



NATURVATION

cities – nature – innovation

URBAN NATURE NAVIGATOR

Exploring Indicators for Nature-Based Solutions



KEY POINTS

- The Urban Nature Navigator is a tool using indicators to capture ecological, social and cultural benefits that nature can provide for cities.
- It assesses multiple benefits from a range of ecosystem services which can be valued with a scoring system.
- Different nature-based solutions can be compared and valued for their use when addressing urban challenges.

ABOUT THE PROJECT

NATURE-based URban innovATION is a 4-year project involving 14 institutions across Europe in the fields of urban development, geography, innovation studies and economics. We are creating a step-change in how we understand and use nature-based solutions for sustainable urbanisation.





What is the Urban Nature Navigator?

The Urban Nature Navigator (UNN) is an online tool that helps users assess the potential benefits from different types of nature-based solutions to meet various urban sustainability challenges. The tool is based on indicators that capture the ecological, social, cultural and economic benefits of nature-based solutions.

It has been created through stakeholder dialogues. The UNN has been created to:

- Estimate how an urban development idea could contribute to address urban sustainability challenges.
- Support users in identifying which types of nature-based solutions can help meeting key priorities.

The assessment process may be implemented with a small group of colleagues or a wider group of stakeholders to create a city development vision, draft an urban development plan or to carry out an initial impact assessment of nature-based solutions.

Benefits from nature-based solutions

Nature-based solutions can provide ecosystem services for cities – providing resources, regulating environments, creating habitats, and generating social and cultural activities. At the same time, nature can have values that are difficult to account for in economic terms but are nonetheless important to society, such as contributing to well-being.

We have scored values for the six common types of nature-based solutions:

- Parks and green areas
- External building greens
- Infrastructure with green features
- Allotment gardens
- Blue areas
- Green areas for water regulation

What are the indicators in the Urban Nature Navigator?

We have selected around 30 indicators that capture ecological, social and cultural benefits that nature based solution can provide for cities and their inhabitants. The selection of indicators is based on an interactive process integrating scientific evidence (credibility) as well as their feasibility from experiences and insights of policy-makers and practitioners (legitimacy and salience) working with nature-based solutions (see Figure 1).

The indicators were selected from a database of several 1000 scientific papers on urban nature indicators where clusters of indicators were linked to challenges. Three to six indicators per challenge were selected and values of benefits from six common types nature-based solutions were estimated and turned into scores.

Assessing benefits of nature-based solutions

Each nature-based solution provides multiple benefits that can be measured by using indicators that value the contribution of nature-based solutions. The indicators assess a range of services which are valued with a scoring system. This means that the services can be compared and their benefits assessed before deciding what types of nature-based solutions can be useful for different urban challenges.

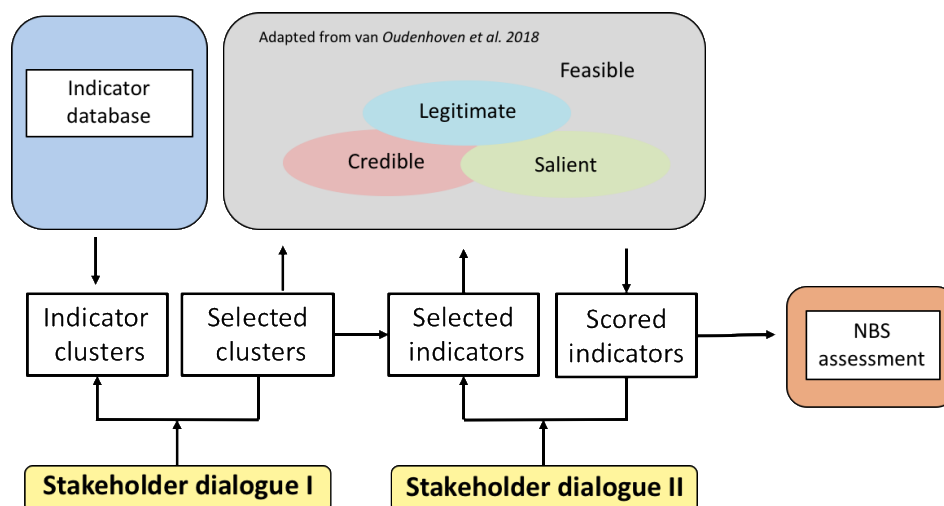


Figure 1. The iterative process of selecting indicators and providing relevant and feasible values of benefits

Ecological services

Air cooling	Carbon storage
Noise annoyance reduction	Fruit set
Green-blue areas as a proxy for biodiversity	Health outcomes of available green space
Particulate matter reduction at air pollution	Peak flow reduction
Physiologically equivalent temperature	Pollinator abundance
Run-off reduction	Wetland area

Key examples of ecological services

Air cooling: The air cooling indicator measures the lowering of air temperature by a nature-based solution. Cooling the air can be a climate action for adaptation to a warmer climate, as well as mitigate the negative effects of the urban heat island effect.

Carbon storage: Carbon storage is an indicator for the amount of carbon in water, soil and biomass. Carbon storage helps with the resilience and mitigation of climate change.

Run-off reduction: Run-off reduction measures the relative change in the total volume of surface water after the implementation of a nature-based solution and thus indicates how efficient a nature-based solution reduce surface water run-off during storms and/or flooding event.

Social and cultural services

Artistic value	Attachment to community
Change in the number of crimes	Citizen involvement in green spaces management
Ecological knowledge	Engagement in community
Environmental awareness related to water	Equal access to urban nature
Historical and cultural meaning	Job creation potential
Legal Frameworks	Life satisfaction
Perceived general health	Perception of safety



Key examples of social and cultural services

Citizen involvement in green spaces management: Assesses whether the implementation of a nature-based solution has a positive effect on citizen involvement in local green space management processes.

Historical and cultural meaning: Describes the benefits of historical and cultural aspects of nature-based solutions to citizens. The benefits cover aspects of artistic expressions such as graffiti, arts and murals, written, drawn or painted as forms of communication.

Perceived general health: Self-reported assessment of individuals about their general health status, covering both their physical and mental health.

Assessing economic values of nature-based solutions

A score on economic value of nature reflects its value to the urban residents, relative to other types of urban nature. The economic value of nature, in monetary terms, may differ between cities, and also within cities. The relative value can be used to compare values between different nature-based solutions even though economic levels differ between cities.

Outputs

The Urban Nature Navigator provides information as:

- A matrix of scores from indicators of six types of nature-based solutions and twelve urban challenges.
- Radar charts that show the scores of 3-6 indicators for each example and towards an urban challenge (see chart).
- An indicative economic value of the overall benefits of the nature-based solutions.
- A decision process guide to help stakeholders use the Urban Nature Navigator.
- A guide for practitioners to a set of tools and methods that can generate context-specific values of benefits from NBS. This will provide assessment of benefits on a local scale and context.

