19.6 Availability and equitable distribution of blue-green space

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Availability and equitable distribution of blue-green space	**Social Justice and Social Cohesion**
Description and justification	It is widely accepted that access to urban green space improves the quality of life for urban residents, facilitating social cohesion, democracy, and equity whilst enhancing physical and psychological health and well-being. Urban green spaces also contribute to the economic vitality of urban neighbourhoods by increasing property values and encouraging tourism (Ibes, 2015). A number of recent studies have highlighted inequitable access to green space in cities around the world. Spatial analysis of metropolitan areas can reveal the relationship between green space access and socio-economic status.
Definition	The availability and distribution of blue-green space with respect to specific individual or household socioeconomic profiles and landscape design
Strengths and weaknesses	+ Provides useful data for urban city planning - Needs expert users and a lot of input data
Measurement procedure and tool	The overall methodology involves selecting relevant characteristics and datasets, then overlaying these dataset using a geographic information system (GIS). Statistical analyses of spatially-explicit variables are then used to explore the relationship between urban green space availability and selected socio-economic characteristics. Additional factors, such as size or type of green space, biodiversity value, etc. can also be evaluated. Steps of the process are given below: Step 1: Separate the metropolitan area of interest into its respective spatial/administrative units which provide clearly defined areas with readily available data regarding population density, demographics, median household income, level of home ownership, etc. Additional information regarding dominant building type (single family and multi-family residences, buildings for retail or commercial/industrial use, mean or maximum building

	height etc.) can be obtained from municipality records for each spatial/administrative unit. Step 2: Using GIS, overlay the spatial units with available urban landscape data. For example, Cohen et al. (2012) obtained high resolution urban landscape data (1 m) from the Paris Urban Planning Agency that described the spatial distribution of: vegetation patches per strata (i.e., <1 m, 1–10 m, >10 m); (2) water bodies, bare soil and asphalt; and, built up areas based on the median height of buildings and the period of construction. This layer was intersected with the census block group data to view distribution patterns of urban landscapes. Step 3: Statistically analyse spatially-explicit data to evaluate green space availability (and green space type and size and/or biodiversity value, if desired) as a function of socio-economic factors in order to determine equity of green space distribution). A number of different statistical methods may be employed to evaluate the equity of public green space distribution. For example, Cohen et al. (2012) used available botanical information for each of the census block groups, calculating the mean household income per botanical and landscape class cluster. They also assessed the correlation between mean revenue, floral richness, the ecological diversity index and building density.
Scale of measurement	Metropolitan scale
Data source	
Required data	Spatial/administrative data regarding population density, demographics, median household income, level of ownership, etc. Also urban landscape data with green spaces and green space characteristics.
Data input type	Qualitative and quantitative
Data collection frequency	Before and after NBS implementation
Level of expertise required	Moderate to high
Synergies with other indicators	Synergies with *Distribution of public green space* and *Accessibility of urban green spaces*
Connection with SDGs	SDG 15 Life on land
Opportunities for participatory data collection	No opportunities identified
Additional information	

References	Cohen, M., Baudoin, R., Palibrk, M., Persyn, N., & Rhein, C. (2012). Urban biodiversity and social inequalities in built-up cities: New evidences, next questions. The example of Paris, France. Landscape and Urban Planning, 106, 277–287. Ibes, D.C. (2015). A multi-dimensional classification and equity analysis of an urban park system: A novel methodology and case study application. Landscape and Urban Planning, 137, 122–137. Kabisch, N. & Haase, D. (2014). Green justice or just green? Provision of urban green spaces in Berlin, Germany. Landscape and Urban Planning, 122, 129–139.