

Data collection frequency	Annually
Level of expertise required	Low
Synergies with other indicators	Partly related to <i>Reclamation of contaminated land</i> indicator
Connection with SDGs	SDG 11 Sustainable cities and communities, SDG 13 Climate action, SDG 15 Life on land
Opportunities for participatory data collection	No opportunities identified
Additional information	
References	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.

10.2 Area of habitats restored

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

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Area of habitats restored	Biodiversity
Description and justification	When NBS delivery is associated with the restoration of target habitats (e.g., Article 17 habitats, national priority habitats, or local priority habitats), quantification of the extent of restored habitats can function as an indicator of success.
Definition	Extent of habitat as a proportion of total area, or total area of a specific habitat type (e.g., proportion of amenity grassland restored to wildflower meadow).
Strengths and weaknesses	A simple and effective measure of habitat change, but this must be updated regularly and combined with condition assessment surveys to be sure that habitat restoration is successfully conserved

Measurement procedure and tool	This indicator uses standard terrestrial habitat mapping approaches (EEA 2014) to quantify changes in habitat area. In urban areas, where habitat parcels are smaller, higher-resolution data and or ground-truthing may be necessary to establish spatial extent.
Scale of measurement	Measurement is typically carried out over a city or regional scale. Smaller scales (e.g., site scales can also be relevant)
Data source	
Required data	Typically, aerial photo and/or satellite data is used as a interrogation layer in GIS with landcover data as a background map. Data on extent of target restoration habitat areas can also be required if such interpretation is not straightforward from aerial images.
Data input type	Spatial & Quantitative
Data collection frequency	Typically, annual, but can be less frequent if resources are stretched.
Level of expertise required	Expertise is typically required either for habitat identification or interrogation of satellite imagery. This requirement can be reduced if low resolution land cover maps are used for calculations.
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	Surveying habitats represents an excellent opportunity for widening participation, this includes survey of habitat condition change over time. Alternatively, participatory GIS portals can be used to ground-truth satellite imagery.
Additional information	

References	EEA (2014) Terrestrial habitat mapping in Europe: an overview: Joint MNHN-EEA Technical report No 1/2014: https://www.eea.europa.eu/publications/terrestrial-habitat-mapping-in-europe/at_download/file
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10.3 Shannon Diversity Index of habitats

Project Name: Nature4Cities (Grant agreement: No. 730468)

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Shannon Diversity Index of Habitats		Green Space Management Biodiversity
Description and justification	This indicator is defined as the simple ratio of the natural areas (An) per the total area (Ac). The objective is to determine if the NBS solution increases or maintains the proportion of areas supporting biodiversity in the city or neighbourhood.	
Definition	Indicates the proportion of bare turf and sparse vegetation, grassland and herbs, shrubs, trees and of built environment to the total area.	
Strengths and weaknesses	+ standardizable, which makes the comparison with other cities easier	
Measurement procedure and tool	<ul style="list-style-type: none"> - spreadsheet methods - or GIS-based models (spatial resolution of 1 meter) - calculation method: $D = - \sum_{i=1}^5 (p_i \log_2 p_i)$ <p>Where pi corresponds to the proportion of each of the five kind of habitat</p>	
Scale of measurement	Object and neighbourhood scale	
Data source		
Required data	- Proportion of each class of habitat	
Data input type	quantitative	
Data collection frequency	Before and after the NBS implementation	