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10.7 Proportion of protected areas

Project Name: CONNECTING Nature (Grant Agreement no. 730222)

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Proportion of protected areas	Biodiversity
Description and justification	Proportion of a specific area (typically a Formal Urban Area) which fall under special protection by the Natura 2000 directive, and this includes a variety of different biodiversity-rich and sensitive habitats. This represents a proxy measure for the contribution that an area is making to biodiversity conservation strategies.
Definition	There are a range of restrictions to agricultural and forestry related activities within these areas which contribute to foster the development and recovery of rare species.
Strengths and weaknesses	A key indicator related to the biodiversity value of spaces. Relatively straightforward, but does not consider any sites that do not fall under the Natura 2000 directive. This can, therefore, miss many sites of value to nature conservation including designated sites, particularly in urban areas.
Measurement procedure and tool	Proportion (%) of a designated area (e.g., Formal Urban Area) belonging to Natura 2000 network per grid cell. Typically, using a GIS programme (e.g.ArcGIS, QGIS) a Natura 2000 shapefile is clipped to a target area polygon,

	with remaining sites dissolved to avoid site overlaps. The proportion of the total area covered by Natura 2000 sites is calculated.
Scale of measurement	Measurement can be carried out over a city or regional scale. Smaller scales are not typically relevant due to the scale of Natura 2000 sites.
Data source	
Required data	Pre-existing Natura 2000 shapefiles are used. If these are not available, it might be necessary to generate them.
Data input type	Spatial & Quantitative
Data collection frequency	Typically, before and after implementation of NBS that has impacted Natura 2000 site areas or designation. Following this regular data collection is advised to coincide with updating of Natura 2000 shapefiles.
Level of expertise required	Expertise is typically required either for habitat identification or interrogation of satellite imagery. If statistics of landscape pattern are used to infer ecological process at an ecotone level, there is a requirement to understand both ecotone ecology and the specific sensitivities of statistics to ecotone characteristics.
Synergies with other indicators	Synergies with other greenspace mapping indicators and protected habitats and species indicators.
Connection with SDGs	Strongest link to SDGs 14 & 15. However there are links to all SDGs except 1 and 5: Biodiversity underpins food production; Links between biodiversity and health & wellbeing benefits; Links to environmental education; Links between biodiversity and water quality; Links between biodiversity and clean energy (biosolar, biofuel); Job creation; Improved green infrastructure and industry associated with biodiversity (potential disservices also); Social equality in relation to access to nature; Sustainable urban development; Biodiversity a good indicator of responsible consumption; Climate change adaptation; More sustainable water management; Biodiversity benefits; Environmental Justice in relation to biodiversity; Opportunities for collaborative working.
Opportunities for participatory data collection	Limited opportunity for participatory data collection, unless combined with some type of condition assessment of sites.
Additional information	
References	Ruf, K., Gregor, M., Davis, M., Naumann, S. and McFarland, K., 2018. The European Urban Biodiversity Index (EUBI): a composite indicator for biodiversity in cities. ETC/BD report to

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10.7.1 Sites of community importance and special protection areas

Project Name: PHUSICOS (Grant Agreement no. 776681)

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Sites of Community Importance (SCI) and Special Protection Areas	**Biodiversity**
Description and justification	These indicators assess whether the study area is classified as a protected area or is within a protected area belonging to Natura 2000 network.
Definition	The Indicator describes the extension, measured in hectares, of Site of Community Importance (SCI) and/or Special Protection Areas (SPA) in the study area.
Strengths and weaknesses	This indicator allows at evaluating the effects of NBS on habitat creation/reduction. The Indicator hardly changes in the design and long-term scenario, even if it could be assessed if the NBS implementation have produced such a beneficial impact on biodiversity to activate EU procedures in order to enlarge SCI and/or SPA perimeter.
Measurement procedure and tool	The indicator is easily calculated using a simple GIS routine, as follows: 1) The intersection between the shapefile of the SCI and SPA and the shapefile of the study area is achieved using the geoprocessing tool “Intersect”; 2) The spatial extension of the output of the previous step, i.e., the portion of SCI and SPA falling within the study area, is calculated using the “calculate geometry” tool.