



URA Cluj-Napoca. Source: ADIZMC

Report on the Urban Plans in FC Deliverable 2.9

Work package: WP2 Dissemination level: PU Lead partner: URBASOFIA Authors: Codrut Papina Due date: 30th September 2023 Submission date: 6th October 2023



Deliverable	Report on the Urban Plans in FC	
Deliverable No.	D2.9	
Work Package	2	
Dissemination Level	PU	
Authors	Codruț Papina (URBASOFIA)	
Co-Authors	Margot Olbertz, RWTH Mădălina Rusen, Andrada Lupulescu (URBASOFIA) FC Cascais: Teresa Ribeiro, Helga Gonçalves (CASCAIS) FC Cluj Metropolitan Area: Codrut Papina (URBASOFIA); Bogdan Stanciu, Melania Blidar, Violeta Irimies, Sandra Dimancescu (CLUJ), Mădălina Rusen (URBASOFIA). FC Piraeus: Nerantzia Tzortzi (Julia Georgi), (Municipality of Piraeus and KEAN); Athina Abatzidi (KEAN) FC Zenica: Amra Mehmedić (COZ), Mirza Sikirić (ZEDA), Andrada Lupulescu (URBASOFIA)	
Date	29 09 2023	
File Name	Report on Urban Plans in FC_Deliverable 2.9	
Status		
Revision		
Reviewed by	Margot Olbertz, RWTH Aachen University	
Information to be used for citations of this report	Papina, C.L. (2023): Report on Urban Plans in FC, D2.9, proGlreg. Horizon 2020 Grant Agreement No 776528, European Commission, 39 pp (40 with annex).	

The sole responsibility for the content of this publication lies with the authors. It does not necessarily represent the opinion of the European Union. Neither the EASME nor the European Commission are responsible for any use that may be made of the information contained therein.



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

This work was financially supported by the National Key 2 Research and Development Programme of China (2017YFE0119000).



CONTACT: Email: progireg@la.rwth-aachen.de Website: www.proGlreg.eu

Contents

Executive Summary	7
Introduction	9
Introduction to the project	9
Introduction to WP2, Task 2.3	11
Part 1 - Methods	12
Roadmap 3rd phase implementation	12
Developing Project Fiches per planned NBS	17
Interactive Urban Plans – Web platform	17
Part 2 - FC Urban-Plans Cross-city conclusions	19
Selection of NBS for urban regeneration	19
Strategic approach of FC Urban Plans	24
Integration into local urban planning frameworks	25
Part 3 - FC Urban Plans	26
FC Cascais Urban Plan	26
FC Cluj-Napoca Urban Plan	30
Web based urban plan of FC Cluj-Napoca	31
FC Zenica Urban Plan	
Annex A – Repository Urban Plans and project fiches	40

Figures

Figure 1 - The proGIreg partnership. Source: RWTH, proGIreg proposal	9
Figure 2 - Spatial representation of proGIreg NBS, RWTH	10
Figure 3 - Roadmap towards urban planning in FC, extracted from D2.6. Source:	
URBASOFIA	12
Figure 4 - The workshops in FC. Source: URBASOFIA	14
Figure 5 - proGIreg website Final Urban Plans interactive dashboard	17
Figure 6 - ProGIreg Website interface - accessing the Urban Plans from the city webpage.	18
Figure 7 - No. of NBS planned/detailed by FC within the Final Urban Plans	19
Figure 8 – Cascais URA at city level in Portugal	26



Figure 9 - Localization of Cluj-Napoca URA at city level	31
Figure 10 - Localization of Piraeus URA at city level	34
Figure 11 - Localization of Zenica URA at city level	36

Tables

Table 1 - Final Urban Plans links	8
Table 2 - Outcomes for 3rd round of workshops	15
Table 3 - Selection of proGIreg NBS and related project fiches	19
Table 4 - Key strategy/measure proposed	21
Table 5 - FC Urban Plan ambitious approaches	23
Table 6 - FC Urban Plans strategic approaches - overview	24
Table 7 – Overview of integration of urban plans into FC local urban planning frameworks	
(updated)	25



Document revision history

Version	Date	Modification reason	Modified by
1			
2			
3			

Partner organisations

No.	Name	Short name	Country
1	Rheinisch-Westfälische 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

СН	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
proGlreg	productive Green Infrastructure for post-industrial urban regeneration
RT	Replication Toolkit
SS	School spaces
UHI	Urban Heat Island
URA	Urban Regeneration Area
WP	Work Package



Executive Summary

Task 2.3 deliverable D2.9 "Report on the Urban Plans in FC," provides a comprehensive overview of the final output and results (Urban Plans) of the Follower cities' (FC) 2-year replication process of nature-based solutions (NBS). Exchanging experiences of NBS implementation in proGIreg Front runner cities (FRC) in WP3 served as valuable sources for elaborating the final urban plans for future NBS implementations in designated Urban Regeneration Areas (URAs) in each FC. The urban plans also consider results of WP5: Identifying barriers to NBS implementation; developing sustainable business models for NBS, hence underpinning the impact of NBS in urban regeneration.

Each FC Urban Plan is based on results of the different roadmap phases of developing the urban plans including multi-level analysis of the URA (site selection, socio-economic drivers, local development priorities, etc.), short-term, medium-term, and long-term visions, strategic objectives, and targets, culminating in three regeneration scenarios (do-it-all, do-something-meaningful, and business-as-usual). The last roadmap phase of developing the urban plans entailed detailing and fine-tuning approaches, actions, and requirements for the URA transformation and envisaged NBS implementations. During several co-design workshops, each FC developed a shared vision, scenarios considering requirements, conditions, and relevant factors for delineating necessary NBS interventions.

Following a strategic approach supported by the developed roadmap, the final urban plans focus on each FCs URA transformation strategy with NBS, linking a series of project proposals for the next 15 years (varying from simple investments, urbanistic programme, regulatory measures, or policy proposal). For each planned NBS (or site containing multiple NBS interventions) FCs developed so-called project fiches (see Annex A), which provide an overview of the planned NBS and outline strategic, operational requirements and technical design themes to coordinate future investments. The project fiches summarise the URA transformation vision, scenario options based on spatial, social, economic, and environmental aspects explored in previous roadmap phases (D2.6, D2.7, D2.8). D2.7 and D2.8 have dedicated chapters for each FC, concluding the results for the strategy elaboration. The complete regeneration strategy of each of the city is compiled altogether – meaning the D2.7 and D2.8 dedicated chapters and the Final Urban Plan with the related project fiches (related to D2.9). It is recommended to all cities to compile the joint document in the local language, for further dissemination and upscaling.

Prerequisites for future NBS implementations include shifting local mindsets and urban planning practices to consider NBS adaptation as a fundamental and valuable change compared to conventional green infrastructure (GI) management practices. This shift needs to address local environmental challenges and social issues. Technical designs for future implementation should be developed by local experts or appropriate municipal departments, using the co-developed project fiches as a starting point.



Transferring the knowledge gained in testing NBS in FRC to FCs to replicating NBS have inspired decision makers, practitioners, designers, and communities to undertake more courageous initiatives for creating more resilient and community-oriented urban environments. The Final Urban Plans are strongly aligned with local planning and strategic frameworks. Notably, FC Cluj-Napoca developed projects that build on the sustainable development strategy 2030 indicators and allocated resources for green transformation and proposes additional requirements for local zoning regulations to ensure smooth and effective implementation of the proposed NBS.

Urban Plans formats

The urban plans can be accessed in two different formats:

- D2.9 as PDF on the EU platform and proGlreg website: www.progireg.eu
- FC Urban Plan of the URA showing all NBS intervention sites as an interactive map on the proGIreg website under the following links (see table 1):

Follower City (FC)	Urban Plan links to proGlreg website
Cascais	City Page: https://progireg.eu/cascais/ Interactive Urban Plan: https://progireg.eu/cascais/urban-plan/
Cluj-Napoca	City Page: https://progireg.eu/cluj-napoca/ Interactive Urban Plan: https://progireg.eu/cluj-napoca/urban- plan/
Piraeus	City Page: https://progireg.eu/piraeus/ Interactive Urban Plan: https://progireg.eu/piraeus/urban-plan/
Zenica	City Page: https://progireg.eu/zenica/ Interactive Urban Plan: https://progireg.eu/zenica/urban-plan/

Table 1 - Final Urban Plans links

The interactive format ensures wide-scale and accessible project results dissemination to explore the each planned NBS in FCs. Additionally, each FC can create a dedicated page the municipal website – directing readers to the interactive maps. Clicking on any map element opens the project fiche, displaying all information about the planned intervention: type of NBS, description of planned intervention, local planning frameworks, vision, study area analysis and constraints, challenges, operational objectives, actions and design requirements.



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 proGlreg partnership. Source: RWTH, proGlreg proposal



ProGIreg will deploy the following NBS in four Living Labs (LL), working with local stakeholders 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 proGlreg NBS, RWTH

The proGlreg set of NBS has undergone a thorough assessment by each FC to determine replication potential and suitability within the local context. Not all eight NBS have been incorporated into local strategies and Urban Plans. Namely NBS 2 New Regenerated Soil, primarily due to resource constraints preventing soil analysis and NBS4 Aquaponics as it is perceived as an innovative yet costly solution that does not fit with current priorities for regenerating post-industrial neighbourhood.



Introduction to WP2, Task 2.3

WP2 Planning, design, and participation processes for NBS, delivers the framework for context-specific implementation of the eight proGlreg 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 the conclusive phase of WP2 and the start of proGIreg project's second phase focusing on the transferability of solutions implemented in FRC. Task 2.3 supports four FCs (Cascais, Cluj-Napoca, Piraeus, Zenica) in elaborating a strategy for the implementation of local urban regeneration actions using the proGIreg set of NBS. The Task builds upon the evidence and knowledge generated during NBS co-design and co-implementation phases in the FRC (WP3), NBS benefit assessments (WP4), and 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, providing 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.

D2.9 Report on the urban plans in FC – concludes each FCs final steps of creating regeneration strategies, finalizing the co-design steps elaborated in D2.6 Roadmap towards Urban Planning. This deliverable comprises the following chapters:

Methods: Outlines methodologies and practices employed in the development of the Urban Plans, including details on how the plans were formulated based on updated analyses, medium to long-term vision considerations, and scenario development.

Cross-City Conclusions: Offering valuable conclusions and insights into focus areas of each Urban Plan and highlights strategic measures proposed by FCs in the form of project proposals.

The Final Urban Plans: The plans are presented as interactive web pages integrated into the proGIreg website. These web pages spatialize intervention proposals and provide comprehensive project fiches detailing the proposed initiatives. Furthermore, the local partners will embed the Final Urban Plans in a dedicated page of their websites: FC Cascais: https://ambiente.cascais.pt/; FC Cluj-Napoca: https://www.clujmet.ro/; FC Zenica: https://www.zenica.ba/fakta/about-zenica/; FC Piraeus: https://piraeus.gov.gr/



Part 1 - Methods

Roadmap 3rd phase implementation



Figure 3 - Roadmap towards urban planning in FC, extracted from D2.6. Source: URBASOFIA

Introduction / Overview

The proGIreg Roadmap for coordinating the co-creation process to develop Urban Plans is a valuable methodological tool guiding cities in engaging in co-owned urban green transformations. Key principles of the Roadmap include an incremental approach, increasing in complexity from mapping local barriers/challenges to identifying key resources for sustainable development. The Roadmap's set of steps working with local communities is not conceives as a linear process. All FCs experienced the need to go back and forth between analysing local conditions of potential sites/environments while constantly refining the transformation vision.



The Roadmap is useful for cities, experts, and communities involved in similar research codesign-based projects such as proGIreg. Given many EU funding programs emphasise the importance and value of co-creation, the Roadmap can act as a useful guide for NBS replication. However, cities aiming to transform neighbourhoods through NBS strategies outside the EU-funded programs of Research, Innovation, and Action framework, required time and resources for such a comprehensive process are a limiting factor. Confined by tight timelines and budget constraints, municipalities find it challenging to engage in valuable codesign processes. To facilitate the widespread use of the roadmap, the following recommendations on key steps and key lessons learned are summarised below:

- → Allocate sufficient resources to identifying key areas for intervention in case the regeneration strategy or project has no clear intervention sites marked. Mapping private and public plots is the initial requirement.
- → Collaborate with local stakeholders and communities to understand their positions about potential intervention sites and how their day-to-day activities relate to these areas.
- → Consequently, steps 1-14 of the roadmap are crucial for deploying green transformation.
- → Steps 15-24 should focus resources on creating co-owned transformation. The challenge lies in how the intervention can be utilized by communities, not so much in NBS landscape design.
- → Mapping specific requirements in relation to available resources and key site criteria (regarding urban planning, environmental, and landscape).
- → Last steps DESIGN, 25-32, municipalities should present options for site transformation (based on previously mapped requirements and resources), and different operation models, allowing citizens/future users to collaboratively decide what fits best.
- → When co-creating NBS designs/plans for already mapped sites (valuable for green regeneration of neighbourhoods), the importance of the roadmap steps changes. The analysis component, steps 1-14, should prioritize needs and requirements of future users. During the scenario process, co-creation activities should focus on discussing different design options and their potential local impact, concluding with the chosen scenario for site design.
- → The final phase: From Co-design to Co-implementation must concentrate on clearly determining roles and responsibilities of involved parties and ensuring continued stakeholder engagement for implementation and subsequent management/maintenance of the NBS intervention, in collaboration with local authorities.

General takeaways for adapting the Roadmap for co-design-driven green regeneration *(addition to D2.6)*

Step 3 – Initial mapping of stakeholders is a recuring step that must be reviewed after every relevant progress/advancement of the co-design process

Step 13 – Definition of roles and responsibilities. It is a critical step for elaborating the regeneration Vision and further the Scenarios but is important to refine/update and adapt the proposal in accordance with the final plan for implementation.

- **Step 15 Marginalized communities involvement plan**. Elaboration of a plan based on collaboration with local stakeholders, considering identified barriers and resources. Based on results/feedback of the target groups (marginalized communities) in NBS co-implementation and co-management, the plan has to be updated.
- **Step 23 Business Models**. The process is bidirectional important to create a business model in preparation of the NBS intervention and refine it after completion of final design. Note: "Business Model" term is not necessarily meant as generating revenue but focuses on social impacts.



FC results

The FC have followed the roadmap with key milestones – represented by three sets of workshops. The co-design activities are characterized by a gradual, incremental, and iterative process that helped FC to elaborate the final Urban Plans. First workshop results (composed of actual 2 local activities, Kick-off and Analysis workshop) are reported in D2.7 - Report on the Follower Cities' stakeholder set-up.

Second workshop results are reported in D2.8 Mid-term report. The third set of activities conducted to the refinement and presentation of the final proposals for the URA transformation – project fiches for the Final Urban Plan.



Figure 4 - The workshops in FC. Source: URBASOFIA

D2.8 Mid-term report summarised and synthesised the FC co-design processes: Scenario development with local stakeholders, the co-design activities carried out during the First Workshop Analysis, which resulted in formulating the URA vision. The Second Workshop of the Scenario Building phase yielded three key scenarios: Do-it-all, Do-something-meaningful, and Business-as-usual.

Based on these results, FCs crafted regeneration strategies and NBS interventions for the Final Urban Plans with the aim of achieving the Do-it-all scenarios. This process involved following the roadmap steps diligently, such as selecting most suitable locations for NBS adaptation, a step referred to as Final NBS mapping, and extensive research and co-design efforts to establish context-specific requirements for the future implementation of solutions.

The final Roadmap implementation phase allowed FCs to consolidate all results into the Final Urban Plans and in particular the elaboration of the project fiches, representing concrete proposals for transforming identified sites. The project fiches synthesise the outcomes of all co-design activities, considering the unique conditions of each site. Table 2 outlines the outcomes and objectives of the third set of local workshops:



Table 2 - Outcomes for 3rd round of workshops

FC Cascais	Outcomes of the 3 rd workshop / round of co-design activities Workshop is scheduled for 09.10.2023.
	Presentation of project outcomes and discussion about future development. Notably, the pedestrian trail project along the river (C 6.2) is expected to be assigned to an external project team under the guidance of the Environmental Municipal Department.
	The aim is to facilitate dialogue among the various departments operating within the territory to involving them in the envisioned projects. It is noteworthy that successful execution of planned NBS projects hinge on obtaining political approval and the degree of future engagement from local communities (which is ensured by the constant engagement of Cascais Ambiente).
Cluj-Napoca	Date: 25.08.2023. The ProGIreg team engaged a local NGO in focused discussions/exchange to integrate community gardening solutions into the local policy framework. This policy aims to formalise and facilitate bottom-up community initiatives. To achieve this goal, the ProGIreg team has developed a Policy Proposal that outlines various garden models and typologies that can be adapted to local contexts, especially within modular green areas within collective housing units. The policy's scope is highly specific and is presented in a concise version in CJ3.4 Community Gardens Policy. The original document was prepared in Romania n. Moving forward, the Metropolitan Association (ADIZMC) will collaborate with SOS Cluj, a local NGO, to expand the policy's reach to different neighbourhoods within Cluj metropolitan area.
Piraeus	Date: 08.09.2023. ProGIreg team Piraeus presented the final

F

project outcomes and final urban plan for Piraeus URA. Already involved teachers confirm their willingness to continue contributing to implementation of NBS. New participants showed interest to get involved and implement NBS in their school activities.



In addition, the Vice Mayor suggested to roll-out implemented NBS activities in the schools during the project into a joint program for all schools of Piraeus, funded by the Municipality.



Zenica

Date: 03.08.2023. Zenica conducted a focused workshop to present the Urban Plan proposal and accompanying Business Model Canvas. The workshop served as a platform for discussing the operationalization of the proposed NBS interventions. Key outcomes included knowledge sharing about the status of various potential NBS projects, delineation of immediate steps for short-term implementation of NBS initiatives, and insights into the integration of NBS solutions within the ongoing advisory phase of the City of Zenica's Development Strategy.





Developing Project Fiches per planned NBS

Coordinated and supported by URBASOFIA, FCs firstly developed a strategic list of potential NBS interventions, forming the basis for creating project fiche templates. Planned NBS proposals range from straightforward investment projects to comprehensive development programs and policy guidelines. The template structures specific requirements of each NBS project aligned with the co-developed vision and scenario. Each FC presents multiple types of NBS proposals, which are indicated on the first page of the project fiche.

In essence, project fiches are comprehensive documents encapsulating co-design processes as valuable outputs of the strategy development and as valuable guidance for development and implementation of NBS interventions. The documents also provide specific details about context and requirements for planned NBS interventions for the following key reasons:

1. Synthesizing Co-Design Outcomes: Project fiches succinctly summarize co-design process outcomes, providing a detailed description of key considerations for the future development or intervention project.

2. Explaining motives and ensuring alignment with local planning frameworks: Providing reasons and motivations for each intervention along with expected impacts, and in line with local regulations and strategic frameworks.

3. Setting Design and Implementation Guidelines: Outline design and implementation requirements while providing guidelines for the technical project realisation.

Interactive Urban Plans – Web platform

The Urban Plans as interactive web-based platforms provide convenient access to comprehensive information for local stakeholders and interested parties within a single digital space. The interactive urban plans incorporate spatialized and clickable interventions, allowing users to access detailed project information by clicking on specific items or solutions, which open as pop-up PDF project fiches (see figure 5). The base map contains various layers users can toggle on or off, including building, land use, and green infrastructure layers, enhancing the overall usability and functionality of the platform (fig. 5).



Figure 5 - proGlreg website Final Urban Plans interactive dashboard



The added value of this functionality is widely available information provided in the project fiches for multiple stakeholders, potentially representing valuable inspiration for a wide range of cities. FC sites and local contexts are representing unique stories, that complete experiences in FRC, offering a comprehensive overview of situations for greening our cities.

The Cities page of the website: <u>progireg.eu</u> also refers to previous FC deliverables, as well as to "NBS business models", and "Monitoring and assessing NBS" pages (see figure 6).







Part 2 - FC Urban-Plans Cross-city conclusions

Selection of NBS for urban regeneration

Planning NBS replication for neighbourhood regeneration can follow a pre-set roadmap and methods but requires a great deal of contextualisation to produce meaningful strategic and operational measures at different local levels. This is reflected in widely varying results across FCs. This divergence is a result of continuous, intensive, and open collaboration with local actors throughout the co-design process in which communities shaped outcomes tailored to their needs, representing a valuable aspect for the urban plans of all FCs.

FC / NBS	Total no. of project fiches	NBS ¹							
		NBS1	NBS2	NBS3	NBS4	NBS5	NBS6	NBS7	NBS8
Cascais	6			2			4		2
Cluj- Napoca	9			4		2	3	1	
Piraeus	5			2			2		3
Zenica	8	1		2		2	3		

Table 3 - Selection of proGlreg NBS and related project fiches

Figure 7 - No. of NBS planned/detailed by FC within the Final Urban Plans

Based on experiences of NBS implementation in FRC (WP3), each FC has chosen a set of NBS according to local needs. Out of the eight proGIreg NBS, two key replicable NBS for significantly improving the green infrastructure system in FCs have emerged as follows:

NBS 3 - Community-based urban gardening and farming. Most popular NBS solution among the eight tested and explored in the proGIreg project. All FCs put forward a total of 10 proposals to transform neglected sites into various types of community gardens, including urban farming, urban orchards, therapeutic gardens, and multifunctional community gardens. The popularity of this solution stems not only from its apparent simplicity. While community gardens may appear straightforward to implement at first glance, its complexity lies in empowering citizens and users to take on responsibility, based on co-developed design and operational models. There is no one-size-fits-all approach. NBS3 can be adapted to different needs and contexts, which gives the characteristic complexity, given parameters that needs to be defined in collaboration with local stakeholders. All FCs recognise and appreciate the social, environmental, and economic impacts of urban community gardens in urban regeneration – which is why the intervention is widely explored by cities.

¹ 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.



NBS 6 – Accessible Green corridors. NBS6 is also a popular choice in FCs, primarily due to its design flexibility, suitability for enhancing local landscape conditions, meeting citizen demands for increased interaction with the natural environment and its synergetic effect with other NBS such as urban gardens, pollinator corridors etc. Green corridors represent highly adaptable NBS solutions in different urban tissue configurations. All four FC have put forth 12 NBS6 proposals in their Urban Plans. These proposals encompass a wide spectrum, ranging from investment initiatives aimed at improving access to river areas as a pedestrian pathway (Cascais – see C6.2+8.2 – Pollinator Friendly Pedestrian Trail along the River) to regulatory measures designed to facilitate the creation and development of inclusive and ecologically sound green corridors, particularly in the context of industrial area conversion projects (Cluj-Napoca – see CJ6.3 – Green Corridors in former Industrial Areas).

Overview of key FC urban plan results

FC Cascais has elaborated a series of closely interconnected projects. Though small scale, NBS can fully transform the URA by focusing on NBS3 and NBS6 interventions, paired with fostering pollinator biodiversity actions (NBS 8) to harness synergies and enhance impact. Green corridor interventions aim at unlocking suitable sites for urban agriculture, while community garden projects aim at transforming the fragmented plots of land (some have informal/illegal vegetable gardens) to connect two neighbourhoods currently divided by a highway. Paired with other greening initiatives, the planned green-blue corridor along the river margins targets the transformation of the entire neighbourhood landscape into a more comfortable, ecologic, and inclusive living environment. Key challenges include private plot ownership and political support but the community and existing initiatives (e.g., community garden) are major drivers for future change. Next steps involve kick-starting the implementation of projects that already have technical designs.

FC Cluj has developed a complex Urban Plan addressing key sites throughout the city, focusing on the blue-green corridor of the Somes River and the industrial railway axis. The plan aims to go beyond current flagship projects in the city centre to provide valuable facilities and infrastructures for communities in peripheral neighbourhoods. Key challenge for FC Cluj is overcoming local laws prohibiting vegetable gardens in public spaces. To address this, the FC Cluj team, with support from URBASOFIA, has created an innovative policy draft/document that guides the municipality in converting unused green pockets in collective housing units into community gardens. This document showcases different community garden models derived from the FRC experience and provides spatial, planning, and landscape requirements for adopting this solution, with replicability potential for a wide range of cities.

FC Piraeus Urban Plan places strong emphasis on upscaling NBS 3 interventions in schools in combination with an educational approach and transforming Marie Kourie Road into a green, pollinator-friendly corridor. Given the high build density of the city, it was considered one of the few solutions most fitting and likely to create a notable change. Thus, FC Piraeus developed a project proposal for upscaling both NBS 3 and NBS 6 at city level.

Key achievement of FC Piraeus is the initiative to upscale and implement NBS 3 in all schools across Piraeus. The co-design actions carried out during proGIreg have gained



significant popularity and had a major impact on local schools where planting have been realized. This initiative has garnered strong political and decision-maker support, showcasing the importance of NBS in educational settings and the value and potential of NBS in enhancing liveability and sustainability of Piraeus. The integration of NBS3 in schools not only enhances the environmental and ecological quality of the educational institutions but also fosters a deeper connection between students and nature. The success of FC Piraeus' co-design actions, engaging stakeholders and their alignment with local priorities have solidified the importance of integrating nature-based solutions in urban planning and have set a positive example for future initiatives in the city.

FC Zenica Urban Plan represents an urban regeneration strategy with impact at city level. Zenica has chosen to transform neglected sites in different neighbourhoods by creating new community gardens and green corridors to connect places, leisure, and sports. Additionally, the remediation of valuable land on a former coal landfill will unlock the potential for regeneration in the area. Key challenge for FC Zenica is correlating NBS intervention requirements with ongoing investment planning. Most NBS interventions are considered flagship projects playing a key attractor role at city level.

Conclusions

The FCs Urban Plans demonstrate the commitment to implementing NBS and achieving sustainable urban regeneration. The unique characteristics and challenges of each FC have shaped strategies and interventions, resulting in diverse approaches to neighbourhood transformation. The collaboration with local communities and stakeholders has been instrumental in driving the urban plans forward, ensuring relevance and fostering a sense of ownership among residents. FCs represent a closely connected actor network regarding NBS techniques, sustainable regeneration of neighbourhoods, co-creation practices and design requirements for ecologic transformation of neglected sites into valuable environmental and community assets. Table 2 – Key strategy/measure proposed by FC concludes the most critical aspects for each urban regeneration area, and Table 3 – FC Urban Plan ambitious approaches, provides an overview of the most challenging project proposals of FC regarding resources allocation, political will, technical requirements, juridical issues, etc.

FC	Key strategy/measure proposed	Key barrier	Likeli- hood	Comment
Cascais	C3.2 - Urban Agricultural Areas. Involves converting fragmented privately owned land into urban farming and community gardening spaces, accessible via a river corridor pathway (see C6.1+8.1). The proposal is leveraging the Land Bank	 Budget allocation and political factors. Connecting with private owners is also a difficult process. 	Mediu m-High	FC Cascais has extended experience in deploying urban agriculture interventions. To raise awareness about the value of the fragmented lands, the intervention C6.1+8.1 is critical. Making the sites accessible will open new possibilities, and pressures

Table 4 - Key strategy/measure proposed



	policy allowing private land exchange for urban agriculture.			from the community will increase
Cluj- Napoca	CJ3.1, CJ3.2, CJ3.3, representing NBS3 multifunctional community gardens, are considered the most relevant measures for raising awareness about the social, environmental, and economic values of productive gardens, with the aim of creating a new standard for green areas regeneration.	 Cluj-Napoca municipality's focus on flagship projects and major infrastructure developments. Once finished, it will free resources to evaluate regenerating peripheral neighbourhoods and converting underused terrain into valuable ecological public spaces. 	High	City's motto is "Green Cluj." Community-driven interventions and NBS- oriented landscape designs are welcomed by decision- makers and citizens alike. As one of EU 100 Climate Neutral Cities, Cluj-Napoca is highly likely of engaging in green transformation projects, leveraging the proGIreg Urban Plan for wide-scale implementation.
Piraeus	P3.1+8.1/P3.2+8.2 primary and secondary schools' gardens and pollinator- friendly areas represent the key strategic measures for greening the URA and the city. Given the dense urban environment, schoolyards are perceived as very valuable open spaces, that require increased thermal comfort and improved environmental conditions.	 No key barriers perceived. Financial support by the public authority is crucial for larger projects. 	High	Several small-scale pilot interventions proved successful. Politician actively involved in the process confirm the solution can be adopted by all schools of Piraeus. Many schools are ready to take similar actions independently. Given multiple projects run concurrently, authorities must ensure an integrated approach, considering synergies between interventions.
Zenica	Z6.2 - Babina Rijeka Regeneration is a key URA project aiming to enhance ecosystem services, connections, and the overall landscape of a valuable green space for leisure and sports. It will create a grid of green corridors to protect open areas from the elements and develop thematic spaces within green zones – subject to further co- design processes.	 No key barriers identified. Budget allocation may be challenging but given high interest to undergo green regeneration and development, the urban plan proposals have high priority for the local context. 	High	Proposal for Babina Rijeka (existing green space with little vegetation) highlights the value of adopting green corridors and necessary requirements to create valuable NBS. If implemented, local landscape and environmental conditions will be significantly enhanced. The proposed project will unlock the potential for multifunctional and ecological public space for leisure, sports, social, and cultural activities.



The proposed measures outlined above aim at setting new local standards for communityoriented green facilities, fostering engagement and interaction among residents. They can raise awareness and encourage similar projects in the URA and beyond.

Table	5 -	FC	Urban	Plan	- ambitious	approaches
Table	J –		Orban	i iuii	- ambitious	approactics

FC	Challenging interventions (ambitious proposals)	Key barrier	Likelihood of implement ation	Comment
Cascais	C3.1 Multi-use Green Areas . The site consists of privately owned lots and public terrain. To implement a coherent design, it is critical to acquire private lots or compensate to create urban agriculture interventions and enhance pedestrian accessibility.	 Privately owned lots are not the only barrier. Given site is adjacent to a highway strict protection zone must be respected. Existing 15-year-old plan to extend the electric infrastructure. Therefore, the sites have been unavailable for development. 	Low- Medium	Deploying the intervention in stages and in cooperation with all actors may ensure the project success in medium- long term.
Cluj- Napoca	C6.1 Somes River Green Pathway . The area holds relevant value due to natural landscape – the project proposes a simple pathway to allow citizens enhanced connections with the natural environment.	 Area is regulated as technical zones – water catchment area, highly protected for the city's security. Thus, very few interventions are permitted. Project fiche details how the existing pathway can be used while ensuring area protection (securing site with surveillance and raising awareness). 	Low- Medium	The pedestrian pathway is highly relevant at neighbourhood level, connecting Water Museum with the commercial area. Further co-creation actions and collaboration may ensure proper connection without compromising infrastructures.
Piraeus	P6.2 Green Corridors in Piraeus City.	 Funding and integrated planning. 	Low	It represents a long- term goal.
Zenica	Z1.1 Landfill Crkvicko Brdo. The former coal landfill site represents a high environmental impact and risk including fumes and air pollution.	 Limited resources for addressing pollution. Remediation known to be costly, requiring further environmental studies to determine the most effective approach. 	Low- Medium	Slope terrain requires more expensive infrastructural works, paired with soil remediation investments.



Strategic approach of FC Urban Plans

Each FC adopted different urban development strategies to address challenges in the URAs, feeding into the development of the Urban Plans. This includes priorities, spatial characteristics of the URA, socio-economic factors, and community involvement.

Table	6 -	FC	Urban	Plans	strategic	approaches	- overview
-------	-----	----	-------	-------	-----------	------------	------------

FC	Urba	n Plan strategic approach by	/ FC
	Urban acupuncture approach	Development of flagship projects	Developing local pilots to trigger wide scale adaptation of NBS
Cascais	FC Cascais aims at implementing local small- scale interventions for greening paved areas and/or plots that are currently illegally used: C6.3 Greening the parking lot, C6.4 Walkway by the vegetable garden, C6.1+8.1 Pollinator friendly green trail.	 No flagships projects. To set new local standards, focusing on transforming a section of the river corridor for improved accessibility and use for ecosystem services (biodiversity and flood protection). Aims at setting an example for other parts of the river corridor or 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	Final Urban Plan includes suitable areas for small- scale NBS 3 and NBS 5 interventions for the medium and long term: CJ3.4 Community gardens in collective housing neighbourhoods, CJ5.1 Community gardens in collective housing neighbourhoods, CJ6.2 Green corridors development programme	 No flagship projects. City has several ongoing large environmental projects (urban parks and gardens). Focus is on developing interventions complementary to those projects. 	Three key intervention sites in the URA are considered critical for demonstrating the impact and value of various forms of urban gardens, serving as examples of the policy proposal: CJ3.1 Community gardens in Mânăştur. CJ3.2 Community gardens in Mănăştur, CJ3.3 Multifunctional public space Timişului.
Piraeus	By converting schoolyards into productive green spaces (NBS3 and NBS8), Piraeus aligns with urban acupuncture principles: affordable, co-managed, and valuable for the local community.	 P6.1 Marias Kiouris (MKR) pedestrian road – Green corridor considered the flagship project of FC Piraeus, converting the former railway line into a green corridor with urban 	FC Piraeus already started to implement small pilots in schools for NBS 3 interventions. High likelihood of being widely replicated throughout the city, given strong support from the local municipality and teachers.



			gardens and pollinator gardens.	
Zenica	FC Zenica's approach is strongly oriented towards developing an urban acupuncture city-level strategy. The Urban Plan elaborates proposals for eight strategically relevant sites for NBS adaptation to improve local conditions of various neighbourhoods.	•	Flagship projects leading the new green NBS-driven standard: Z3.1 Therapeutic Garden, Z1.1 Landfill Crkicka Brda, Z5.1 Green Roof on Underground Parking, Z6.2 Regeneration of Babina Rijeka.	Besides small-scale community gardens (planned to be operated in collaboration with local NGO), interventions are not planned as pilots, even if the goal is to set a standard of good practices for ecological interventions at city level.

Integration into local urban planning frameworks

The final urban plan of each FC showcases the efforts of replicating NBS and implementing sustainable urban regeneration strategies in alignment with existing and planned local urban planning frameworks. Below table 6 highlights the strategic alignment of projects with FCs visions and objectives, demonstrating the commitment to integrating NBS into the local context for long-term positive impacts on the urban environment and quality of life.

Table 7 – Ove	erview of integration of	r urban plans into FC local urbai	n planning frameworks (updated)
FC	Existing masterplans	Context	ProGlreg project outcomes
Cascais	Climate Change Adaptation Action Plan (2016) "Terras de Cascais" strategy	Implementing NBS3 at city level. NBS6 and NBS8 proposals for URA in line with Climate Change Adaptation Action Plan.	Supporting the Action Plan by: (i) developing community gardens to further improve the GI network. (ii) riverbank restoration and accessibility. (iii) increase accessibility of key plots for urban agriculture.
Cluj- Napoca	Cluj-Napoca Integrated Development Strategy 2021- 2027 (SIDU), NetZero Cities	SIDU has been approved and is now operational. NetZero Cities project started with consultation processes.	Contribute to achieving SIDU targets for newly planted trees by identifying key areas for NBS6 implementation. Contribute to the CNC objectives by enhancing the GI ecosystem services – NBS3 deployment.
Piraeus	Regulatory Plan "Athens- Attica 2021"	Stakeholders activated. NBS3 for schoolyards conversion/adaptation has been discussed within public authorities.	NBS3 proposal contribute to achieving set greening objectives. NBS6 proposal are in line with mobility and development priorities detailed in the Regulatory Plan.
Zenica	Development Strategy 2021- 2027	Public hearing until the end of September 2023, expected adoption in City council at the end of October 2023Synergies with proGIreg outcomes are being integrated.	ProGlreg proposals are integrated under the Strategic Goal 3 of the local strategy: Environmental protection, investments in energy efficiency, traffic infrastructure and communal services, Programme 3.1.3 Protection of nature and biodiversity, defining and equipping recreational zones

Table 7 – Overview of integration of urban plans into FC local urban planning frameworks (upda



Part 3 - FC Urban Plans

FC Cascais Urban Plan



Figure 8 – Cascais URA at city level in Portugal

FC Cascais Urban Plan aims to regenerate two neighbourhoods through enhanced interconnectivity and accessible river corridors. This unlocks potential in fragmented land and facilitates the application of the local Land Bank Policy for urban agriculture. Other initiatives include greening a parking lot for improved public spaces and realizing a multifunctional area that acts as both an attractor and buffer for highway-adjacent housing area.

Going beyond administrative barriers, legal procedures, and lengthy bureaucratic processes.

FC Cascais URA is characterised by fragmented urban fabric, complex overlay of available plots, existing but un-landscaped and/or un-managed GI, major infrastructures (highways and related protection areas, areas reserved for infrastructure work, and flooding areas), informal/illegal housing and built structures, and unknown/private ownership resulting in blocked sites without concrete real estate objectives given the challenging context, particularly in relation to major infrastructures.



Based on the work in T2.3, FC Cascais has mapped, analysed, and evaluated the Urban Regeneration Area and identified its needs and requirements for green infrastructure (GI) development and community-oriented facilities. Development solutions in terms of function, design, and ecological impact are in place. However, the comprehensive regeneration of the neighbourhood hinges on an important driver: political will to address these problems. Decision-makers must understand the priority and added value of adapting nature-based solutions (NBS) in the study area, e.g., allocating adequate funds. Existing negotiation and collaboration tools, such as the Land Bank (local policy facilitating land exchanges between the public and private land owners for urban agricultural activities) are currently ineffective. Exploring additional incentives is necessary to determine how this tool can be effectively deployed in the URA.

Consequently, the urban plan's primary objective is to raise awareness and showcase compelling scenarios and potential strategies for green transformation in the URA. Strategically designed actions are planned to have a visible and relevant impact within the initial 0–5-year period of the 15-year planning horizon. Visible results are crucial for persuading decision-makers, thus planned actions should align with the typical 4-year agenda of mayoral terms while larger and more ambitious projects require politicians' long-term commitment. By strategically deploying numerous hard and soft interventions in the first 5 years, the continuity of development can be ensured. The Final Urban Plan aims at:

- → empowering citizens to advocate for the green transformation of the area and
- → convincing decision-makers to allocate resources for these initiatives.

Key principles of the FC CASCAIS Final Urban Plan:

Cluster and strategically mix temporary interventions with important investments (feasible in the current planning and administrative context). 0-5-year period:

- → Urban Plan details critical investments: green corridors (and pollinators), together with suitable options/solutions for temporary interventions of soft interventions on "blocked" plots. The green corridor projects are already undergoing or have been addressed formally. Challenges include ensuring that the contracted designers of the blue-green corridor on Mariana's River follow the NBS requirements and a smart and ecologic design.
- → Green corridor along vegetable gardens requires the demolition of illegal buildings and site security. Other sites must have at least minimal interventions for improving local conditions.

Flexibility in design. The Cascais Urban Plan is exploring flexible design options for its interventions due to the uncertainty surrounding administrative and legal factors. Therefore, the project fiches accommodate various design solutions while also providing detailed regulations for parameters related to GI and NBS, drawing upon the results of the co-design process conducted within and beyond the proGIreg timeframe.



Web based urban plan of FC Cascais



Urban Plan Interactive map click here: https://progireg.eu/cascais/urban-plan/

Access project fiches (click on hyperlinks below)

- → C3.0 Brejos Community Garden (existing)
- → C3.1 Multi-use green areas
- → C3.2 Urban agricultural areas
- \rightarrow C6.3 Greening the parking lot
- \rightarrow C6.4 Walkway by the vegetable garden
- \rightarrow C6.1+8.1 Pollinator friendly green trail (along vegetable garden)
- \rightarrow C6.2 + 8.2 Pollinator friendly pedestrian (trail along the river)

CASCAIS URBAN PLAN for implementation of NBS



Ownership of relevant plots 17 Municipal land Private land

-

Planned NBS in FC Cascais: NBS3 - Community-based urban farms and gardens NBS6 - Accessible green corridors NBS8 - Pollinator biodiversity highway-adjacent housing area.

Other initiatives include greening a parking lot for improved public spaces and realizing a multifunctional area that acts as both an attractor and buffer for

URA limit

agriculture.

through enhanced

Intervention site

FC Cascais Urban Plan aims to

regenerate two neighbourhoods

interconnectivity and accessible

potential in fragmented land and

facilitates the application of the

local Land Bank Policy for urban

river corridors. This unlocks

PLANNED NBS: Details on NBS3 interventions

Multi-use green areas (C3.1)



Multifunctional community garden, adapting relaxation, socializing and sports areas. Land use must be reframed from ownership point of view.

Urban agricultural areas (C3.2)



Converting neglected land for agricultural purposes: potentially community gardens, orchards, vineyards, or even pastures for cattle (flock of sheep is often seen).

Details on NBS6 (and NBS8) interventions Pollinator friendly green trail along garden (C6.1+8.1)



The path will be designed as a pollinator friendly trail with native species, co-implemented with residents contributing to environmental awareness).





FC Cluj-Napoca Urban Plan



Primary aim of FC Cluj-Napoca Urban Plan is to facilitate the green revitalisation and transition of post-industrial neighbourhoods and peripheral residential zones. Cluj-Napoca has been focusing in recent years on deploying flagship projects. Thus, the current strategy prioritises local efforts and reduce social discrepancies, empowering residents through sustainable green NBS interventions and regenerating local landscapes.

FC Cluj-Napoca Urban Plan characteristics

Connecting communities with Nature and consolidating a more compact GI system The FC Cluj-Napoca Urban Plan faces the specific challenge of mitigating discrepancies caused by ongoing or planned flagship greening projects, including major urban parks and gardens. The primary objective of the final Urban Plan for Cluj is to enhance greenery in local neighbourhoods through small-scale projects and actions. Several NBS3 adaptation measures are available, with a significant barrier being outdated legislation that prohibits vegetable plantation in public spaces. Consequently, the Final Urban Plan for Cluj seeks to persuade decision-makers to update this local policy. Updating the policy becomes feasible when the project provides strategic directions and guidelines for specific scenarios in which the solution can be adopted. As a result, the Final Urban Plan takes the form of a strategy, designed to regulate future investments and offer concrete requirements for planning and strategic documents at the neighbourhood level. Simultaneously, to demonstrate the impact



of NBS3, preliminary piloting is necessary, involving the creation of three multifunctional green public spaces in three key neighbourhoods.

Regarding NBS6, the Final Urban Plan will develop project fiches for significant green axes at the local level, customized to each specific context, which includes the conversion of post-industrial sites, residential green corridors with community functions, and the revitalization and landscaping of blue-green corridors.

Key principles for the FC Cluj Final Urban Plan:

Acknowledge the potential snow-ball effect for small-scale initiatives. NBS3 community gardens represent a relevant solution for the context of the city of Cluj-Napoca, especially in the case of green spaces associated with collective housing neighbourhoods where informal vegetable gardens already exist. Through pilot interventions in key areas and through a local policy that supports and regulates these interventions, the solution can be scaled to the city level, regenerating communities that are significant in number.

A forward-looking and proactive approach closely aligned with local urban regulations and plans. Urban transformation is an ongoing process, and in the context of standard urban planning, nature-based solutions can be gradually integrated. Consequently, the Final Urban Plan proposes measures for upcoming conversions that are already outlined in the city's regulatory plans. This ensures that the new developments on former industrial sites with waterfront access prioritize inclusive and consistent citizen access to the blue-green corridor. To obtain building permits, the authorities will impose a specific set of requirements on new developers. This obligates them to adhere to the design and functional guidelines outlined in the urban plan, which focus on making the river corridors accessible, sustainable, and imbued with a distinct natural ambiance.

Web based urban plan of FC Cluj-Napoca

Figure 9 - Localization of Cluj-Napoca URA at city level



Urban Plan Interactive map: https://progireg.eu/cluj-napoca/urban-plan/



Access project fiches (click on hyperlinks below)

- CJ3.1 Community gardens in Mânăștur
- CJ3.2 Multifunctional public space and green corridor Nădășel
- CJ3.3 Multifunctional public space Timişului
- CJ3.4 Community gardens in collective housing neighbourhoods
- CJ5.1 Green roofs on collective housing unit
- CJ5.2 Green roof rehabilitation programme
- CJ6.1 Someș river green pathway
- CJ6.2 Green corridors development programme
- CJ6.3 Green corridors in (former) industrial areas





FC Piraeus Urban Plan



Figure 10 - Localization of Piraeus URA at city level

Key aim of the FC Piraeus Urban Plan is to identify critical zones for integrating NBS to foster more environmentally conscious neighborhoods. Piraeus and study area grapple with high urban density, posing challenges for implementing Green Infrastructure (GI) adaptation measures. Hence, the Urban Plan focuses its efforts on two pivotal elements: schools and schoolyards with the aim of transforming them into interactive community gardens including didactic and pollinator spaces. Additionally, the plan targets streets that can serve as sites for new green corridors, further enhancing greening initiatives within the urban environment.

FC Piraeus Urban Plan characteristics

Demonstrating that built density can be mitigated with NBS adaptations - street conversion into community-oriented multifunctional green spaces and NBS3 in schools.

FC Piraeus has progressed in the development of the Urban Plan, reaching a point where they have a clear understanding of future project requirements and design directions. In comparison to other cities, the study area in Piraeus is less complex, leading co-design efforts to concentrate more on design scenarios, options, and specific requirements. Furthermore, they've already initiated small-scale piloting of NBS3 gardens in schools, using



a "learning by doing" methodology to raise environmental awareness, especially in terms of environmental education.

The primary challenge for FC Piraeus in crafting the Final Urban Plan was to incorporate a more strategic component for the medium and long term. The proposed projects for Marie Kourie Road, involving the adaptation of NBS6 and NBS8, can realistically be implemented within the 0–5-year period. Conversely, including NBS3 in schools in the Piraeus area depends on establishing a local policy where the municipality collaborates with local schools, providing small grants, funds, or support for creating these gardens.

Key principles for the FC Piraeus Final Urban Plan include:

Detailed requirements and design guidelines for planned interventions. Design solutions have been developed in previous co-design activities involving local students and students from Landscape Design at the Polytechnic University of Milan. These solutions have been presented to local actors, and further refinement of the design requirements has taken place.

Strategic directions and guidelines for replicating concrete interventions in other sites. The Final Urban Plan clusters interventions in the 0-5 year period, with the 5-15 year period focusing on expanding interventions to other sites within the URA and the city.

Web based urban plan of FC Piraeus



Urban Plan Interactive map: https://progireg.eu/piraeus/urban-plan/

Access to project fiches of planned NBS (click on hyperlinks below)

- P3.1+8.1 Guidelines for future greening policy
- P3.2+8.2 Primary and secondary school gardens
- P6.1 Marias Kiouris (MKR) pedestrian road green corridor
- P6.2 Green corridors in Piraeus City
- P8.3 Marias Kiouris pollinator-friendly route



FC Zenica Urban Plan



Figure 11 - Localization of Zenica URA at city level

Objectives of the Zenica Urban Plan include adapting strategic NBS interventions in line with ongoing projects to regenerate neighbourhoods throughout the city: Reclaiming neglected, degraded, or underused sites and greening measures within the Green Infrastructure System.

Overview - FC Zenica Urban Plan characteristics

NBS as means for activating places and spaces, and as an added layer of sustainability on ongoing or already planned initiatives.

FC Zenica is embarking on the proGIreg journey with the goal of aligning local investments with the innovative knowledge generated from the research project. Currently, FC Zenica is focusing its co-design efforts on analysing and determining the optimal locations for NBS adaptation. The boundaries of the Urban Regeneration Area in Zenica have been somewhat diffuse, given the circumstances. Through the co-design process, the FC Zenica team has identified 10 projects in different parts of the city, closely connected to existing green infrastructure such as the river corridor, required pedestrian connections, and underutilized green spaces.



As a result, the Final Urban Plan for FC Zenica serves as an urban regeneration strategy following the principles of "urban acupuncture." The primary objective of the Final Urban Plan is to provide design options and solutions for each site, tailored to the local context, aimed at enhancing the daily lives of citizens, improving the local microclimate, and ensuring better ecosystem services. One of the main challenges FC Zenica faces in developing the Final Urban Plan is collaborating with a wide range of stakeholders and aligning local agendas and ongoing projects with the specific requirements of NBS implementation. To address these challenges, the FC Zenica team has brought together municipality departments responsible for ongoing projects and investments to assess how NBS can be coherently incorporated into project designs, serving as valuable assets for local communities. Unlike the other FCs, the proposed projects by FC Zenica have a higher likelihood of being implemented in the short to medium term. Consequently, the parameters for future designs, including NBS-related considerations, landscaping requirements, accessibility, environmental impact, community involvement, and more, need to be more detailed. In addition to the requirements outlined in the Final Urban Plan, the FC Zenica team, supported by Urbasofia, proposes concrete design directions.

Key principles for the Final Urban Plan include:

Integration of measures: Establishes a common identity and logic for all planned interventions. The projects must be connected and strategically planned in three phases.

Concrete parameters: The Final Urban Plan must steer the design of ongoing projects plan with NBS for urban regeneration. It provides concrete indicators/requirements and guidelines for future projects, along with suitable design options for all sites.

Web based urban plan of FC Zenica



Urban Plan Interactive map: https://progireg.eu/zenica/urban-plan/

Access project fiches (click on hyperlink below)

- Z1.1 Landfill Crkvicko Brdo
- Z3.1 Therapeutic Garden
- Z3.2 Urban Gardens
- Z5.1 Green Roof on Underground Parking



- Z5.2 Green Roofs on private garages
- Z6.1 Bicycle Path Blatusa Banlozi
- Z6.2 Regeneration of Babina Rijeka
- Z6.3 Plateaus on the River Bosna

ZENICA URBAN PLAN for implementation of NBS



PLANNED NBS **Details on NBS1 interventions** Landfill Pusaona Regeneration (Z1.1)



Leisure and sports activities on former landfill and potential clean energy (solar panels on poor soil unfit to grow vegetation - energy can be used for park facilities)

Details on NBS3 interventions Therapeutic Garden (Z3.1)



Therapeutic garden to be integrated into the local context, considering vulnerable communities in the neighbourhood and the central location of the site.

Urban Gardens (Z3.2)



Implementing community gardens in form of raised box gardens, allotments including leisure elements, paired with other greening intiatives and creation of local green corridors plantings.

Objectives of the Zenica Urban Plan inlcude adapting strategic NBS interventions in line with ongoing projects to regenerate neighborhoods throughout the city: Reclaiming neglected, degraded, or underused sites and greening measures within Green Infrastructure System.

URA limit Intervention site

Planned NBS in FC Zenica:

NBS1 - Leisure activities and clean energy on former landfills

NBS3 - Community-based Burban farms and gardens

NBS5 - Green walls and roofs

NBS6 - Accessible green corridors

Landfill Pusaona Regeneration

Plateau on the **Bosna River**

Green Roofs on

Private Garages Green Roof on Underground Urban Gardens

NBS6

Urban Gardens Urban Gardens

NBS6

Regeneration of

Babina Rijeka



100 200 300 400 500 n

Theropeutic

Garden

Garages





Details on NBS5 interventions Green roof on underground garages (Z5.1)





Create public green roof on top of underground parking garage, providing valuable ecosystemic services to the neighbourhood.



Create public green roofs on top of underground parking, providing valuable ecosystemic services to the neighbourhood.

Details on NBS6 interventions Bicycle path Batusa Banzoli (Z6.1)



Create bicycle path connecting the new mixed use development planned in the former ndustrial area. The bike path has to be further connected to the city bike network.

Regeneration of Babina Rijeka (Z6.2)

A LO A ALAN ALAN ALANA

Accessible green corridors and green infrastructure for: redeveloping Babina Rijeka into a community park with supporting green infrastructure.





Waterfront development to create public spaces for leisure activities, making the riverbanks accessible for residents and other users.



Annex A – Repository Urban Plans and project fiches

Cascais Urban Plan and project fiches

Urban Plan Interactive map: https://progireg.eu/cascais/urban-plan/ https://progireg.eu/fileadmin/user_upload/Cascais/C_NBS_3.0.pdf https://progireg.eu/fileadmin/user_upload/Cascais/C_NBS_3.1.pdf https://progireg.eu/fileadmin/user_upload/Cascais/C_NBS_3.2.pdf https://progireg.eu/fileadmin/user_upload/Cascais/C_NBS_6.1_and_8.1.pdf https://progireg.eu/fileadmin/user_upload/Cascais/C_NBS_6.2_and_8.2.pdf https://progireg.eu/fileadmin/user_upload/Cascais/C_NBS_6.3.pdf https://progireg.eu/fileadmin/user_upload/Cascais/C_NBS_6.3.pdf

Cluj-Napoca Urban Plan and project fiches

Urban Plan Interactive map: https://progireg.eu/cluj-napoca/urban-plan/ https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_3.1.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_3.2.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_3.3.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_3.4.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_5.1.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_5.2.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_5.2.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_6.1.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_6.2.pdf https://progireg.eu/fileadmin/user_upload/Cluj-Napoca/CJ_NBS_6.3.pdf

Piraeus Urban Plan and project fiches

Urban Plan Interactive map: https://progireg.eu/piraeus/urban-plan/ https://progireg.eu/fileadmin/user_upload/Piraeus/P_NBS_3.1_and_8.1.pdf https://progireg.eu/fileadmin/user_upload/Piraeus/P_NBS_3.2_and_8.2.pdf https://progireg.eu/fileadmin/user_upload/Piraeus/P_NBS_6.1.pdf https://progireg.eu/fileadmin/user_upload/Piraeus/P_NBS_6.2.pdf https://progireg.eu/fileadmin/user_upload/Piraeus/P_NBS_8.3.pdf

Zenica Urban Plan and project fiches

Urban Plan Interactive map: https://progireg.eu/zenica/urban-plan/ https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_1.1.pdf https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_3.1.pdf https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_3.2.pdf https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_5.1.pdf https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_5.2.pdf https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_6.1.pdf https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_6.2.pdf https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_6.2.pdf https://progireg.eu/fileadmin/user_upload/Zenica/Z_NBS_6.3.pdf