and Valuation of Ecosystems and their Services) (JRC-D3- Institutional project)

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Land composition	Green Space Management Urban Regeneration										
Description and justification	Land composition is used to assess the co-occurrence of land types within each Functional Urban Area. It represents the arrangements of ecosystem types within and around cities.										
Definition	<p>Land composition or co-occurrence of land use types, is a measure of spatial distribution of elements or components of a landscape. To quantify land composition we use the Landscape Mosaic (LM), model available in Guido's tool box (Vogt and Riitters 2017). A land mosaic is a tri-polar classification scheme that represents the land type dominance, the interface zone and the mix zone within a defined area. The classification uses the threshold values of 10%, 60%, and 100% along each axis to partition the tri-polar space into 19 classes. These threshold values are indicative for the presence (10%), dominance (60%), or uniqueness (100%) of each land cover type.</p> <p>The model measures land type heterogeneity and allows to consider trade-offs occurring between intra-land type changes (i.e., modification of the area of a given land type) and inter-land types changes (i.e., direction of change). It provides a measure of the relative contributions of the three key land types in percentage within a given neighborhood/observation area.</p>										
Strengths and weaknesses	<p>-spatially explicit -> provides a detailed analysis of change in urban green infrastructure</p> <p>-relatively complex</p>										
Measurement procedure and tool	<p>Dominant land types were extracted from Corine Land Cover. Agricultural areas include all agricultural land types identified in Corine, natural areas include all natural and semi-natural land types, developed areas include all artificial land types including urban green. Parameters applied for the analysis of 700 EU Functional Urban Areas</p> <table border="1" data-bbox="373 1534 1174 1723"> <thead> <tr> <th colspan="3" data-bbox="373 1534 1174 1576">Dominant land types</th> </tr> </thead> <tbody> <tr> <td data-bbox="373 1576 556 1652">Dominant type</td> <td data-bbox="556 1576 758 1652">Corine Land Cover</td> <td data-bbox="758 1576 1174 1652">notes</td> </tr> <tr> <td data-bbox="373 1652 556 1723">A = Agricultural</td> <td data-bbox="556 1652 758 1723">[12 -> 22]</td> <td data-bbox="758 1652 1174 1723">all agricultural land types included in CLC</td> </tr> </tbody> </table>		Dominant land types			Dominant type	Corine Land Cover	notes	A = Agricultural	[12 -> 22]	all agricultural land types included in CLC
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	N= Natural	[23-36]	for cities we exclude lakes
	D = Developed	[1 -> 11]	Urban green is classified as artificial
	Spatial parameters		
	resolution (m)	moving window	observation area (km ²)
	100	15 pixels	2.25
Scale of measurement	Functional Urban Areas		
Data source			
Required data	- Corine Land Cover (CLC) 2000-2018, Version 20 - the model can be implemented using any land use land cover data		
Data input type	-raster (vector data will be rasterised)		
Precision	100 m		
Data collection frequency	Year or time-series range (for available data at EU scale): 2000–2018 https://land.copernicus.eu/pan-european/corine-land-cover		
Level of expertise required	-GIS programmer (advanced)		
Synergies with other indicators	With structure of Urban green and Urban Forest		
Connection with SDGs	//		
Opportunities for participatory data collection	no		
Additional information			
References	Landscape Mosaic (LM), model available in Guido's tool box (http://forest.jrc.ec.europa.eu/download/software/guidos/) Vogt P, Riitters K (2017) GuidosToolbox: universal digital image object analysis. Eur J Remote Sens 50(1): 352–361. doi: 10.1080/22797254.2017.1330650 + next MAES report will include the methodology applied to all EU cities		

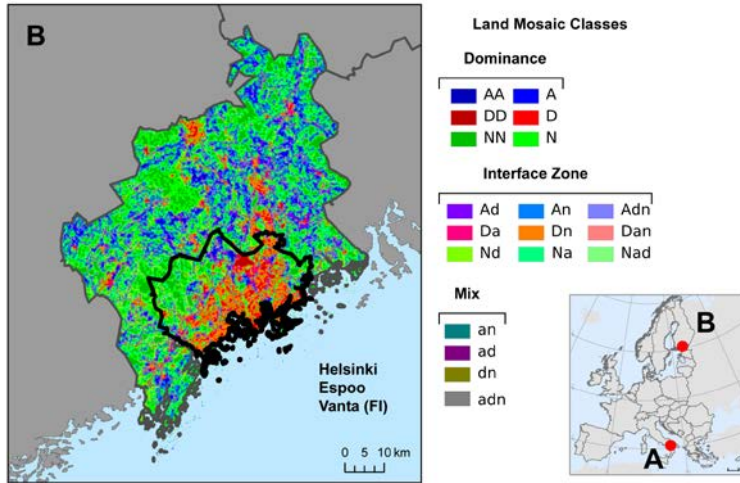


Figure 1: Example of Land Mosaic maps in Helsinki (FI) and Naples (IT). A = Agriculture; D = Developed; N = Natural; Mix = Mixed presence of all land classes.

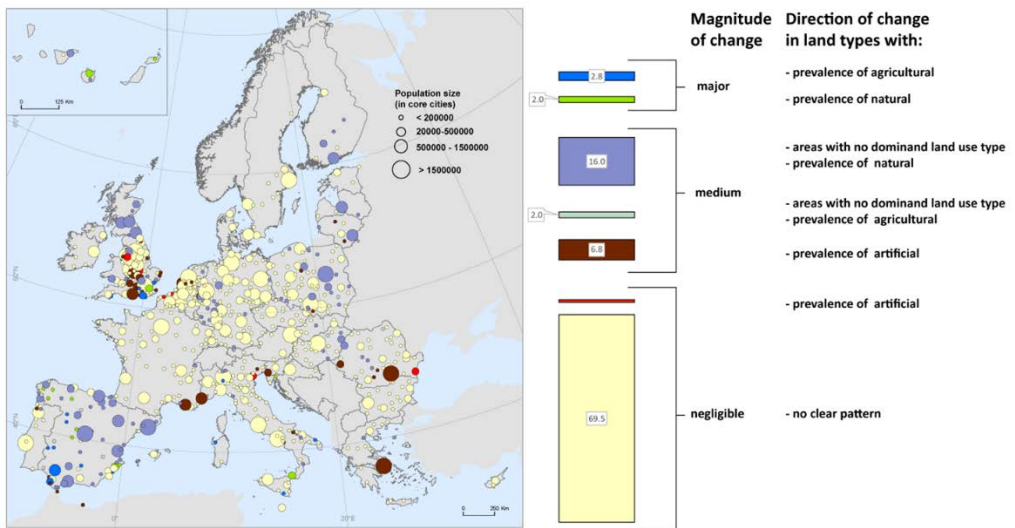


Figure 2: FUAs classified in terms of land types magnitude and direction of change between 2000 and 2018.