proGIreg

Piraeus co-design activities © FC Piraeus

Mid-term report on the implementation process of the urban plans in FC

Deliverable 2.8

Work package: WP2

Dissemination level: PU

Lead partner: URBASOFIA

Authors: Emilia Budau and Codrut Papina

Due date: 31.10.2022

Submission date: 02.11.2022

Deliverable	**Mid-term report on the implementation process of the urban plans**
Deliverable No.	D2.8
Work Package	2
Dissemination Level	PU
Authors	Oana Emilia Budau, Codruț Papina (URBASOFIA)
Co-Authors	Margot Olbertz, RWTH FC Cascais: Teresa Ribeiro, Helga Gonçalves (CASCAIS) FC Cluj Metropolitan Area: Codrut Papina (URBASOFIA); Bogdan Stanciu, Melania Blidar, Violeta Irimies, Sandra Dimancescu (CLUJ) FC Piraeus: Nerantzia Tzortzi (Julia Georgi) (Municipality of Piraeus and KEAN); Laura Guaita (KEAN); Athina Abatzidi (KEAN) FC Zenica: Amra Mehmedić (COZ), Mirza Sikirić (ZEDA)
Date	02.11.2022
File Name	Mid-term report on the implementation process of the urban plans_ D2.8_URBASOFIA
Status	Final version
Revision	
Reviewed by	Margot Olbertz, RWTH Bernd Pölling, SWUAS
Information to be used for citations of this report	Budau, O.E., Papina, C.L. (2022): Mid-term report on implementation process of urban plans, D2.8, proGIreg. Horizon 2020 Grant Agreement No 776528, European Commission, 115 pp (124 with annex).

This project has received funding from the EU's Horizon 2020 research and innovation programme under grant agreement no. 776528.

CONTACT:

Email: **progireg@la.rwth-aachen.de**
Website: **www.proGIreg.eu**

This work was financially supported by the National Key Research and Development Programme of China (2017YFE0119000).

Contents

Figures

Tables

Document revision history

Version	Date	Modification reason	Modified by
1			
2			
3			

Partner organisations

No.	Name	Short name	Country
1	Rheinisch-Westfaelische Technische Hochschule Aachen	RWTH	Germany
2	URBASOFIA	URBASOFIA	Romania
3	Cascais Ambiente – Terrestrial and maritime environment management	CASCAIS	Portugal
4	City of Piraeus	PIRAEUS	Greece
5	Asociatia de Dezvoltare Intercomunitara Zona Metropolitana – Cluj	CLUJ	Romania
6	City of Zenica	COZ	Bosnia and Herzegovina
7	Kyttaro Enallaktikon Anazitiseon Neaon	KEAN	Greece
8	Zenica rezvojna agencija	ZEDA	Bosnia and Herzegovina

Abbreviations

CH	Chapter
D	Deliverable
ES	Ecosystem Services
EU	European Union
FC	Follower Cities
FRC	Front-Runner Cities
FIG	Figure
GCAP	Green City Action Plan
GI	Green Infrastructure
LL	Living Lab
LLL	Living Lab Lounge
L.U.	Landscape Unit
MKR	Marias Kouri Road
NBS	Nature-Based Solutions
proGIreg	productive Green Infrastructure for post-industrial urban regeneration
RT	Replication Toolkit
SS	Schools' spaces
UHI	Urban Heat Island
URA	Urban Regeneration Area
WP	Work Package

Executive Summary

Task 2.3 aims at ensuring the replication of good practices based on experiences of implementing NBS in Front Runner Cities (FRC) and transferability into strategic planning for green regeneration of Follower Cities (FC) in the medium and long term. Deliverable *D2.8 - Mid-term report on the implementation process of urban plans* documents process results in each FC over the last year, following the methodology elaborated in D2.6 – Roadmap towards urban planning in Follower Cities, and D2.7 – Report on the Follower Cities' stakeholder set-up. This deliverable contains relevant information that will contribute to the development of final Urban Regeneration Plans in each FC (*D2.9 – Report on the urban plans in Follower Cities*),

Processes in the four FCs feed into the wider NBS replication strategy implemented within WP6 – Global networking, training, dissemination and impact. FCs in particular, but also other cities represent potential replicators of the proGIreg approach in Task 6.2 – Replication events. FCs will take inspiration for defining the integration into each local urban planning framework. Moreover, WP5 deliverable D5.6 – Business model catalogue will support each FC in developing sustainable NBS offering social, environmental and economic value creation.

This report documents the outcomes of the activities each FC performed to develop a sound context-specific framework for elaborating the final urban plan responding to local needs. FC Cascais (PT), Cluj-Napoca (RO), Piraeus (GR) and Zenica (BIH), together with local stakeholders, consolidated visions for the local urban regeneration areas (URA), elaborated objectives and actions, identified key transformation areas, built three narrative scenarios (best-case scenario, set-priority scenario and business-as-usual scenario) of plausible future developments, and worked towards defining the action plan needed to accomplish the selected scenario.

The collected information is valuable both as evidence-based research and as a strategic planning output for strengthening green and blue infrastructure of FC neighbourhoods. Coordinated by Task 2.3, FCs achieved two-thirds of all activities planned for developing the Final Urban Plans, thus validating the methodologies developed in Task 2.3, i.e. Roadmap towards urban planning in Follower Cities: each FC followed the same framework while being able to adapt to the specific scale and context of each Urban Regeneration Area (URA). The apparent adaptability of co-design methodologies, and the overall process of developing green regeneration strategies to various urban contexts serves as a first validation of tools and instruments for NBS replication. Given the current context of green policies and innovations in NBS, other European cities may easily adopt NBS.

Cross-city conclusions

Each FC Urban Regeneration Plan is locally adapted according to the needs identified in the first two phases of the FC proGIreg process (the "Preparatory work" and the "Planning the URA transformation" phases, see D2.6), and to the developed scenarios.

FC Cluj-Napoca and FC Zenica tackle green urban regeneration solutions on city level. FC Piraeus and FC Cascais approach NBS adaptation options on a smaller local neighbourhood scale. FC Cluj-Napoca has a well-defined URA based on a multi-layered analysis of the local landscape, focusing on two key city axes: the blue-green corridor and

the former industrial and railway axis. FC Zenica identified key transformation areas where NBS adaptation is considered a priority by rehabilitating green spaces that are relevant for the entire city-level green infrastructure network. FC Piraeus' URA is fragmented due to the densely built environment with low to no green elements. As a result, FC Piraeus explores innovative drivers for adopting NBS - schoolyards and the former railway line conversion. FC Cascais has the most compact URA, addressing relevant challenges found in many neighbourhoods in European cities: valorisation of small rivers/creeks, land-ownership conflicts, and informal uses of green spaces.

- FC Cluj-Napoca and FC Piraeus (despite differences in the scale of the URA and socio-economic and environmental factors) are steering the development of the Urban Plan in devising a strategy that stipulates NBS 3 – Community Gardens as a common practice in the local planning and policy framework (city-level, beyond URA).
- FC Cluj-Napoca aims to update the legislative framework and provide an urban policy for making community gardens in collective housing neighbourhoods legitimate (urban-block-type developments).
- FC Piraeus is leveraging micro-interventions of NBS 3 – Community urban farms and garden in schools and related co-design work to create a similar policy for educational gardens in all schools of Piraeus. Concrete projects are also explored, and aim at demonstrating the impact NBS at the local level on different dimensions, using it as a good-practice example for mainstreaming the interventions.
- FC Cascais and FC Zenica are approaching their Urban Plans in the form of a concrete 'agenda' for interventions, aimed to improve the local conditions of neighbourhoods by reactivating green spaces, transforming derelict areas, and adapting NBS in specific sites in line with local residents' needs.

1. Introduction

Introduction to the project

Productive Green Infrastructure for post-industrial urban regeneration (proGIreg) is developing and testing nature-based solutions (NBS) co-creatively with public authorities, civil society, researchers and businesses. Eight NBS, which will support the regeneration of urban areas affected by deindustrialization, have been implemented or are going to be deployed in four front-runner cities (FRC): Dortmund (Germany), Turin (Italy), Zagreb (Croatia) and Ningbo (China). The follower cities (FC) of Cascais (Portugal), Cluj-Napoca (Romania), Piraeus (Greece) and Zenica (Bosnia and Herzegovina), in the meantime, will receive support in developing their strategies for improving NBS at the local level through co-design processes (see Figure 1 - The proGIreg partnership. Source: RWTH, proGIreg).

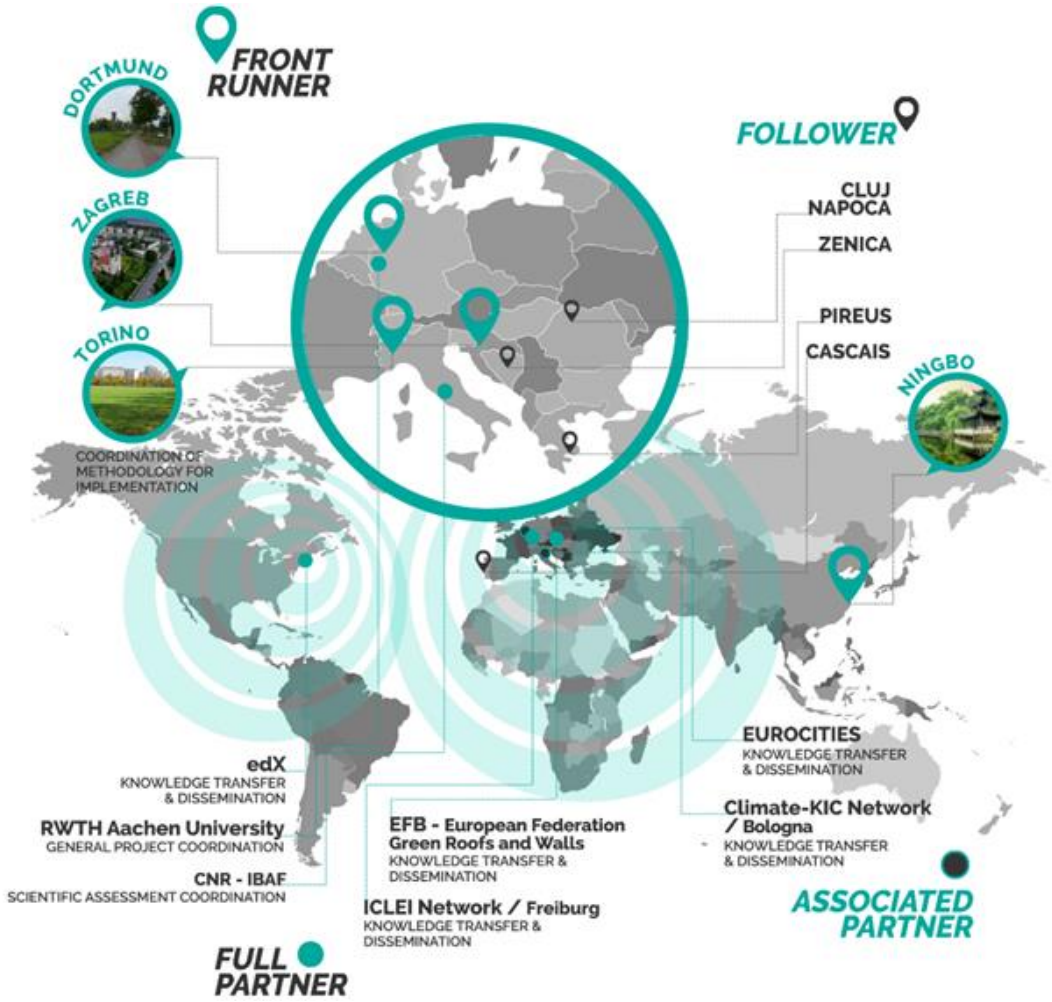


Figure 1 - The proGIreg partnership. Source: RWTH, proGIreg proposal

ProGIreg will deploy the following NBS embedded into Living Labs (LL), working with the local stakeholder landscape to create ownership and locally rooted solutions:

- NBS 1 - Renaturing landfill sites for leisure use and energy production.
- NBS 2 - New regenerated soil thanks to biotic compounds for urban forestry and urban farming.
- NBS 3 - Community-based urban farming and gardening on post-industrial sites.
- NBS 4 - Aquaponics as soil-less agriculture for polluted sites.
- NBS 5 - Capillary GI on walls and roofs.
- NBS 6 - Making post-industrial sites and renatured river corridors accessible for residents.
- NBS 7 - Establishing protocols and procedures for environmental compensation at local level.
- NBS 8 - Pollinator biodiversity improvement activities and citizen science project.

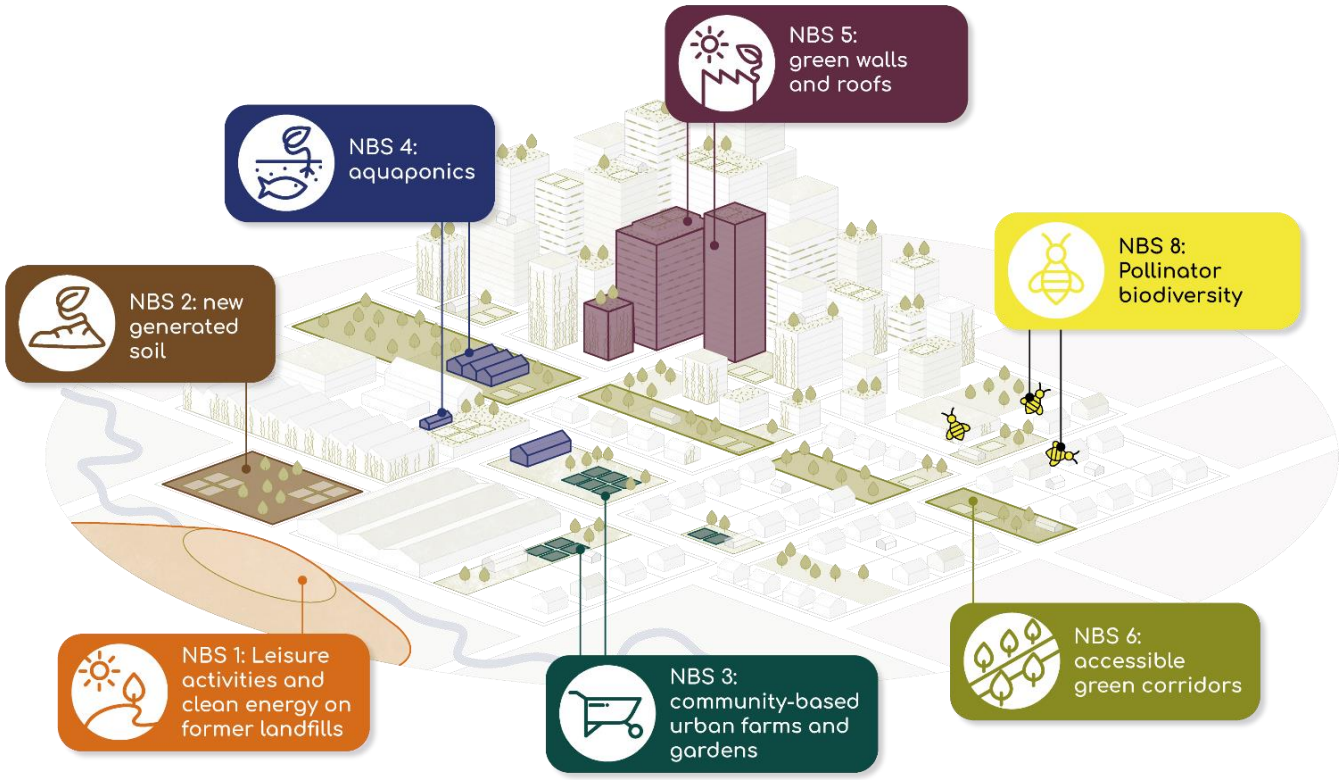


Figure 2 - Spatial representation of proGIreg NBS, RWTH

Introduction to WP2, Task 2.3

WP2 delivers the framework for context-specific implementation of the eight proGIreg NBS in the four FRC (WP3), and at identifying the potential for NBS transfer to the four FC. By analysing the local population's needs and organising related co-design activities, WP2 ensures the optimal fit between local conditions and suitable NBS, guiding local stakeholders through co-creating nature-based solutions.

Task 2.3 - Urban planning in follower cities – coordinated by URBASOFIA, represents both the conclusive phase of WP2 and the start of proGIreg project's second phase focusing on the transferability of solutions that are implemented in FRC. Task 2.3 supports the four FC (Cascais, Cluj-Napoca, Piraeus, Zenica) in elaborating a strategy for the implementation of local urban regeneration actions using the proGIreg set of NBS. Based on the evidence and knowledge generated during NBS co-design and co-implementation phase in the FRC (WP3), the NBS benefit assessments (WP4), and the market readiness, barriers and upscaling potential and preliminary studies on FC's territory and specific context (WP5). Task 2.3 works in close collaboration with WP6, which will provide training for FC's and other worldwide cities' administrative actors, civil society, relevant stakeholders following the replication process elaborated within Task 2.3 (see D2.6 – Roadmap towards urban planning in Follower Cities), upscaling it to a wider public.

Deliverable D2.8 has two objectives:

1) synthesis of FC co-design activities and results of the implementation of two sets of workshops: First Workshop Analysis and Second Workshop Scenario Building
2) qualitative output for developing FC local strategies (part of the Final Urban Plan).

This report contains a substantial part of the information that will constitute the final urban regeneration plan of each FC. The report is structured in two parts:

1. Chapters 1 to 3 explain context, process and key results of FC activities:
   - → Introduction to T2.3 and the FC process;
   - → Methodology used to support FC in the process of elaborating urban plans;
   - → Cross-city comparisons between FC mid-term status of developing urban plans,
   - → Conclusions.

2. Chapter 4 contains detailed reports of each FC. Subchapters reflect the step by step approach to integrating NBS in their urban planning framework:
   - → Summary of co-design activities with local stakeholders: Updated stakeholder map, identification and involvement of marginalized communities
   - → Political approval and integration into urban plans
   - → Selection of the key transformation areas, barriers and obstacles identified on the areas
   - → Local level priorities on three levels: GI improvement, urban regeneration, community aspects
   - → Visions for the short, medium and long-term, validated by stakeholders,
   - → Objectives and potential actions,
   - → Three scenarios of possible future developments. (Best-case scenario, Set-priorities and Business-as-usual scenarios). Potential impacts, risks, obstacles and challenges per scenario.
   - → Comparison between scenarios, considering advantages and disadvantages of each strategic narrative.

2. Methods

This deliverable document the progress of implementing the Roadmap (methodology and process developed in D2.6) by the FC. The Roadmap (see fig. 3) is structured as a step-by-step process with the aim of accompanying FC from the preparatory work phase (entailing preliminary activities to be consolidated before starting to plan the transformation of the Urban Regeneration Areas (URA)) to the final design of regeneration strategies and action plans towards the integration of NBS into the local context. The roadmap is designed as a flexible tool to fit local needs and each NBS development status, considering each FC's starting point and conditions.

The process towards developing urban plans has been divided into three main phases:

- Phase 1 "Preparatory work" – Through which FC set the framework for an optimal planning process, assessing the local needs, stakeholders to be involved, NBS to be implemented etc.
- **Phase 2 "Planning the URA transformation" – FC decides, with local stakeholders' help, what should be done in the URA and what would be the implications/ effects at local level**.
- Phase 3 "Co-designing the Final Urban Plan" – This phase responds to the question "How to do it", trying to guide FC towards the elaboration of a well-defined strategy for the achievement of the objectives set in the previous stages.

Each phase is composed of different blocks, which are further broken down into steps to facilitate the urban planning process. Each block refers to gradients of stakeholder participation suggested and the possibility of using tools provided within the replication toolkit (see D2.6). To coordinate and implement the Roadmap steps, Task 2.3 created reporting templates, theoretic guidelines, and thematic presentations while keeping constant exchange with FC in order to ensure the replication process stays relevant for proGIreg and planned activities. Given the four URAs differ widely, co-design activities required local adjustments.

FC performed activities of Phase 2 and **Phase 3,** blocks 2 to 8 of the Roadmap (see fig.4). The two phases are composed of two set of workshops. Given the complexity of the process, FC implemented several co-design activities that are closely interlinked: physical/online workshops, interviews, questionnaire and desk research and analysis of local regulations, laws, urban planning documents etc.

1. First Workshop Analysis.

The First Workshop Analysis generated each FCs co-design activities in relation to the complexity of the URA, development priorities, and target groups. Several additional activities were needed to complete the work. The flowchart (fig. 3) highlights linkages between components for Phase 1.
In this process, FCs established measurable target indicators in relation to objectives (see Annex 1 - FC Objectives and Actions), based on local multi-layered analysis and the URA potential for adopting NBS. Target indicators show the level of feasible short, medium- and long-term transformation needed, and can be measured in one or multiple indicators, depending on local context, and strategic documents and plans. For example:
NBS 3 Community urban gardens: no. of ha of new green space/converted land for community gardens; no. of community gardens in the neighbourhood; no. of trees to be planted.
NBS 6 – Green corridors: km of green connections; no. of trees; no. of ha of renatured land of the green corridor; no. of ha of accessible land.
This approach will be deployed for developing the final urban plans, offering advantages such as: (1) better estimation of resources needed; (2) better monitoring; (3) can be used as a communication "tool" of urban regeneration intentions.

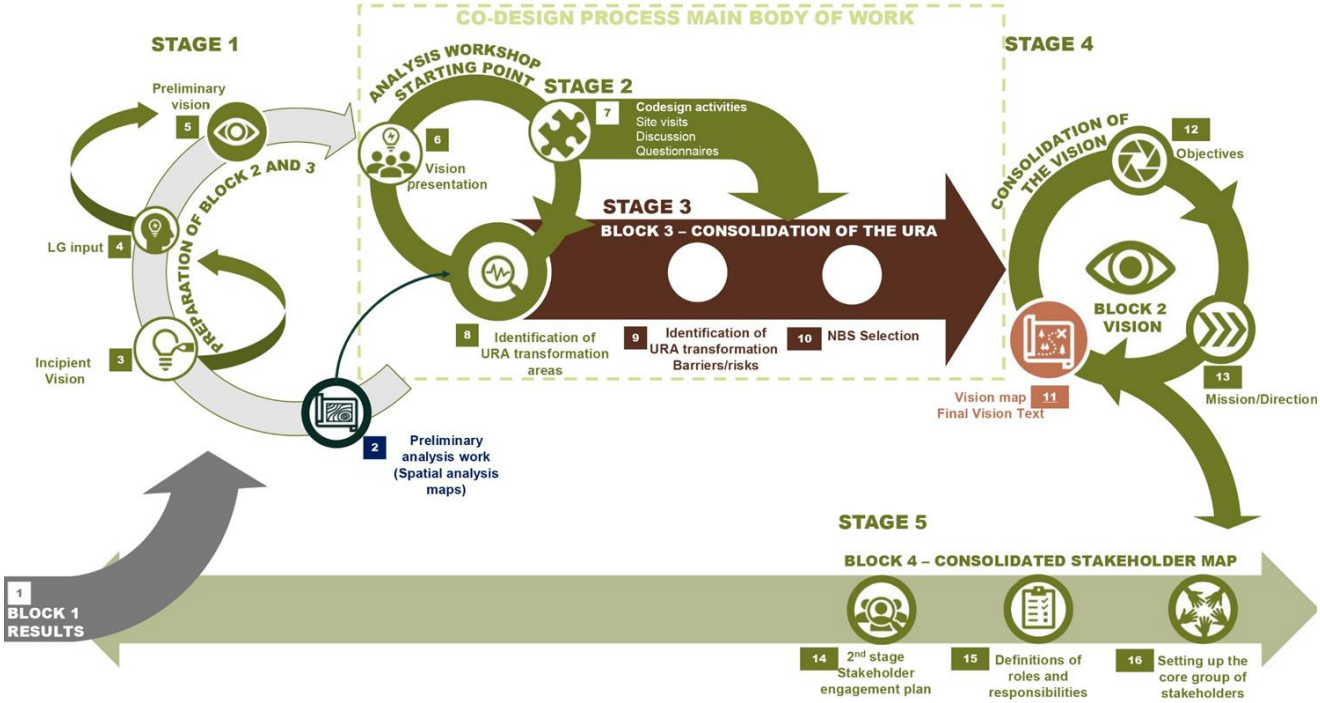


Figure 3 - First workshop ANALYSIS Activities Flowchart – to achieve the ROADMAP steps (Block 2, 3, 4)

2. Scenario Building Workshop

Scenarios are useful for identifying possible patterns of future urban development by stimulating long-term thinking about envisaged conditions and actions for achieving it. Scenarios benefit from describing not just one future, but several possible futures and provide perspectives for policies or proposals in urban plans, starting from a set of key driving forces, development trends and major uncertainties regarding the future of the URA. Following various co-design activities, the scenario-building workshop comprised the following scenario-planning components:

- → Making explicit assumptions about the future development of the urban environment
- → Area of focus (URA)
- → Geographic context (keeping the green infrastructure system of the whole city in mind)
- → Long-term planning horizon (e.g. 15 yrs, 20 yrs)

ProGIreg constructs scenarios **around green infrastructure** development/evolution and (potential) impact **in relation to relevant aspects of the urban environment** (i.e. quality of life, local economy, environment and ecologic situation, etc.). The scenarios are *long-term oriented approaches for anticipating transformation,* and dealing with the complexity that a comprehensive GI imposes on the specific urban environment of each URA. The scenarios are based on a *normative approach;* **taking the desirable future as a starting point,** building on the common vision developed during co-desgin (blocks 2,3,4).

- How to Develop Scenarios with Local Stakeholders

Scenario-building is a co-design-oriented process to deliver potential solutions for the FC URAs, enabling municipalities to respond dynamically to an unknown future. The scenario-building focused on **understanding different ways green infrastructure (GI) can evolve, adapt, and contribute to local needs**. Involving all relevant actors is key, and local

communities represent a driver for urban transformation/regeneration. Scenarios are based on discussions with residents, questionnaires with relevant stakeholders for specific expertise, etc. Thus, the scenarios present feasible tailored actions/interventions for communities/residents of URA. When proposed solutions are effectively accommodate users‘ needs, decision-makers (e.g. municipalities) may be more likely to adopt them.

- Building qualitative scenarios

Time horizon: A wider time frame implies more ambitious narratives. The scenarios look at 15/20 year planning timeframe so expectations for transformations are set accordingly.

Narrative 1. Do-it-all: best-case scenario. Key driving forces of transformation align and needed resources are available while being feasible (in relation to GI area transformation / extensions, plot ownership, urban context and trends, identified challenges, etc.).

Narrative 2. Do-something meaningful scenario: Set priorities: Focus on finding key interventions and actions to generate the biggest impact on the larger scale (entire URA level). Narrative 2 is not a down-scale of the first narrative, but provides a different path to achieve the vision, acknowledging potential risks, transformation power of driving factors, and potential barriers and challenges in the transformation process. It allocates resources more strategically to achieve the vision with less effort and more synergistically.

Narrative 3. Business-as-usual scenario: Highlights consequences of continuing current trends (both positive and negative). Narrative 3 should allocate resources to key priority areas, with the objective of triggering an organic/spontaneous regeneration of the URA**.**

- Choose the optimal scenario

The chosen scenario is based on the following criteria: (i) Consistency; (ii) Plausibility; (iii) Relevant to the issues of interest; (iv) New perspective on the problems; (v) Transparency. ProGIreg specific validation criteria: (i) Relevance of the scenario in relation to the GI development and suitable NBS in the URA and wider urban scale; (ii) Feasibility of actions, depending on the possibility of integration within strategic/regulatory/planning documents and resources to be allocated for implementation. Comparing scenarios offers the opportunity for assessment: (i) Which opportunities (and threats) are common across the scenarios?; (ii) How well prepared is the local regulatory and strategic framework, as well as the institutional one (management, maintenance, interface with the users – the experience of the municipality of collaborating with local communities in innovative interventions)for these opportunities? (iii) Which core competencies are needed to implement the scenario and vision successfully?

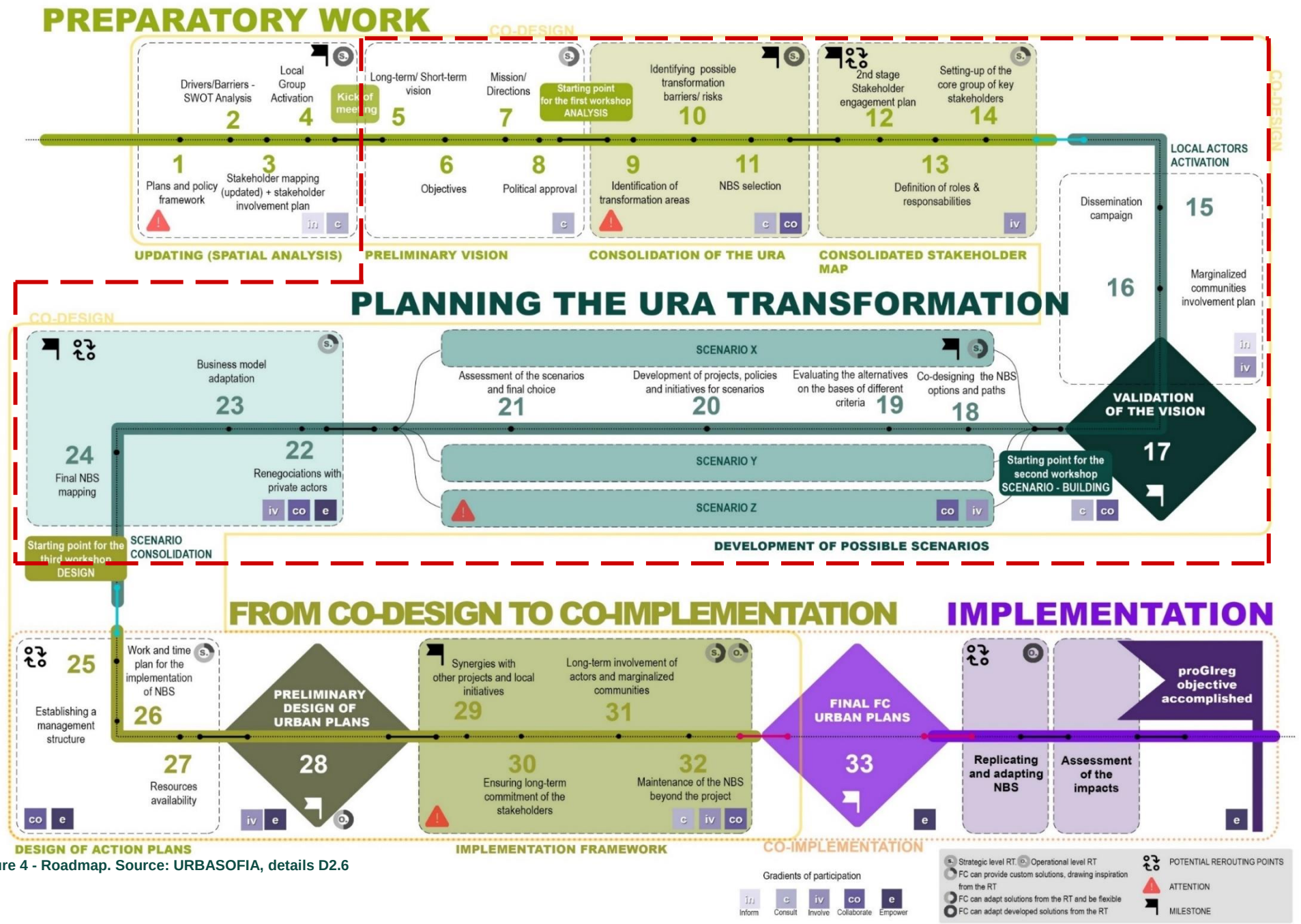


Figure 4 - Roadmap. Source: URBASOFIA, details D2.6

3. Conclusions & next steps

Status of FC process in replicating NBS at local level

D2.8 Mid-term report marks an important milestone for each FC in elaborating their urban plans, and developing strategies for the green regeneration of neglected neighbourhoods and sites within delineated Urban Regeneration Areas (URA).

The wide variety of activities FCs have performed from analyses, co-designing vision and objectives, and scenario building. This helped understanding assets and challenges of the URA, develop custom co-design activities, and elaborate visions, objectives, actions and scenarios to fit the local context. FCs explored the urban structure where adaptation of NBS is possible and assessed the URA challenges (social, economic, environmental). Based on these thorough analyses, each FC elaborated a strategic vision for improving the quality of living in the URA and beyond (block 2 – preliminary vision). Developing the vision was helpful in understanding which NBS can be adapted to alleviate different challenges. In this process, FC identified specific key transformation areas within the URA and selected suitable context-specific NBS providing multiple benefits (block 3 – consolidation of the URA). The process of elaborating the Vision - Objectives - Scenarios proved to be an important phase but not an easy exercise. Guiding documents (templates with a clear set of instructions), constant exchange and support by the proGIreg team were considered helpful.

The implementation of the Roadmap towards the final urban plans has generated clear ideas of the transformative (ecologic, sustainable and social) potential each URA in the four FC offers. Further, the process led to determining a clear set of objectives that are feasible to achieve in the medium and long term with identified resources. Based on objectives (and related set of actions – see Annex 1), FC established different roles of stakeholders, activating the needed human resources (block 5 – local actor activation) and consolidating the implementation group (block 4 – consolidated stakeholder map). The developed scenarios support achieving the URA vision by assessing different alternatives, projects and policies (block 7 – development of possible scenarios).

The Final Urban Plan development process comprises a series of activities in a gradual approach from defining problems - necessity to vision - strategic steps. Involving relevant local actors makes the urban regeneration strategy using NBS more valuable, and more effective to implement. The co-design activities in the FCs have gained momentum as the community and other local actors are increasingly interested, which can create a snow-ball effect despite initial hesitance by local stakeholders to participate due to various misconceptions of NBS (especially NBS 5 – Green roofs and walls). FC Piraeus triggered a wide interest in schools to adopt NBS 3 interventions, FC Cluj-Napoca managed to activate stakeholders that are willing to collaborate for changing local legislation. FC Zenica worked with stakeholders involved in a sister project (Interreg AGORA), and managed to develop complementary actions. FC Cascais started working with local residents for developing near-future river corridor rehabilitation projects.

FC mid-term conclusions

Analysing the chosen strategic directions of each FC, FC Zenica and FC Cascais are planning a concrete agenda of NBS interventions in line with local regulations and strategies. On the other hand, FC Cluj-Napoca is developing both a synthetic agenda of potential interventions, and a comprehensive strategy to ensure city-wide adaptation of NBS, overcoming legislative barriers, and creating synergies with the local planning strategy and future urban regulation plans. FC Piraeus is taking the knowledge and good practices of the FRC that are relevant to the local conditions and working towards proving the impact of small-scale interventions and showing the potential that conversion of infrastructural" artefacts" have.

FC Cascais URA can be divided in into areas for specific interventions: the first one is an urban area with issues regarding land privatization, whilst the second is represented by the river corridor and adjacent green spaces. The river allows for many NBS supporting the improvement of accessibility to the riverbanks, strengthening their functions to prevent potential floods, as well as recovering abandoned areas along it for agriculture. The interventions in the first area are more challenging and require thorough planning. One of the assets on which Cascais will focus is urban gardening initiatives (NBS 3), an area in which they have already gained experience through municipality initiatives.

FC Cluj-Napoca selected a wide and diverse Urban Regeneration Area (URA) including both natural and urban/industrial elements, addressing urban regeneration of post-industrial neighbourhoods and its green infrastructure system while increasing community engagement. The co-design process deployed by FC Cluj-Napoca revealed that the Final Urban Plan has to operate on different levels: (1) a policy proposal for legalising existing community gardens, (2) a guide to spread awareness and infirm common misconceptions of green roofs and support its development at the local level, also by private stakeholders, (3) a comprehensive set of projects for green corridors, taking into consideration rehabilitation of river corridors (making them more accessible), and proposing new green connection in residential areas, high-traffic areas, industrial areas.

FC Piraeus focuses on two main components: interventions in school yards and the regeneration of a degraded area, Marias Kouri Road (MKR). The parallel activities focused on two areas: (1) Many small events and co-design activities with children held in three primary schools, sparking similar initiatives in schools not directly involved in the proGIreg activities, thus expressing the need of integrating permanently these initiatives in educational programs. (2) The MKR was the focus of an international university student workshop, aiming at understanding how to reactivate its main functions and reconnect it with the wider green infrastructure (GI). Key objective is to forge a collaboration with the neighbouring municipalities for the reintegration.

FC Zenica's URA is large, comprising six different areas, each regulated by detailed plans. In each area, a combination of NBS have been selected for implementation to demonstrate the advantages of greening interventions through separate pilots and/or complementary interventions or plans already in place. The objective is triggering long-term impacts and a change in dealing with urban regeneration towards more comprehensive and green strategies for development.

FC approach on green urban regeneration

FCs conducted comprehensive analysis of the assets, problems and opportunities of the URA and identified replicable NBS (Tab. 1). In this process, NBS 3 and NBS 6 have emerged as key proGIreg solutions that can be easily adapted and tailored to the local context identified challenges. However, each FC approaches NBS 3 and NBS 6 differently in local neighbourhoods.

Table 1 - NBS selected by each FC

FC	NBS1	NBS2	NBS 3	NBS4	NBS 5	NBS 6	NBS7	NBS 8
Cascais			x			x		x
Cluj-Napoca			x		x	x	x	
Piraeus			x			x		x
Zenica	x		x		x	x		

FCs are pursuing specific urban regeneration strategy approaches (Tab. 2), conditioned by factors such as: territorial scale, available resources for implementation (financial, staff, available land). Key target groups will co-create and be an active part of the new green facilities. Alignments with local regulations and urban planning strategies and documents are foreseen:

Table 2 - Overview of FC urban strategy approaches

FC	The Final Urban Plan potential orientation		
	Urban acupuncture approach	Development of flagship projects	Developing local pilots to trigger wide scale adaptation of NBS
Cascais	FC Cascais will explore the suitability of implementing local small-scale interventions for greening paved areas and/or plots are currently illegally used.	Focus on transforming a section of the river corridor for better accessibility, and used for eco-systemic services (biodiversity and flood protection). To set an example for other parts of the same river corridor, or other neighbourhoods with similar challenges.	No local pilots. NBS 3 is already a widely used solution in Cascais for the last 10-15 years.
Cluj-Napoca	Given the complexity and large scale of the URA, FC Cluj-Napoca can include suitable areas for small-scale NBS 3 and NBS 5 interventions for the medium and long	No flagship projects. The city has already several on-going large environmental projects (urban parks and gardens). Focus is on developing interventions	Three Key Sites for interventions identified in the URA are considered critical for demonstrating the impact and value of NBS 3 interventions and the various forms it can take, serving as examples

	term in the Final Urban Plan.	complementary to those projects.	of the policy proposal FC Cluj aims to develop.
Piraeus	No plans to have various small-scale interventions in the public space that are strategically chosen. NBS 3 interventions in schools cannot be considered an urban acupuncture approach.	NBS 6 intervention on Marie Kurie Road is considered the flagship project of FC Piraeus, converting the former railway line into a green corridor with urban gardens and pollinator gardens.	FC Piraeus already started to implement small pilots in schools for NBS 3 interventions. High likelihood of being wide replicated throughout the city, given strong support from the local municipality and local teachers.
Zenica	FC Zenica's approach is strongly oriented towards developing an urban acupuncture strategy. The team have chosen six strategically relevant sites for NBS to improve the local conditions of various neighbourhoods of the city.	All six sites can be considered flagship projects, depending on the availability of resources for implementation. The interventions can be scaled according to available funds. The conversion of the area within former Botanical Garden is highly likely to become one of the flagship projects.	The interventions are not planned as pilots, even if the goal is to set a standard of good practices regarding ecological interventions at city level.

FC strategic directions

The different types of interventions listed in the table can be achieved with one NBS or a combination of NBS, or in some cases with integrative policy making that aims at making proGIreg set of NBS adapted and adopted at the local level.

Table 3 - Overview of FC planned type of interventions rated by level of focus

Type of intervention in the Strategy and Final Urban Plan	**Follower City**	**Level of focus for the Final Urban Plan** (**low** - take in consideration, **high** – targeted projects and specific actions)
Activating derelict/unused spaces	FC Cascais	High
	FC Cluj-Napoca	Medium
	FC Piraeus	Medium-high
	FC Zenica	Medium-high
Reactivating/adapting existing green spaces	FC Cascais	Medium-high
	FC Cluj-Napoca	High
	FC Piraeus	Medium
	FC Zenica	
	FC Cascais	Medium-high

Increasing connectivity of GI	FC Cluj-Napoca	High
	FC Piraeus	Medium
	FC Zenica	Medium-low
Improving the local biodiversity	FC Cascais	High
	FC Cluj-Napoca	Medium
	FC Piraeus	Medium-high
	FC Zenica	Low -medium
Local communities as main drivers of change	FC Cascais	High
	FC Cluj-Napoca	
	FC Piraeus	
	FC Zenica	
Creating the basis for new policy framework / city-level interventions	FC Cascais	Low
	FC Cluj-Napoca	High
	FC Piraeus	
	FC Zenica	Low
Supporting the creation of a community of practitioners at local level	FC Cascais	
	FC Cluj-Napoca	Medium-high
	FC Piraeus	Low - medium
	FC Zenica	Low

Overall, FC followed a gradual and incremental approach for the co-design activities, managing to construct valuable ideas for the URA transformation. All cities can harness the momentum of local activities and engagement with stakeholders. It appears that target users and relevant actors not only have a good understanding of the main objectives of the project, but also have clear expectations for the implementation of NBS.

Three out of four FCs have chosen to pursue the Do-it-all scenarios. This proves that the work conducted with FC is on good track to contribute to supporting local capacity-building. The proGIreg team may soon be able to act as NBS advocates for the local communities and co-workers in the different departments of the municipal administration.

Synergies/alignments with local urban planning frameworks in FCs

The work highlighted the importance of political approval of planning and co-designing NBS, which in turn can lead to an integrated planning and policy approach that stipulates NBS implementations in urban planning frameworks. FC will prioritise planned projects in line with indicators and budgets already planned in relevant local planning documents. At the same time, the planned proGIreg interventions should be complementary with ongoing local projects, initiatives and future investments of the municipality. However, the degree of integration in the different cities varies (Tab.3):

Table 4 Overview of FC integration potential in local planning frameworks

Follower city	Existing Masterplans	Status	ProGIreg projected outcomes
Cascais, Portugal	Climate Change Adaptation Action Plan (2016) "Terras de Cascais" strategy, supporting implementation	Implementation – developing NBS 3	▪ ProGIreg urban plan of the Urban Regeneration Area (URA) supports the planning and implementation of the action plan to develop Urban Allotments that promote sustainable horticulture and improve the GI network.
Cluj-Napoca, Romania	Cluj-Napoca Municipality Integrated Development Strategy 2014- 2020 (to be updated for period 2021-2027) Somes River Masterplan (under development)	Planning process / stakeholders activated	▪ Cluj is developing a green corridor masterplan incl. green-blue network along Somes River. proGIreg co-design and urban plans will focus on potential spaces for NBS, complementing the masterplan
Piraeus, Greece	Regulatory Plan "Athens-Attica 2021"	Planning process / stakeholders activated	▪ Strategic document supporting the recovery of the discontinued tram line, light rail track (Piraeus - Perama) since 1977. FC has approached the Green Fund to ensure sustainability of Urban Plan provisions.
Zenica, Bosnia-Herzegownia	Development Strategy (period 2021-2027) – in preparation	Planning process / stakeholders activated	▪ Areas and interventions addressed in the Urban Plan may be integrated into the Development Strategy, e.g. therapy gardens (NBS 3) and pollinator-friendly plantings (NBS 8) have already been considered.

Next steps

Over the next year, each FC will elaborate its Final Urban Plan for the Urban Regeneration Area identified, or for the assets defined in the scenarios. Plans will take different forms, according to the needs analysed and the conditions of each city. Concretely, FC have to:

- Define the final list of potential NBS intervention areas
- Gather relevant info about future interventions: legal boundaries, regulations, interventions areas, and available resources;
- Co-develop key criteria and requirements for future interventions measured by set targets
- Anticipate potential barriers and seek solutions to overcoming them based on findings from FRC and WP5 output on technological and non-technological barrier analyses
- Implement co-design activities for clearly defining type of interventions, type of management for the chosen solutions and basic technical expertise to ensure the feasibility of projects;
- Adapt the proGIreg NBS Business Models to the local context, and/or customise value creation based on the Business Model Catalogue
- Present final outcomes to the local communities, relevant local actors and decision-makers within the municipality.
- Integrating and harnessing synergies to link the Final Urban Plan with local planning frameworks.

4. FC Detailed Reports

4.1. FC Cascais

4.1.1. FC Cascais URA description

The Regeneration Area delineated is characterized by a dense morphology of the built environment and crossed by a major road that is part of an important infrastructure road system. The lack of valorisation of these spaces results in increased pressure for urbanization (D2.2 Spatial Analysis). The area identified is crossed by the Marianas stream, functioning as a blue infrastructure connecting the two separated areas. The Cascais' Regeneration Area includes parts of the areas Tires (the northern part of the URA, above the major road) and Zambujal in São Domingos de Rana (the southern part, beneath the road).

Figure 5 - Representative image of FC Cascais URA

4.1.2. Co-design activities

Report on workshop activities

Figure 6 - FC Cascais co-design activities overview

Co-design activities overview

→ Phase 1 “Preparatory work” – First Workshop Analysis

The pandemic and the complicated political situation caused several delays in the FC Cascais (see D2.7, ch. 4.1.3). Therefore, the proper roadmap implementation of phase 1 could only be started in 2022 by holding the proGIreg Kick-off Meeting and the First Workshop Analysis in tandem. The first official meeting of Task 2.3 established important partnerships with different departments of the municipality. Technical and legal restrictions were explained through the previously elaborated spatial analysis maps. The First Workshop analysis had a follow-up with relevant decision makers (president of local parish, director of Local Strategic and Planning Department), discussing and approving the preliminary vision, and affirming their alignment with the overall project goals.

→ Phase 2 “Planning the URA Transformation” – Scenario Building Workshop

The FC Cascais concentrated the scenario-building work into one main face-to-face event. The workshop included site visit and discussions to support participants in the analysis of the URA, identifying assets and problems for different key areas and elaborating feasible scenarios. This comprised two steps:

1. Four groups of participants elaborated a personalized Community Map of the URA, organized by a consultant of the municipality. This methodology led participants to develop a comprehensive scenario of the entire area.
2. Proposal of projects to improve and restore the area in order to solve the identified problems were delivered. This was done through text, coloured stickers and drawings.

Figure 7 - FC Cascais working with local stakeholders

Co-design activities outcomes

Table 5 - FC Cascais co-design outcomes for the first two phases

Phase	Results
Preparatory work (First Workshop Analysis)	→ Achieving political approval for the URA transformation vision. FC Cascais team encountered difficulties in deploying community-oriented activities without the support of the municipality (political). Implementation of the community garden (as a pilot), together with other proGIreg local events, generated a good momentum in debating and planning green transformation processes. → Partnership with Municipal Environment Department – Rivers Division to develop studies for Marianas River. For future interventions, there is the possibility of expropriating private land near the river margins. → Partnership with Municipal Participation Department is valuable for future engagement and participation of citizens, collecting input for NBS implementation.
Planning the URA transformation (Scenario Building)	→ Stakeholders showed relevant interest in the green river corridor rehabilitation, with the request of creating a new pedestrian trail. Proposing the stream recovery and the creation of a blue/green corridor with more green leisure areas next to it. → For greening the overall neighbourhood, stakeholders suggested multi-use green areas with playgrounds for children, fitness equipment and community gardens in vacant lots near residential areas. → Stakeholders highlight the need for more natural elements and better pedestrian connectivity between the residential areas. → Participants agree of proposed solutions and expect results in the near future. Some solutions may be realized with participatory budget. → Developing community maps helped gaining a mutual understanding of the URA assets. → The Final Urban Plan for the Cascais URA will continue the initiatives of community gardens, and provide additional interventions on the blue-green corridor, improving the local environmental conditions by transforming the riverbanks into pollinators green spaces. → The four groups produced coherent and complementary solutions for the URA, corresponding to the initial long-term GI vision. → Key scenario includes the pedestrian trail along Mariana's stream as a blue/green corridor with two bridges connecting the margins. → Possible alternatives depend on the intervention in private areas including abandoned farm and illegal buildings. Improvements of the local market are expected, together with organising food related events (gastronomic event), and synergies with already recurring events.

Political approval & integration into the urban planning framework

FC Cascais T2.3 activities encountered difficulties at the start causing a one-year delay. However, Cascais was able to leverage an early NBS 3 community garden initiative in the URA, which was co-designed and co-implemented before the start of T2.3. In February 2022, FC Cascais team started the process with two main events: Analysis Workshop and Scenario Building Workshop.

Due to administrative changes, FC Cascais required approval of the City Councillor in order to proceed with the Kick-off meeting (held in February 2022), allowing to collect contributions from different municipal departments, including the local parish. The local parish council president approved the intention to adapt green interventions in the URA and disclosed plans for the local market (relevant for NBS 3). The local parish will contribute to proGIreg initiatives by unlocking municipal land and/or to buy private land to increase green areas (for the long-term).

A communication and dissemination strategy have been elaborated to inform the wider public about the proGIreg activities and trigger community engagement.

Figure 8 – FC Cascais First Workshop Analysis follow-up

4.1.3. Transformation Areas

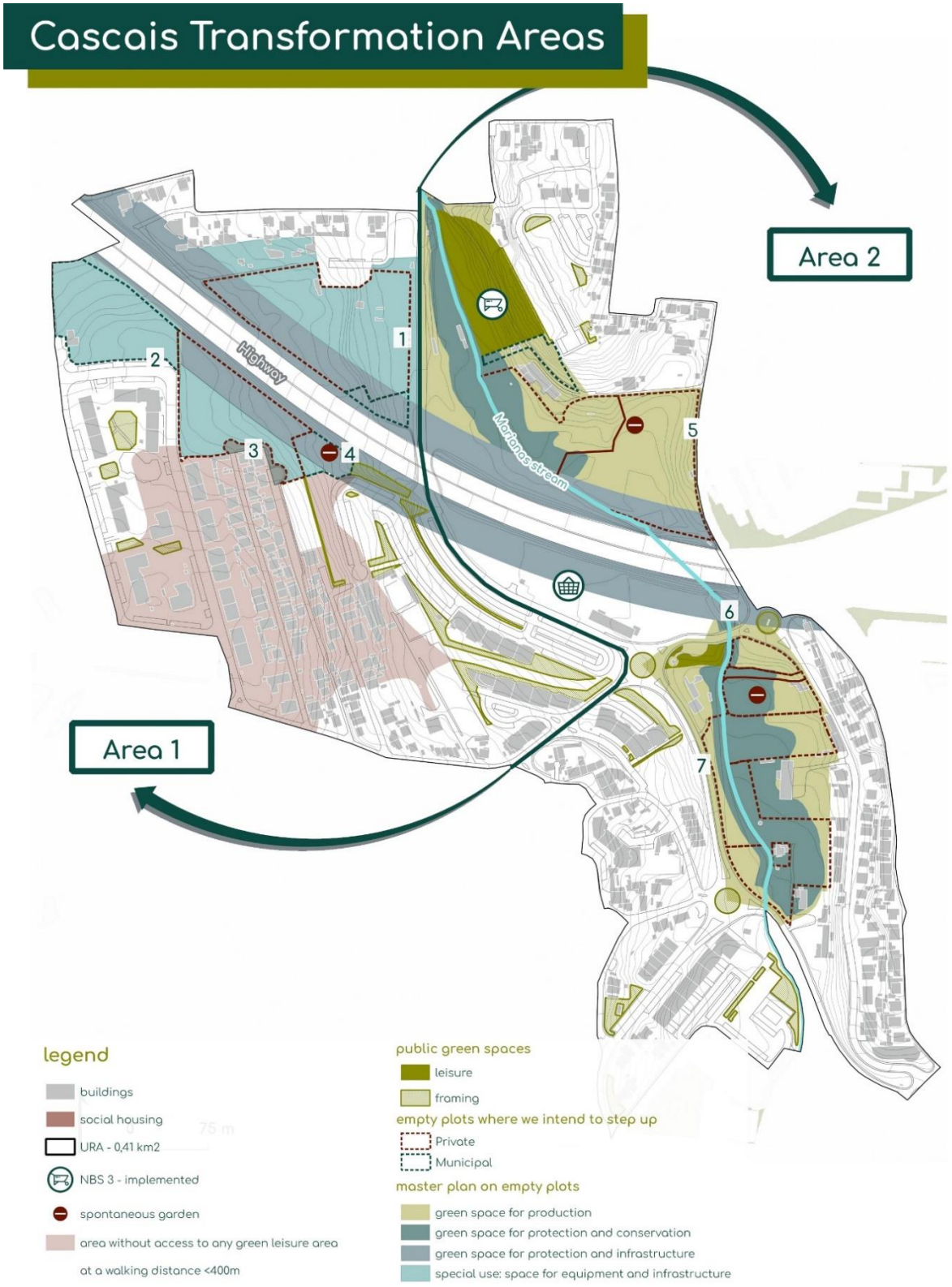


Figure 9 - FC Cascais Transformation Areas

Identification and description of transformation areas

FC Cascais identified two key transformation areas that need targeted nature-based solutions to enhance the green infrastructure network.

Area 1: Greening the neighbourhood

Area 1 is in urgent need of multi-use greening initiatives. However, the urban structure offers limited flexibility in developing green infrastructure. The area has few potential intervention sites for several reasons: The soil of the sites is classified as special use for infrastructures or equipment implementation. This makes it difficult to justify purchasing private land for creating new green areas and to obtain approval for similar projects on municipal land, which is currently foreseen for other purposes, including construction works. Overall, rehabilitation of existing plots is needed, followed by finding the suitable community-oriented function.

Figure 10 - FC Cascais: private land with illegal gardens

Figure 11 - Derelict/abandoned area

Figure 12 - Private land (opportunity for acquiring)

Area 2: Blue-green corridor

Area 2 is represented by the blue-green corridor and connected green spaces. In contrast to Area 1, the urban structure is fragmented while offering more potential areas for NBS. These are on protected land according to the Master Plan and designated to the creation of new green areas, but are mostly private plots. Possibility to facilitate the expropriation process of private land on riverbanks is being considered that would allow necessary interventions and make it publicly accessible.

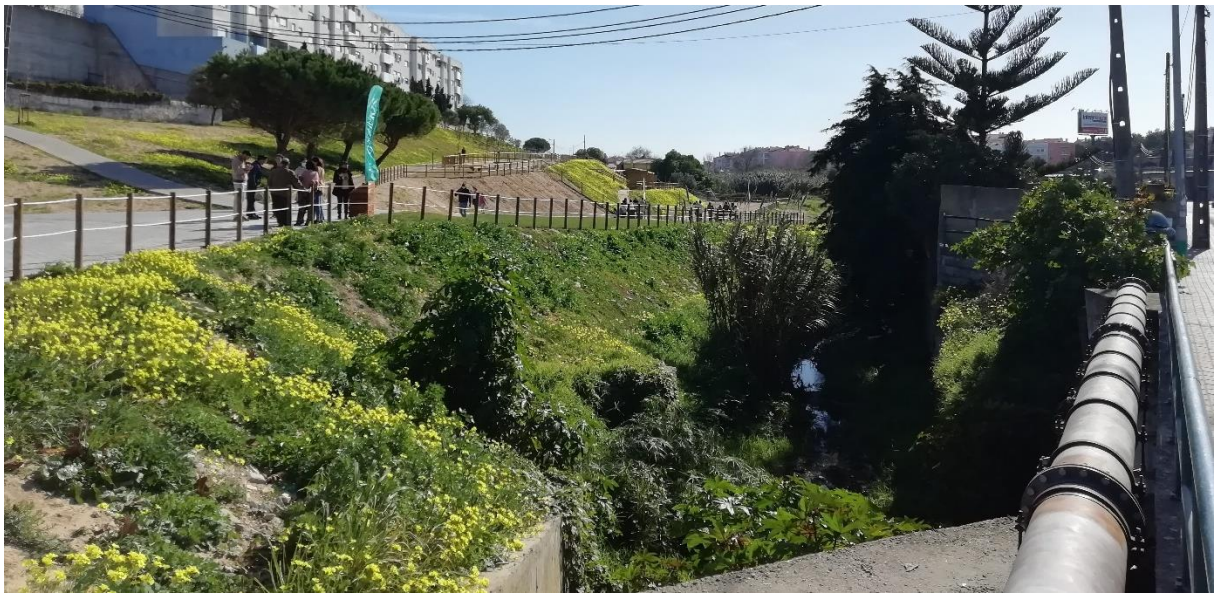


Figure 13 - FC Cascais: river Marianas

Figure 14 - FC Cascais: private land with illegal gardens

Figure 15 - FC Cascais: river corridor intersection with the highway

Barriers and obstacles

Table 6 - FC Cascais transformation barriers/ risks

Area	Transformation barriers/risks
Area 1	Key barriers for the green transformation: conversion of private land, previous uses determined by the Master Plan, and removal of illegal occupations.
Area 2	To extend the GI with new community-oriented functions, expropriations are required. In addition to the land ownership issues, the area is in a flooding zone. Rehabilitation of the blue-green corridor for flooding prevention is considered a priority. Municipality has planned investments in the area for the corridor rehabilitation – representing a key transformation driver

Consolidated stakeholder map

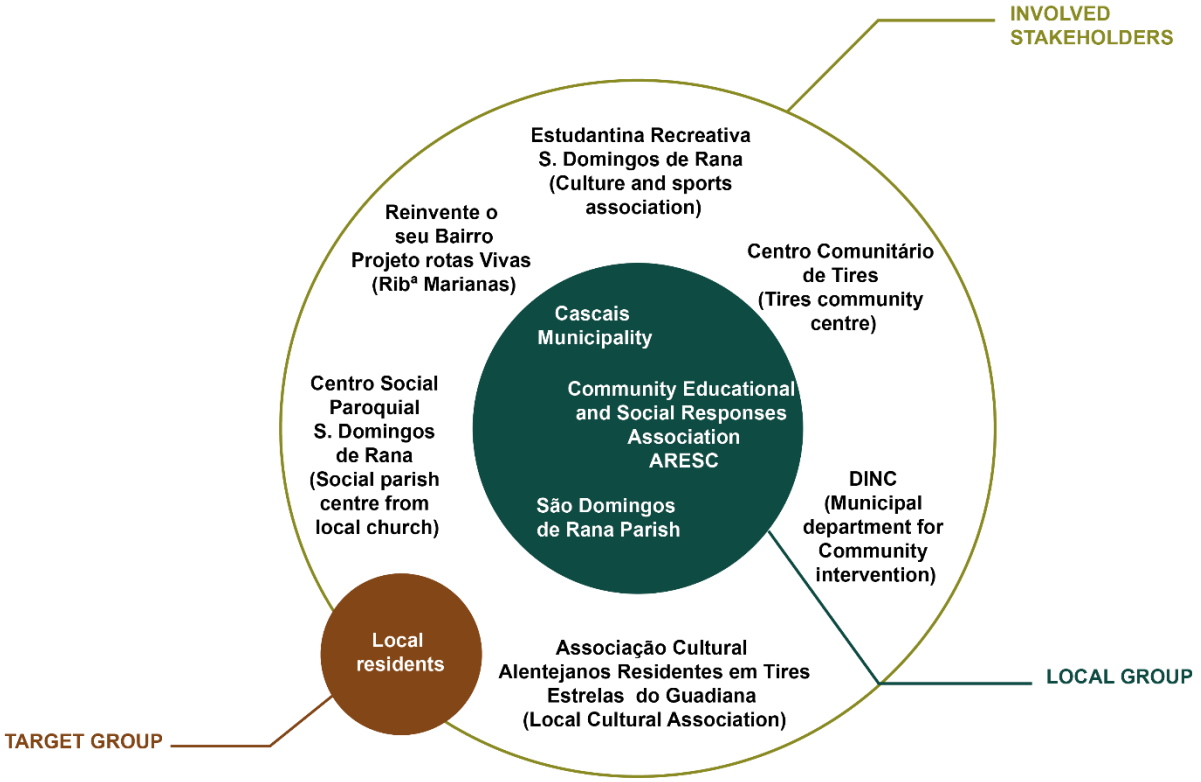


Figure 16 - FC Cascais stakeholder set-up update

Table 7 - FC Cascais stakeholders' roles and responsabilities

Stakeholders	NBS	Responsibilities
Cascais Municipality	All	Management, fund raising
Associação Cultural Alentejanos Residentes em Tires - Estrelas do Guadiana (Local Cultural Association)	NBS 3 NBS 6	Representing the resident population - related to local cultural and recreational activities.
Estudantina Recreativa S. Domingos de Rana (Culture and sports association)	NBS 3 NBS 6	Representing the resident population - activities related to culture and sports.
ARESC - Associação de Respostas Educativas e Sociais à Comunidade (Community Educational and Social Responses Association)	NBS 3 NBS 6	Representing the resident population - supports families at risk and/or social vulnerability, food bank distribution, help with legal requirements, etc.
Centro Comunitário de Tires (Tires community centre)	NBS 3 NBS 6	Representing the resident population - focus on senior citizens and inherent problems of the ageing process

Centro Social Paroquial S. Domingos de Rana (Social parish centre from local church)	NBS 3 NBS 6	Representing the resident population - respond to community needs, day care centre, nursery, social home support, etc.
DINC – Div. Intervenção Comunitária (Municipal department for Community intervention)	NBS 3 NBS 6	Municipal staff for social inclusion – direct contact with the people from social neighbourhoods; legal requirements, social and economic support. Focus on social inclusion and adult literacy.
Reinvente o seu Bairro - Projeto rotas Vivas (Ribª Marianas)	NBS 3 NBS 6	Representing a group of residents that are involved in projects to recover the Marianas stream
São Domingos de Rana Parish staff	NBS 3 NBS 6	Local government – political approval

Marginalized communities' involvement plan

Overview of marginalized groups in URA

The URA includes social housing neighbourhoods, where marginalized communities live. There are several local associations supporting them, with very diverse activities:

- local food bank,
- adult literacy classes,
- kindergartens,
- after-school occupation for children,
- gymnastics,
- legal issues, etc.

Communities include Portuguese immigrants from rural areas, Roma, low-income families etc. Marginalized communities are integrated by local associations into regular activities. Dwellers were involved since the beginning of proGIreg co-design activities for the community vegetable garden and orchard, in which they are participating.

Involvement plan during proGIreg

The municipal social inclusiveness office in the social neighbourhood works directly with communities and coordinates association activities. Existing relationships support interaction and easy communication channels with marginalized groups.
Continuous contact with dwellers, ensuring participation in community gardens and seasonal activities are organized. Cultural events are also organized by the social inclusiveness office.

Involvement plan after proGIreg

- Plans to create public open-air facilities with municipal maintenance over time.
- Associations and local office members are expected to keep working in place.
- The idea of creating an organized framework for additional income is still discussed. It is necessary to create a local structure that allows low-income families to produce more vegetables, which can be sold to other members of the local community in the framework of a CSA system.

4.1.4. Priorities and final vision

Priorities

GI improvements

- Involvement of municipal decision-makers or relevant experts responsible for the recovery of streams and rivers.
- Inclusion of the regeneration of the URA in the political agenda.
- Planning of flood prevenetions interventions, creating natural retention basins at strategic locations along the stream that function as green meadows during the dry season and can be used for recreational purposes for a large part of the year.
- Accessibility improvement.
- Planting of pollinator friendly vegetation to increase biodiversity.
- Protection, maintenance and further development of the green areas to enhance the ecologic value, and productive (agricultural) value of the land.
- Green areas multi-functionality improvement.

Urban regeneration

- The URA built area is partly fragmented incl. different types of developments over the years with different standards (architectural, environmental, aesthetical).
- Vacant abandoned areas feature partly illegal occupations, rubble deposits, and patches of invasive vegetation due to real-estate speculation.
- Valorisation of unused land with high ecological value.
- Protection of productive soil from urbanization and creation of more green areas of different typologies according to population needs.
- Removal of existing illegal occupations once legal procedures are settled
- Replacement of abandoned buildings with new facilities linked to NBS that protect high ecological valued areas.

Community aspects/social inclusion needed improvements

- The URA features many immigrant families from Africa and Portuguese countryside, some illiterate, that require support from the local food bank.
- Empowerment of residents through the implementation of solutions such as urban community gardens with training in organic agriculture, hence promoting the development of new skills while helping to overcome poor nutrition.
- Fostering interactions between diverse residents and different communities, supporting social inclusion and cohesion by reducing conflicts.
- Despite misconceptions (for proving feasibility of investments), the social housing is not directly vulnerable to vandalism or security problems. Any future development of the URA has to include and directly involve all stakeholders to provide a peaceful area with higher quality of living.

Final Vision statement on different time scales

FC Cascais Short-term Vision - 2030

The URA in 2030 will be in the middle of a green regeneration process, having important milestones achieved, and setting the quality-of-life standards for public space, green infrastructure and community-oriented facilities. The participatory processes will result in the transformation of some of the vacant plots into green spaces for leisure and urban agriculture. The URA GI is extended with the conversion of the parking lot, integrating a pedestrian pathway, connecting the green river corridor and the open-air market (opened daily).

→ **Blue-green corridor rehabilitation**
The restoration of the green-blue corridor resulted in a positive impact on the local landscape, improving the attractivity of the neighbourhood, and counteracting the abandonment tendency. The river corridor is used as a pedestrian connection between the north and south side of the highway. Flood management interventions are completed, and pollinator-friendly plants are being used for river restoration.

→ **Greening the neighbourhood**
Part of the plots with informal functions and covered by major mineral surfaces are converted (e.g. parking lots), the neighbourhood has a relevant ecologic identity. Pedestrian routes are connecting the new multifunctional green spaces.

→ **Supporting communities**
Important facilities and interventions, related to the community garden and new converted green spaces, are being realized, supporting the community and local circular economy solutions profiting from the local open-air market. The traditional summer fairground is taking place in a new urban park clustering diverse leisure activities.

The short-term vision has a high chance of being achieved: the municipal election period for mayor is four years (2022-2026), meaning interventions proposed in the first stage of the mandate have better chances of acceptance and implementation.

FC Cascais Long-term Vision 2050

URA development will reach a balance between real-estate pressures and green infrastructure elements. The URA will have a well-thought zoning regulation plan that ensures the provision of a variety of green spaces that accommodate NBS and the conversion of former vacant areas into new multifunctional green areas. In 2050, residents recognize the green areas' value and have more proximity green elements, which mix different ecologic functions: environmental, recreational, and productive, with a high degree of pedestrian connectivity. URA GI targets three key dimensions:

→ **Ecologic function**
River stream is transformed into a blue-green corridor acting as a linkage for the entire neighbourhood and as an ecological solution for preventing floods. Greening processes in the neighbourhood will help mitigating climate change impacts, and recovering plots occupied illegally. Riverbanks are "oases" of biodiversity, respecting a well-thought and tested mix of plant species to attract pollinators and improve quality of green spaces.

→ **Recreation function**

Green spaces along the blue-green corridor and throughout the neighbourhood have a high value for residents, accommodating multi-use recreation areas, designed with the involvement of the direct users.

→ **Productive function**

In 2050, the community gardening model will have strong roots in the daily life of citizens. Low-income families are target users, using the productive gardens as sustainable food sources and generating additional income from selling the products in the open market. In 2050, urban agriculture is developed in many areas, as food systems tend to be more sustainable and integrated into circular economy solutions.

By 2050, the URA is setting new standards for neighbourhood regeneration processes, acting as a best-case example for other areas in the city that are replicating the initiatives.

The URA vision was politically approved, forming the basis for developing scenarios to structure the GI and maximize the available land. Considering technical and administrative information of the territory, the URA was divided into two key Transformation Areas.

→ **Area 1 Multifunctional green areas**

- Cascais Master Plan allows building construction.
- Vacant existing plots (west side of the URA) are planned for Equipment and infrastructure implementation. Municipal land in this area is already designated for these purposes.
- Buying private land in this condition is not affordable for the municipality. These barriers are difficult to surpass in short term.
- In the long term, given there is great public pressure leading to a change in Master Plan regulations, opportunities may arise.

→ **Area 2 Blue Corridor**

- Protection and conservation of the blue corridor along Mariana's stream where land use possibilities are restricted to NBS, with no building construction allowed.
- Several plots are abandoned and owners show no interest in development.
- Expropriation processes of private land on the riverbanks can be implemented to create a green accessible corridor, which would be affordable for the municipality.
- A hydrological study was conducted on flood control. The main solution envisaged for this is a green area including a temporary retaining basin, such as a meadow depression, which can have other uses during dry season, possibly conserving the agricultural uses. It can also lead to the expropriation of land and result in a new green area.
- Abandoned farms in this area have also transformation potential to be included in the new green area, given financial resources for acquiring them.
- "Cascais land Bank" may be activated for renting agricultural private areas if owners see it as a reliable mechanism and a way to increase the land value.
- Starting a process of regeneration can lead to other initiatives favourable to a better land use according to existing regulations.

On the basis of the information acquired and of the vision elaborated with the help of local stakeholders, objectives and actions for the overall URA have been elaborated (for the complete list see Annex 1.1 – FC Cascais objectives and actions).

Objectives and actions have been categorized according to their focus:

→ GI improvement – towards a higher public space quality, increased accessibility and resilience to climate change effects.
→ Urban Regeneration – to compensate the internal and external urban fragmentation between the different neighbourhoods, as well as the lack of contact of the citizens with the natural environment
→ Social inclusion – to be promoted through events that can connect the local identity to the value that nature can offer, social and economic.

City of Cascais

A territory with new green multifunctional areas accessible to the entire population

Area 1 : Multifunctional green areas

1 - URBAN GREEN PARK - prepared to receive the summer fairground and all year outdoor facilities.

2 - GREEN AREAS - leisure green areas with playgrounds, fitness areas, community gardens

Area 2 : Blue corridor

3 - PARKING AREA UPGRADE - ecological pavement with trees integrated in a pedestrian walkway and bridge

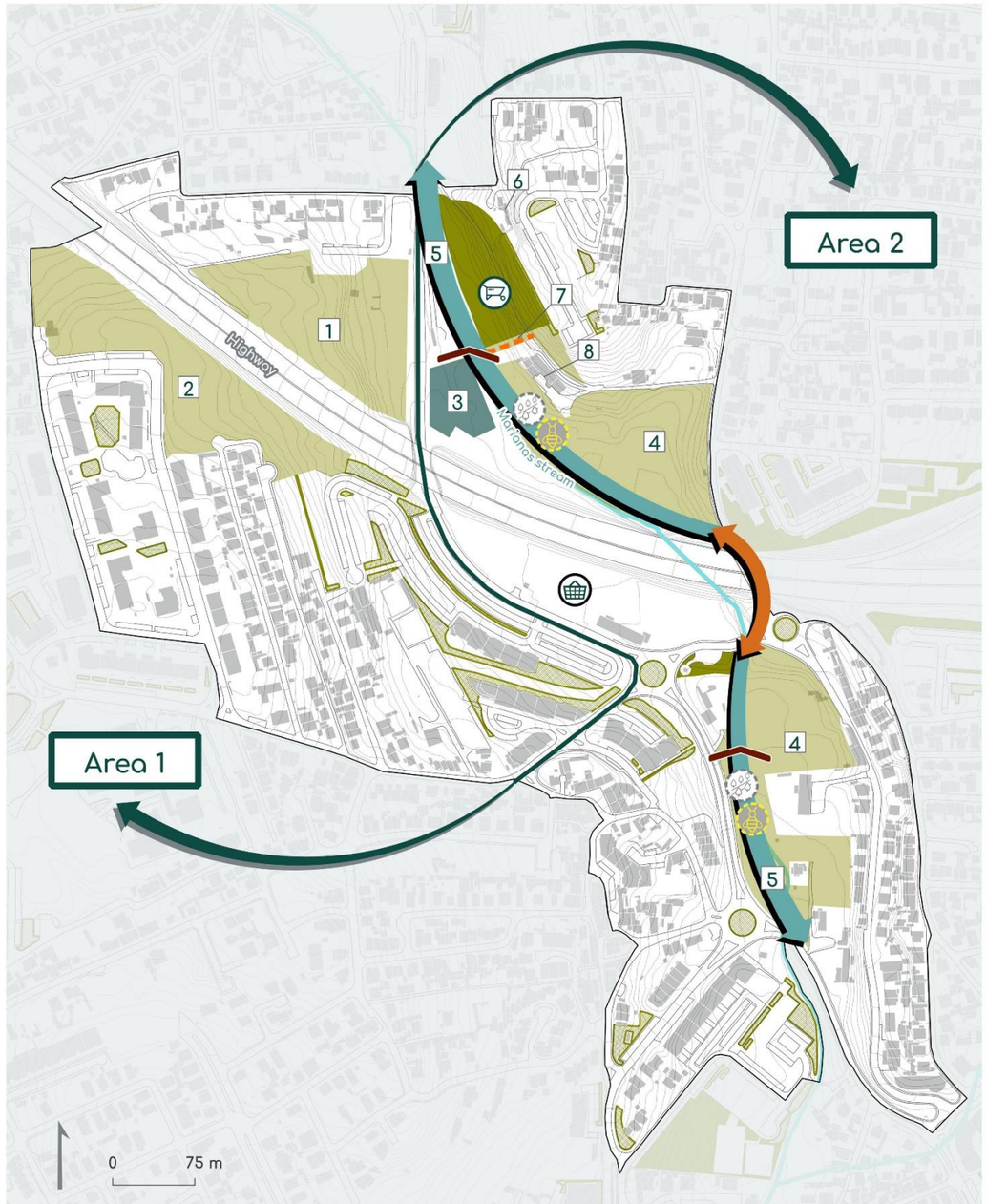
4 - URBAN AGRICULTURE AREAS - develop urban agriculture in all areas with potential soils for it

5 - PEDESTRIAN TRAIL - green corridor along the river connecting areas now isolated

6 - PLAYGROUND - playground integrated in green leisure areas after removal of illegal house

7 - WALKWAY - removal of the illegal shed and a new path connecting the existing road to river margin and the parking area

8- FARM AND LEISURE PARK - restore the abandoned farm and integrate agricultural initiatives (4) with public green areas



legend

currently:

- URA
- buildings

public green spaces

- leisure
- framing
- NBS 3 implemented
- open-air market

vision:

- future green areas
- ecological parking lot

in Planning

- NBS 6
- NBS 8
- NBS 3
- bypass by existing road, a little further from river but still in the same direction
- accessible blue/green corridor ~640m
- walkway
- bridges

Figure 17 - FC Cascais vision map. Source: URBASOFIA

4.1.5. Scenarios

FC Cascais has developed the scenarios for the two identified key transformation areas:

Area 1 Multifunctional Green areas - Scenario for the long-term vision

Key driver is a policy framework change for interventions on private land. North of the highway, a green multifunctional area is hosting a summer fairground, replacing the derelict area. The green areas close to the residential blocks South of the Highway become green multifunctional leisure areas with playgrounds and a new community garden.

Area 2 Blue green corridor - Scenario for the short-term and long-term vision

Short-term, the blue corridor generates ecological value. This is in line with the Master Plan, classifying river margins as green production areas, protection and/or conservation. The river restoration will create greater awareness and public interest in agricultural uses on the river banks.

Long term, the accessible blue/green corridor is generating river restauration, with more urban agricultural areas surrounding it. The Municipality allows the installation of community gardens on the river margins, representing a key driver for the transformation of the local GI. Planning of interventions in the area are advanced – proGIreg team will ensure the synergy between project efforts and municipality investment plans.

Figure 18 - FC Cascais stakeholders working on the scenarios for the two areas

Best case (Do-it-all scenario)

First step for consolidating the URA's new green identity is to leverage the existing community gardens and extend the number of users by agricultural training of members and transforming several plots (even if privately owned) into temporary or permanent urban gardens. To support the local food value chain, the open market is the focal trade point, in which users of local community gardens can sell their products with the support of local NGOs and the local parish in a Community Supported Agriculture model (CSA).

Second priority in transforming the URA is the blue-green corridor rehabilitation and transformation. Working with municipal staff (dedicated departments and experts for flood prevention) forms the basis of understanding the specific requirements of the interventions. Based on the assessment, expropriation processes and negotiations can start (local parish will contribute if possible for acquiring land). River restoration is a complex project that includes the creation of river basins, new pedestrian connections, and new green spaces that act as recreational areas and biodiversity “oases”. Vacant plots that are rich in productive soil and adjacent to the river margins are transformed into urban agriculture projects, managed and exploited by local communities. The blue-green corridor will act as a connector for the neighbourhoods, with a pedestrian trail along the river, resulting in new infrastructural requirements: new bridges and landscaped areas for social interaction.

Through the comprehensive rehabilitation and transformation of the green corridors, the study area regeneration process is gaining momentum.

Further, the greening process of the neighbour will be realized by: converting the derelict area north of the highway into an Urban Green Park, accommodating also a summer fair. The area where the illegal house was built, is converted into a playground and a garden (close to Brejos F). The illegal shed, on municipal land, is demolished, and the walkway connects the river margin to the existing road, near the parking lot. The abandoned farm is restored, integrating either the agricultural initiatives and leisure public green areas. The parking area is upgraded, with permeable pavement and trees, connecting the river margins, and giving access to the open-air market. South of the highway Brejos A and Mação have green multifunctional areas, including playing fields, fitness areas, a community garden, and different typologies according to the population needs.

Potential impacts, risks, obstacles, and challenges

- Acquiring private land may not be possible due to lack of funding. (to be managed by the municipality)
- Areas compromised to equipment facilities, need to be approved for other uses. The municipality need to develop a long process of land use change, which may not be possible. (To be managed by the municipality)
- Parking lot ownership is unknown, legal authorization to transform it needed. (Depends on the municipality authorisation)
- Private land with high potential for agricultural uses is mainly abandoned. Needs divulgation of Cascais Land Bank (Banco de Terras) and maybe other framing in Terras de Cascais. Requires political will and public involvement in the long term. (Expropriation to be managed by the municipality)
- Key barrier to green corridor implementation is the expropriation of land areas for the pedestrian trail in the river margins (to be managed by the municipality). This can be a long legal and administrative process.
- The illegal house needs to be returned to the municipality and demolished before project design. This can be a lenghthy process. Legal procedures developed by the municipality.
- The illegal shed demolition depends on an administrative and legal procedure, enrolled by the municipality.
- The abandoned private farm requires difficult negotiation with owners (to be managed by the municipality) and funding is needed.

Set priorities (Do-something-meaningful scenario)

The existing community garden is maintained, and benefits from the demolition of an illegal shed (in municipal land), allowing a new circular trail around the vegetable garden and access from the opposite river bank where the parking lot is naturalized. Workshops and activities managed by Cascais Ambiente staff for local communities can ensure sustainability of the intervention. Extending the user base and increasing attractivity of NBS3 interventions is needed in order to ensure feasibility of similar interventions in the blue-green corridor area, including the potentially available private land plots near the river margins will be transformed into community gardens.

Blue-green corridor will be transformed by implementing a pedestrian trail along the river, and flooding mitigation achieved by temporary retaining basins. Adjacent area will be sustainably maintained, invasive plants eradicated, margins planted with pollinator-friendly species. Training happens before they start the activities in the vegetable gardens, afterwards they attend some workshops.

The blue-green corridor will become the main attractor and the most coeherently developed element of the GI.

Potential impacts, risks, obstacles, and challenges

- Key challenge for the green corridor implementation is the expropriation of land areas for the pedestrian trail in the river margins (to be managed by the municipality). Potential long legal and administrative process.
- The flood area needs to be evaluated, and the creation of a natural retaining basin is expected at north of the highway.
- The illegal shed demolition depends on an administrative and legal procedure, enrolled by the municipality

Business as usual (do-minimum scenario)

The area surrounding the Community Garden is improved with a pedestrian path along the river margin and connecting the vegetable garden to the upper existing road.

Invasive vegetation is controlled and replaced by pollinator friendly plants. This is only a complement to the vegetable garden intervention.

Potential impacts, risks, obstacles, and challenges

The illegal shed demolition depends on an administrative and legal procedure by the municipality.

Implementing the path with no bridge across the river connecting the pathway to the open-air market may be highly unsatisfactory for the users

Comparison between scenarios

A. Do-it-all scenario

Pluses:

- Consolidating a new green identity of the URA
- Highly oriented towards community oriented activities and interventions
- Scenario implementation results in creating a coeherent urban structure of the URA

Minuses:

- Idealistic relating to resources, community participation, land conversion (private land)

B. Do-something-meaningful

Pluses:

- Landscaping the pedestrian path along the river
- Transforms the green corridor, prioritizing environmental aspects
- Feasible to implement short term
- In accordance with co-design results

Minuses:

- Scenario implementation will not impact the overall urban structure of URA. Area 1 (west) can still be considered "fragmented"

C. Business as usual

Pluses:

- Sustainability of the existing community garden is ensured
- Key target users will benefit from sustainable sources of food

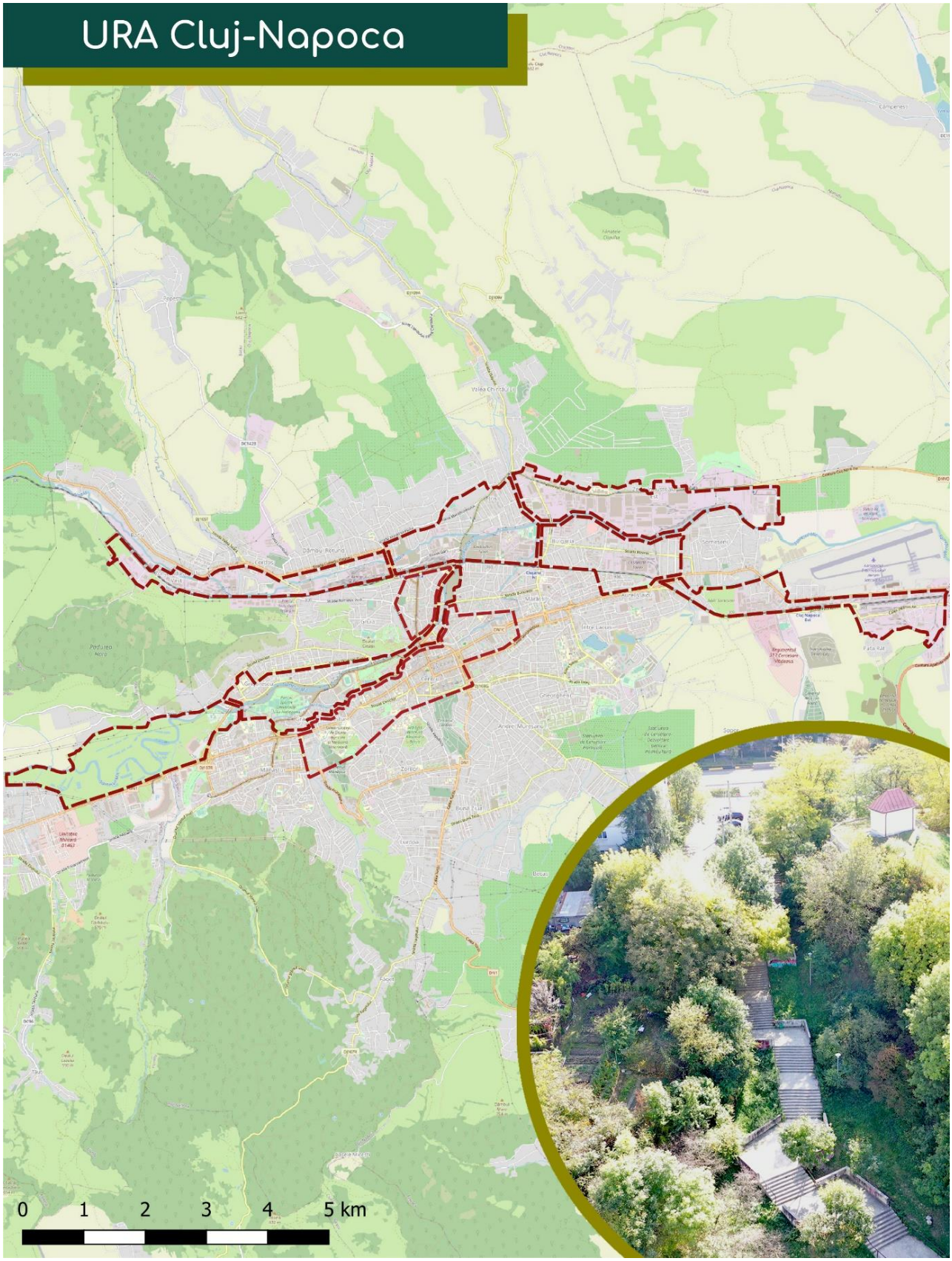
Minuses:

- Does not generate a signifcant impact on the local environemnt

Climate change impact and other potential pandemic outbreaks makes GI a very important asset of the urban areas, and even more important for residential areas. FC Cascais URA has to improve the resilience against such factors. Do-it-all scenario ensures the improvement of GI in all sectors: community-oriented facilities, biodiversity, ensuring shadow areas (especially needed in a climate such as Cascais), infrastructural solutions to reduce flood risk, and more.

FC Cascais will explore the do-it-all scenario for developing a complete set of projects in the long-term, aimed at creating the URA into a best-case example for the city of Cascais.

4.2. FC Cluj-Napoca



4.2.1. FC Cluj-Napoca URA description

The FC Cluj-Napoca URA is the largest territory of all FC study sites. The area stretches across the city from east to west along two main axes: natural and green-blue corridor axis and industrial and railway corridor, both being subject to green urban transformation processes. The green transformation is leveraging on existing natural elements, the Someș and Nădaș river corridors and adjacent green spaces, becoming an easily accessible and permeable-interconnected system of green and natural areas. The area includes a variety of urban functions and developments (residential, industrial, commercial, green public spaces).

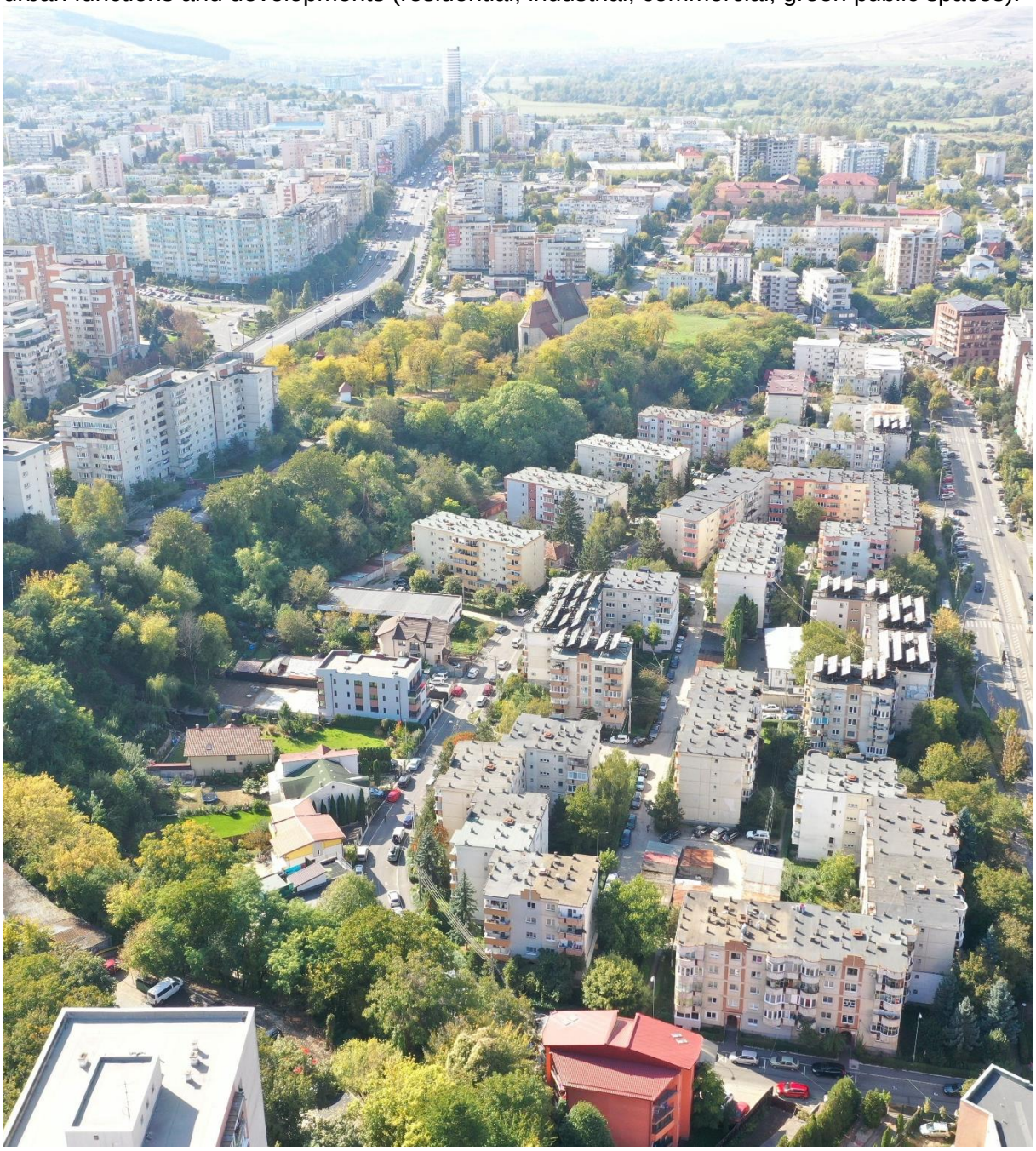


Figure 19 - Representative image of FC Cluj-Napoca URA

4.2.2. Co-design activities

Report on workshop activities

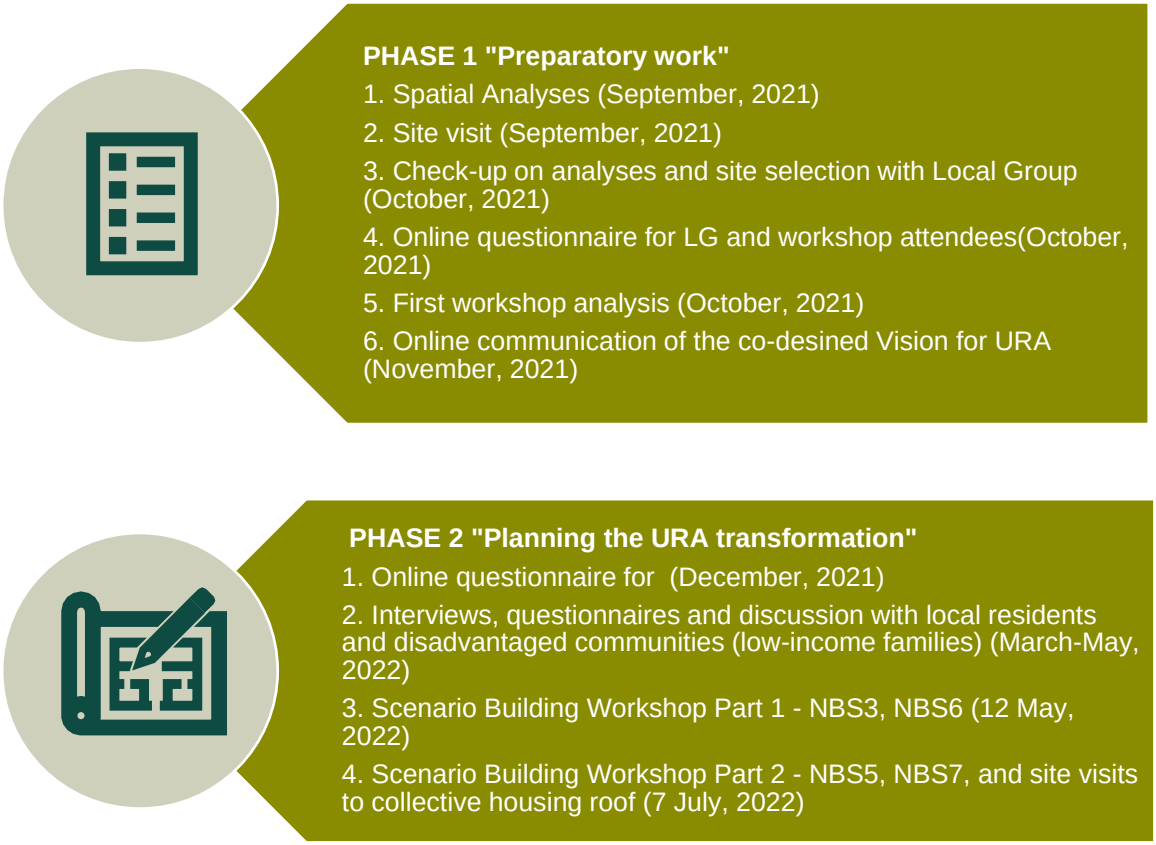


Figure 20 - FC Cluj-Napoca co-design activities overview

Co-design activities overview

FC Cluj-Napoca implemented various community-oriented activities in a gradual approach, involving expert and key stakeholders for the city-level GI in the first stages, following context-oriented discussions with residents and actors already involved in the green transition. Co-design activities reached relevant actors; from municipality departments, decision-makers, architects and designers to real-estate developers, housing associations, NGOs, and residents.

Involved stakeholders showed mutual willingness to adopt and to welcome green initiatives despite the lack of instruments (financial, legislative) and resources. The proGIreg co-design activities continuously support the city motto “Green Cluj”, aiming to offer knowledge and direction to adopt more innovative and sustainable green solutions to improve the urban quality and the day-to-day life of citizens.

→ Phase 1 “Preparatory work” – First Workshop Analysis

Given the complexity of the study territory, FC Cluj-Napoca presented the thematic spatial analyses at the First Analysis Workshop to discuss URA priorities. Given the complexity of the area, the analyses

helped in discovering most suitable areas and potential drivers for green transformation and urban regeneration. Spatial analysis and discussions with members of the Local Group were helpful in finding the areas with high potential and/or need of adapting NBS. Organising site visits and taking drone photos confirmed the suitability of NBS intervention sites. Site visits identified locations of informal community gardens. The Key Area of Intervention 1 contains an important area used as vegetable gardens by some local community members. Local Group members (see D2.7 – FC Local Stakeholders Activation), representing Sustainable Cluj and Someș Delivery organizations, indicated URA areas of interest for the Online First Analysis Workshop and refined potential intervention areas.

→ Phase 2 “Planning the URA Transformation” – Scenario Building Workshop

- Wide-scale online and offline questionnaires were launched addressed to all citizens of Cluj-Napoca and for residents of three identified Key Areas of interventions with the objective to understand the suitable NBS 3 and NBS 6 typology of interventions.
- FC Cluj-Napoca performed on-site visits, gathering the local communities for open discussions, questionnaires and individual interviews. Attendees included housing associate, NGOs, local residents, members of the elderly communities and young families.

Results of the previous activities necessitated a deepened study of the URA regarding opportunities of NBS adaptation, legislative and strategic framework, and potential policy measures. Based on the analyses, the Scenario Building workshops aimed at planning NBS 3 and NBS 6 and discuss barriers and drivers for wide-scale implementation and suitable spatial options. Attendees included NGOs, public administration: green spaces and urban strategies departments, architects, academia.

Since Cluj-Napoca considers green roofs a city-level priority, a separate follow-up workshop focused on developing scenarios for NBS 5 “Green roofs and walls” under the umbrella of NBS 7 “Establishing new protocols for environmental compensation”, given the topic’s specific requirements. Green roofs are subject to policy making and regulatory measures to incentivise and engage actors to implement the solution.
Attendees present included: EFB President (proGIreg partner), Real-estate developers, Academia, Housing associations, Youth representatives, Global Bank Consultant for Romania, Local architects, Municipality departments: green spaces, taxes, urban strategies.
A site visit at at a collective housing unit in the Mânăștiur Neighbourhood (near Key Area of Intervention 2) served to assess the possibility of including a green roof when applying for renovation works of the façade.

Figure 21 - FC Cluj-Napoca working with local stakeholders

Co-design activities outcomes

Table 8 - FC Cluj-Napoca co-design outcomes for the first two phases

Phase	Results
Preparatory work	The Cluj-Napoca URA is a large and complex urban area, with already on-going green interventions. Important new questions arose: → What are key drivers for NBS adaptation? → What are the specific requirements for community-oriented interventions? → How can each planned NBS generate significand change? → What are the resources needed? Key outcome was an integrated URA assessment in regard to key GI purpose and function in relation to the city and natural surroundings.
Planning the URA transformation	**Co-design activities outcomes for NBS 3 Urban Gardens:** ● Local residents were concerned about potential vandalism of the NBS and maintenance responsibility. ● Local residents have a low level of understanding and acknowledgment of NBS benefits. ● Overall, communities' welcome community gardens if properly planned, but current legislation prohibit growing vegetables in public spaces. Local NGO proposed a policy proposal and pushed for updating the local legislation in order to allow community gardens. NGO is open to collaborate for refining the policy proposal, according to the knowledge and resources of proGIreg. ● Spontaneous interventions and improvisations are present in public green spaces, especially in the Mânăștiur neighbourhood. At first, users of informal gardens were not open to collaborate, being “defensive” in discussions. Consequently, it will be crucial to empower existing users of informal gardens as advocates and “managers” of the future community gardens. ● Transgenerational involvement may be a key for the elderly passing on knowledge of growing vegetables to younger generations. ● Newly adopted development strategy of Cluj-Napoca proposed the elaboration of urban regeneration plans for collective housing neighbourhoods, focusing on green public spaces. It represents a potential driver to integrate NBS 3 in future projects. **Co-design activities outcomes for NBS 5 Green roofs / NBS 7 New protocols:** ● Green roofs in Cluj-Napoca are not common practice - part of the attendees had preconceptions about the utility, costs and risks of a green roof, but little ideas of the direct and indirect benefits. ● Eventually, attendees understood the actual characteristics of green roof solutions with the help of EFB partner (European Green Roof Association). ● Several stakeholders had experimented with small-scale green roof and walls initiatives, incl. local real-estate developers, but upscaling appears unlikely to date. ● PROMOTING and RAISING AWARENESS of the technicalities and benefits green roofs, e.g. creating a short GUIDE promoted by public

administration to contain basic information about green roofs: types, starting costs, benefits, maintenance, characteristics specific to Cluj-Napoca climatic context.
- Form a COMMUNITY OF PRACTITIONERS (engineers, architects) with experience in designing green roofs
- Adapting local policy generated intense debates. Tax incentives are considered possible, but not the best option, due to the national laws.
- For new buildings, the best option would be to have zoning regulation adaptations. Firstly, adopt green roofs policy in the General Urban Plan (PUG) for regulating the creation of green roofs depending of the urbanistic indicators. Other mechanism of negotiations: e.g. increase of urbanistic indicators if developers build green roofs or roof gardens.
- For community/housing associations, creating a one-stop shop (local network/community of practitioners) will help potential beneficiaries to know procedures needed and have access to all resources.
- The municipality can co-finance green roofs for housing associations. Creation of a local budget for green roofs – municipality to co-finance a percentage of the costs, if it compiles to a concrete set of criteria.
- For public buildings, green roofs appear a good option – potential funds can be accessed from regional and national level.

Co-design activities outcomes for NBS 6 Green corridors:

- Key aspect of GI development in the URA is ensuring connection and accessibility of all valuable green spaces. Secondly, connecting green spaces with focus on more accessible blue-green corridor Nadăș and extensions and minimal community-oriented interventions.
- Adaptation of NBS is a step-by-step process: accommodate immediate community needs. Residents demand multifunctional green spaces. The scenario-building workshop favoured co-developing modular solutions to be adopted in the community. Community green spaces must be ecologic, needing minimal maintenance.
- Improving ecologic aspects of GI and the local landscape can be achieved by using native plants that require a reduced effort of maintenance. The project team will explore good examples for producing a series of guidelines on how to create such spaces.
- Green corridors Interventions adjacent to residential areas and collective housing must be partly managed by locals, however this may be difficult to achieve. A gradual approach may help, but quick. results are necessary.
- Permeability, in terms of mobility, of the blue-green corridor has to be improved. To improve the local landscape and its value for residents a rethinking of the street profile is needed. Shared space in strategic sectors will enhance better access to green corridors.
- The green corridor Nadăș and its extensions can accommodate punctual modular interventions, where the landscape is unique, and where the local communities think is fit to have them.
- The sloped terrain of Mânăștiur neighbourhood (Key Area 1) has to be made more accessible and connected with important green spaces in the proximity.
- Local NGO is interested in making the lower part of Someș accessible to residents.

Political approval and integration into local urban planning frameworks

“Political approval” of green transformation measures is granted through the main objective of the public administration “Green Cluj”, part of the Integrated Sustainable Development Strategy 2030. The objective is the motto of the city, the “Green Cluj” movement triggering multiple investments for GI. Due to this effort and other ecologic initiatives for energy and mobility, Cluj-Napoca became one of the 100 Climate Neutral Cities. Ensuring an efficient transfer of proGIreg project results from the ADI-ZMC (FC Cluj-Napoca metropolitan agency - official proGIreg partner) to decision-makers in the administration is challenging. For future implementation work, ADI-ZMC must continue to be the advocate of NBS at local level, engaging relevant stakeholders in implementing the planned work and seek collaborations. FC Cluj-Napoca URA represents a complex territory of interests as the environmental regeneration and improvement of the landscape conditions of the two structural axes (together with community-oriented green facilities) will impact the whole city. Hence, political voice, dissemination and political approval of the Final Urban Plan is an essential component that would ensure the feasibility of actions developed in proGIreg.

"The local strategy chapter dedicated to the environment is of key importance in the future Integrated Urban Development Strategy 2021-2030. An extensive investment program in the development of new green spaces has already started: GREEN CLUJ.

This program aims to arrange over:

- **100 ha of new green spaces,**
- **100,000 new trees,**
- **Installation of sensors and stations for measuring air quality, water and soil,**
- **Creation of green colours for sustainable mobility on river banks in the Cluj Metropolitan Area, based on the model of the Someș banks"**

Ovidiu Cîmpean, CIIC coordinator and director of local development in Cluj-Napoca City Hall.

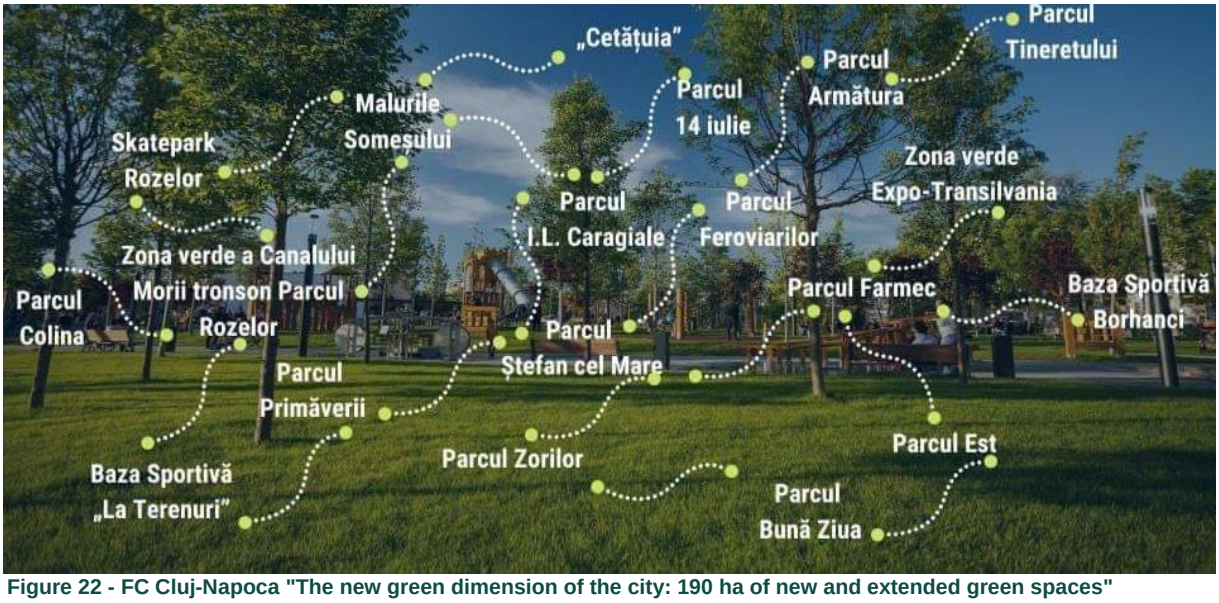


Figure 22 - FC Cluj-Napoca "The new green dimension of the city: 190 ha of new and extended green spaces"

4.2.3. Transformation Areas

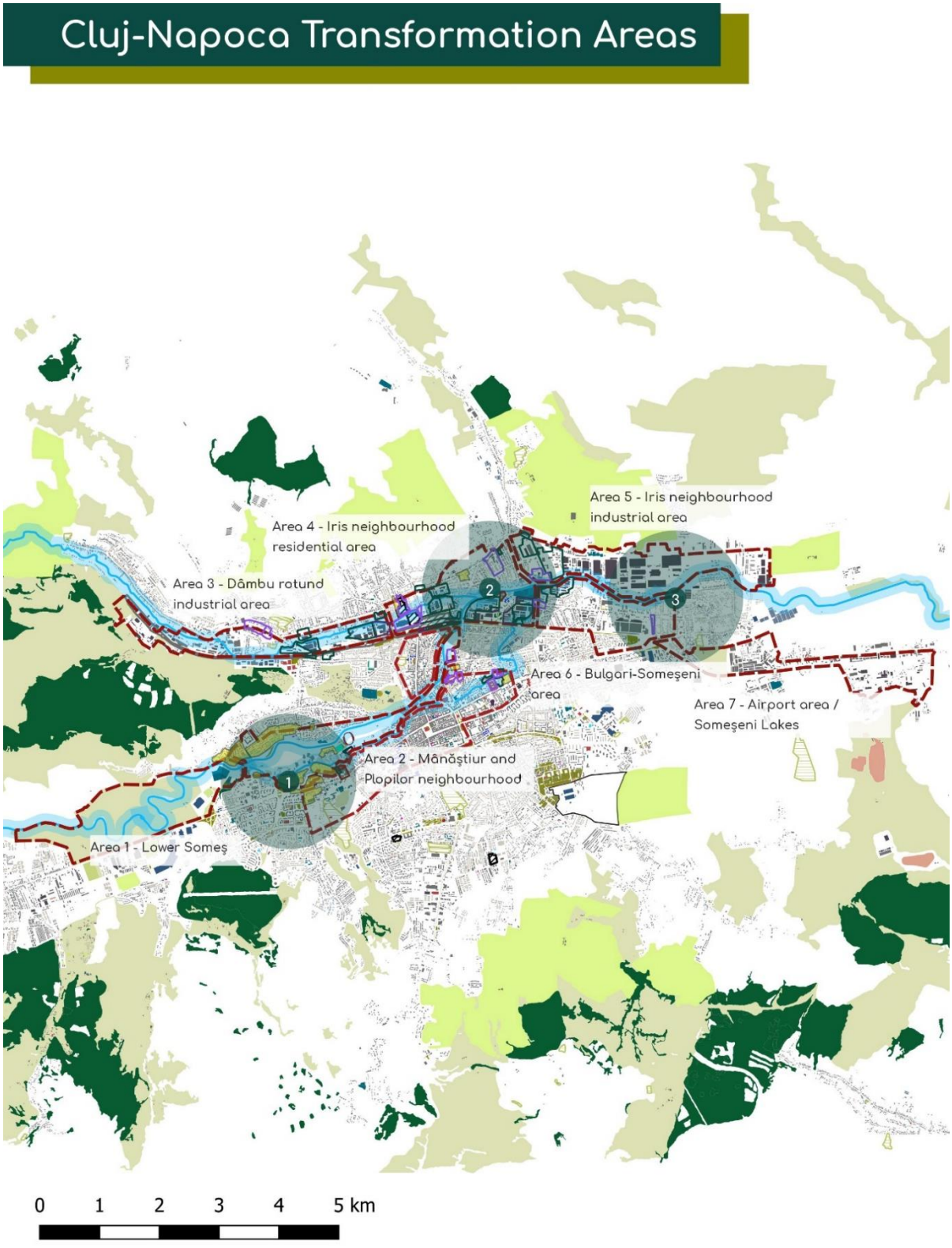


Figure 23 - FC Cluj-Napoca transformation areas

Identification and description of transformation areas

Considering the large scale of the URA, FC Cluj-Napoca has identified seven key transformation areas / landscape units sharing similar characteristics, thus requiring targeted solutions and approaches. Within each key transformation area, individual sites have been selected for specific potential nature-based solutions.

Area 1 (Landscape Unit 1 – L.U.1): Lower Someș

The area has the technical function regulating a water catchment area. It is considered valuable due to its specific natural landscape and ecological characteristics (biodiversity, abundant vegetation). The area is relatively difficult to access, being located at the exit of the city. Important landmarks in the area are: (1) CORA Supermarket, (2) Colina Park, and (3) Water Museum (west of the URA).

Area 2 (Landscape Unit 2 – L.U.2): Mânăștiur and Plopilor neighbourhood

A dynamic and densely built urban environment with important activities and public facilities. An area considered with potential is the sloping land in the Mânăștiur area (Key Area 1). The important landmarks of the area are: (1) Cluj Arena stadium, (2) Luceafărul football academy, (3) Rozelor Park, (4) Railway Park (in the process of transformation). Someș river represents a structuring axis and a point of attraction, and important role of leisure, recreation, and ecologic services. The area has a well-developed system of landscaped green spaces (parks, landscaped green spaces, green spaces related to the block area).

- **Site 1 (Key Transformation Area 1): Mânăștiur green corridor and community gardens.**

Valuable vegetation and location (in the extension of a planned park – “Canalul Morii”). Currently, the area represents a barrier; high declivity of the terrain represents both a challenge and an opportunity. Stakeholders agree that the areas need to become more accessible and permeable. The area has informal productive community vegetable gardens – this can be taken as a good sign, meaning that NBS 3 interventions are welcomed.

Figure 24 – FC Cluj-Napoca, Key Transformation Area 1. The slope terrain can transform into an efficient and valuable green/ecologic corridor, that can accommodate at the same time NBS 3 interventions. Other NBS 3 interventions can be implemented in the upper and lower part of the area, within collective housing green public spaces. Source: ADI-ZMC

Figure 25 – FC Cluj-Napoca, Key Transformation Area 1. In this drone photo we can observe that a series of informal community productive gardens are arranged. Source ADI-ZMC

Area 3 (Landscape Unit 3 – L.U.3): Dâmbu rotund neighbourhood (west industrial area)

The area is a major axis, marked by industrial / commercial activities and the railway. It is an area with a specific industrial urban landscape, to the detriment of enclave-type living areas. Important landmarks are: (1) Beta Bus Station, (2) West Industrial Zone, (3) Septimiu Mureşan School of Police Agents, (4) Dedeman store, (5) Ethnographic Museum. The area has important green areas in the south (forest patches). Nadăș creek is an important green corridor for the area, not landscaped and difficult to access.

Area 4 (Landscape Unit 4 – L.U.4): Iris neighbourhood residential area

Residential area of individual houses in the northern part with good access to the centre. Important landmarks are: (1) IRIS City Hall, (2) Armătura Park. The south is predominantly industrial and mixed use (commerce and services). Important landmarks are: (1) the Municipal Clinical Hospital, (2) 1 Mai Square, (3) Clujana Swimming Pool. Part of the present industrial heritage is abandoned and in a state of degradation. The area has two important green-blue axes, Someșul Mic and Canalul Morii.

- **Site 2 (Key Transformation Area 2): Street Nădășel and Porțelanului Bridge**

The area represents a valuable element of the local GI for accommodating new facilities for the local neighbourhood.

Figure 26 – FC Cluj-Napoca, Key Transformation Area 2. The area represents an extension to the blue-green corridor Someșul Mic

Figure 27 – FC Cluj-Napoca, Key Transformation Area 2. The space is maintained and used by the local communities. Source ADI-ZMC

Area 5 (Landscape Unit 5 – L.U.5): Iris neighbourhood industrial area

Predominantly industrial area, logistics, trade / services, crossed by the green-blue corridor Someș. Important landmarks are: (1) Technical University of Cluj-Napoca - Faculty of Road Vehicles, Mechatronics and Mechanics and (2) Auchan Supermarket.

Area 6 (Landscape Unit 6 – L.U.6): Bulgari-Someșeni area

It represents a complex and densely built area with various functions. There are individual housing areas, collective housing areas, industrial areas, trade, services. Important landmarks are: (1) Aurel Vlaicu Park / Expo Transylvania, (2) IRA Agri-Food Market, (3) Cluj Regional Centre for Adult Vocational Training. The area is crossed by the railway, an axis that divides the area into 2 (north-south) and represents a strong boundary.

- **Site 3 (Key Transformation Area 3): Timișului collective housing area**
    - Green area, near Someș river and collective housing units (social housing 2 to 3 storeys high).

Figure 28 – FC Cluj-Napoca, Key Transformation Area 3. The area is crossed by a high voltage line, representing a challenge for NBS transformation. Safety measures and specific landscaping design is needed. Source: ADI-ZMC

Figure 29 – FC Cluj-Napoca, Key Transformation Area 3. The urban context for the area is considered opportunistic. The residents represent the key target users to take ownership of the intervention. Source: ADI-ZMC

Figure 30 – FC Cluj Napoca, Key Transformation Area 3. The visual and functional relationship of the area with the river corridor is limited by fence, and invasive vegetation.

Area 7 (Landscape Unit 7 – L.U.7) – Airport area / Someșeni Lakes

A peripheral development of the city close to the airport marked by industrial areas, logistics/trade services. The area is relatively difficult to access for pedestrians, the present individual living area being delimited by the railway. Important landmarks are: (1) Someșeni Baths; (2) Selgros Supermarket; (3) Military Unit.

Barriers and obstacles

Table 9 - FC Cluj-Napoca transformation barriers/ risks

Key area of intervention	Transformation barriers/risks	Type of barrier (WP5)
L.U.1	Not easily accessible. Proximity of major road represents a risk for the protection of the area and for making the site more accessible.	Administrative
L.U.2	High density of urban functions and densely built area. GI system allows for few areas for NBS. Priority is to connect existing green spaces.	
Key Area 1	The area is characterised by an important green space with a high slope, which represents a barrier for adopting NBS interventions. Potential landslides must be taken into consideration when implementing NBS 3 and NBS 6 interventions. Several informal vegetables gardens exist in the area. Involving the respective residents in expanding and sharing the garden may be a potential barrier.	Technological
L.U.3	Urban tissue fragmentation can represent a barrier in creating coherent green corridors.	Administrative
L.U.4	Area has few available plots for adapting NBS. The blue-green corridor is considered the only driver for adaptation of community-oriented NBS. Potential barriers are narrow river banks and potential floods.	
Key Area 2	Represents the widest riverbank of the blue-green corridor, local communities planted fruit trees. Potential barriers are low community involvement of managing community gardens, difficult permit processes due to the complex juridical state of blue-green corridors.	Social
L.U.5	High diversity of urban morphologic units, few available plots for NBS.	Administrative
L.U.6	Main barrier for adopting NBS is the slow and unpredictable conversion of industrial areas into mixed used developments.	
Key Area 3	Represents a green space on the riverbank of Someș river, of high value for the local community – social housing.	

Consolidated stakeholder map

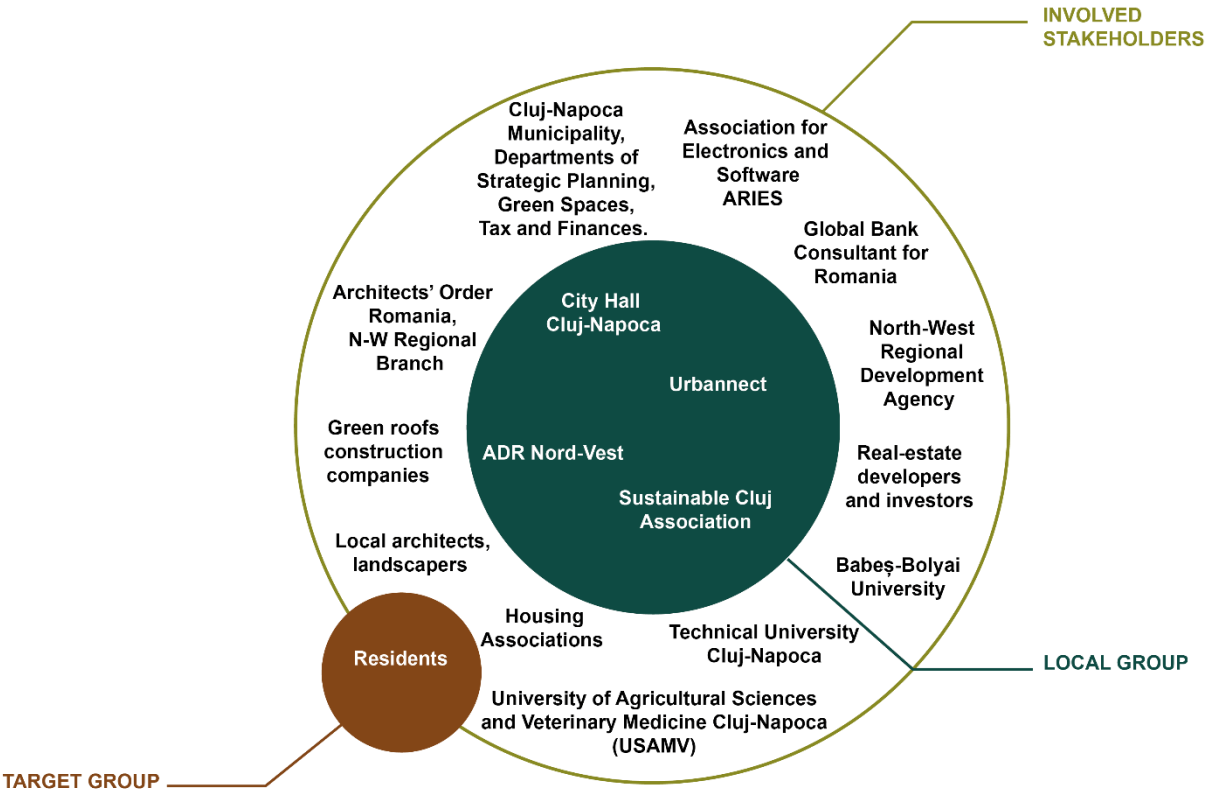


Figure 31 - FC Cluj stakeholder set-up update

Table 10 - FC Cluj-Napoca stakeholders' roles and responsabilities

Stakeholders	NBS	Responsibilities
University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca (USAMV)	NBS 3	Knowledge on community gardens, planting, natural/environmental aspects of the URA (suitable vegetation, soil characteristics, growing conditions, maintenance).
	NBS 5/7	
	NBS 6	
Technical University Cluj-Napoca	NBS 3	Expertise, faculties of Architecture and Urban Planning, Environmental Engineering.
	NBS 6	
Babeș-Bolyai University (UBB) Cluj-Napoca	NBS 3	Expertise, faculties of Environmental Science and Engineering; International & National Research Projects and many more other fields of education.
	NBS 6	
Architects' Order Romania	NBS 3	Chamber of Architects of Romania is the most important organization representing and promoting the domain of architecture.
	NBS 5/7	
	NBS 6	
Cluj-Napoca Municipality, Departments of Strategic Planning, Green Spaces, Tax and Finances	NBS 3	Departments most relevant when planning NBS strategic interventions, policy measures,
	NBS 5/7	

	NBS 6	and identification of location and requirements for community-oriented facilities.
North-West Regional Development Agency	NBS 3	ADR is a non-governmental organization of public interest in NW of Romania. It can offer options for future funding of interventions, ensuring that the elaborated plans/projects are eligible.
	NBS 5/7	
	NBS 6	
Sustainable Cluj Association	NBS 6	Local activists, independent project, engaging citizens to implement and test innovative ideas in public space of Cluj-Napoca.
SOS Cluj (Society Sustainably Organized)	NBS 3	Local activists, aimed at promoting and realizing ideals of a balanced developed society, offering fair living conditions for all.
	NBS 5/7	
Urbannect (Community organization · Cultural center)	NBS 3	Action platform intending to facilitate the concept of urbanity and the involvement of everyone in the city life. One representative is part of the local group and helped constructing the regeneration vision, highlighting the key assets of the URA.
	NBS 6	
Housing associations	NBS 3	Housing association representatives are involved in key steps in the co-design process, for understanding the requirements and needs of residents.
	NBS 5/7	
	NBS 6	
Residents of URA	NBS 3	Residents of the Key Transformation Areas have the responsibility of being involved in the decision-making process, design phase, co-implementation and sustainable management of the NBS.
	NBS 5/7	
	NBS 6	
ARIES	/	Association for Electronics and Software. Organization is involved in relevant sustainable projects.
Global Bank Consultant for Romania	NBS 5/7	Relevant stakeholder for planning green solutions, especially from economic development point of view (real-estate, local economy value chains, etc..)
Green roofs construction companies	NBS 5/7	Relevant stakeholders for understanding the requirements for developing the green roof market in Cluj-Napoca.
Local designers: architects, landscapers, etc..	NBS 3	Stakeholders offering specialized expertise for the design requirements of the future interventions.
	NBS 5/7	
Real-estate developers and investors	NBS 5/7	Relevant actors for wide scale adoption of NBS.

Marginalized communities' involvement plan

Overview of marginalized groups in URA

To have the same rights of accessing and using GI, the following marginalized communities have been considered:

- → ethnic minorities (Roma communities, and others),
- → mobility disabled people,
- → unemployed,
- → to a certain degree, social housing residents,
- → elderly people.
- → Future NBS intervention, notably in the three key intervention sites, will consider the accommodation/integration of the needs and necessities of all social groups relevant for the area. Areas of interest in Cluj-Napoca URA targeting marginalized or disadvantaged communities: Two out of the three Key Areas include or are bordered by social housing areas – blocks of flats/apartments: Key Area 2 and Key Area 3. One comprises public social houses, while the other one is made up of social housing blocks of flats built by an NGO. Both areas offer social housing for people who were previously evicted from their homes or lived in other vulnerable situations.

Involvement plan during proGIreg

A series of measures are developed, ensuring the involvement of all relevant target groups in the co-creation process: interviews, questionnaires, public debates, site visits, individual discussion with members from the local communities.
Given the broad and complex URA Cluj, two types of actions are implemented for efficiency: (1) general communication and questionnaires for all residents, (2) specific activities/site visits in the Key Areas of Intervention. The opinions of the locals are fed into the scenarios of NBS. Similar activities will be performed for the next stage of Design. By the end of the proGIreg project, a follow-up is to establish the terms for future collaboration regarding the final solutions identified. Local communities have to take ownership of planned interventions, triggering social cohesion and inclusion and fostering the development of more sustainable communities.

Involvement plan after proGIreg

For future implementation, Cluj-Napoca is planning to continue the collaboration started with local communities. Existing marginalized communities can be involved in co-implementation of the interventions. To sustain NBS, local communities will continue to be involved in the long term, ensuring co-ownership of interventions.

4.2.4. Priorities, vision, objectives and actions

Priorities

GI improvements

Green infrastructure immediately needed improvements are twofold:

(1) *Interventions on the blue-green corridors.*

- Improving environmental qualities and accessibility to secondary blue-green corridors, such as Nădaș River: improving the local landscape of post-industrial neighbourhoods, and enabling residents to access new green facilities. The lower part of Someș is an important natural and ecologic sub-system that needs to be accessible, becoming a natural attraction of the city.

- Protection of the corridor in relation to natural surroundings, ensuring biodiversity mobility.

(2) *Punctual (community-oriented) interventions to be connected in a coherent green system.*

- Given the relatively dense urban environment, local interventions have to be strategically located in relation to existing GI.

- The urban acupuncture type of approach is considered optimal, most opportunistic areas in which to intervene, re-connect, re-generate. Areas of interest are: green plots located within collective housing areas, green areas in the extension of blue-green corridors, neglected green areas, green areas within public institutions plots (such as educational institutions, hospitals, etc…).

URA urban regeneration priorities

Neighbourhoods included in the URA have to become more attractive. The urban areas considered a priority to be regenerated are:

(1) Aleea Grădini Mânăștur - Strada Plopilor,

(2) Strada Nădășel - Podul Porțelanului,

(3) Strada Timișului/Someșeni.

These three locations are considered relevant due to valuable green infrastructure elements (with high potential to transform and accommodate new NBS).

Community aspects/social inclusion needed improvements

- Promotion of a cohesive community and good environmental behaviour.

- Ecologic education, awareness-raising and better (and sustainable) civil involvement.

- Improvement of citizens' well-being through nature

Final Vision statements on different time scales

Short-term Vision (5 years)

By 2027, FC Cluj-Napoca will be able to engage in green transition measures, involving civic community into NBS co-design and environmental awareness activities, triggering a long-term transformation process, debuting with urban regeneration interventions on specifically selected areas that will represent successfully implemented NBS interventions, acting as landmarks, further co-implemented and maintained by the residents, to be replicated in similar contexts. Blue-green corridors, Someș river will be transformed into the natural spine of the city, functioning as a connection path and recreational asset. NBS transformation process for the secondary green corridors will be started, being an incremental and gradual process. First, the natural areas are made accessible, then small minimal and ecologic interventions are accommodated, followed by implementing community-oriented interventions.

Medium-term Vision (13 years)

By 2035, FC Cluj-Napoca will implement NBS interventions in different key areas of the URA (collective housing units, green corridors, public institutions premises, green public spaces). Interventions are tailored to community needs, being collectively used, and maintained. ProGIreg strategy will be implemented in synergy with other important planned interventions at local level. Residents of post-industrial neighbourhoods will interact with nature in day-to-day life, microclimate conditions will be improved, and ecologic and natural settings enhanced (inner-city green systems will be coherent and will have good connections with the natural surroundings).

Long-term Vision (27 years)

By 2050, Cluj-Napoca will have a comprehensive green infrastructure network, creating powerful connections between the inner-city green system and the natural environment surrounding the city. The network will connect new green community spaces, community gardens, and natural landscapes, all located within the urban framework of the two structural axes. After the implementation of strategically chosen interventions, the post-industrial neighbourhoods will be attractive urban areas, resulting in a more resilient and ecologic city, creating a synergy between urban developments and natural elements – perceived as efficient productive, catalytic, ecologic, and ambiently system.

During the Scenario Building phase locations and more specific characteristics of the area have been identified. Objectives and actions for the overall URA have been elaborated in collaboration with local stakeholders (see Annex 1.2 – FC Cluj-Napoca objectives and actions).

- → GI related objectives focused on the preservation and valorisation of biodiversity and local ecosystem services, as well as on its binder role between the different urban layers and entities.
- → Urban regeneration, in the Cluj-Napoca case, goes through the reconversion of post-industrial areas and the enhancement of the attractivity of the local assets.
- → The objectives related to the social aspects recognize the central role of educating citizen to enhance the value of nature in their day-to-day life, also contributing to the collaborative decision-making process.

Figure 32 - FC Cluj-Napoca vision map. Source: URBASOFIA

4.2.5. Scenarios

FC Cluj-Napoca developed the scenarios considering three key dimensions of GI development and NBS adaptation in the short, medium, and long term: (1) Community Gardens (NBS 3), (2) Green corridors (NBS 6), (3) Green roofs (NBS 5/NBS 7. Key development driver is the new green regeneration policy.

Best case (Do-it-all scenario)

Transformation of the URA of FC Cluj-Napoca is happening gradually, driven by high interest on creating local policies and practices to implement NBS on a wider scale.

(1) Community Gardens

Local law prohibits the creation of vegetables plantations on the green spaces of public domain. Existing informal gardens in Mânăștiur area (Key Area 1) will be sanitised, modernised, and extended to accommodate the needs of the entire community, becoming the first pilot for urban gardening in Cluj-Napoca. The driving forces of this transformation are the informal gardens' owners, collaborating with the municipality and local NGOs. They will become advocates for NBS 3, teaching and engaging other members. The funds used for Mânăștiur pilot will be public money. The results of the pilot will be used for constructing a local policy that will allow NBS 3 interventions to be implemented on a wider scale. Local legislation will be updated accordingly integrating a preliminary business model for encouraging residents to be part of garden communities. A clear set of eligibility criteria is developed (location, status, motivation, etc…), together with restrictions and sanctions.

Once the local policy is updated, the municipality can assess different funding options for wide-scale implementation. The priority will be to intervene in Key Areas of Intervention 2 (area Nădășel River) and Key Area of Intervention 3 (Timișului neighbourhood). These 2 sites will be multifunctional community spaces that will integrate community gardens and other public space features such as dog park, leisure and green areas. Community gardens will be realised as raised bed gardens, managed, and maintained by residents. Urban orchards are planned along the river (for Key Area 2 Nădășel).

Integrated Sustainable Urban Development Strategy 2030 proposed the elaboration of a series of regulatory plans for the urban regeneration of collective housing units. The three Key Areas will function as examples for regulating community gardens. This will ensure coherence of investments in medium and long term, supporting the green transition.

(2) Green Roofs.

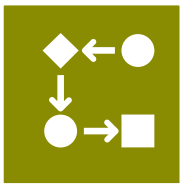
So far, only small-scale green roof initiatives and focused discussions with local actors have taken place, but the topic is of high interest for various stakeholders: NGO, local communities – housing associations, architects/designers, real-estate developers, city administration. The proGIreg project will continue to advertise/advocate green roofs, ensuring to infirm the common misconceptions and educate on their multiple benefits. For this purpose, a short and comprehensive guide is created, mainly addressed to housing associations, community members, real-estate developers, containing basic information about green roofs: typologies, starting costs, benefits, maintenance, characteristics specific to Cluj-Napoca climatic context, bureaucratic process. By raising awareness and a promotion campaign, the market of green roofs in Cluj-Napoca will gain more interest. A network of actors to facilitate the implementation of green roofs, and to ease the bureaucratic process will be created.

Guided by the public administration, the new policy of green roofs in Cluj will take form. Specific regulation of green roofs will be integrated in the Urban General Plan. Driving forces for this transformation include rehabilitation of public buildings and outdated collective housing units, attractive branding and image for new residential buildings.

(3) Green Corridors
Cluj-Napoca is in the process of making its river corridors more accessible. Public funds drive important work in the central part of city on the Someș river corridor, and accessibility improvement interventions are implemented on Nădășel River and Someșul Mic river through. Local communities will be involved in design process and in decision making concerning urban design (functionality, landscape, ambiance, and urban furniture interventions). Lower Someș will be open to nature explorations and properly secured and monitored. Interventions will be promoted through a set of events and educational activities.
Key Area 1, 2, 3 are all subject to green corridor rehabilitation.
Key Area 1 – Mânăștiur, will be cleaned and connected to important public parks and green spaces – Canalul Morii/ Babeș Sports Complex.
Key Area 2 – Nădășel area, riverbanks secured, and accessible, existing plantations will be regenerated.
Key Area 3 – Timișului neighbourhood, Someșul Mic river accessible – the existing wall deconstructed, riverbanks secured, and vegetation cleaned.
URA will have a coherent and comprehensive green system, connecting important green areas within the URA with relevant natural surroundings. Together with academia, experts and local communities, the municipality will construct alignment plantations: (1) specifically designed for high traffic areas – with high levels of carbon and pollutants retention; (2) for mitigating the relation between residential area and major infrastructure elements or industrial areas – creating “green curtains”; (3) for secondary and tertiary streets in residential neighbourhoods – chosen, used and valued by locals. The main characteristic of green corridors for the URA is that they are planned and designed to be low maintenance, by using locally adapted and native trees and shrubs and a specific mix of seeds for ground resilient vegetation that do not require as frequent irrigation as traditional grass.

Potential impacts, risks, obstacles, and challenges

Do-it-all scenario represents an important commitment of the local public administration. The potential impact is high – creating nature-based oriented communities that care, protect, and sustainably interact and exploit what nature can provide.
To implement this scenario, the municipality needs to form a team able to implement a comprehensive step-by-step strategy to transform neighbourhoods, aiming at educating and empowering local communities. Each intervention has various layers of complexity requiring: co-design and co-implementation actions, promoting and education activities, and collaboration of diverse stakeholders.
Key challenge is keeping a coherent succession of actions. Closely intertwined set of steps have been developed, each action building upon previous results.
Key risks include drastic changes of the political will, low level of synergy/collaboration between decision makers within public administration, requires a lot of funding.



Set priorities (Do-something-meaningful-scenario)

This scenario focuses on activating communities and spaces, developing organically. Local community initiatives will be triggered and supported by new local policies. Given reduced resources at disposal, planned interventions can be strategically downscaled compared to do-it-all scenario.

(1) Community Gardens

Legislative barriers have been solved. Local legislation that forbids vegetable gardens in public space is updated. The existing ad-hoc/informal gardens are now legal if the local communities inform the local authorities. A new local policy regulates the management model of the community gardens.
Collaboration with local communities will continue, especially in the three Key Areas of Interventions. Funds will be allocated for public space renovation / development projects, accommodating community gardens. Key Area 1 – Mânăștiur neighbourhood, existing gardens modernized and secured, not extended.
Key Areas 2 and 3, funds allocated for public space renewal, accommodating box gardens and small-scale urban orchards, managed and maintained by local communities. Awareness campaigns will represent an important component in making community gardens a common practice in Cluj-Napoca. Thanks to this, more communities will require support from the municipality to construct such interventions. Support can be offered by ensuring municipal staff, and clear explanations of the requirements that the gardens have to fulfil. The movement will also be supported by updating the Zoning Plans for collective housing neighbourhoods, regulating community gardens in optimal areas of the existing green system.

(2) Green Roofs

At local level, a green roof network comprising manufacturers, designers, interested developers exist. The missing link is a community of practice. Thus, the local administration will engage in an awareness campaign in order to infirm the common misconception of green roofs and to advocate for their wide range of benefits.
Regulations included in the Local General Plan comprise specific indicators for adopting green roofs solution, for existing and new buildings. The community of practice will be created, together with a simple guide for the adoption of green roofs. Public administration will embark in negotiation activities with the aim to have a first series of green roofs arranged and trigger a movement in Cluj-Napoca area. Housing associations will be able to apply for permits to construct their own green roofs. Private sector: investors office and new residential buildings, will be compiled to construct green roofs due to the advantages that green roofs provide, in terms of energy efficiency), and attractiveness improvement. Public sector: rehabilitation of public buildings will accommodate green roofs. In order to make green roofs initiative work, the public administration has to provide support by providing: access to resources, fast-track bureaucratic for permits, tax-incentives.

(3) Green Corridors

Minimal approach for activating only important nodes of the river corridors. The vegetation will be maintained, keeping the natural ambiance, preventing informal uses such as parking. Intervention locations will be decided together with the local communities. The wider banks of the river will be made accessible to the local communities and will accommodate minimal urban furniture for leisure and recreation.
The URA will have a coherent and comprehensive green system. Locally adapted vegetation alignments of strategically chosen streets will be realised.

Potential impacts, risks, obstacles, and challenges

Do-something-meaningful scenario represents a good alternative to the do-it-all scenario to ensure similar impact in case the local administration will not be able to overcome the foreseen challenges and risks. To avoid low levels of synergy/coherency between actions in this scenario is challenging. Key risks are: lower level of ownership of NBS interventions, and lower level of social cohesion.

Business as usual (do-minimum scenario)

Important development measures have been taken in Cluj-Napoca area in last years concerning green infrastructure development: creation of new urban parks and river corridor rehabilitation/landscaping interventions.

(1) Community Gardens

Due to the effort of local NGOs, and with the help of the proGIreg project, the local legislation that prohibits the plantation of vegetables gardens in public space will be updated. Legal community gardens will become possible. The local policy adopted integrate minimum requirements for the design and operation of community gardens, without integrating innovative business models. Community gardens will be created at the request of housing associations, and/or NGOs. Interested actors can apply for participatory budgeting funds or can either use own funds, or apply for sponsors.

(2) Green Roofs

ProGIreg project and local interventions have initiated the slow growth of a community of green roofs practice. Minimal requirements/regulations for green roofs will be integrated in the General Urban Plan. Green roofs are not a common practice.

(3) Green Corridors

The GI development of Cluj-Napoca is a priority. Relevant funds have been allocated in the local strategy for planting trees and building new urban parks. Intervention on riverbanks will be realized punctually, with no integrated vision of the superior green system. Potential interventions will be classic public spaces, heavily manured, with high percentage of impervious surfaces. Street green corridors will be realized in form of simple tree alignments, with no regard of the potential functions the trees and vegetation can have for the local context and communities. Green system structure will be party fragmented, with low level of connectivity with the natural surroundings.

Potential impacts, risks, obstacles, and challenges

In the business-as-usual scenario, the initiative of making Cluj-Napoca a greener city will be continued, although with little consideration on integrating NBS into the daily life of residents. The potential impact of green infrastructure in the URA will be low – interventions are incoherently coordinated and connected, and local communities will not play an important role.

Key risks: lack of environmental education, communities that do not care as much as they should for the environment, existence of very few community-oriented interventions (if any).

Comparison between scenarios

A. Do-it-all scenario

PLUSES:

- describes a gradual process, ensuring that interventions become part of the local identity.
- aiming at structural changes - creates good connections with on-going initiatives and projects

MINUSES:

- scenario is too linear, with low level of flexibility
- involves many actors in the process in order to access the needed resources
- too complex: the implementation team has to have continuity

B. Do something meaningful

PLUSES:

- ensures the amelioration of identified problems
- presents a holistic thinking in the URA transformation

MINUSES:

- too focused on bottom-up approaches
- interventions are downscaled
- legislative framework is updated with little integration of co-management models and proGIreg-specific NBS requirements

C. Business as usual

PLUSES:

- Cluj-Napoca is already on the pathway of creating a greener communtity. The initiative will continue, extending the GI network

MINUSES:

- the scenario presents low level of community involvement
- green transformation of Cluj-Napoca will not results in a productive and resilient GI, as proGIreg project aims to help cities achieving

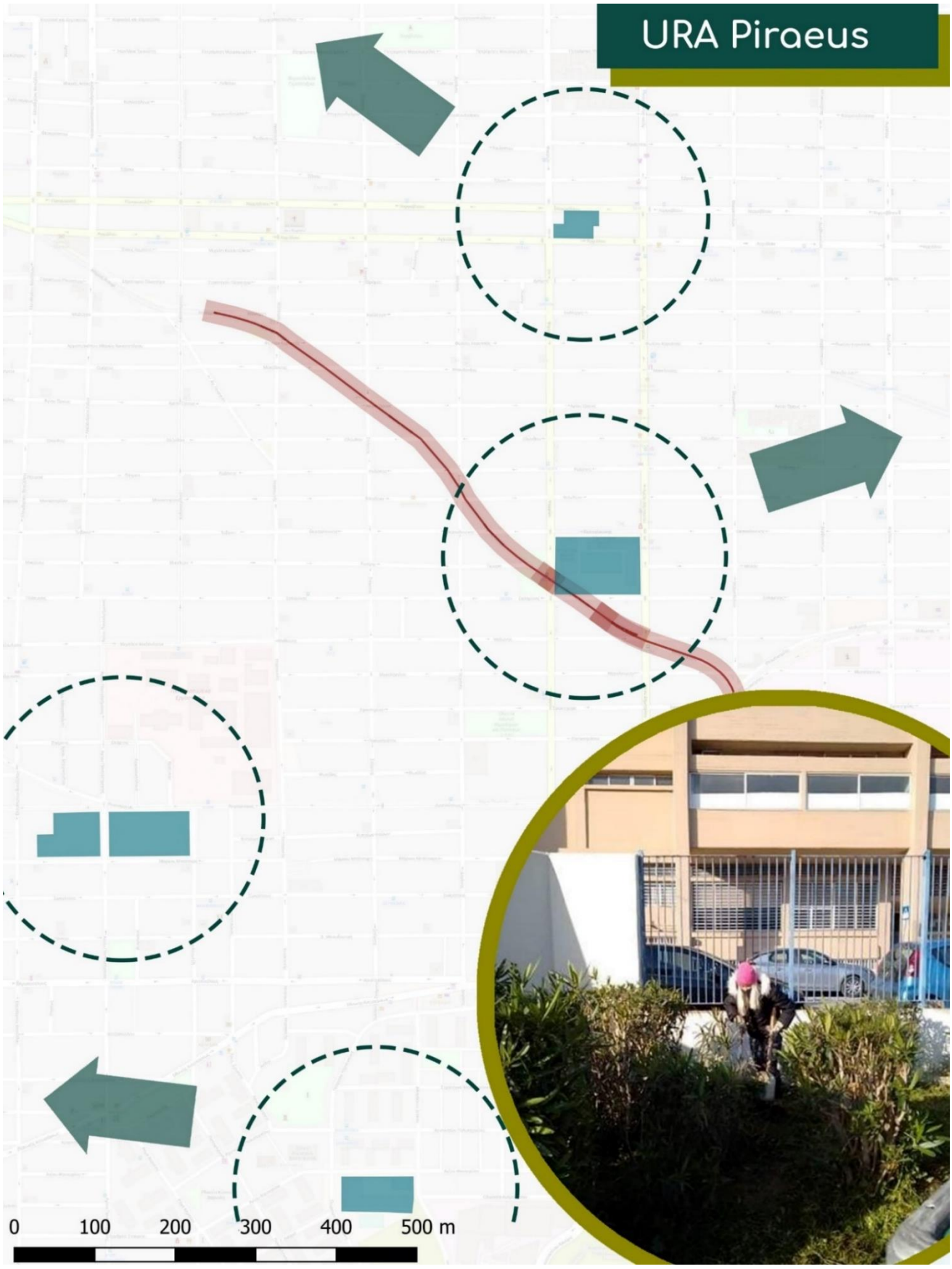
The existing situation in Cluj-Napoca for adopting NBS is considered slightly unfavorable, due to existing legislative and social barriers (mentality) among decision-makers. Actors involved in the process confirmed the urgent need of nature-based community-oriented interventions.

The Integrated Sustainable Urban Development Plan represents an important driver for facilitating the wide-scale adoption of NBS. Key priority will be updating legislative frameworks in line with requirements of local communities. Following the new city motto: ”Green Cluj”, and important implemented initiatives (urban parks and gardens), FC Cluj will pursue the do-it-all scenario. **Do-it-all scenario** offers a comprehensive pathway for generating structural long-term changes.

In comparison with do-something-meaningful scenario focusing on key actions, the do-it-all scenario follows a more gradual approach, deploying prototypes and pilots for refining the model, empowering citizens in green transitions.

Do-minimum scenario is characterized by low integration of interventions, low involvement of communities, and minor impact generated.

4.3. FC Piraeus



4.3.1. FC Piraeus URA description

Piraeus is one of the most important Greek port cities and most densely populated European city suffering from degraded environmental conditions: Lack of open green spaces and parks, infrastructure and air pollution (due to the emissions of ships) are major environmental challenges for Piraeus today.

The urban regeneration area in Piraeus is divided into two main components:

1. Schools' spaces, referring mainly to the closed public/ private areas around the schools' buildings that can potentially host urban gardening interventions for educational purposes
2. Marias Kouri road (MKR), a degraded area with undefined public space currently used for parking, characterized by an abandoned tram line that needs to be reconnected to the urban tissue of the city.

Figure 33 - Representative image of FC Piraeus URA

4.3.2. Co-design activities

The co-design activities for these two areas have been organized in parallel, keeping in mind the overall objectives of Piraeus.

Report on workshop activities

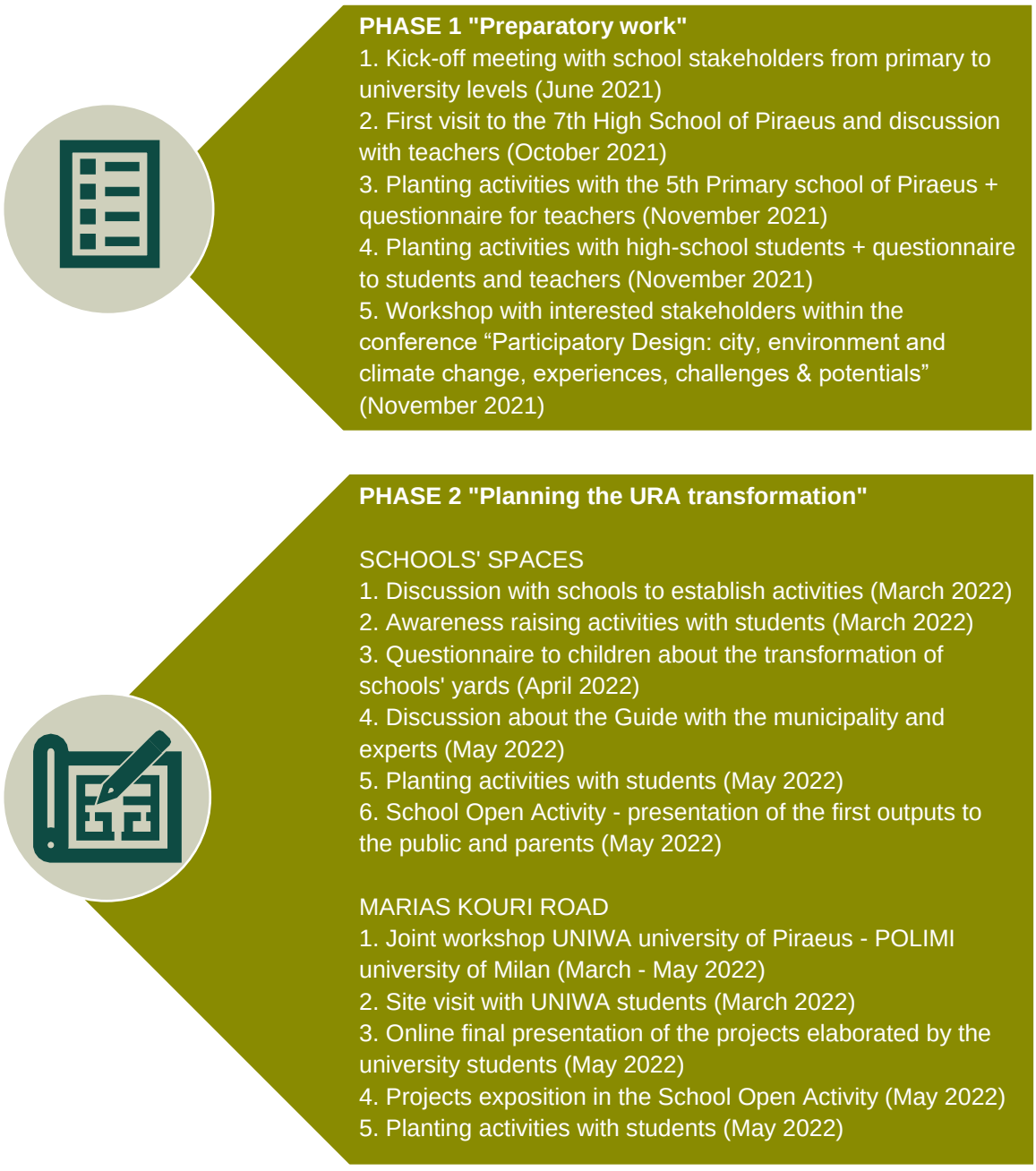


Figure 34 - FC Piraeus co-design activities overview

Co-design activities overview

→ Phase 1 “Preparatory work” – First Workshop Analysis

First attempt was made to keep the two components of Piraeus’ development strategy together during the kick-off meeting gathering all the interested stakeholders and presenting the project, NBS and outputs of the first analysis (see D2.7). The kick-off online event generated several opportunities for collaboration with different schools of Piraeus. Co-design activities for elaborating the vision, and students and teachers from two primary schools and one high-school conducted small planting exercises. Questionnaires have been submitted to teachers, high-school students and, when possible, families. Information and feedback have also been collected from interested stakeholders during the workshop held during the “Participatory Design: city, environment and climate change, experiences, challenges & potentials” conference, held in Athens.

Figure 33 PC Piraeus first set of activities with schools

→ Phase 2 “Planning the URA Transformation” – Scenario Building Workshop

Second phase activities differentiated between the two components of Piraeus URA. Planting activities and workshops with students represented a relevant component of co-design activities for the school spaces. Feedback has been collected through interviews and questionnaires and the outputs have been re-elaborated coherently by the internal team as a basis for the scenario building activities. The scenarios and the emerging suggestions, including the creation of a Guideline for schools to replicate the solutions tested in this period, have been discussed with local experts and education stakeholders, as well as municipality representatives.

The MKR was mainly addressed by a joint international university workshop in collaboration between the UNIWA University of Piraeus and POLIMI University of Milan. The workshop generated results on two different levels:

- Students enrolled in the Italian course worked at a more macro-level of the entire MKR corridor, studying multiple ways in which this stretch of disconnected road can be reintegrated into the local green infrastructure, suggesting projects that fed the scenario building process
- The Greek students divided the corridor into eight blocks, each group focused on one specific block studying the challenges and barriers while suggesting solutions for NBS implementation at local level.

A final hybrid event served as a knowledge exchange between the two groups and interlinkages between the different strategy levels including discussion with international professors and professionals working on NBS.

A final event organized as a School Open Activity in one of the schools provided the opportunity for the two components of Piraeus URA to meet and brainstorm on the results.

Figure 36 - FC Piraeus second phase co-design activities, site visit and final event with university posters' exhibition and presentation of the outcomes from the activities with primary and high school students

Co-design activities outcomes

Table 11 - FC Piraeus co-design outcomes for the first two phases

Phase	Results
Preparatory work	The validation of the vision was performed through a questionnaire and interviews to teachers and members of the municipality. The priorities identified by the people participating in the questionnaire/ interviews for the Marias Kouri Road are, first of all, the reorganization of parking spots and the improvement of accessibility and cycle paths. This result might be related to the target group, 41% doesn't live in the area and primarily visit it to accompany children to school. For what concerns the school yards, the answers focused on plantation of new trees and bushes, creation of orchards and food gardens, plantation of flowers for aesthetic improvement and pollinator friendly plants, and finally the improvement of playground green areas. Other suggestions concern the integration of smart water collection systems and energy efficiency solutions. Only ¼ of the respondents declared to know environmental programs already developed in schools, and most of them quoted proGIreg as one of these programs, highlighting the role this project can have in guiding the change in the education institutions. Most of the respondents consider important to integrate permanently the activities into school programs. The small piloting actions and the support from the municipality had a great impact at local level, nourishing similar initiatives in other schools, independent from the proGIreg project activities.
Planning the URA transformation	The most relevant output achieved through the co-design activities and piloting in schools, focused on NBS 3 and NBS 8, was the awareness raising and the ownership of the small interventions by the school staff and students, as well as the spreading of the initiative in other schools not directly involved in proGIreg activities. This led to awareness of the usefulness of the integration in schools of experiential learning-innovative programs. On the other side, the thorough analysis conducted by students on the MKR and the suggestions and projects they came up with as a result of the international workshop, led to the acquisition of relevant information and ideas related to the perception of the area, the different use of space and design actions. And the drawing of considerations about the potentialities and opportunities of the area to better structure the scenarios.

Political approval and integration into the local urban planning framework

The Municipality of Piraeus granted political support from the very beginning of the first phase being a partner of the proGIreg project. However, the municipality lacks a consolidated strategic planning, leading to a low level of potential for the final urban plan to be integrated at local level. The challenging financial situation will require raising external funds. Many possibilities are being explored, one being the Greek Green Funds initiative. In the meantime, Piraeus activities focused on raising awareness of NBS benefits by working along stakeholders and marginalized groups in small, but impactful activities.

For the school spaces, members of the municipality and the Vice Mayor attended the school visits and implementation phases, providing materials for the activities with children. After the activities implemented in the first 2 pilot schools, new ones were carried out autonomously by the municipality, showing already a degree of integration of the project objectives in the administration policy.

The Marias Kouri Road transformation area faces the challenge of being located and divided in multiple municipalities regarding integrated planning of the administration strategy and policy. Therefore, further discussions are needed in the long-term involving a wider range of stakeholders from all interested municipalities.

Figure 37 - FC Piraeus, presentation of the project in the Conference Participatory Planning: City, Environment and Climate Change, 19-21 November 2021, with the contribution of the Vice-Mayor of the Green Department

4.3.3. Transformation Areas

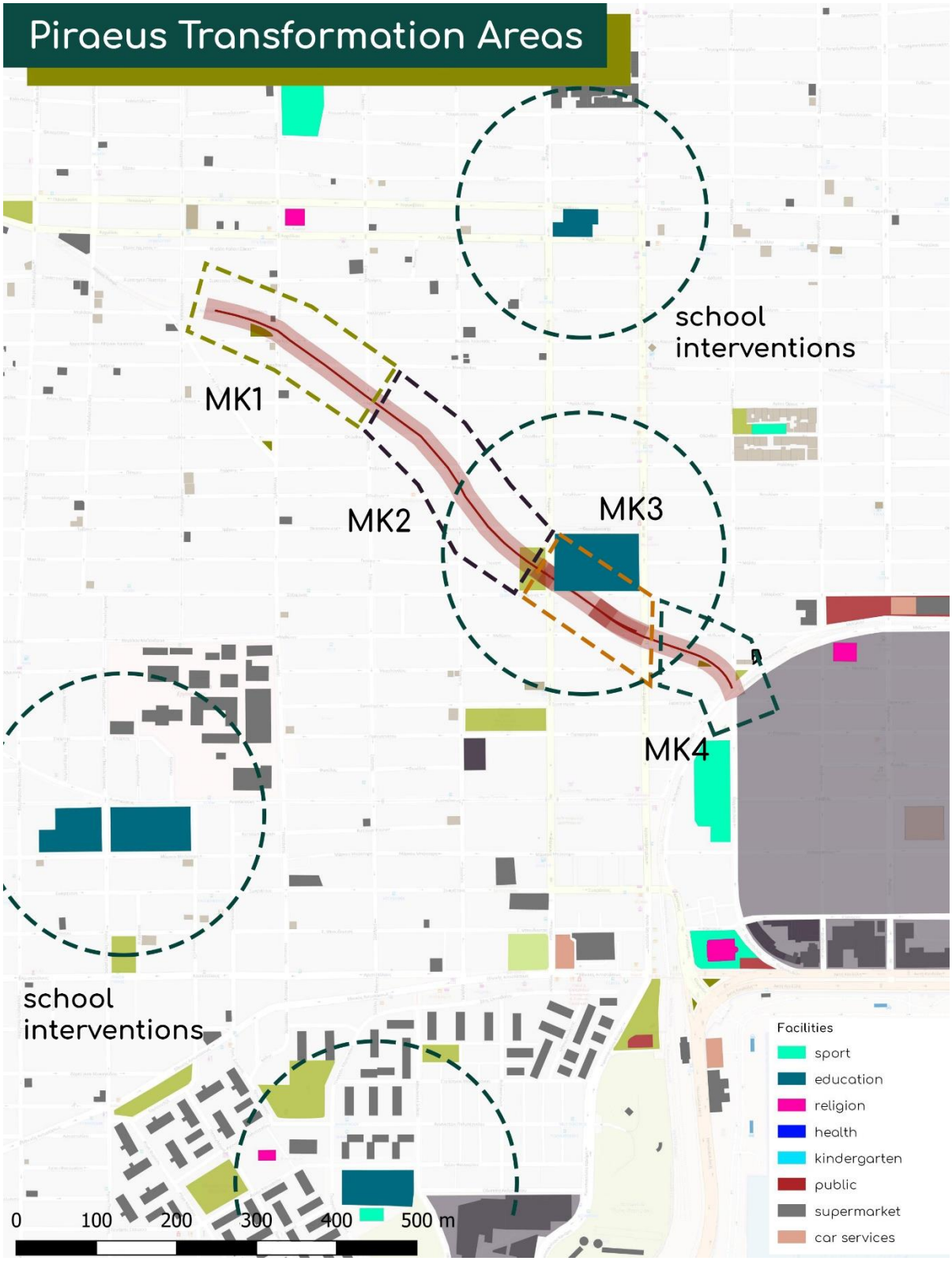


Figure 38 - FC Piraeus transformation areas

Figure 39 - FC Piraeus schools' spaces

INTERVENTIONS IN SCHOOL SPACES

Piraeus lacks vast green areas or parks, nature is present within the city in scattered, small portions of green along roads. Therefore, the strategy for Piraeus, within proGIreg project, focuses on acupunctural interventions aiming mostly at communicating the benefits of sustainable practices and contact with nature to local communities.

In this sense, schools play a catalysing role, as demonstrated by the results of the questionnaires distributed to teachers and families of the schools' children involved in the project. For this reason, Piraeus selected schools as front-runners of their strategy to demonstrate NBS functionalities and benefits.

School yards often feature small green areas. The city of Piraeus has mapped those areas and got in contact with the schools' administrators from the very beginning to assess their availability to host pilots of urban gardening practices.

So far, three schools have been directly involved in the first two phases of the FC co-design process towards the integration of NBS into the urban planning framework: Two primary schools and one high-school. The experience of the proGIreg activities have sparked similar interventions in other schools by the municipality.

Key goal is to create a policy for the integration of solutions such as urban gardens (NBS 3) and green walls and roofs (NBS 5) with potentially attracting pollinators to plants (NBS 8) in the schools, as part of the educational programs for children.

MARIAS KOURI ROAD (District City E')

The Marias Kouris Street is part of the former tram line, a light rail track (Piraeus - Perama) discontinued since 1977. The disuse of the tram line has isolated the area being disconnected from the surroundings and in a state of decay. The public spaces in front of the buildings are used as parking spaces and the scattered greenery on the sides of the road appears to be uncultivated.

The vision for Marias Kouri Road [MKR] is to transform it into an accessible green corridor (NBS 6) which can simultaneously be pollinator friendly (NBS 8), thus improving the biodiversity of the area, even though it doesn't follow a natural green corridor (e.g., a river).

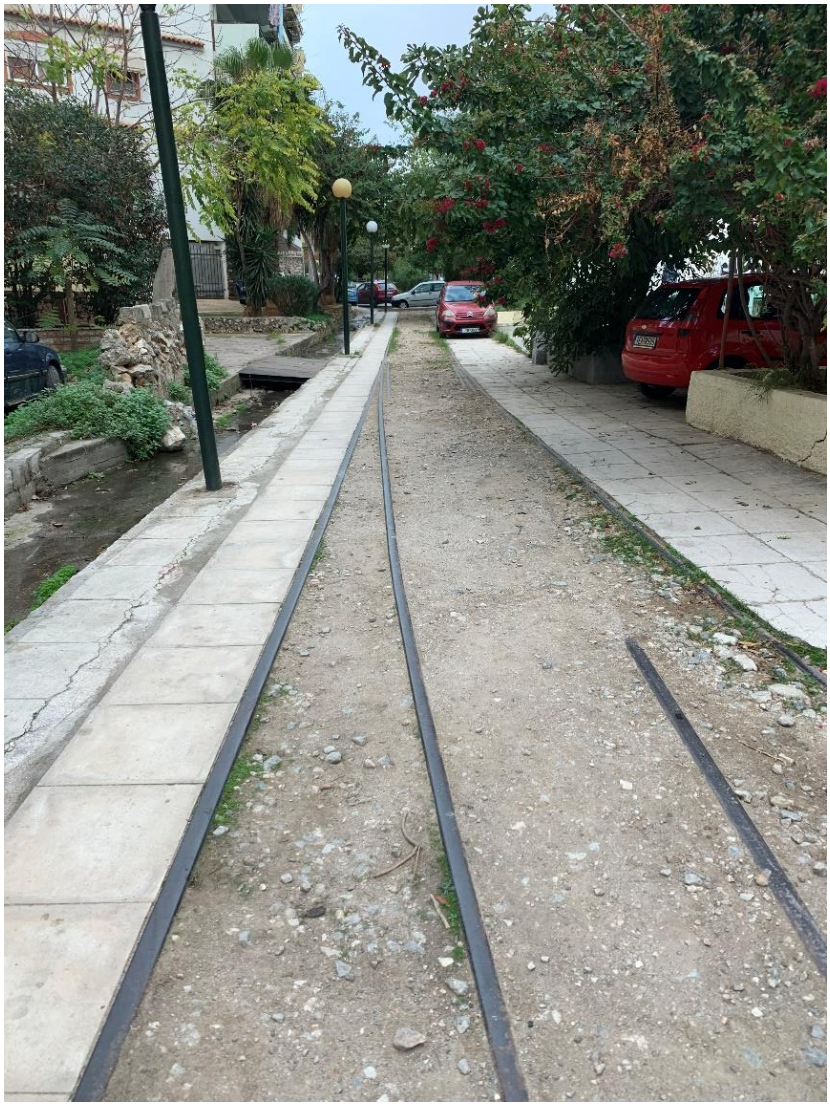


Figure 40 – Marias Kouri Road

The road crosses multiple municipality administrative boundaries and has the potential of becoming an important component of the local GI, especially considering the current urban density and general lack of quality and multi-functional green space. The idea is, on one side, to offer the community a liveable environment, enabling the transition from a car-oriented space to a pedestrian and cycle-oriented space (e.g. amelioration of pavements and creation of dedicated pedestrian and cycle lanes). On the other side, to improve the environmental quality and functionality of the urban spaces by designing and implementing new green spaces and reinforcing the existing ones not only through recreational purposes but also for improving the resilience of the area (e.g. flooding).

Barriers and obstacles

Table 12 - FC Piraeus transformation barriers/ risks

Key area of intervention	Transformation barriers/risks	Type of barrier (WP5)
School spaces	**LANSDCAPE AND NBS:** ● Availability of public land for NBS interventions ● Lack of awareness regarding NBS ● Lack of knowledge **ACCESS & TRANSPORTS:** ● Low level of accessibility of green spaces **MANAGEMENT & RESOURCES:** ● Bureaucracy and lack of government approval ● Land ownership ● Lack of maintenance of the implemented solutions ● Funding, budget and resources for implementation **COMMUNITY & PARTICIPATION:** ● Public participation & engagement ● Lack of collaboration and vandalism ● Fear of the unknown and change ● *Covid	**Administrative** **Social** **Administrative** **Financial** **Social**
Marias Kouri Road	**LANSDCAPE AND NBS:** ● Availability of public land for NBS interventions ● Impermeable surfaces ● Lack of awareness of NBS and ES ● Lack of knowledge ● Lack of information of MKR and surrounding spaces **ACCESS & TRANSPORTS:** ● Traffic and car-oriented roads ● MKR accessibility difficulties for vulnerable groups ● Safety (physical and perceived) **MANAGEMENT & RESOURCES:** ● Bureaucracy and lack of government approval ● Lack of maintenance of implemented solutions. ● Land ownership ● Waste disposal ● Funding, budget and resources for implementation ● Economical system and investment justification **COMMUNITY & PARTICIPATION:** ● *Same applies as above*	**Administrative** **Social** **Administrative** **Financial**

Consolidated stakeholder map

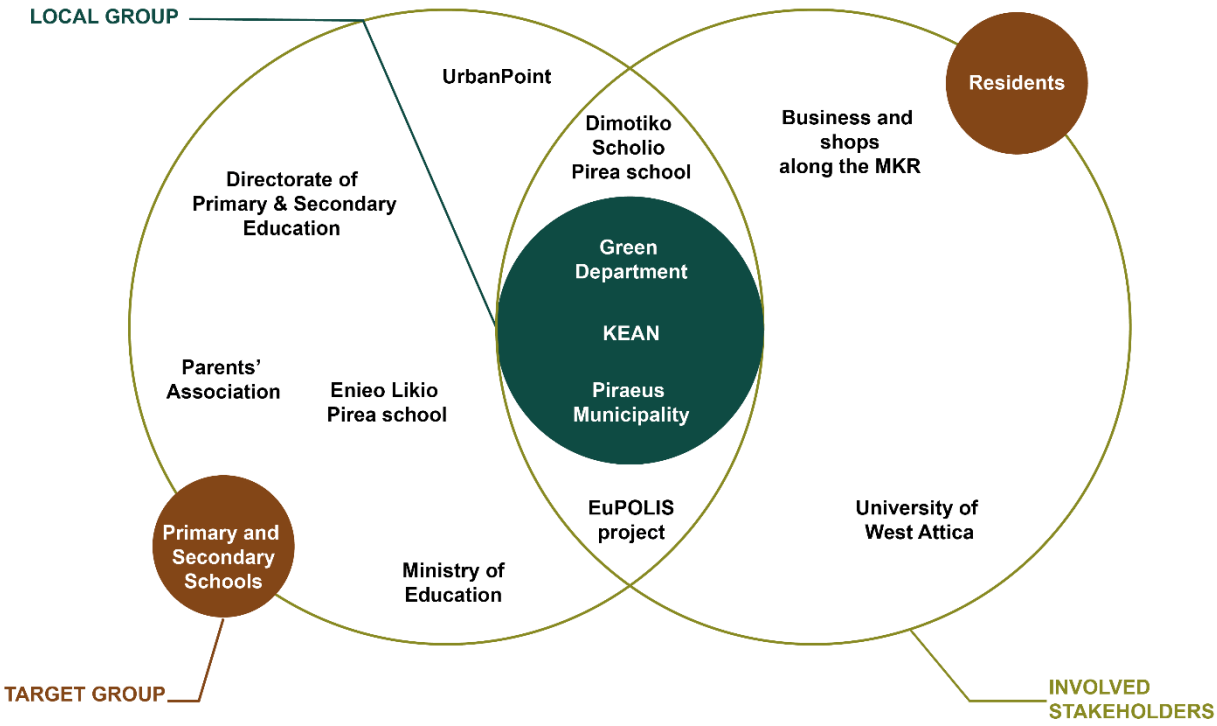


Figure 41 - FC Piraeus stakeholder set-up update

SCHOOL SPACES

Table 13 - FC Piraeus stakeholders' roles and responsibilities (SS)

Stakeholders	NBS	Responsibilities
Enieo Likio Pirea (7° grade) & Dimotiko Scholio Pirea (5°, 9°, 11° grades) schools	NBS 3 NBS 8 NBS 5 partially	Co-design, co-implementation, maintenance, educational activities
Municipality of Piraeus, department for green	NBS 3 NBS 8	Co-design, co-implementation, materials provision, permissions
Vice Mayor of Piraeus	NBS 3 NBS 8 NBS 5 partially	Strategy planning, o-design, co-implementation, materials provision, permissions
Parents associations and groups	NBS 3 NBS 5 NBS 8	Co-design, co-implementation, maintenance, educational activities

External Landscape experts (UrbanPoint)	NBS 3	Co-design
	NBS 5	
	NBS 8	
EuPOLIS staff	NBS 3	Co-design, co-implementation, guide and toolkits, educational activities
	NBS 5	
	NBS 8	
Ministry of education	NBS 3	Co-implementation, educational activities
	NBS 5	
	NBS 8	

MARIAS KOURI ROAD

Table 14 - FC Piraeus stakeholders' roles and responsabilities (MKR)

Stakeholder group	NBS	Responsibilities
Municipality of Piraeus, green department	NBS 6	Co-design, co-implementation, materials provision, permissions
	NBS 8	
Vice Mayor of Piraeus	NBS 6	Strategy planning, co-design, co-implementation, materials provision, permissions provision
	NBS 8	
Dimotiko Scholio Pirea (9°, 11° grades) school	NBS 6	Co-design, co-implementation, maintenance, educational activities, monitoring activities (inside and outside the school)
	NBS 8	
Businesses and shops along the MKR corridor	NBS 6	Data collection, vision validation, co-desig, monitoring and/or maintenance
	NBS 8	
West Attica University, Sustainable Design master course (Prof. Maro Sinou)	NBS 6	Data collection, Co-design, co-implementation, awareness and educational activities, monitoring activities
	NBS 8	

Marginalized communities' involvement plan

Overview of marginalized groups in URA

The marginalized groups mostly taken into consideration in the planning process for the integration of NBS in FC Pireaus are:

- **Children with special needs** - Piraeus has a school for children with special needs, the 1st Special Primary School of Piraeus educating and supporting students with disabilities and special educational needs who constitute a particularly vulnerable social group. Urban gardening, in the form of therapeutic gardens, could be integrated in their common spaces on the school grounds
- **Children of immigrant families** - There is a significant presence of immigrant students and parents in the city schools that needs to be properly addressed, considering their often-limited local language skills.
- Elderly people - The intervention planned in the Marias Kouri Road addresses more **elderly community** by increasing access to the area and reinvent the public space to transform it into a green leisure place for everyone to enjoy.

Involvement plan during proGIreg

- The involvement of **children with special needs** in the co-design and further implementation processes need specific adjustments to the plan. Their participation in co-design sessions in schools is fundamental for the collection of feedback on the activities already implemented and to understand how to adapt them according to their specific needs in the planning process.
- The difficulties of **foreign students** have already been addressed during the activities held in schools by organizing English co-design sessions and interactions with university students. Questionnaires in English language have also been prepared and distributed to the foreign parents, thus filling the language gap.
- The **elderly people** care homes in Piraeus have been mapped. To raise environmental awareness and NBS co-design specific and tailored activities can be organized, as well as gardening activities in the spaces of the communities, in the form of therapeutic gardens.

Public and local events will present an opportunity for the members of these communities to take an active role as presenters of the activities to other groups or as intermediaries to involve their families and friends in the project actions.

Involvement plan after proGIreg

- Following the piloting experiences in the schools, organising discussions and questionnaires to collect feedback from the communities, validate the interventions, supports understanding their specific needs align future interventions accordingly.
- Involving education experts in the planning and management of the activities.

4.3.4. Priorities, vision, objectives and measures

Priorities

GI improvements

- Consolidation of the existing GI
- Reconstruction of the missing linkages (e.g., Marias Kouri Street)
- Biodiversity conservation
- Overcoming multi-administrations barriers
- Understanding the connections and the impacts on GI and environment of activities

URA urban regeneration priorities

- Lightening of urban density pressure through integration of natural elements in the urban tissue
- Improvement of urban environmental quality
- Improvement of the quality of urban public spaces, in terms of aesthetics, comfort and urban hygiene
- Improvement of green areas' multifunctionality
- Improvement of the accessibility of public spaces
- Improvement of security of public spaces

Community aspects/social inclusion needed improvements

- Awareness raising in citizens of the benefits of NBS
- Ensure an active role to the citizen in the decision-making processes of the city and in the implementation and maintenance of NBS
- Engagement of young people in the design and planning processes to increase their sense of citizenship and their ability to replicate good practices
- Improvement of intra-municipality and intra-departments coordination

Final Vision statement on different time scales

FC Piraeus Short-term Vision

SCHOOL SPACES: (3 years)

The short-term objective refers to the project timeframe and by this time selected educational institution of Piraeus Municipality are engaged for the co-design and co-implementation of NBS (3-5-8) within their school spaces. Such pilot implementation activities will represent an example of regeneration through NBS for the neighbouring areas and through them the students, the school staff and their families are engaged in co-design and co-implementation processes, as well as in awareness raising and educational activities regarding green spaces and their benefits. The knowledge gained by the project team and its stakeholders during these processes, is transformed in a practical tool available for the administration to be upscaled and to facilitate the replication in other areas of the municipality in the long term. The tool foreseen can be described as a guide, a strategical and efficient co-designed policy of NBS integration within educational institutions. This tool, combined with continuous collaboration with the municipality and with other supporting institutions, have the purpose to give practical suggestions to the involved actors and facilitate the implementation process after the end of the project. Finally, the collaboration with partners and stakeholders from other projects is envisioned: partners join forces to collect consistent data, to implement NBS in pilot schools, and to ensure a smoother integration of the projects outcomes in the local existing policies.

Figure 42 - FC Piraeus projects for school spaces redevelopment

MARIAS KOURI ROAD: (5 years)

Due to administrative borders that divide the road, the envisioned transformation of this area must consider many factors and requires an intensive collaboration between municipalities and stakeholders. For a short-term and mid-term vision, the project team aims at achieving a plan for the portion of road included in Piraeus Municipality. The NBS interventions envisioned include the creation of gardens and flower beds which are pollinator friendly, the creation of bioswales (landscape elements designed to remove silt and pollution from

surface runoff water, consisting of a swelled drainage course with gently sloped sides and filled with vegetation, compost and/or riprap) and other water-based gardens for the drainage of rainfall run-off, the combination of horizontal and vertical green spaces to enhance the tram rails and industrial buildings heritage of the area, the development of gathering spaces and playgrounds to improve the community life and access to the area, the amelioration of pavements and dedicated lanes (e.g. cycle lanes) to improve accessibility and continuity of the green corridor.

The collaboration with local stakeholders (e.g., businesses, organizations, and schools) is foreseen through interviews and active workshops, to boost social inclusion and participation.

Figure 43 - Outputs of the university international workshop for the regeneration of the MKR

Starting from the above-mentioned vision, objectives and actions have been elaborated together with stakeholders for both assets, together with potential measures and indicators for the monitoring of their achievement in the future (see Annex 1.3 – FC Piraeus objectives and actions).

FC Piraeus Long-term Vision

SCHOOL SPACES (15 years)

The municipality will adopt a policy to be incorporated in local regulations for NBS implementation in educational institutions. The long-term vison envisages the policy to be adopted consistently by an Administration bodies will and engage the majority of Piraeus schools to implement NBS in the school grounds. School yards and buildings are regenerated by improving existing green spaces or implementing new green elements (such

as gardens, green walls and roofs). Important ecosystem services (ES) are provided by these green spaces, improving the quality and liveability of educational institutions, concerning aesthetics, wellbeing & health and comfort of internal and external spaces. The schools' regenerated spaces represent an established network of punctual interventions distributed throughout the dense urban area of the Piraeus municipality, improving the local GI of related neighbourhoods regarding pollinator biodiversity, connection with nature, temperature and pollution mitigation, and water drainage. Both students and the school staff are engaged in the co-creation and co-implementation processes of the green spaces. In this way, they contribute to raising awareness and educational activities related to nature and its positive impact on the quality of life. The connections between the schools and the families ensures the direct involvement of the local community, both in the implementation and the educational processes.

MARIAS KOURI ROAD (20 years)

Given the road crosses several administrative borders divide the space, the envisioned transformation has to consider many factors, requiring an intensive collaboration between municipalities and stakeholders.

Mid-term (10 years), the project team aims at creating a plan for the portion of road that belongs to the Piraeus Municipality (see below). Long-term, the aim is to involve neighbouring municipalities to spark the discussion for a continuous green corridor resulting in a coherent approach both in environmental and social terms. Such collaboration requires a long-term process, but must be initiated during the project frame in order to join forces and not lose focus on the URA. The outcome envisioned includes the implementation of the co-designed NBS, targeting several aspects of urban regeneration in an integrated and coherent planning process across the involved municipalities.

On the basis of the visions elaborated, each of the Piraeus' assets (Schools and MKR) a set of objectives and related actions have been elaborated (see complete list Annex 1.3 – FC Piraeus objectives and actions).

SCHOOLS

- → focus on maximizing the impact on the GI of small interventions in schools, creating small green spots for biodiversity
- → interventions contribute to regenerating educational environments
- → key objective is the engagement of young communities in the valorisation of natural elements, thus improving the educational functions and raising awareness on the importance for residents' well-being.

MKR

- → focuses on the reconstruction of a continuous GI, small subsequent interventions triggering an overall process of valorisation of its functions, i.e. biodiversity conservation, quality of the environment and resilience.
- → connectivity and accessibility play a fundamental role for the communities and for the relation with neighbouring municipalities.
- → including local communities and businesses in the regeneration of this area.

Figure 44 - FC Piraeus vision map. Source: URBASOFIA

4.3.5. Scenarios

Best case (Do-it-all scenario)

SCHOOL SPACES

To sustain NBS 3 in the long-term and to consolidate this practice at local level, the municipality needs to elaborate and adopt a local policy that will allow urban gardens to be permanently installed in schools. Further, urban gardening has to be integrated as an education practice within the schools' annual programs. Given the experience and knowledge gathered during the pilots in front-runner schools and within proGIreg, refining a suitable policy proposal will be possible. The results of the experimental urban gardening initiatives in schools can serve as the basis for creating a Guide that will support other schools within the municipality and beyond to replicate the solutions in school yards.

Policy and guidance supported by a dissemination campaign and participative processes promoted by the municipality will create a consolidated network of schools. Interested stakeholders can hence adopt and adapt the solutions to each specific case, generating sustainable knowledge and exchange processes. It will be key to communicate the pivotal role of community gardens in school yards as academic learning enrichment, sensitise young people to environmental issues and thus creating positive neighbourhood environments.

Establishing a collaboration model between schools and municipalities will be a necessary leverage.

MARIAS KOURI ROAD

A regeneration plan for Marias Kouri Road will be designed, approved and implemented on the basis of proGIreg outcomes stakeholder networks established. This intervention can act as a prototype for other green corridors, triggering neighbouring municipalities to reconnect and valorise their green assets. Key objective for green corridors in the URA is a coherent and comprehensive green infrastructure system, connecting important green areas within the URA with relevant natural surroundings. It is important to plant trees and shrub species that: (1) attract the pollinators and the bird species (2) absorb the pollutants; (3) act as "green curtains" for car-based traffic and for mitigating the visual relationship with industrial areas; (4) are favoured by residents to achieve greater 'adopt' and ensure maintaining.

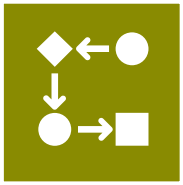
The URA green corridor will be planned and designed to be low maintenance by using locally adapted and native trees and shrubs and a specific mix of seeds for ground vegetation that results in resilient vegetation, not requiring as frequent irrigation as traditional grass, increasing and protecting biodiversity, attracting pollinators, mitigating urban heat island effects, reducing air and noise pollution, etc.

Marias Kouri's intervention will be a best practice example, acting as the basis for a future strategy elaborated in collaboration with neighbouring municipalities for the revitalization of the overall GI in Piraeus.

Potential impacts, risks, obstacles, and challenges

- One key challenge is ensuring the municipality's commitment beyond proGIreg: pushing for events and activities to be organized is a crucial element for the success of the implementation.
- Similarly, engaging external stakeholders, such as experts and institutions, after the end of the project can represent a relevant challenge.
- Lack of funds is a major obstacle, which might discourage or prevent implementation actions to happen after the project ends.

- The dissemination campaign needs to communicate the objectives and benefits convincingly, underlining the overall idea of the vision and chronological steps to reach the goal in the long term in order minimise the risk of high expectations and disagreement.
- A fruitful collaboration between the municipality and the educational institutions is crucial to avoid problems during the implementation and maintenance phase: definition of clear roles during the creation of the collaboration model/program is very important (who will pay, who will provide materials and/or skills, who will take care or maintain for the implemented solutions etc.)
- Another risk is the low level of collaboration between the municipalities.



Set priorities (Do-something-meaningful scenario)

SCHOOL SPACES

When funds might not be sufficient, the municipality should play a coordination role and through a system of incentives, encourage schools and NGOs or private stakeholders to plan and implement NBS in their own spaces or in public designated areas. The system should be based on the experience with pilot schools and adapted to different situations. Priority is the creation of a collaboration system and a series of guidelines to follow, combined with communication and dissemination activities to raise awareness and promote the program among all the stakeholders involved in the process. Pilots of urban gardening activities in the front-runner schools will be continued, offering good practice examples to be promoted through the municipality network of schools. Guidelines for other schools to replicate the urban gardening educational experience will be founded on the basis of first results, containing suggestions on methodologies and typologies of suitable plants, including pollinator friendly species, and a benefit assessment of the piloting in terms of children engagement, awareness raising, social and technical skills and, where possible, environmental improvement.

MARIAS KOURI ROAD

Planning the regeneration and re-integration of the Marias Kouri Road within the wider GI and urban system will be at a strategic level. The outcomes of the activities conducted within proGIreg project (design, guidelines on the ways to plan the corridor as well as suggestions for the different species to be cultivated in the area) will be used to set the basis for a regeneration plan and a consortium will be formed together with the surrounding municipalities to elaborate a strategy for the reconnection, regeneration and valorisation of the wider area green assets, improving the environmental and aesthetic aspects as well as the accessibility to the area.

Potential impacts, risks, obstacles, and challenges

- Lack of funds
- Lack of commitment from the main actors (schools, teachers, municipality, stakeholders, children, and their families) after the end of the project
- Low level of engagement of neighbouring municipalities
- Superficiality or lack of data obtained from the first experiments with schools
- Poorly presented outcomes (low level communication and dissemination strategy)

Business as usual (do-minimum scenario)

SCHOOL SPACES

In the scenario with insufficient funds and low commitment from the municipality, the responsibility for implementation would pass on the schools. As it is already happening, the schools could continue the organization of events and small urban gardening (NBS 3) initiatives, without a structured support from the municipality. Priority will be given to the communication and dissemination of the initiatives by the municipality, in order to raise awareness among all the stakeholders involved in the process and incentivize other schools to adopt this experimental approach toward the engagement of children in environmentally friendly practices. Dissemination campaigns might also help inform external organisations which might support the actions through volunteering.

MARIAS KOURI ROAD

With the help of the ideas and materials collected through proGIreg co-design process with university students and locals, an awareness raising process will be started on the benefits of regenerating the area. Its regeneration will be appointed in the political agenda of the municipality and the Urban Regeneration Plan that will be elaborated as an output of the proGIreg project will be used for assessing the funding possibilities (public and private) and building a network of interested stakeholder.

Potential impacts, risks, obstacles, and challenges

- Lack of funds
- Lack of commitment from the main actors (schools, teachers, municipality, stakeholders, children, and their families) after the end of the project
- Poorly presented outcomes (low level communication and dissemination strategy)

Comparison between scenarios

Do-it-all scenario

PLUSES

Schools

- Sets the framework for future successful replication in other contexts
- High level of involvement of target groups

MKR

- Connection with other municipalities
- Demonstrative approach
- Strong stakeholder network

MINUSES

Schools

- Highly dependent on the receptivity of external schools, students and parents
- Small impact on the improvement of environmental quality

MKR

- large budget required & external expertise

Do something meaningful

PLUSES

Schools

-Provides adaptable instruments for future replications

- Demonstrates the feasibility of NBS and of the collaboration scheme between municipality and schools

MKR

- The strategy can be used as a starting point for collaborating with surrounding municipalities

MINUSES

Schools

- Highly dependent on the municipality availability to support the process with limited funds
- Small impact

MKR

- No application
- Low interaction with neighbouring municipalities

Business as usual

PLUSES

Schools

-Front-runner schools will adopt the program as their own

- Bottom-up initiatives strenghtening

MKR

-Political approval

- Assessment of potential funding sources

MINUSES

Schools

- Highly dependent on the schools' willingness of getting involved and financial resources
- Requires a large dissemination campaign

MKR

- Low impact
- No application

Considering the scale of the actual interventions, FC Piraeus decided to select the "**set priorities scenario**" for the design phase. Currently, the lack of collaboration with surrounding municipalities hampers pursuing the "best-case scenario".

Therefore, FC Piraeus will focus activities on School spaces, creating a guideline for replicating solutions tested in the front-runner schools to guarantee a level of continuity of the activities.

The plan for MKR will focus on developing the part within the Piraeus' municipality territory, with the potential of leveraging improvements of the GI network in collaboration with the bordering municipalities.

4.4. FC Zenica

4.4.1. FC Zenica URA description

The industrial city of Zenica is one of the rare cities in Bosnia and Herzegovina with a high percentage of urban green areas (58% of total urban area). However, these spaces suffer from low functionality because of insufficient connections between the areas. The city is located in the valley of the river Bosna, offering high potential for developing its green infrastructure: it is mostly flat, facilitating the construction of different modes of transportation (bike sharing system) that connect both sides of the river. Currently, sporadic similar initiatives are already taking place but need systematic organisation. In the planning process within proGIreg, the city of Zenica extended its urban regeneration area to integrate six key areas of transformation distributed along the river Bosna banks, with the aim of strengthening the city's green infrastructure functions and create benefits for the community.

Figure 45 - Representative image of FC Zenica URA

4.4.2. Co-design activities

Report on workshop activities

Figure 46 - FC Zenica co-design activities overview

Co-design activities overview

→ Phase 1 “Preparatory work” – First Workshop Analysis

The first workshop took place at the municipality of Zenica. Most workshop participants are representatives of the city’s administration, public companies, NGOs and utility companies. As a basis for further activities and for identifying the limits of the URA, stakeholders discussed current spatial plans, green cities action plan and challenges from the field and everyday contact with citizens. Each NBS proposed by proGIreg project was discussed in the context of Zenica’s needs, plans and opportunities, finally narrowing down to four NBS to be implemented. Given the scale and complexity of the urban environment, stakeholders agreed on the necessity of extending the URA limits to have several actions dispersed within the city’s urban tissue rather than a single area. Therefore, six transformation areas have been identified for NBS and concrete actions have been established and debated. All considered areas are covered by individual regulatory plans, many of these already adopted or about the be adopted by the City Council.

Figure 47 FC Zenica working with local stakeholders, 1° workshop

→ Phase 2 “Planning the URA Transformation” – Scenario Building Workshop

The second phase comprised several activities targeting different stakeholder groups. A follow-up workshop with stakeholders “Analysis” kick-started phase 2, introducing the concept of scenarios and brainstorming on opportunities and needs for each area and funding possibilities. Many abandoned, underused buildings and areas have been identified as suitable for NBS such as urban gardens and green walls and roofs, given a thorough renovation process, providing target group specific benefits. Finally, a first “Green islands in the city” event was organized to demonstrate the benefits of NBS through greening interventions in the city centre.

Figure 48 - FC Zenica working with local stakeholders, 2° workshop

Co-design activities outcomes

Table 15 - FC Zenica co-design outcomes for the first two phases

Phase	Results

Preparatory work	• NBS planning need to respond to the issues identified at local level:
	  ○ Lack of soft mobility connections between the two riverbanks.
	  ○ Existing cycle paths and pedestrian routes fragmented and lacking an organic setup
	  ○ Air pollution due to industrial activities
	  ○ Luck of systemic approach in the green areas' distribution
	  ○ Overflowing of the river
	  ○ Citizens' engagement
	• To be efficient, the city of Zenica need to test the solutions through several actions dispersed within the city fabric rather than focusing on a specific area – identification of 6 different key transformation areas
	• Importance of integrating the plans elaborated within proGIreg into actual planning documents – identification of regulatory plans per each area and synergy between the objectives expressed through proGIreg and Green Action Plan

Planning the URA transformation	• Vision validated by stakeholders involved in phase 2 activities • NBS and actions consolidated per each key transformation area identified in phase 1 • Commitment of relevant stakeholders as NGOs and residents into the planning and future design activities Outcomes for NBS1 • Involvement of the university of Mostar to support the planning of the regeneration of the old landfill represented by the coal deposits resent in area 1. Outcomes for NBS 3 • Abandoned/ underused buildings and green areas identified as opportunities for the integration of urban gardening practices within the urban fabric dealing, through the intervention on these assets, with two very relevant problems at local level: reuse and greening. • Educational function of urban gardens is planned to be exploited in relation with the recovery of the former kindergarten • Therapeutical function of urban gardens to be integrated in the City Park, to be renovated in the near future. Outcomes for NBS 5 • Green roofs and walls supporting the greening interventions together with urban gardens, potentially supporting the educational function of green (following the example of FRC Turin) • Possibility of integrating green roofs on private properties, that is garages, involving privates in their maintenance. Outcomes for NBS 6 • Scenarios elaborated for the reconnection of the existing sections of cycle and pedestrian paths along the riverbanks.

Political approval and integration into the urban planning framework

The city of Zenica has committed to implement the Green City Action Plan (GCAP), adopted with the aim of strengthening the city's green infrastructure and mitigating the impacts of its industrial past on the climate and citizens' wellbeing. Formally, the urban regeneration plan will be integrated in the development strategy of the City of Zenica for the period 2021-2027 and adopted by the City Council.

Interventions promoted within proGIreg project benefit from this commitment to the city's green transformation. Given Zenica is still an industrial and polluted city, all activities that contribute to improving air quality are supported. A small portion of the city budget is already dedicated for implementing projects for environmental protection. The urban regeneration plan elaborated within proGIreg will help the city to raise the awareness of NBS benefits of the greening process and boost green infrastructure consolidation and NBS interventions at local level. It further supports the search for additional funding sources.

Figure 49 - FC Zenica, presentation of the project for political approval

4.4.3. Transformation Areas

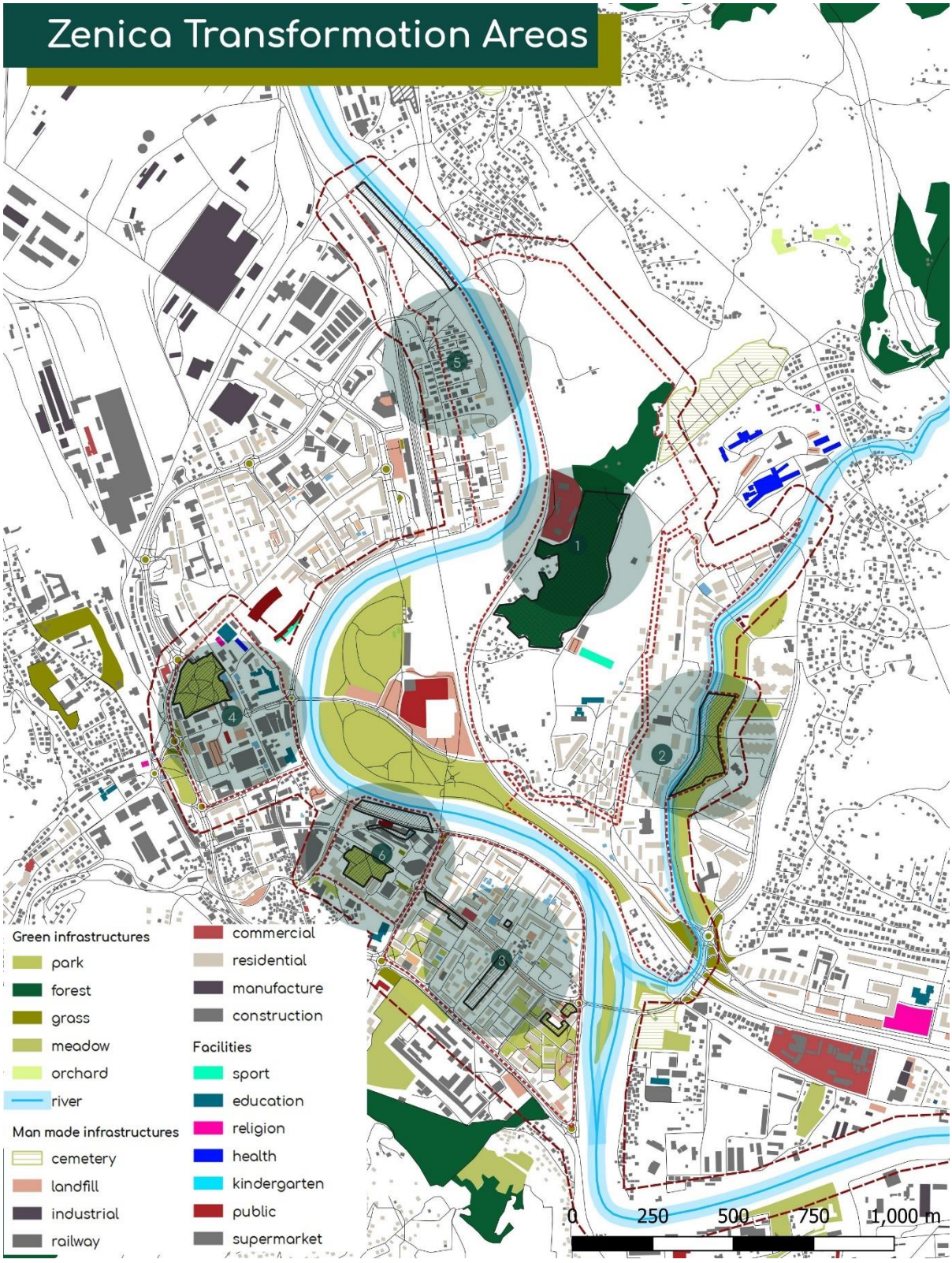


Figure 50 - FC Zenica transformation areas

Identification and description of transformation areas

FC Zenica identified six key transformation areas with assets that can be exploited and revitalized through NBS interventions: from brownfields to city parks and small underused green areas within residential neighbourhoods. For each area, the city, together with stakeholder involved, has selected a set of suitable NBS, totalling four NBS of the eight proGIreg NBS. All areas identified are covered by the Regulation Plan of the city.

TRANSFORMATION AREA 1

Figure 51 - FC Zenica Transformation Area 1

The *"Kamberovića ravan i padina"*- KRIP field**,** covering 66.85 ha**,** is located on the eastern side of the city of Zenica, on the right bank of the river Bosna, about 1 km as the crow flies from the city centre. The area's population is 2.756 inhabitants, and the density 42 inhabitants / ha. The Regulatory Plan defines within the scope of the Kamberovica field a 7.2 ha zone dedicated to green and recreation that serves as park for the local community. This plan defines pedestrian and bicycle paths and sets the location of pavilions-places for rest.

In this location two potential NBS have been identified:

→ **NBS 1 - Regeneration of the old landfill (coal deposits)**

Planning of this activity was delegated to the Civil Protection Service department of the City of Zenica. The potential of the area is being assessed in a direct relationship with the university of Mostar, dealing with similar issues. Firstly, a thorough analysis of the characteristics of the area is required for the revitalization due to the fragility of the site, in risk of collapsing. After the regeneration process, discussions with local stakeholders can start about the best use of the area.

→ **NBS 6 - Making green corridors accessible**

- **Bicycle path**

The development of a cycle path is ongoing, as project documentation and the Regulation plan is under development. Once bureaucracy completed, the city will organize public debates with the general public, stakeholders and interested parties, mandatory by law.

TRANSFORMATION AREA 2

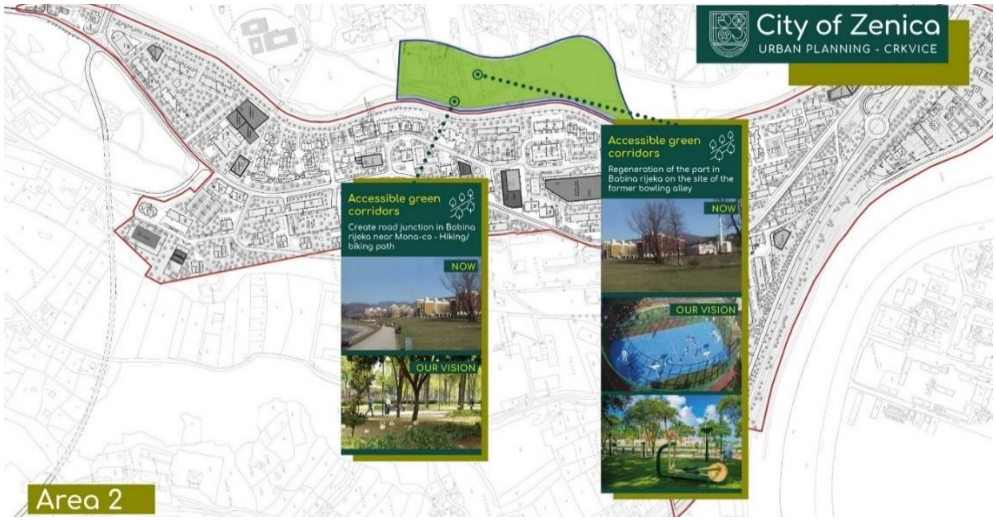


Figure 52 - FC Zenica Transformation Area 2

The "Crkvice" area is located on the east side of the city of Zenica about 1 km from the city centre, on the right bank of the river Bosna. The settlement formed along the Babina River with residential and recreational functions. The overall area covers a surface of 35.85 ha. The population is 4.355 and density is relatively low (122 inhabitants/ha). The existing green area within the scope of the Regulatory Plan is 13.11 ha, in need to be improved and enriched by new trees, as well as arranging hiking trails, urban furniture and adequate lighting. The NBS selected for this area are:

→ **NBS 6**

- **Create road junction in Babina rijeka near Monaco - pedestrian/biking path**
- **Regeneration of the part in Babina rijeka (used to be an old bowling alley)**

Both activities are a part of the long-term vision for revitalization, no preparatory activities yet. Feedback from citizens via questionnaires is necessary to envision future developments. Once an initial draft of the project is developed, public debate can be organized with citizens to discuss further adjustment of the development project.

TRANSFORMATION AREA 3

Figure 53 - FC Zenica Transformation Area 3

The "*Odmut, Jalija and Talića brdo*" area, located in the immediate vicinity of the city centre is a residential and business zone covering 33.10 ha. A population of 10,797 inhabitants, population density of 326 inhabitants/ha, one of the highest of the city compared to the city centre (average density about 144 inhabitants /ha). This is a consequence of the high share of mostly collective housing. The existing green area is 11.40 ha.

In this location two potential NBS have been mapped:

→ **NBS 3 Urban gardening & NBS 5 Green roofs and walls**
Urban gardens and green walls and roofs in kindergartens as pilot projects

Co-design results in Zenica, organized by the city administration and the local stakeholder group the Kindergarten Kanaric building, currently underused, has been identified as suitable for hosting a piloting intervention. After a process of restoration of its functions, the building will be able to host not only a proper kindergarten, compensating the luck of these services in the area, but also an occasion for pupils to interact and learn with nature by hosting an urban garden in its yard and a green wall for education purposes.

TRANSFORMATION AREA 4

Figure 54 - FC Zenica Transformation Area 4

The fourth area is also a residential and business area located in the north-western part of the city centre, covering 16.30 ha with a very low population density of 43 inhabitants/ha. The "*Center II*" area provides administrative and cultural functions, whilst the recreational greenery is concentrated in the 2.1 ha city park. One NBS is planned connected to the park:

→ **NBS 3 – Urban gardens**

- **Botanical Garden converted into a Therapeutic Garden**
  The City Park located in the Center II area has been identified as suitable for replicating the FRC Zagreb approach to involve people with disabilities and special needs in the management of the urban garden. Therefore, part of the existing botanical garden has the potential to integrate therapeutic functions (we mention that the intevertion will be integrated in the overall botanic garden, with activities dedicated for people disabilities).

TRANSFORMATION AREA 5

Figure 55 - FC Zenica Transformation Area 5

Area 5 is located in the northern part of Zenica, 6 km from the city centre. It is a commercial area of 15.93 ha accommodating several businesses. The west side borders on the industrial track that leads to ArcelorMittal Zenica, one of the biggest steel production plants of the city. The east side borders on the left bank of the Bosna River. Urban regeneration plans focus on renovation and improving accessibility of the Bosna River slopes. Near future plans incl.:

a) the construction of the City Wastewater Treatment Plant
b) the installation of economic and business facilities
c) the enhancement of traffic and energy infrastructure

→ **NBS 6**

- **Create bicycle path connection on the road near Banlozi, creating an interrupted section between Blatuša – Banlozi**

  The documentation for the cycle path is already under development. Once it is ready, a public debate with stakeholders will be organized to present the project, as per law.

TRANSFORMATION AREA 6

Figure 56 - FC Zenica Transformation Area 6

The "*Alija Izetbegović Square*" area of 8.40 ha, with its 1.955 inhabitants and a population density of 233/ ha is part of the city centre. High number of collective housing buildings and high-rise buildings cause the high population density. Total surface of greenery is 1.77 ha. A park (recreational greenery) in front of large residential complexes occupies about 1.04 ha, where an underground garage with an intensive green roof is planned. Each inhabitant has currently 9 m² of green space. The green areas need to be improved and enriched by planting new trees, as well as arranging greener pedestrian paths, urban furniture and adequate lighting. With new facilities planned, the increase in the number of inhabitants is bound to exert pressure and existing greenery may not be sufficient to meet the need of inhabitants. Therefore, it is necessary to plan the integration of greenery in all the newly planned facilities. This is the area with the highest number of NBS interventions planned:

→ **NBS 5 - Green roofs and walls**

- **Green roof over underground garages**
- **Green roofs on private garages near the Kineski zid building**

These initiatives have already been integrated in the draft of the new Regulatory plan for the City Centre. After the adoption of the Regulatory Plan, a public design competition will be established and private investors will be contacted for the development of the initiatives.

→ **NBS 6 - Green corridors**

- **Create a bike path within GGM**
- **Construction of access to the river Bosna with plateaus**

Whilst the first activity is in a planning phase, improving accessibility to the Bosna River slopes has already been integrated into the draft of the City Regulatory Plan. Also, NBS 5 interventions, also for the construction of accessibility path to the river a design competition will be establishes and private investors will be involved in the decision-making process.

Barriers and obstacles

Table 16 - FC Zenica transformation barriers/ risks

Area	NBS	Key area of intervention	Transformation barriers/risks
Area 1	NBS 1	Regeneration of the old landfill (coal deposits)	Lack of capacity and knowledge for this area, political will, lack of financing, high risk of incidental situations (fire, explosions…)
Area 4	NBS 3	The city park has a solution for the Botanical Garden that could change its purpose into a Therapeutic Garden	Sustainability, potential vandalism, maintenance
Area 3		Urban gardens within local communities as a pilot project	Motivation of local communities, supervision, maintenance, soil pollution, selection and criteria
Area 3		Urban gardens in kindergartens	Motivation of staff and management, insufficient internal capacities for urban gardening
Area 3	NBS 5	Construction of green walls/roofs in kindergartens that lack green spaces	Constructional limitations and access to roofs, insufficient number of companies in the market, lack of knowledge and experience
Area 6		New underground garages will be covered with a green roof – initiative in the draft of Regulation plan.	Interest of private investors, long period of implementation, ownership issues

Consolidated stakeholder map

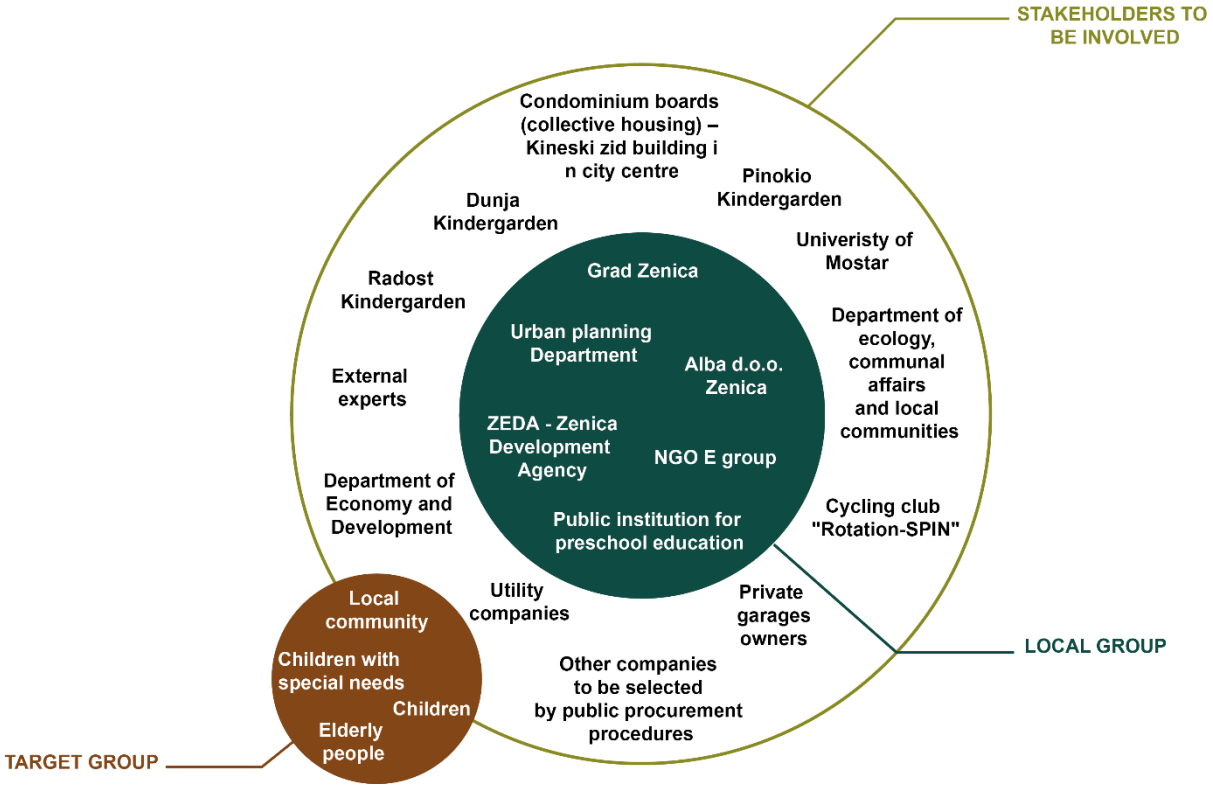


Figure 57 - FC Zenica stakeholder set-up update

Table 17 - FC Zenica stakeholders' roles and responsibilities

Stakeholders	NBS	Responsibilities
Grad Zenica	All	Managing, ensure political approval, browse funding opportunities
Urban Planning Department	All	Expertise provision, ensure alignment with ongoing processes, plans and standards
ZEDA – Zenica Development Agency	All	Supporting management, expertise provision, browse funding opportunities
External Experts	All	Know-how
City department for ecology, communal affairs and local communities	All	Responsible for ecology and communal infrastructure and collaboration with local communities. Plans and prepares annual Program of projects for environment improvement, which can include initiatives derived from NBS scenarios. They will also contribute to the implementation.

City Department of Economy and Development	All	Manages business spaces, social houses and business zone and it is main implementer of the project activities for the city.
University of Mostar	NBS 1	Project design
Companies to be selected by public procurement procedure	NBS 1	Design, support the implementation
Public institution for preschool education	NBS 3	This PC is managing all the public kindergartens in the City, has good infrastructure for urban gardening and managing/maintenance of the interventions can be delegated to them in future
Kindergardens: "Dunja", "Pinokio", "Radost"	NBS 3	Dispose of valuable resources for potential NBS interventions: land, users, location
NGO - e-Grupa	NBS 3	NGO that deals with issues related to ecology and social matter. Can contribute to activating local groups in different phases of co-design.
Utility companies	NBS 3	Maintenance
Condominium boards (collective housing) – Kineski zid building in city centrum	NBS 5	Consent – Consultation, implementation and maintenance
Private garages owners – next to Kineski zid building	NBS 5	Consent – Consultation, implementation and maintenance
Utility company – Alba doo	NBS 5 NBS 6	Maintenance - Has contract with the City to manage waste and green surfaces in the city and will be consulted and included in decision making process.
Cycling club "Rotation SPIN"	NBS 6	This NGO will be particularly interested in extending bike lanes. It is important to involve them in elaborating NBS 6 solutions.
Local communities, Children Children with special needs, Elderly people	NBS 3 NBS 5 NBS 6	Beneficiaries, actively participate in co-design activities, consultancy, consent, further implementation and maintenance.

Marginalized communities' involvement plan

Overview of marginalized groups in URA

One of Zenica's most pressing issue is accessibility.
Focus on involving marginalized groups in the NBS co-design activities, notably people with disabilities and special needs, and elderly people.
Several non-governmental associations work with these groups, receiving funding from the city budget.

Involvement plan during proGIreg

NGOs and directors of schools for children with special needs and of care homes for the elderly located in the areas will be involved in discussions and workshops to present NBS identified as suitable in key transformation areas and build together a strategy for the involvement of such marginalized groups in the proper design and management of the solutions. The potentiality of installing urban gardens in the proximity of the school buildings for children with special needs and care homes will be analysed together with the urban planning department.

Involvement plan after proGIreg

In the long-term, the urban regeneration plan will foresee piloting actions to be promoted and used for testing public opinion.
The plan for the revitalising the City Park includes also the design of a therapeutic garden, following the example of the FRC Zagreb.

4.4.4. Priorities, vision, objectives and measures

Priorities

GI improvements

Based on preliminary territorial analysis, one of the main priorities is to connect existing infrastructure of cycle and pedestrian paths on the river banks. Tree planting programme has to be intensified in the urban area along with forest restoration around the city. Installation of green urban islands and green roofs will lower the local temperature and reduce the surface runoff of rainwater. These projects will also serve as an illustrative example of action and motivate citizens to get involved in projects that are created for them. Soft measures will ensure the sustainability of all solutions by creating ownership among citizens and responsibility in maintaining the built infrastructure.

URA urban regeneration priorities

Green city action plan has envisioned strategic objectives, measures and interventions which have to be implemented in the next ten years. Some of these measures are closely related to urban regeneration.

Zenica's main priorities are as follows:

- Revitalization of abandoned/ underused spaces within the urban areas integrating NBS
- Ensure compliance with urban standards for housing and greenery per inhabitant
- Implementation of measures to protect citizens and their properties from floods and other threats.

Community aspects/social inclusion needed improvements

Current cooperation with local communities is on demand basis. On annual basis, representatives of each local community submit request and needs mainly for improving communal infrastructure (roads, public lighting, children playgrounds). This cooperation can be reversed and improved in the context of urban regeneration by offering an active role in NBS co-creation.

The city can provide initial resources, guidance, knowledge and benefits linked to certain activities. These will only be sustainable if there is interaction with the relevant communities.

Final Vision statement on different time scales

FC Zenica Short-term Vision

Zenica will become an attractive and green place to visit, with adequate resilience measures to protect against climate change. The short -term vision is to improve energy efficiency across both City owned and privately-owned buildings in Zenica, as well as improving energy efficiency in public lighting in order to reduce carbon emissions and overall energy consumption. The ultimate goal is to enhance and protect the existing green space within and around Zenica, making the City visually appealing to residents and visitors and contributing to improved biodiversity and environmental quality. The aim will also be to enhance the protective ecosystem services, reducing extreme flood events. Protecting green spaces will provide vital habitats within the city for flora and fauna, helping to increase biodiversity levels within its borders.

FC Zenica Long-term Vision

"Zenica will be a clean, liveable and active City, resilient to future environmental pressures"

Zenica will create a clean and liveable environment. This includes improving air quality and delivering clean water for a good quality of life. Residents will lead healthier and more active lifestyles. More residents will be encouraged to undertake active models of transport in a cleaner environment. The level of CO2 emissions and air pollution from industry, homes and transport will be reduced, along with associated health risk. Zenica will become an attractive and green place to visit, with adequate resilience measures to protect against future climate change impacts.

The identification of priorities and elaboration of short-term/ long-term visions lead to the identification, together with stakeholders, of objectives for the overall URA and potential actions (see Annex 1.4 – FC Zenica set of objectuves and actions), starting point for the further elaboration of the scenarios (ch. 4.4.4).

- → Zenica's objectives related to the overall GI focuses on valorising and recovering its role for the enhancement of overall environmental quality, connectivity, attractivity and protection against flooding.
- → The FC merged the potential functionalities of nature with the resources present at local level, especially the abandoned sites that can be recovered with the help of NBS.
- → The aim is also to invite citizens to take ownership of the natural solutions and involve all the components of the community to increase social inclusion.

Figure 58 - FC Zenica vision map. Source: URBASOFIA

4.4.5. Scenarios

FC Zenica's four key dimensions of GI development is: (1) Leisure activities and clean energy on former landfills (NBS 1), (2) Community Gardens (NBS 3), (3) Green roofs (NBS 5), and (4) Accessible green corridors (NBS 6). In this challenging context, NBS are used to demonstrate how the natural resources available at local level can be exploited to improve citizens' quality of life, enhance resilience and build the necessary connections.

Best case (Do-it-all scenario)

The URA transformation of FC Zenica is happening with the active support and involvement of local stakeholders. For all NBS to be fully implemented, a number of obstacles have to be overcome. First, the solutions are to be legally recognized and integrated into a well-defined legal local framework. All necessary regulation plans are to be adopted and approved by the city's urban planning department to ensure there are no legislative barriers to implementing NBS. At the level of key transformation areas, the documentation is fully developed and all private ownership issues are settled. Private and EU financial resources are used to fund the implementation of NBS. In this way, NBS are integrated into the local planning framework and are accepted by the local community, which actively contributes to their construction and management.

NBS1 - Leisure activities and clean energy on former landfills

→ Regeneration of old landfill (Area 1)

Soil stabilisation is a key priority, leading upon preparation of project documentation. Given the size of the area, the revitalization process will be staged over several phases. The outcome will be a new green leisure area accessible for local communities.

NBS 3 - Community Gardens

→ Urban gardens in kindergartens (Area 2 & 3)

Urban gardens policy framework must be developed including all important criteria and guidelines for sustainable urban gardens in the city. Awareness raising campaigns and educational programs will be also organized to ensure the necessary knowledge and skills are acquired by the citizens.

→ Botanical Garden converted into a Therapeutic Garden (Area 4)

The regulation plan for this area has been already adopted, and it envisage the elaboration that will provide guidelines for the activities and measures, costs, responsibilities and timeframe for implementation. This park is going to host the very first therapeutic garden in the city.

NBS 5 - Green roofs and walls

→ Green roofs on top of new underground garages and on private garages near the Kineski zid building (Area 6)

The green roofs have already been integrated into the draft Regulation Plan for the City Centre and a new Green Roofs Policy for green interventions on existing buildings will be elaborated, with an incentive scheme and strategy for maintenance to ensure long-term sustainability. The project will be financed by private investors.

→ Green walls & roofs in kindergartens (Area 2)

The renovated former kindergarten Kanarinac is shared among public institution of pre-school education and NGOs. The project documentation for the renovation of the building will include the installation of a green walls for educational purposes of children. A green wall policy with incentive scheme will support the development.

NBS 6 - Accessible green corridors

→ Regeneration of Babina rijeka old bowling alley and road junction through biking path (Area 2)

Existing green areas will be improved and enriched by planting new trees, installing new urban furniture and adequate lighting. The regeneration of the entire area, incl. the former bowling alley and connecting the river Babina banks with the main roads will significantly improve the quality of life in this residential area.

→ Bicycle paths (Area 6, Area 2, Area 1, and Area 5)

The consolidation of the local bicycle infrastructure will happen in three phases, from the extension of existing paths, to the construction of new bicycle roads, connecting the city centre with the riverbanks and deviating the regular traffic. This intervention will require a strong political will, project documentations, resolved property legal relations, permits and finances for the development of new paths.

→ Urban green islands (Area 3)

Urban green islands play a crucial role in mitigating the urban heat island (UHI) effects occurring in cities. Two locations within Area 3 will be implemented as pilot interventions which will be replicated on other localities within the city. Zones with the highest intensity of UHI effect will be determined, public consultations and co-design process for each location provided. Project documentation will be prepared, and finances secured.

→ Construction of access to the river Bosna with leisure plateaus in the City Centre (Area 3)

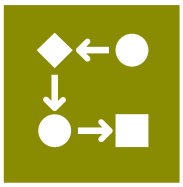
Regulation plan for the City Centrum must be adopted. The permit from Agency for protection of water area of river Sava for interventions on riverbanks for the construction of leisure plateaus must be obtained. Sufficient financing must be secured.

Potential impacts, risks, obstacles, and challenges

Best-case scenario has many positive impacts for improving the quality of green areas, private and public areas in the city, and the wellbeing of citizens. Safety is improved, triggering an increase in the use of bicycle lanes while indirectly decreasing the carbon footprint and improve air quality.

The obstacles and challenges for the implementation of this scenario are:

- → **financial:** increase of costs for renovation and new construction projects, and the lack of funds available for maintenance.
- → **administrative:** to implement all interventions, urbanist approvals and integration into local level plans is critical – such processes require time, thus delaying implementation. Furthermore, involving private stakeholders in the installation of green roofs and integrating urban gardening practices in dense residential areas might raise complicated ownership issues. The political approval to overcome these obstacles is fundamental, together with a consolidated know-how in the municipality.
- → **social:** inhabitants don't buy-in to the concept of NBS and urban green islands, reducing potential collaboration and involvement in the management of solutions. Also, urban gardens and green walls can be at risks of vandalism, proper protection measures must be planned to ensure the sustainability.



Set priorities (Do-something-meaningful scenario)

This scenario is focused on setting the ground and building the necessary preconditions for the successful implementation of all interventions identified for the URA.

NBS1 - Leisure activities and clean energy on former landfills

→ Regeneration of old landfill (Area 1)

Strategic focus from city administration to revitalize old coal mine will be provided. The Urbanistic project will be fully developed, as well as all necessary project documentation. Funds are secured and the co-design process with relevant stakeholder for the revitalization of the area can start.

NBS 3 - Community Gardens

→ Urban gardens in kindergartens (Area 2 & 3)

The legal framework to enable establishing community gardens in schools, kindergartens and similar educational buildings is constructed and approved. Available public spaces and local companies and institutions willing to maintain such gardens will be mapped.

NBS 5 - Green roofs and walls

→ Green roofs on top of new underground garages and on private garages near the Kineski zid building (Area 6)

The possibility of installing green roofs on top of public and private garages will be integrated into the Regulatory Plan of the city centre. Incentives will be granted to private investors.

→ Green walls & roofs in kindergartens (Area 2)

The legal framework to enable installing green walls and roofs in schools, kindergartens and similar educational buildings is constructed and approved. Available public spaces and local companies and institutions willing to maintain such installations will be mapped.

NBS 6 - Accessible green corridors

→ Bicycle paths (Area 6, Area 2, Area 1, and Area 5)

The study elaborated in 2021 shows clearly where there is the necessity to intervene. A proper plan for the reconnection of existing cycle paths and consolidation of slow mobility infrastructure will be elaborated and all the property related issues will be solved before implementation. A secured source of funding will be identified.

Potential impacts, risks, obstacles, and challenges

This scenario represents the basis for the best-case-scenario. If the “set priorities” scenario is accomplished, there are high chances for a future achievement of the first scenario.

Here the obstacles are, as in the best-case scenario related mainly to the lack of resources, know-how and difficulties in the approval of the interventions.

The level of residents’ involvement required is lower, leading to a lower sense of ownership. Strong awareness raising campaign accompanying the interventions planned may counteract.

Business as usual (do-minimum scenario)

The green transformation at local level has already started. It aims at climate change adaptation, improving citizens wellbeing and dealing with the industrial past and present by elaborating and implementing the Green City Action Plan (GCAP), developed and adopted in 2019. The GCAP is going to be integrated into the Strategy of development of the City of Zenica for the period 2021-2027, together with the Urban regeneration agenda that will be developed as an output of the proGIreg project. This plan will represent a measure guiding the transformation of the city, piloting actions distributed around the key transformation areas foreseen to demonstrate the benefits of NBS. High relevance will be given to awareness raising campaigns and knowledge sharing programmes to promote such solutions and familiarize the local community.

NBS 3 - Community Gardens & NBS 5 - Green roofs and walls

→ Urban gardens and green walls & roofs in kindergartens (Area 2 & 3)

One pilot project implemented in school, kindergarten or by local NGO identified as suitable to host and manage the urban gardens.

NBS 6 - Accessible green corridors

→ Bicycle paths (Area 6, Area 2, Area 1, and Area 5)

Interventions for the improvement of existing paths and construction of new ones are already foreseen in the Green City Action Plan and Regulatory Plans for each area.

Potential impacts, risks, obstacles, and challenges

In the business-as-usual scenario, focus is on piloting actions to raise awareness in the local community and create the basis for bottom-up greening interventions.

Urban gardens provide new perspectives for local citizens and demonstrate an improvement of the quality of urban areas and wellbeing, especially for children and elderly people. The risk of lack of resources and vandalism persist, as well as the need for local know-how regarding the greening interventions but also the best ways of communicating their benefits.

Comparison between scenarios

Do-it-all scenario

PLUSES

- addresses many different issues at the same time (abandoned spaces, connectivity and accessibility, flooding risk, pollution etc.)
- synergetic with ongoing processes at local level
- High-level of involvement of external stakeholders and local community

MINUSES

- It depends on many factors that could hinder its success (administrative, financial, public - private partnerships)
- Difficult systemic approach as the NBS are detached from one another

Do something meaningful

PLUSES

- tackles factors on which scenario A is based upon
- set the ground for future interventions toward a transformation of the city
- Long-lasting benefits
- considers and integrates ongoing plans and projects

MINUSES

- Low level of involvement of external stakeholders and local community
- Highly dependent on political approval and administrative processes
- Lack of demonstration interventions

Business as usual

PLUSES

- Demonstrative approach
- Immediate benefits in terms of awareness raising
- High-level involvement of local community and marginalized groups
- Integrates ongoing processes and plans

MINUSES

- not long-term oriented
- Low level of involvement of stakeholders
- it does not address the local level problems at the root

Despite limitations identified, FC Zenica selected the **Best-case scenario** for implementation, offering a more complete solution and tackling many local-level challenges at the same time. It is the fusion between scenario B and C components, integrating an administrative process and consolidating the political approval, whilst providing piloting actions to involve the community and raise awareness on the benefits that NBS can offer.

Annexes

Annex 1: FC objectives and actions

Annex 1.1 – FC Cascais objectives and actions

Objectives		Target/indicators	Related NBS
GI	Ob.1 Neighbourhood has improved environmental conditions and quality public space	3 ha of new green space (converted land) 2 community projects (gardens/orchards/vineyards)	NBS 3
	Ob.2 Blue-green infrastructure is rehabilitated, accessible, and valuable for the local community	700 m walkable paths	NBS 6
	Ob.3 URA has improved biodiversity and increased resilience to climate conditions	1 ha of pollinator friendly plantations on the riverbanks	NBS 6, NSB 8
	Ob.4 URA has reduced risk of flooding events	1 temporary retaining basin implemented, for controlled flooding 700m riverbed restored	NBS 6
Regeneration	Ob.5 URA has an increased connectivity between neighbourhoods	1 km walkable paths;	NBS 6
	Ob.6 URA fragmented urban tissue is regenerated	3 new green corridors connecting urban areas (with street vegetation) 750 new planted trees	NBS 3, NBS 6
	Ob. 7 URA has a dynamic public space, enabling residents contact with natural elements in the day-to-day life	3 multifunctional interventions;	NBS 3
Participation, social inclusion	Ob.8 Community gardening in the URA is part of the local identity and attractivity of the neighbourhoods	150 persons received training in organic agriculture;	NBS 3
	Ob.9 Local communities benefit from seasonal events related to local food value chains (supporting local economy)	2 events per year (summer and winter)	NBS 3

Actions / Development direction	Resources	Related objectives
a.1 Local surveys	Municipal staff	Ob.1 to Ob.7
a.2 Juridical, economic and technical assessment of potential land for green transformation	Municipal staff, external experts	Ob.1 to Ob.7

a.3 Expropriation of land and negotiations processes for temporary uses	Municipal team, and accessing financing structures	Ob.2,Ob.3,Ob.4,Ob.5
a.4 Eradicating invasive vegetation, Building/construction of the pedestrian walkway, tree and shrub planting	Municipal contracting and financing	Ob.2, Ob.3, Ob.4
a.5 Environmental studies and assessment of requirements for green corridor revitalisation and flood management transformation	Outsourcing the project; Municipal financing budget	Ob.1, Ob.2, Ob.4, Ob.5
a.6 Getting permits	Technical documentation, Municipal contracting	Ob.1 to Ob.7
a.7 Accessing funds for interventions (for short- and long-term investments)	Municipal team, and accessing financing structures	Ob.1 to Ob.7
a.8 Awareness campaign and training in organic agriculture for community gardens	Terras de Cascais Team	Ob.8
a.9 Establishing partnerships for implementing open market and seasonal events	Municipal team, NGOs, local businesses	Ob.9
a.10 Elaboration of community-driven multi-use solutions for green spaces	Municipal team, NGOs	Ob.1, Ob.6, Ob.7

Annex 1.2 – FC Cluj-Napoca objectives and actions

Objectives		Target/indicators	Related NBS
GI	**Ob.1** Nurture, conserve and enrich the local biodiversity by preserving the natural character of the lower part of Someș, and the secondary blue-green corridor Nădaș.	• 10 ha of renatured land. • 1000 new trees planted.	NBS 3 NBS 6
	Ob.2 Someș and Nădaș blue-green corridors act as an environmental, social and infrastructural binder between landscapes, green facilities, communities.	• 5 community-oriented interventions within the blue-green corridors.	NBS 6
	Ob.3 Existing green areas and planned interventions (homogenous distributed) are efficiently connected within a multilevel inner-city green system.	• 70% of the URA is covered by a 500m/800m radius of green infrastructure and facilities.	NBS 3 NBS 6

	Ob.4 URA presents ecologic connections between the improved inner-city green system and the natural surroundings.	• 10 km of green connections??	NBS 6
Regeneration	**Ob.5** Increased accessibility of GI throughout the URA while maintaining both structural and functional connectivity.	• 70% of the URA is covered by a 500m/800m radius of green infrastructure and facilities.	NBS 3 NBS 6 NBS 7
	Ob.6 ”Greening” the post-industrial areas	• 3 ha of renatured land in post-industrial areas. • 1000 new trees planted.	NBS 3 NBS 5 NBS 6 NBS 7
	Ob.7 Increased attractivity of the URA concerning green infrastructure facilities and services (community-oriented)	• 70% of the URA is covered by a 500m/800m radius of green infrastructure and facilities. • 3 major community gardens • 6 small scale community gardens	NBS 3 NBS 5 NBS 7
Participation, social inclusion	**Ob.8** The private sector is engaged in green transition measures (facilitating from the environmental compensations instruments)	• 10 green roofs/green facades.	NBS 3, NBS 5, NBS 7 (and NBS 6)
	Ob.9 Citizens of the URA and beyond, have a high degree of environmental awareness and relevant knowledge about ecology and the role and potential impact of NBS	• 100 people attended to an awareness-raising campaign • 100 people attended to co-design activities	NBS 3, NBS 7
	Ob.10 Urban-farming and productive gardens interventions are used and valued by the local communities (helping them to produce food locally, live healthier lives and be more economically sustainable)	• 3 major community gardens • 6 small scale community gardens	NBS 3
	Ob.11 Green facilities and interventions are co-designed, co-implemented, and co-maintained by the users.	• 50 people attended to co-implementation activities	
Sustainability	**Ob.12** NBS implemented are in-line with community needs and can adapt to evolving requirements and conditions.	• 2 prototype multifunctional green spaces • 15 NBS interventions community-oriented integrated in the urban regeneration regulatory plans of collective housing units	NBS 3, NBS 5, NBS 6, NBS 7
	Ob.13 NBS implemented are resource-efficient, ecologic, and affordable.		

Action / Development direction	Resources	Related objectives
Actions towards the creation of infrastructures and green facilities		
a.1 Create productive gardens / urban-farming facilities for local communities	Human, financial resources, terrain resources	Ob.3, Ob.5, Ob.7, Ob.10
a.2 Create community gardens as more accessible spaces (therapeutic gardens, social gardens)	Human, financial resources, terrain resources	Ob.5, Ob.6, Ob.7
a.3 Rehabilitation of neglected and underused green area plots	Human, financial resources	Ob.6, Ob.7
a.4 Transform the abandoned land of relevant location within the URA and GI system, that is owned by the municipality, and holds uncertain real-estate value.	Human, financial resources, administrative approval	Ob.2, Ob.6, Ob.7
a.5 Make riverbank accessible for all target groups (including disabled groups of people).	Human, financial resources	Ob.1, Ob.2
a.6 Engage collaboration and negotiations process with relevant stakeholders from public institutions within the refined URA limit. (can be partly achieved within proGIreg timeframe).	Human resources	Ob.8
a.7 Make natural areas within URA accessible for explorations and nature observation - the lower part of Someș activated as a natural attraction with the help of green connections (controlled pedestrian routes).	Human resources, areas	Ob.1, Ob.2, Ob.5
Actions supporting the green transition		
a.8 Environment study / Identifying existing biodiversity conditions, in order to choose the optimal green corridors to be built	Human resources	Ob.1
a.9 Facilitate environmental compensation measures both for the community and businesses for implementing NBS interventions within private premises or for engaging in greening actions of the post-industrial neighbourhoods.	Human resources, administrative approval	Ob.8, Ob.9
a.10 Include green walls and roofs into local building policy.	Human resources, administrative approval	Ob.6, Ob.9
a.11 Establish a special status for the valuable natural areas within the URA to preserve the natural ambience. Location and set of requirements to be established within proGIreg timeframe. Results will be communicated and integrated (if possible) within the new regulation plan (Cluj-Napoca General Urban Plan PUG is the updating process).	Human resources, administrative approval	Ob.1, Ob.9
a.12 Create a landscaping guide/set of recommendations in collaboration with USAMV to provide requirements for planting diversification, indigenous plants, and where to use them. The work	Human resources	Ob.1, Ob.4, Ob.6

can be partly achieved within the proGIreg timeframe with the help of dedicated scenario-building and design workshops.		
Actions supporting ecologic behavior change		
a.13 Involve the local community and local stakeholders in the planning process (during and after the ProGIreg project implementation)	Human resources	Ob.11
a.14 Promote environmental education through co-design activities and ensure residents' contact with nature	Human resources	Ob.9, Ob.11

Annex 1.3 – FC Piraeus objectives and actions

SCHOOLS' SPACES

Objectives		Target/indicators	Related NBS
GI	**Ob.1** Improve local environment and strengthen GI through new green areas in schools	→ 1000: citizens around the school → 3000: Involved school students and staff (primary and high school) → I: 1500 m^2 of planted/regenerated green areas → I: 3000 n° of new planted species → I: 200 questionnaires to assess local citizens opinion before and after the intervention	NBS 3 NBS 6 NBS 8
	Ob.2 Improve pollinators biodiversity near schools	→ T 1500: school students and staff (primary and high school) → I: 50 planted species → I: 20 pollinators observed (school educational activity for pollinators observation and monitoring)	NBS 8 NBS 3 NBS 6
Regeneration	**Ob.3** Improve environmental quality of educational institutions spaces.	→ T 1500: school students and staff (primary and high school) → I: Questionnaire to assess students and teachers' opinion before and after intervention, with improvement for >75% of participants	NBS 3 NBS 6 NBS 8

Participation, social inclusion	**Ob.4** Engagement of young people and education professional in environmentally friendly activities	→ T 1500: school students and staff (primary and high school) → 6 schools involved → 1500 students and school staff involved	NBS 3 NBS 6 NBS 8
	Ob.5 Engagement of local community in the implementation and maintenance of schools' NBS	→ T 1500: school students and staff (primary and high school) → T 300: parents and families of students → T 500: extended local community and other stakeholders or partners (school neighbourhood) → I: 3 workshops and open activities organized by the schools → I: 200 participants to these activities	NBS 3 NBS 6 NBS 8
Education	**Ob.6** Promote and encourage educational activities related to NBS, ES importance, environmental awareness and citizenship	→ T 1500: school students and staff (primary and high school) → T 300: parents and families of students → T 3: administrative bodies (green and education departments) → T 3: extended local community (school neighbourhood) → I: 3 workshops and open activities organized by the schools → I: 200 participants to these activities → I:3 new courses or activities in school curricula	NBS 3 NBS 6 NBS 8

Action / Development direction	Resources	Related objectives
a.1 Organize workshops and activities in a 3rd school of Piraeus, if possible, in collaboration with EuPOLIS, to develop a process of NBS co-creation and implementation.	Human resources (EuPOLIS partners, landscape and agronomy experts, construction experts, school staff, administration); financial resources (schools, municipality);	Ob.1, Ob.2, Ob. Ob.3, Ob.4, Ob.5, Ob.6
a.2 Construct a "Guide for NBS integration in educational institutions", collaborating with EuPOLIS project, with guidelines extracted from the front-runner schools' experiences, to approach the different phases of the process.	Human resources (EuPOLIS partners, landscape and agronomy experts, communication experts, school staff, administration);	Ob.1, Ob.2, Ob. 3, Ob.5,

	financial resources (municipality, proGIreg);	
a.3 Extract from the guide a “general policy” to help the municipality and other administrative bodies to implement similar solutions in other schools.	Human resources (EuPOLIS partners, landscape and agronomy experts, communication experts, school staff, administration); financial resources (municipality, proGIreg);	Ob.1, Ob. 2, Ob.3, Ob.4, Ob.5,
a.4 Collect best practices and tips to create a small Guide for teachers and school staff to implement educational activities related to NBS (to be included in curricula or as open activities with parents etc.)	Human resources (EuPOLIS partners, landscape and agronomy experts, communication experts, school staff, administration); financial resources (municipality, proGIreg);	Ob.4, Ob.5, Ob.6
a.5 Organize and participate in events/open days to present the NBS design/implementation to involve and educate the community, find new stakeholders and support for the actions	Human resources (EuPOLIS partners, landscape and agronomy experts, communication experts, school staff, administration); financial resources (municipality, schools);	Ob.4, Ob.5, Ob.6
a.6 Keep constant connection with the political environment and local authorities, to discuss the policy adoption and to define a school engagement strategy	Human resources (EuPOLIS partners, landscape and agronomy experts, communication experts, school staff, administration);	Ob.1, Ob.2, Ob.3, Ob.4, Ob.5, Ob.6
a.7 Perform additional research and analysis in relation to areas nearby schools and how the green spaces implemented within the school areas can have an impact on the local GI	Human resources (EuPOLIS partners, landscape and agronomy experts, communication experts, analysis experts, universities, administration); financial resources (municipality, schools, private stakeholders, univerities);	Ob.1, Ob.2
a.8 Perform questionnaires for satisfaction and opinion collection before and after NBS implementation and activities in the school (to assess the regeneration and quality improvement of spaces)	Human resources (school staff, project team)	Ob.1, Ob.2, Ob.3, Ob.5, Ob.6

MARIAS KOURI ROAD

Objectives		Target/indicators	Related NBS
GI	**Ob.1** Improve local GI by creating a continuous	→ T 1000: citizens around MKR	NBS 6 NBS 8

	green corridor along Marias Kouri Road [MKR] (also at inter-municipality level)	→ I: 1500 m^2 of new green areas → I: 200 questionnaires to assess local citizens opinion → I: 100 of people, experts, institutions involved in discussions and negotiations	
	Ob.2 Improve pollinators biodiversity along MKR	→ I: 50 planted species → I: 20 pollinators observed (school educational activity for pollinators observation and monitoring)	NBS 6 NBS 8
Regeneration	**Ob.3** Increase green spaces along MKR, and improve environmental quality of the area (water drainage, temperature, air quality etc.)	→ T: 1500 citizens around MKR → I: 1500 m^2 of new green spaces and permeable ground → I: 200 Questionnaires to assess people's opinion	NBS 6 NBS 8
	Ob.4 Improve the accessibility of the road for the local community (pedestrian and cycle ways, gathering spaces etc.)	→ T 1500: citizens around MKR → T 1500: school students and staff (primary and high school) → I: 1000 m^2 of new permeable ground → I: 10km of new dedicated lanes (pedestrian lanes and cycleways) → I: parking lots moved → I: 200 Questionnaires to assess people's opinion	NBS 6 NBS 8
Participation, social inclusion	**Ob.5** Involve and engage local community and businesses in the NBS co-design and co-implementation phases (and if necessary maintenance)	→ T: 1500 school students and staff (primary schools, high-schools, university) → T: 300 parents and families of students and staff → T: 30 businesses along MKR → I: 3 activities organized in the area → I: 2000 of participants involved in activities (questionnaires, interviews, events)	NBS 6 NBS 8

Action / Development direction	Resources	Related objectives
a.1 Organize workshops and activities with new or already involved schools (high school in Piraeus) in the MKR area or	Human resources (school staff, universities, administration);	Ob.4, Ob.5

online, to assess needs and discuss design ideas	Places (online platforms, school spaces)	
a.2 Collaborate with West Attica University (Sustainable Design Master course) to implement analysis and scenario building activities (interviews to local community and businesses, analysis maps, sharing ideas, design workshops etc.)	Human resources (project team, university staff and students, administration, analysis and communication experts); Financial (university, proGIreg, municipality) Places (online platforms, school spaces, local businesses)	Ob.1, Ob.2, Ob.3, Ob.4, Ob.5
a.3 Produce scenarios and transformation design ideas, together with university students and other involved stakeholders, to submit to the municipality	Human resources (project team, university staff and students, administration, analysis and communication experts, local businesses representatives); Places (online platforms, school spaces, local businesses)	Ob.1, Ob.2, Ob.3, Ob.4, Ob.5
a.4 Keep constant connection with the political environment and local authorities, to discuss the stakeholder engagement strategy and how to include design ideas into local and regional planning	Human resources (project team, university staff and students, administration and urban planning bodies, analysis experts, landscape and urban experts, communication experts, business consultants, local businesses representatives);	Ob.1, Ob.2, Ob.3, Ob.4, Ob.5
a.5 Organize and participate in events/open days to present the NBS design/implementation, to involve and educate the community, raise awareness about NBS, find new stakeholders and support for the actions	Human resources (project team, university staff and students, administration and urban planning bodies, analysis experts, landscape and urban experts, communication experts, business consultants, local businesses representatives, sponsors); Financial (university, proGIreg, municipality, local businesses, sponsors) Places (online platforms, school spaces, local businesses)	Ob.1, Ob.2, Ob.3, Ob.4
a.6 Enhance urban biodiversity by providing mobility options for insects, creating ecologic corridors	Human resources (project team, university staff and students, administration and urban planning bodies, analysis experts, landscape and agronomy experts, business consultants); Financial (progireg, municipality, local businesses, sponsors)	Ob.1, Ob.2, Ob.3, Ob.4

a.7 Implement communication campaigns for awareness about NBS benefits, contact with nature and project vision/objectives/actions along the entire co-design and co-implementation	Human resources (project team, university staff and students, administration and urban planning bodies, analysis experts, landscape and urban experts, communication experts, business consultants, local businesses representatives, sponsors); Financial (proGIreg, municipality, local businesses, sponsors)	Ob.1, Ob.2, Ob.3, Ob.4, Ob.5
a.8 Create connections with the neighbouring municipalities for starting the process towards the creation of inter-municipality strategy for revitalization of GI	Human resources (project team, university staff and students, administration and urban planning bodies, analysis experts, landscape and urban experts, communication experts, business consultants, local businesses representatives, sponsors) Financial (proGIreg, municipality, local businesses, sponsors)	Ob.1, Ob.2, Ob.3, Ob.4

Annex 1.4 – FC Zenica objectives and actions

Objectives		Target/indicators	Related NBS
GI	Ob. 1 Improvement of infrastructure for leisure activities	Local community - Minimum of 5 km of new bike and pedestrian paths	NBS 6
	Ob. 2 Quality improvement of green areas	Local community-Minimum 4 green islands for minimum 12.000 inhabitants residing in that area	NBS 6
	Ob. 3 Improved connectivity and accessibility	Reduced rush hour congestion in city traffic. Expansion of existing paths and construction of new paths for a total length of bike infrastructure of 31.400 m	NBS 6
	Ob. 4 Air quality improvement	Local community – Air quality indicators used at local level	NBS 5 NBS 3
	Ob. 5 Reduce flooding in urban area	Number of flooding events in city centre reduced from 5 to 0	NBS 6 NBS 1
Regeneration	Ob. 6 Rehabilitation of abandoned sites	Local community - Minimum 1 site out of 5	NBS 1

	Ob. 7 Implementation of new solutions on existing facilities	Local community - Minimum 1 green roof	NBS 5
Participation, social inclusion	Ob. 8 Create sense of ownership in local communities	Local community (elderly and unemployed citizens)- Minimum 3 established urban gardens – minimum of 10 participants in each garden	NBS 3
	Ob. 9 Increase social inclusion of vulnerable groups	Minimum 3 NGO included	NBS 3

Action / Development direction	**Resources**	**Related objectives**
a.1 Perform regeneration of the old landfill (coal deposits)	Financial, know-how	Ob.3
a.2 Invest in new infrastructure for city park - Botanical Garden that could change its purpose into a Therapeutic Garden with option to build hanging promenades in the city park	Financial, urbanistic approval	Ob.1, Ob.3, Ob.4
a.3 Start pilot projects of urban gardens within local communities and kindergartens	Human, financial	Ob.8, Ob.9
a.4 Construction of green walls/roofs in kindergartens that do not have green areas and on private garages in city centre	Human, financial, know-how, maintenance	Ob.2, Ob.7
a.5 Cover new underground garages with a green area (green roof) – initiative in the draft of Regulation plan for the City Centre	Human, financial, know-how, maintenance	Ob.2, Ob.5, Ob.7
a.6 Create bicycle path connection on the road near Banlozi, in order to get a section without interruption Blatuša – Banlozi (Zenica North – City Area) and bike path within GGM	Financial, urbanistic approval	Ob.1, Ob.3
a.7 Construction of the riverbanks of the fort on the section Zenica South - Bilimište. The section should be extended to the Railway Bridge	Financial, urbanistic approval	Ob.5
a.8 Create road junction in Babina rijeka - pedestrian/biking path	Financial, urbanistic approval	Ob.1, Ob.3
a.9 Perform of the part in Babina rijeka where there used to be an old bowling alley	Financial, urbanistic approval	Ob.2, Ob.5, Ob.6, Ob.7
a.10 Build urban green islands within neighbourhoods	Financial, urbanistic approval, know-how, human, maintenance	Ob.2, Ob.5, Ob.7
a.11 Construction of access to the river Bosna with plateaus - initiative in the draft of Regulation plan for the City Center	Financial, urbanistic approval	Ob.2, Ob.3, Ob.7