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GreenScape CE

# D.3.4.1 GreenScapeCE Package Pitch

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# A. What is the GreenScape CE Package Pitch?

This guide is designed to serve as a clear and practical entry point for anyone interested in implementing Nature-based Solutions (NbS). It offers a step-by-step overview of the NbS development process, showcases experiences from partner cities, and provides a dedicated toolkit to support early-stage planning and decision-making. The primary aim of the Package Pitch is to provide a structured and accessible guide for implementing NbS projects. This guide will enable stakeholders, including local authorities, organizations, and community groups, to:

- Understand the step-by-step process for developing NbS projects;
- Explore real-life examples and experiences from GreenScape CE partners;
- Access a toolkit ("solution suitcase/catalogue") tailored for early-stage planning and implementation of NbS.

# B. Key principles

The structured implementation of NbS relies on a clear methodological framework that supports context-sensitive, technically sound, and strategically aligned planning. Within the GreenScape CE project, a shared foundation has been developed, guided by three key principles:

- **place-based selection**, ensuring that all solutions respond to the specific environmental, social, and infrastructural conditions of a site;
- **challenge-driven yet criteria-based design**, focusing on targeted urban issues such as overheating or flooding while applying strict suitability filters; and
- **flexibility within defined typologies**, allowing for local adaptation without compromising methodological coherence.

# C. Step-by-Step Workflow

Building on these principles, this document introduces a step-by-step workflow, sort of a solution suitcase or a catalogue, structured into nine interlinked chapters. Each chapter represents a distinct phase of the planning and implementation process, rooted in the project's methodological tools and aligned with broader European and national policy frameworks. While this structure partially reflects commonly recognized planning stages—such as site analysis, feasibility assessment, or integration into spatial plans, it has been adapted and reorganized to suit the specific objectives of the GreenScape CE project.

The nine steps presented here do not strictly replicate standard NbS planning templates. Instead, they reinterpret and reorganize key methodological components—such as those found in the NbS Pipeline, the Toolbox for Selecting NbS, and financial planning documents in a way that responds to the practical needs of pilot cities and partners. The approach is intended to be applicable across diverse territorial contexts, from small towns to metropolitan regions, and to facilitate the mainstreaming of NbS into local planning systems. Steps are divided into chapters as follows:

- **Initial Assessment**
- **Stakeholder Engagement**
- **Selecting Areas for NbS Implementation**

- **Selecting an Appropriate NbS – the steps**
  1. Financing
  2. Design and Planning
  3. Implementation
  4. Evaluation and knowledge sharing
  5. Communication and Engagement

# 1. Initial Assessment

The initial step involves clarifying what constitutes a Nature-based Solution, drawing on relevant scientific literature, European policy definitions, and national legislative frameworks. This includes an overview of different typologies and working definitions.

## 1.1. Consulting the established typology of NbS and GI

Refer to the typology of NbS developed within the project, which includes solutions like bioswales, infiltration trenches, bioretention systems, permeable pavements, green roofs, urban forests, and community gardens.

Each typology is linked to specific ecosystem services, challenges addressed, implementation scales, and technical requirements, and includes clear descriptions, design considerations, and functional benefits.

The starting point is to consult the typology of NbS described in D.1.1.1 (Typology and Criteria for Planning GI and NbS), which classifies different types of interventions, such as:

- Bioswales
- Infiltration trenches
- Bioretention systems
- Tree box filters
- Detention basins
- Retention ponds and constructed wetlands
- Permeable pavements
- Green roofs and green walls
- Street trees and urban forests
- Community gardens and urban agriculture

Selection should consider opportunities for integrating NbS into new developments (greenfield sites), existing urban areas (brownfield sites) and planned infrastructure projects (public spaces, roads, public buildings). This maximizes the potential for NbS to contribute to multiple goals simultaneously, such as climate resilience, biodiversity, social well-being, and urban regeneration.

# 2. Stakeholder Engagement

The desire to improve space can be an excellent starting point, but how to proceed might not always be clear. Citizens, end-users, stakeholders, and other relevant actors must be actively involved from the earliest stages of project development. Their participation ensures that the solutions address real needs and enhance the sense of local ownership and acceptance.

Therefore, the project should be developed collaboratively with experts such as architects, landscape architects, and civil engineers, while maintaining an open dialogue with the community throughout the process, especially regarding the design of the programme and functions to be included. The technical and spatial design should remain primarily the responsibility of the engaged professionals, ensuring quality, feasibility, and coherence of the overall project. To facilitate the identification of suitable experts and to guide inclusive engagement, the resource "A Toolbox for Integrated Project Development" (European Commission, 2023) provides valuable methodologies and tools, promoting a participatory, cross-sectoral approach from the outset.

In this collaborative process, it is important to:

- Define clear primary goals for the project, such as reducing $CO_2$ emissions, managing stormwater, or enhancing biodiversity, while ensuring that the space's fundamental function and usability are preserved.
- Differentiate between greenfield and brownfield approaches, where greenfield projects focus on expanding the green infrastructure network into undeveloped areas, while brownfield projects seek to integrate nature-based solutions into existing urban fabrics.
- Value both micro- and macro-scale solutions, recognising that smaller, site-specific interventions can sometimes deliver a more significant localized impact than larger, more generalized projects.

To facilitate structured and effective participation, the process can build on existing project resources such as:

- D1.3.1 – NBS Curriculum Concept, which provides a framework for capacity-building workshops and best practice sharing aimed at municipal professionals and decision-makers, and
- D1.4.1 – Multi-Stakeholder Engagement Roadmap, which outlines a step-by-step methodology for stakeholder mapping, defining engagement levels, and selecting appropriate tools for communication and co-creation.

These deliverables offer practical guidance that can be adapted to local contexts, ensuring that stakeholder engagement is systematic, inclusive, and aligned with project objectives.

## 2.1. Key stakeholders

Engaging the local community, relevant experts, and other key actors ensures that solutions are grounded in real needs, foster ownership, and gain broad support across different sectors. An essential step is to identify and map key stakeholders, understanding their interests, influence, and potential roles in the project:

- Identify and map key stakeholders, including local authorities, citizens, NGOs, businesses, experts, and other relevant actors.
- Involve the local community and relevant stakeholders, as well as the expert community.
- Facilitate workshops and co-creation sessions, linking them to partner events such as Hackathons, and listing all relevant partner experiences and activities. As part of this collaborative approach, selected parts of the Joint Report of all Hackathons can be published to highlight the shared results and lessons learned.

# 3. Selecting Areas for NbS Implementation

Strategic prioritization ensures that limited resources are directed where they can address the most pressing challenges and deliver the greatest environmental, social, and economic benefits. Both public and private spaces can offer opportunities for NbS development, but different strategies may be needed depending on ownership, governance, and access conditions.

To ensure effective and scalable implementation of NbS, it is essential to adopt a differentiated approach for public and private areas:

- Public areas (e.g. streets, parks, schoolyards, public facilities):
  - Under direct control of city authorities – enable immediate action.
  - Require strategic planning through:
    - Clear NbS action plans and investment strategies.
    - Development of visual manuals and typological guides (e.g. archetype-based solutions) to support design coherence and reduce ad-hoc decision-making.
    - Inclusion of NbS goals into urban design standards and municipal projects.
    - Paradigm shift in spatial design, prioritizing ecological performance, multifunctionality, and long-term resilience.
  - Focus should be on areas addressing the most pressing urban challenges:
    - Mitigation of urban heat islands;
    - Stormwater retention and permeability;
    - Biodiversity enhancement and habitat restoration.

- Private areas (e.g. residential yards, company campuses, private schools):
  - Need to be included through targeted policies and enabling instruments.
  - Key tools include:
    - Incorporation of green infrastructure requirements into spatial and urban development plans (e.g. minimum soil permeability, green cover ratios).
    - Financial incentives such as:
    - Reduced communal fees for properties investing in NbS;
    - Co-financing of green roofs, front-yard greening, or tree planting;
    - Planning advantages (e.g. increased buildability) for exceeding green standards.
    - Clear guidelines and performance criteria for private landowners and developers.
    - Outreach and education campaigns to raise awareness of NbS benefits.

To ensure effective and phased deployment of Nature-based Solutions, it is essential to establish an implementation hierarchy:

- Prioritize areas where multiple objectives can be achieved simultaneously (e.g. heat, water, biodiversity, social use).
- Begin with high-visibility public spaces to build momentum and demonstrate feasibility.
- Expand toward private sector through incentives and regulatory frameworks.
- Use data-based diagnostics (e.g. heat vulnerability maps, flood risk, vegetation coverage) to sequence actions effectively.

Adopt and maintain a comprehensive spatial planning approach, to avoid fragmented, point-based interventions:

- Move beyond isolated, exclusively site-specific (dotted) interventions;
- Promote integrated, cross-sectoral planning of entire urban zones;
- Ensure NbS are embedded in all levels of spatial planning—from strategic documents to block-level design.

# 4. Selecting an Appropriate NbS - the steps

Selecting an NbS must be a place-based process, ensuring that solutions are tailor-made to the specific local conditions, challenges, and community needs. This step forms an integral part of the feasibility study, helping to assess the suitability and practicality of proposed interventions. In this phase, the following actions are essential:

- Determine the type of NbS based on the site's characteristics, local needs, and the key challenges being addressed (e.g., urban heat, stormwater management, loss of biodiversity).
- Evaluate the scale and nature of the intervention, considering biotechnical solutions, technical solutions, or a hybrid approach, depending on the environmental, social, and economic context.
- Apply suitability criteria to ensure that the selected NbS aligns with both the goals of the community and the specific site conditions.

The correct approach includes the following key steps:

## 4.1. Assess the local context

Understand the environmental, social, and economic characteristics of the target area, including site-specific factors such as soil permeability, water availability, urban density, and existing green infrastructure.

Assess available resources and space:

- A green roof may be the only viable solution for limited spaces.
- Planting directly into the soil is often cheaper and has a more significant impact when space allows than more technically demanding solutions.
- Avoid following trends or "last craze" solutions, as this can lead to greenwashing. Optimization and suitability are the key. In this context, the GreenScape CE Visual Mapping Platform (GVMP), an interactive suitability mapping tool developed within the project, can support decision-making by visualising environmental, spatial, and socio-economic data to identify potential locations for NbS interventions. The platform is available at:

  https://greenscapece.visualmapping.eu/about/index.html.

## 4.2. Identify main challenges

Define the environmental and climate-related challenges the intervention aims to address (e.g., stormwater management, heat island mitigation, biodiversity enhancement).

## 4.3. Apply suitability criteria

After identifying potential typologies, the next step is evaluating their appropriateness for the site using **suitability criteria** defined in *D.1.1.1 (Typology and Criteria for Planning GI and NbS)*:

- Site-specific physical conditions.
- Alignment with project and community goals.
- Expected environmental and social benefits.
- Economic feasibility, including implementation and maintenance costs.
- Contribution to climate resilience and biodiversity.

## 4.4. Final selection of the most appropriate NbS

Based on the context, identified challenges, and suitability evaluation, select the NbS typology or combination of typologies that best fits the local needs and objectives.

Support tools such as:

- Typology descriptions and schemes in D.1.1.1 (Typology and Criteria for Planning GI and NbS), previously mentioned in the initial assessment;
- Practical selection aids in D.3.3.1 (Toolbox for Selecting NbS), which provides structured guidance for practitioners to make informed, evidence-based decisions.

## 4.5. Goals and Types of NbS

Nature-based Solutions (NbS) aim to expand and strengthen green infrastructure networks while transforming existing grey, impermeable spaces into functional, resilient, and nature-integrated environments.

The choice of approach depends on local needs, spatial conditions, and the type of intervention required to address specific urban challenges. In this context, several complementary directions are proposed:

- Revision of existing documentation and the shift from a “business as usual” paradigm toward one that integrates nature-based solutions (NbS) and prioritizes ecosystem services in urban design and planning.
- Greenfield investments focused on embedding green infrastructure (GI) from the outset in new urban developments, ensuring resilience and sustainability are incorporated from the planning phase.
- Integration of GI and NbS into spatial planning documents, including the development of dedicated Green Infrastructure Plans that guide the long-term transformation of urban fabric.
- Activation of brownfield sites as latent potential for ecological regeneration, adaptive reuse, and re-naturalisation.
- Greening of existing "grey" urban spaces, especially impervious surfaces (e.g. playgrounds, parking lots, streets), through:

- Technological solutions (e.g. permeable pavements, cooling materials, water retention systems);
- Biotechnological solutions (e.g. tree trenches, green roofs/walls, bioretention systems).

# 5. Financing

Before proceeding with detailed design and planning, it is essential to define a clear financing strategy for the NbS.

This step ensures the financial feasibility of the project and addresses both initial investment needs and long-term operational sustainability.

Key elements to address:

- **Estimate full project costs**, including design, construction, and maintenance phases.
- **Identify potential funding sources**, such as:
- Municipal budgets.
- National or European grants and funding programs (e.g., GreenScape CE Programme).
- Public-private partnerships (PPP).
- Green bonds or innovative financial mechanisms.
- **Select appropriate funding mechanisms** based on criteria such as cost-effectiveness, financial sustainability, ease of access, and scalability.
- **Assess financial risks** (e.g., potential funding gaps, cost overruns) and develop safeguarding strategies, such as diversifying funding sources or establishing contingency budgets.
- **Consider financial benefits** if applicable, including potential economic returns (e.g., increased property value, reduced infrastructure costs) and broader societal benefits (e.g., improved health outcomes, job creation).

At this stage, the information provided in D2.1.1 – Gap analysis of existing financing mechanisms in partner countries to be used for GI investments can serve as a valuable resource. It offers a broad overview of financing options for urban NbS, including a catalogue of key mechanisms currently available, along with their respective strengths and weaknesses.

In addition, D2.1.2 – Summary report on good practice examples of NBS/GI financing in the EU provides further insights by exploring these financing mechanisms in more detail, illustrating their practical application through real-world case studies from across Europe. Together, these two documents can offer useful guidance and inspiration for identifying viable financing pathways for NbS implementation.

# 6. Design and Planning

At this stage, a comprehensive design and planning process should be developed, ensuring that NbS interventions are fully aligned with site-specific needs, regulatory frameworks, and long-term sustainability goals. Finally, the process highlights the types of studies needed to support decision-

making. A multi-dimensional evaluation of environmental, social, and economic conditions is essential for selecting context-sensitive and high-impact NbS interventions.

Key steps include:

- Develop an area-specific NbS strategy, based on a thorough analysis of environmental, social, and economic conditions, as outlined in the context and needs assessment phase. This strategy should identify priority challenges (e.g., stormwater management, urban heat mitigation) and define the role of NbS in addressing them.
- Create an integrated NbS and Green Infrastructure (GI) plan, applying the typologies, suitability criteria, and selection methodologies described in D.1.1.1 and supported by the Toolbox (D.3.3.1).

The plan should:

- Define spatial layout and functional relationships between proposed NbS elements.
- Propose multiple solutions where appropriate, distinguishing between permanent and temporary measures.
- Address multi-functionality, ensuring that NbS provide co-benefits (e.g., ecological, social, economic).
- Prioritize the use of green infrastructure and nature-based approaches within all new projects and major renovations.

Where possible, revise and adapt existing or planned projects (e.g., public building upgrades, urban redevelopment schemes) to incorporate NbS measures, thereby enhancing climate resilience and ecosystem services delivery.

- Incorporate findings from financing analysis (conducted in the previous step) to ensure the feasibility and sustainability of the proposed NbS interventions.
- Ensure stakeholder engagement and co-creation during planning, building on participatory processes initiated earlier. This step ensures community needs and preferences are integrated into the design phase, fostering local ownership and long-term support.
- Prepare preliminary technical documentation, including conceptual designs, initial cost estimations, and maintenance planning, to be further refined during the detailed design and implementation phases.

Reference materials and guidelines for this phase are available in:

- D.1.1.1 (Typology and criteria for planning CCI/GI/NBS on the local level)
- D.3.3.1 (Toolbox for Selecting NbS)
- D.1.2.3 (Guidelines for integrating spatial data from different databases, supporting evidence-based site selection and integration of NbS into planning)
- D.3.1.1 (Using visual maps to determine possibilities for linking single GI/NBS actions into a coherent network)
- D.3.1.2 (Recommendations for integrating GI/NBS in urban and spatial plans to ensure long-term alignment with municipal strategies and regulatory frameworks)

## 6.1. Approaches and Perspectives

When integrating NbS into urban spaces, different approaches must be considered, depending on whether the intervention involves creating new green areas or adapting existing infrastructure.

Examples include:

- Using permeable surfaces to manage stormwater and reduce urban heat.
- Introducing vegetation through interpolation into built environments without requiring major structural changes.

Multiple approaches can be combined within the same area, offering flexibility:

- Technical and biotechnical solutions can be blended based on site needs and available resources.
- Hi-tech and lo-tech options allow for tailored responses, depending on technological capacity and maintenance potential.
- Permanent and temporary solutions can be used strategically, considering both long-term planning and short-term needs.

The Toolbox for Selecting Nature-based Solutions (D.3.3.1) offers a structured methodology for identifying, selecting, and implementing NbS based on local conditions, the typology of spaces, and specific environmental challenges. It provides practical examples and checklists (such as the NbS Toolbox Table) that guide decision-making across greenfield and brownfield contexts, emphasizing the need for tailor-made, site-specific solutions.

# 7. Implementation

Once the design and planning phase is completed and financing is secured, the project moves into the implementation stage.

This phase focuses on the practical realization of the planned NbS, while ensuring that flexibility is maintained to respond to unforeseen circumstances.

Key actions:

- Execute the project while monitoring progress.
- Include adaptive management to address unforeseen challenges.

## 7.1. Adaptability and Sustainability

Implementing NbS requires more than technical execution; it demands a careful balance between functionality, environmental goals, and the long-term viability of the intervention.

Adaptability, practicality, and sustainability should guide decision-making, recognizing that sometimes the most effective interventions are the simplest ones, and that success is measured by real impact rather than appearance.

Key principles include:

- Choose solutions appropriate to the specific spatial context.
- Avoid overly aesthetic solutions that do not serve practical purposes.
- Emphasize long-term sustainability and the primary function of the space.
- Acknowledge that some NbS might not be suitable if they interfere with the space's original purpose or reduce its quality.
- Conventional solutions, such as simple tree planting in a park, may sometimes be the most effective and impactful option.
- Strive for a balance between quantity and quality—sometimes, the sheer number of interventions (e.g., tree planting) itself constitutes a qualitative improvement.

# 8. Evaluation and knowledge sharing

Continuous evaluation strengthens accountability, supports further improvements, and enables replication in other contexts. Knowledge sharing through accessible platforms ensures that lessons learned are transferred across cities, communities, and stakeholders, promoting wider adoption of effective practices.

Key actions include:

- Measure the impact and effectiveness of the solution: at this stage, the human health and wellbeing, economic, environmental, and social indicators described in detail in D2.1.3 – Overview of socio-economic long-term benefits of GI/NBS can be particularly useful. These indicators can be used to assess the long-term benefits of the implemented NbS, and thus support their ongoing monitoring and evaluation. They provide a solid foundation for understanding the broader impacts of NbS over time, beyond their immediate environmental effects
- Document and share findings through available platforms.

# 9. Communication and Engagement

Transparency, accessibility, and visual clarity help build trust with citizens and stakeholders, while active involvement fosters a sense of ownership and ensures the long-term sustainability of interventions. Strategic communication should be integrated throughout the project, using innovative and user-friendly tools to keep the public informed, engaged, and motivated. Relevant methods and examples from D3.2.2 – Guide for Citizens can be applied here to support citizen engagement and participation, ensuring that communication activities are not only informative but also actionable.

- Ensure the process is transparent and visually appealing:
  - Use tools such as neighbourhood tree-planting maps or infographics for citizens.

- Share announcements about greening activities.
- Provide QR codes with information about projects.

- Engage citizens to ensure solutions are sustainable and widely accepted.

# 10. GreenScape CE Glossary

**Nature-based Solutions (NbS)** – Actions inspired by, supported by, or copied from nature that address societal challenges while providing environmental, social, and economic benefits.

**Green Infrastructure (GI)** – A strategically planned network of natural and semi-natural areas designed to deliver a wide range of ecosystem services and enhance urban resilience.

**Grey Infrastructure** – Conventional engineered infrastructure such as roads, drainage systems, and buildings, typically lacking integrated ecological functions.

**Climate Resilience** – The capacity of a system, community, or city to adapt to, withstand, and recover from climate-related hazards.

**Urban Heat Island (UHI)** – The temperature difference between urban areas and surrounding rural areas, caused by heat-retaining materials and limited vegetation.

**Ecosystem Services** – Benefits people obtain from ecosystems, such as air purification, stormwater retention, climate regulation, and recreational opportunities.

**Typology (of NbS)** – A structured classification of nature-based interventions according to their functions, scales, and design features (e.g., bioswales, green roofs, urban forests).

**Greenfield Site** – Undeveloped land, typically used for agriculture or left as natural space, which can be planned to integrate NbS from the outset.

**Brownfield Site** – Previously developed land that is not currently in use and may be contaminated, offering opportunities for ecological regeneration through NbS.

**Stakeholder** – Any individual, group, or organisation with an interest in or affected by a project or its outcomes.

**Co-creation** – A participatory process in which stakeholders collaboratively develop, design, and implement solutions.

**Toolbox for Selecting NbS** – A structured set of methods, checklists, and typologies developed within GreenScape CE to help practitioners choose appropriate NbS for specific contexts.

**Feasibility Study** – An assessment that evaluates the practicality, financial viability, and potential impacts of a proposed NbS project.

**Public-private Partnership (PPP)** – A cooperative arrangement between public authorities and private entities for financing, developing, and operating projects, including NbS.

**Greenwashing** – Misleading communication or actions that give the impression of environmental responsibility without substantive sustainability benefits.

# 11. Terms listed in D.1.1.1 (Typology and Criteria for Planning GI and NbS)

**Bioswale** – A landscape element designed to concentrate or remove debris and pollution from surface runoff water, typically featuring vegetation and engineered soils.

**Bioretention System** – A shallow, vegetated depression designed to capture and treat stormwater through soil filtration and plant uptake.

**Infiltration Trench** – A narrow, excavated trench filled with gravel or stone that collects and infiltrates stormwater into the ground.

**Tree Box Filter** – A contained planter system designed to capture and treat stormwater runoff using vegetation and filter media.

**Detention Basin** – A constructed basin that temporarily stores stormwater to reduce peak runoff rates.

**Retention Pond / Constructed Wetland** – A permanent water body or engineered wetland designed to manage stormwater and improve water quality.

**Permeable Pavement** – A paving system that allows water to pass through its surface into underlying layers, reducing runoff and improving infiltration.

**Green Roof** – A vegetated layer grown on a rooftop, providing insulation, stormwater management, and biodiversity benefits.

**Green Wall** – A vertical structure covered with vegetation, often including a growing medium, irrigation, and drainage systems.

**Urban Forest** – A collection of trees within an urban area, managed to improve environmental quality, climate resilience, and human well-being.

**Community Garden / Urban Agriculture** – A shared space where community members grow plants, often for food, recreation, and social engagement