

Ecological Indicators. 85. 190-203.  
 10.1016/j.ecolind.2017.10.029  
 Wessel M, Brandmeier M, Tiede D (2018) Evaluation of Different Machine Learning Algorithms for Scalable Classification of Tree Types and Tree Species Based on Sentinel-2 Data. Remote Sens., 10, 1419. [Google Scholar] [CrossRef]

### 9.1.1 Structural connectivity of green space

**Project Name:** UNaLab (Grant Agreement no. 730052)

**Author/s and affiliations:** Laura Wendling<sup>1</sup>, Ville Rinta-Hiiri<sup>1</sup>, Maria Dubovik<sup>1</sup>, Arto Laikari<sup>1</sup>, Johannes Jermakka<sup>1</sup>, Zarrin Fatima<sup>1</sup>, Malin zu-Castell Rüdénhausen<sup>1</sup>, Peter Roebeling<sup>2</sup>, Ricardo Martins<sup>2</sup>, Rita Mendonça<sup>2</sup>

<sup>1</sup> VTT Technical Research Centre Ltd, P.O. Box 1000 FI-02044 VTT, Finland

<sup>2</sup> CESAM – Department of Environment and Planning, University of Aveiro, Campus Universitário de Santiago, 3810-193 Aveiro, Portugal

Structural connectivity	Biodiversity
<b>Description and justification</b>	Biodiversity is the measure of biological variety in the environment and it has an important role in functioning ecosystems services and health of environment and society. Biodiversity is an aspect of natural environment that is most directly affected by anthropogenic influence. City biodiversity is seen as an important aspect of sustainable and resilient urban development. The fragmentation of natural environments is a major threat to biodiversity as scattered and non-connected natural areas are much less efficient in preserving biodiversity than large and connected areas.
<b>Definition</b>	Degree of physical (“structural”) connectivity between natural environments within a defined urban area
<b>Strengths and weaknesses</b>	+ Relatively easy to evaluate - Estimation about connections
<b>Measurement procedure and tool</b>	To estimate fragmentation, natural areas are defined and then an estimation is made about their connections. A mesh indicator value is calculated. Natural areas are categorized into separate interconnected patches. The area of each patch is summed, squared and these squares are summed and divided by the total area of natural areas. $\text{Mesh indicator} = \left( \frac{A_1^2 + A_2^2 + \dots + A_n^2}{A_1 + A_2 + \dots + A_n} \right)$ This index (in hectares) is a metric - mesh indicator - used in the indicator value.
<b>Scale of measurement</b>	District to region scale
<b>Data source</b>	

<b>Required data</b>	Data on zones in natural or naturalized condition in the urban area of interest from, e.g., government agencies, municipalities, nature groups, universities, etc.
<b>Data input type</b>	Quantitative
<b>Data collection frequency</b>	Annually
<b>Level of expertise required</b>	Moderate
<b>Synergies with other indicators</b>	Related to <i>Reclamation of contaminated land</i> and <i>Ratio of open spaces to built form</i> indicators
<b>Connection with SDGs</b>	SDG 11 Sustainable cities and communities, SDG 13 Climate action, SDG 15 Life on land
<b>Opportunities for participatory data collection</b>	
<b>Additional information</b>	
<b>References</b>	Chan, L., Hillel, O., Elmqvist, T., Werner, P., Holman, N., Mader, A., & Calcaterra, E. (2014). User's Manual on the Singapore Index on Cities' Biodiversity (also known as the City Biodiversity Index). Singapore: National Parks Board, Singapore.

### 9.1.2 Functional connectivity of urban green and blue spaces

**Project Name:** PHUSICOS (Grant Agreement no. 776681)

**Author/s and affiliations:** Gerardo Caroppi<sup>1,2</sup>, Carlo Gerundo<sup>2</sup>, Francesco Pugliese<sup>2</sup>, Maurizio Giugni<sup>2</sup>, Marialuce Stanganelli<sup>2</sup>, Farrokh Nadim<sup>3</sup>, Amy Oen<sup>3</sup>

<sup>1</sup> Aalto University, Department of Built Environment, Espoo, Finland (gerardo.caroppi@aalto.fi)

<sup>2</sup> University of Naples Federico II (UNINA), Department of Civil, Architectural and Environmental Engineering, Naples, Italy

<sup>3</sup> Norwegian Geotechnical Institute (NGI), Oslo, Norway

Hanski Connectivity Index	Biodiversity
<b>Description and justification</b>	Indicators of Green Infrastructure sub-criterion will assess the landscape connectivity and the mosaic diversity.
<b>Definition</b>	The index <i>CII</i> can be calculated by measuring edge-to-edge distances between study site (separately for large and small study sites) and all other habitat patches within the 2-km radius of each landscape.
<b>Strengths and weaknesses</b>	