

Potential to innovate through NbS implementation: Local Innovation Screening Tool (‘LIST’)

What is innovation in the clever cities project?

Innovation is a core element of the CLEVER Cities project, integrated in different activities and steps of the nature-based solution implementation and co-creation processes. Within the project, we use this term to broadly refer to new ideas or methods that are able to be turned into value in some way.

More specifically, the project defines innovation as: ***the capacity to promote an ecosystem where the cities (from the planner’s perspective), citizens (from the user’s perspective), private sector and knowledge providers work together in a co-creative process.*** The main goal of this process is to foster innovative regeneration and support solutions which address a city’s challenges, thereby achieving social, economic and environmental benefits for increased resilience and improved quality of life.

Innovation framework

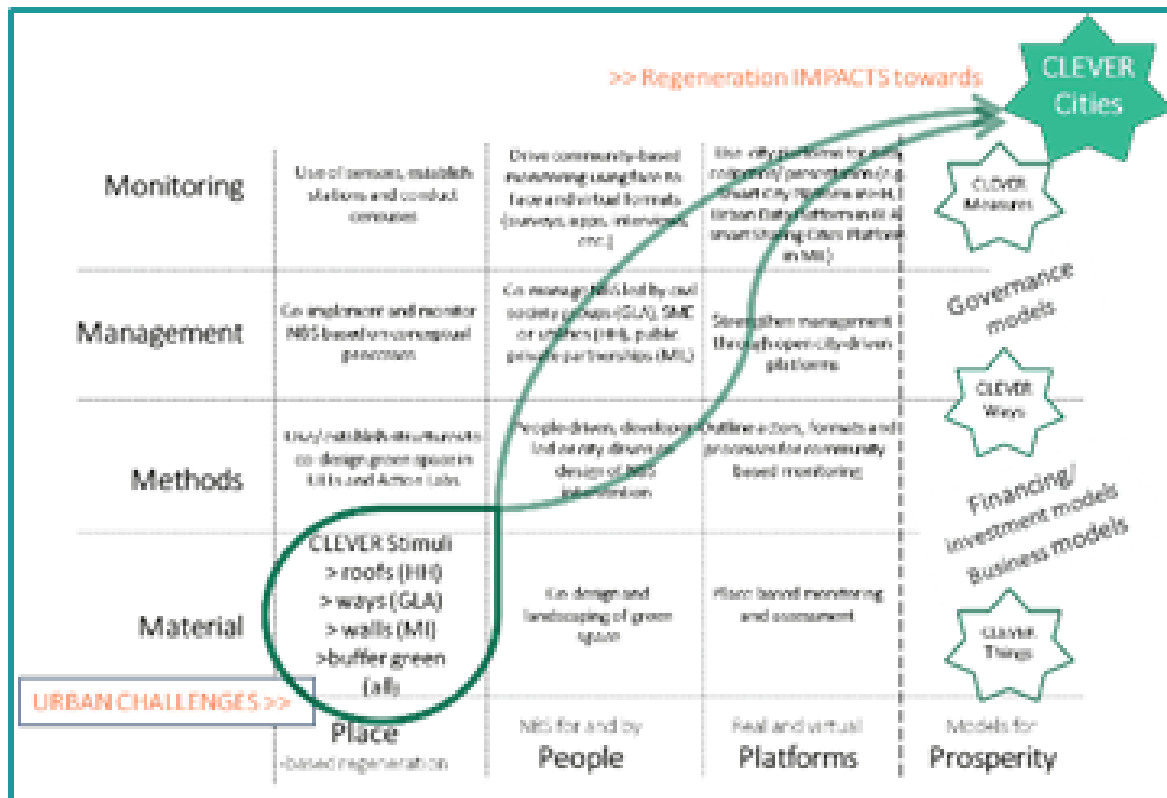
The CLEVER Cities framework for innovation aims to capitalise on synergies between the NbS interventions (monitoring, management, methods and materials) and local capacities (place, people, platforms, prosperity). These elements are outlined through a grid, within which new innovations may emerge in the interven-

tions-capacities intersections. As such, CLEVER Cities pursues the idea that innovation is present both in the technology of the NbS itself as well as during the NbS co-creation process. By bringing these opportunities to light, the innovation framework allows for the identification of specific actions where innovation may emerge.



Image by Bjorn
from Adobe Stock





Local innovation screening tool: Identifying innovation pathways

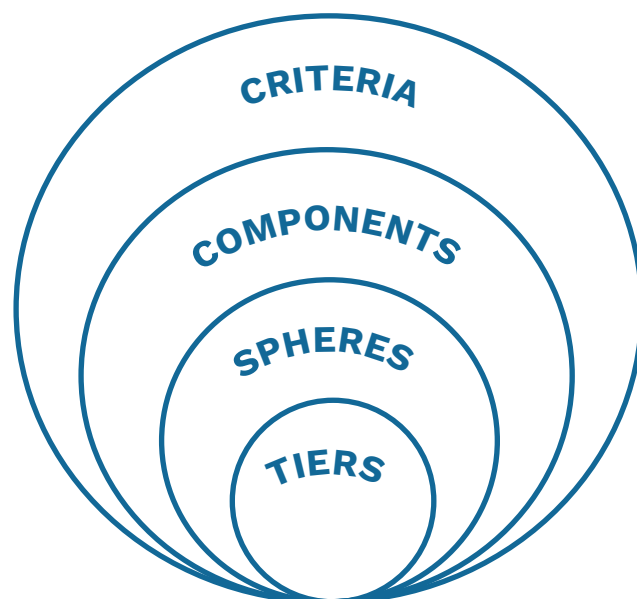
The Local Innovation Screening Tool ('LIST') is an interactive and easy-to-use webtool created to respond to the innovation potential in CLEVER Cities. The tool's goals are two-fold, namely:



1. Inspire cities to innovate in NBS implementation processes by offering a detailed list of criteria to be contemplated.



2. Help cities to identify and understand innovation pathways, and recognise their transformation during the project lifetime.



As a response to the first goal, a co-creation process with the consortium partners was employed to define a set of innovative criteria which could be applied along the NBS process. This list (link to pdf document with content) was later improved through iterative reviews with thematic experts, who generated a struc-

ture with more than 150 innovative criteria, following a hierarchical order to facilitate understanding and to ease the navigation through the tool. The content included in the LIST may be considered the core and main value of the tool, providing useful insights to any city in terms of innovation aspects in terms of NBS monitoring, management, methods and materials. For example, there are 6 criteria under the component "green/blue roofs", that is part of the sphere "interventions in buildings" from the tier "material":

TIER	SPHERE	COMPONENT	CRITERIA
MATERIAL	Interventions in buildings	Green / blue roofs	Count on the volume of storage for water treatment
			Consider water retention
			Use of smart flow control through a weather app
			Use of smart drip irrigation systems in green roofs
			Qualify roof areas with wild bee and nesting aids
			Combine solar panels and green-blue roofs
		Green facades and living walls	Build a green wall trellis
			Grow edible plants in façades and walls
			Use of smart drip irrigation systems in green facades and living walls

In the tool, each individual criteria contains a brief introduction and - in most of the cases - also some references and links to good practices and existing case studies. These additional resources provide the user with a sufficient degree of confidence in the innovation in terms of its usability, and they might be of great support while a city is in the process of defining replication strategies of potentially reviewing its planning instruments.

The second goal is more focused on the understanding of the trajectory of each city along the project timespan, indicating their Innovation Pathway along the project, i.e., identifying from the criteria they initially expected to innovate (and the conditions for doing so), those which were effectively implemented. For that, the LIST envisions three types of evaluation: Innovation Readiness Level (IRL), Innovation Model, and Feasibility (technical, economic, legal and social). After concluding an *ex-ante* and an *ex-post* analysis, some relevant questions are automatically answered, e.g. What kind of innovation was considered? What were the challenges behind why some innovation could not be implemented, although expected? Which of the Spheres have pictured the most innovation actions during CLEVER Cit-

ies? (RESULTS WILL BE INTEGRATED TO D.4.4. -LINK WILL BE AVAILABLE WHEN THE REPORT IS FINALIZED)

Added value of analysing innovation

- The analysis of the LIST application by the CLEVER Cities project contributed to the understanding on which, how, and by whom, the innovation aspects were tackled along the project timespan; this has been led by a reflection on the reason of success and/or limitations to be either replicated or overcome.
- The LIST results provided important evidence about where a city has innovated the most, and in which direction. This information may serve as a self-evaluation, and it is a valuable basis for planning future activities.
- The development of the cities' urban planning are expected to make use of the results of LIST as a reference, while focusing on a vision on what kind of future are expected, and how innovation could be implemented in situ.

Examples of innovation in clever cities

The CLEVER frontrunner-cities – Milan, Hamburg and London, have gone through a complete NbS implementation co-created process, and so, they have contributed filling in the *four tiers* of the LIST (materials, monitoring, management and methods). In turn, the CLEVER follower cities (Malmo, Madrid, Belgrade, Larissa, Sfantu Gheorghe and Quito), given their more narrowed role (developing an NbS plan), have limited their analysis to the *management tier* only (for them, physical NbS implementation was not envisaged).

Some advances of the ex ante results show the following:

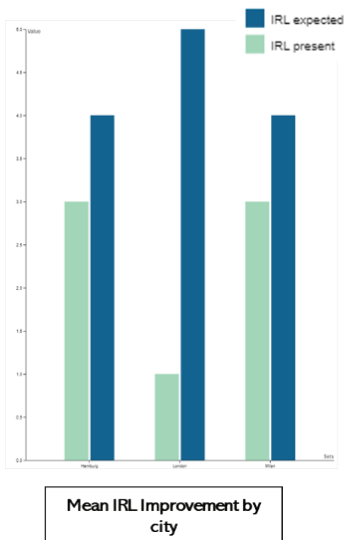
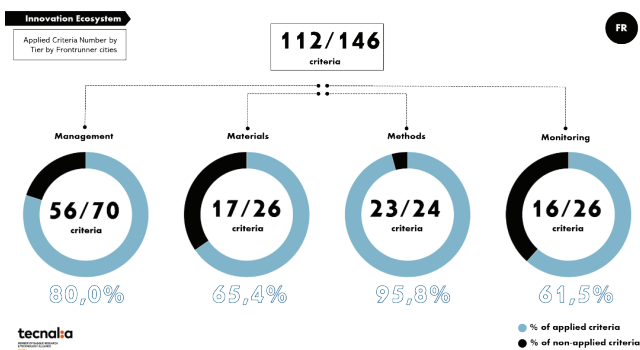
More than half of the innovative criteria included in the tool was expected to be con-

sidered by at least one city in at least one intervention (in the example, the criteria considered to be innovated by the frontrunner cities, in each of the tiers).



The Innovation Readiness Level are expected to jump significantly in all tiers until the end of the project (the following diagram show the proposed innovation of frontrunner cities in terms of MANAGEMENT).

Some innovation aspect results to be chosen repeatedly by multiple cities, and so, they are analysed in-depth (in the example, “Integraton of different social and citizen stakeholders’ groups”, repeated in the 3 CLEVER cities).



Hamburg:
Transfer & Improve

London:
New

Milan:
Transfer & Improve

Innovation Model

