

Planning and implementing nature-based solutions

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## Abbreviations & explanations

See the full **proGireg glossary** for detailed definitions.

proGlreg	productive Green Infrastructure for post- industrial urban regeneration
NBS	Nature-based solution(s)
Front Runner City	Dortmund (Germany), Turin (Italy), Zagreb (Croatia) and Ningbo (China) host Living Labs in post- industrial districts where nature-based solutions are developed, tested and implemented.
Follower City	Cascais (Portugal), Cluj-Napoca (Romania), Piraeus (Greece) and Zenica (Bosnia and Herzegovina) closely follow the progress in the Living Labs and engage in city-to-city exchange to replicate the nature-based solutions.
Living Lab	A test site area in the cities for nature-based solutions implementation

## Introduction

The proGIreg project is funded by the European Commission under the Horizon 2020 programme and will run from June 2018 until 2023. ProGIreg stands for 'productive Green Infrastructure for post-industrial urban regeneration': nature for renewal. The project's 'Front Runner Cities' Dortmund (Germany), Turin (Italy), Zagreb (Croatia) and Ningbo (China) host Living Labs in post-industrial districts where nature-based solutions are developed, tested and implemented'. Cascais (Portugal), Cluj-Napoca (Romania), Piraeus (Greece) and Zenica (Bosnia and Herzegovina) are 'Follower Cities' that closely follow the progress in the Living Labs in the Front Runner Cities and engage in city-to-city exchange to replicate the nature-based solutions of the front-runners. Pro-GIreg's eight different nature-based solutions, reduce vulnerability to climate change, and provide measurable economic benefits to citizens and entrepreneurs in post-industrial urban districts. Learn more about the project: pro-Gireg.eu.

This report is a summary of the proGIreg projects efforts in planning and implementing nature-based solutions, the summary is derived from in-depth reports linked to the end of each chapter. Explore the reports to learn more!



## Spatial Analysis

The planning process of nature-based solutions in proGIreg cities began with developing a methodology for spatial analysis. The methodology entails six steps:

- 1) Data availability check
- 2) Analysis of existing plan and policy framework
- 3) Basic data collection and area-based stakeholder identification
- 4) Quantitative data collection and interpretation
- 5) Data synthesis and spatialization
- 6) Formulation of conclusions



Figure 1 Spatial Representation of proGIreg NBS

In total, a number of 85 spatial datasets were developed under the four key analysis domains of proGIreg. Read more about the methodology in the 'Methodology on spatial analysis in front-runner and follower cities' report.





### Figure 2 Analysis scales in proGIreg

Once the methodology was set, the project followed up with detailed spatial Analysis in proGIreg Front Runner and Follower Cities to develop a common spatial framework based on existing data, and information on stakeholder and policy landscapes in each city. Despite the European Front Runner cities differing context, culture and history, a SWOT analysis confirmed cross-cutting issues characteristic of post-industrial and

socially-deprived areas such as depopulation, economic stagnation, social segregation and disconnection.

The Living Lab areas were found to have a negative image within the city context (Huckarde, Dortmund; Mirafiori, Turin) or were generally unknown and marginalised (Sesvete; Zagreb). The population base in the areas of Dortmund and Turin is characterised by a strong presence of welfare recipients and lower education, while the Living Lab area in Zagreb faces a dramatic population increase creating a disparate community lacking a local identity. Lack of public services and social facilities in the Living Lab areas generates significant local pressures, in particular when corroborated with lower housing standards (Huckarde), a decline in the capacity of existing social support structures (Mirafiori) or an excessive population densification not served by public services and urban functions (Sesvete). In terms of infrastructure, the three Living Labs struggle with low urban fabric permeability, low accessibility of urban green spaces and severed connections between points of interest in the areas, due to the barrier effect of transport infrastructure. The specific problems are lack of connections and paths (Huckarde), low permeability which leads to urban green spaces being abandoned (Mirafiori and Sesvete), the fracture in the territory caused by infrastructure, cutting off communities (Sesvete). While health data is only available for Turin (which has an indication of a higher incidence of several diseases in the Mirafiori area compared to the city), urban safety, pollution and low availability of good-quality green space are perceived as issues. Albeit soil data is very limited, brownfields and anthropogenically influenced soils are present in all Front Runner Cities, including soils polluted by fuels (Mirafiori). Lastly economically, unemployment (Huckarde; Mirafiori – especially youth) and a low number of businesses and entrepreneurship opportunities (Mirafiori), as well as a generally inert economic landscape where potential is not harnessed (Sesvete) are present.





Figure 3 SWOT-analysis map on social inclusion aspects in Dortmund

This is not the case of the **Ningbo Living Lab**, which has a more stable setting allowing testing of the proGIreg nature-based solutions in a central historic park of heritage and cultural relevance. The challenges in Ningbo are a very high population density and limited economic activities in service and hotel industry.

The opportunities in the Living Labs are also plenty - the proGIreg Front Runner Cities can leverage:

- Presence of available land for re-development (all cities)
- A generally young, active population (Sesvete) or possibilities of attracting it with sports
- Equipment (Huckarde)
- A high density of urban green spaces (all cities) with possibility to create a green infrastructure network.
- Comparatively low costs of real estate and land in all three areas are a competitive advantage for attracting businesses and inhabitants and raising the profile of the neighbourhoods
- High value and priority of preserving area, integrated in municipal and other planning schemes (Ningbo)



However, the effect of these actions needed careful assessment in conjunction with potential gentrification – especially in the case of Mirafiori, Huckarde and Sesvete areas are now highly diverse neighbourhoods, socially and culturally.

The challenges and contexts of the **Follower Cities** are more diverse – nevertheless, there are still commonalities between the four cities:

- Deficient pedestrian and bicycle accessibility represent a problem identified throughout the four cities.
- High level of air pollution, partly due to traffic, is present in Zenica, Cluj-Napoca as well as Piraeus.
- Very high population density, private ownership of brownfields, overcrowding and lack of urban connections / relationship with the green areas are issues characteristic of both Cluj and Zenica,
- Lower-income social situation, low education, discrimination, as well as illegal soil occupation in Cascais, similar to Turin / Mirafiori and Dortmund / Huckarde

### Other issues are unique to each Follower City:

- Cluj-Napoca has the opposite problem of Front Runner Cities with respect to the economic component: here, property costs are high with the city spearheading the upwards rent and land / construction costs at national level.
- Zenica is quickly depopulating.

Read more on the 'Spatial analysis in front-runner and follower cities' report.



Figure 4 Cascais Municipality zoning plan, with the identification of Regeneration Area (red)



## **Co-Design**

The spatial analysis was followed by **co-design planning** in proGIreg cities, entailing several workshops to help define a suitable approach. The first work-



Figure 5 proGIreg co-design dimension

shop round entailed three main building blocks, which were mostly identified based on the feedback received during the site visits:

1. Introduction and discussion of co-design principles

2. Aligning long-term expectations for the LL

3. Identifying stakeholders, roles and responsibilities

The six **co-design principles** guides planning and decisionmaking processes in the Living Labs towards co-design were set as:

- 1. Be open & inclusive
- 2. Be diverse,
- 3. Share goals and vision
- 4. Think long term
- 5. Be experimental & reflective
- 6. Be flexible
- 7. Be transparent.



### **BE OPEN, INCLUSIVE & DIVERSE**

Be aware that jointly producing solutions to real-world problems relevant for society, policy and practice requires the collaboration of all relevant stakeholders holding different types of knowledge (i.e. scientific, experiencebased, tacit). Look to inclusive & early-on engagement of all relevant stakeholders in decision-making processes and equal consideration of their needs and preferences. These are prerequisites for building trust, legitimacy and ownership for solutions.

# Co-design for urban



#### SHARE GOALS & VISION

Explore possibly differing perspectives and expectations, find common ground and develop a jointly agreed, common vision and goal to foster effective, mutually valued outcomes with high acceptance among different stakeholders.



### BE TRANSPARENT

Be transparent, honest and realistic about the rules of the game, the desired outcome, as well as extent and limits to stakeholder engagement at all times. This will help manage expectations, enhance acceptance and commitment to the NBS, and promote the uptake of solutions.

### THINK LONG-TERM

Look to a long-term planning horizon for all services and solutions to be produced. Good anticipatory, initial design and planning regarding monitoring, maintenance and governance can tackle arising barriers to the long-term success of an NBS.

## regeneration



**BE EXPERIMENTAL & REFLECTIVE** 

Actively foster iterative learning and trial and error. Learning environments should allow stakeholders to create and test new technologies, services and products in safe, real-life environments. A continuous feedback cycle of evaluating results and adjusting actions helps get to the best results. Accceptance of unfinished products and states is crucial.



### **BE FLEXIBLE**

Allow for flexibility in processes and plans. Give room for adjusting strategies in response to changing actors' needs, insights and circumstances, and for changing the ways and rules of collaboration.

### Figure 6 proGIreg co-design principles

The first round of co-design workshop brought **all participants onto the same page and aligned expectations** towards the desired local transformation in the Living Labs. A high intensity of stakeholder engagement in co-design was found to be neither possible nor desirable for all nature-based solutions by the initiating actor. Thus, aspects of co-design needed to be reconciled with the individual context and nature-based solutions in question. The intensity of stakeholder engagement seemed to be dependent on



a) The type of nature-based solutions (green roofs, aquaponics - which require a high level of technical expertise in design and operation) vs. urban gardening,

b) The type and experience of the initiating actor with stakeholder engagement processes

c) The context of administrative structures and procedures that might not be conducive to empowering actors to take significant influence on the design of the nature-based solutions.

Learn more about the first round of co-design workshops in the 'Co-designing nature-based solutions in proGIreg Living Labs – Workshop round 1' report.



Figure 7 Co-design workshop in Dortmund

The second round of co-design workshops focused on clarifying the links between innovation and transformation as well as exploring the key technical and social innovations in the Front Runner Cities. The question it set out to answer was how do we employ technical and social innovations and design the experimentation process to bring about the desired transformation? In order to realise the transformative potential of the Living Lab, the participants from Dortmund, Turin and Zagreb noted the need to link the goals of the individual Living Lab to broader district/city visions and strategies, integrating the experimentation process into district urban planning, and scaling up through public administration tools, plans and procurement activities to ensure long-



term sustainability. Linking up the vision/overall narrative of the Living Labs with higher-level governance is as critical as consolidating it downstream with those that benefit from the implemented nature-based solutions. Any longterm vision created by core group during the workshops was therefore not considered final, but up for discussion and revision with citizens. Especially in the context of moving co-creation beyond the core group and triggering communication with the broader public in the Living Lab district, as a natural next step. The cities overwhelmingly identified societal risks in co-design processes. Proposed mitigation measures included: improved communication measures, systematic stakeholder involvement, the creation of an overarching Living Lab narrative, and the cultivation of a sense of ownership and a local identity within the Living Lab. Read more on the second round of workshops in the 'Codesigning nature-based solutions in proGlreg Living Labs – Workshop round 2' report.



Figure 8 proGIreg NBS addressing different dimensions

In all three workshops, participants highlighted the importance of **speaking the language of the targeted populations, getting a good understanding of their living circumstances and their perspectives, and identifying representative and suitable intermediaries** to win their trust and enable successful engagement. It is important to be as concrete as possible in communicating the value of a particular measure using clear language, visuals and translation services. The third workshop brought to light that in some Living Labs, the codesign and co-creation process was well developed but still open to the involvement of new interest groups. Whereas in others, this was only possible after the third round of workshops as the partners feared raising the residents' expectations only to disappoint and demotivate them later on in the process



in light of unclear land leases and contracts issues. Read more in the 'Co-designing nature-based solutions in proGIreg Living Labs – Workshop round 3' report.



After the workshops distinct guidelines for codesign for nature-based solutions were developed. For replication efforts within proGIreg and beyond, the following points are of key consideration co-design:

Figure 9 Co-design brainstorming in Zagreb

- Know your target group, their daily routines and needs to find anchor points for their engagement and design activities according to their needs.
- Engage stakeholders early in the process to create a sense of ownership for the Nature-based solutions and increase the chance of their maintenance and caretaking beyond termination of a pilot project.
- Especially when working with disadvantaged groups, transparency is key to gaining trust, one of the most important assets in the management of such an initiative. Trust can be won by engaging users and intermediary NGOs directly and from the start.
- Identifying the benefits of a nature-based solution for the target group and making them visible and valued is crucial but at times difficult. The more focused the nature-based solutions is on its target groups' benefits, the easier it is to communicate them and thus aid any co-creation process.
- To garner citizens' support in general and marginalised groups in particular, it is crucial to frame nature-based solutions along the needs and interests of the particular group and their daily routines. In addition, it is recommended to be as concrete as possible in communicating the value of a particular measure using clear language, visuals and translation services as needed.



The proGlreg Front Runner Cities have different ways of navigating roles, responsibilities and governance arrangements for co-designing urban naturebased solutions, which are all equally valid. Arrangements include public-private partnerships between municipal and non-municipal actors where the role of public officials vary between a coordinating role and a consultative/supportive role. NGOs, associations or private actors are entrusted by municipal actors with the management and operation of the respective nature-based solutions, often on public space. At the same time, the latter often serve as strategic links between the municipality and citizens or marginalised groups. There are also arrangements characterised by interactive governance, where several public and private stakeholders are involved in naturebased solutions design and implementation and largely perform equal roles in formalised and non-formalised partnerships. The third governance arrangement observed is self-governance, characterised by the private sector or community organisations taking the lead while the public sector takes a supporting, responsive role. Citizens are perceived as equal partners in planning and power relations are well balanced between the actors.

The following process map illustrates the proGireg co-design principles:



Figure 10 proGIreg co-design principles





Co-design process \_





Planning and implementing nature-based solutions



The following four **changing parameters in co-design** were identified, and should be taken into consideration in a flexible manner when engaging in co-design:

- 1. Type of nature-based solutions: due to their nature and the benefits they deliver, some nature-based solutions might garner more support and commitment than others; not all types of nature-based solutions are conducive to co-creation from the early stage of co-design, and/or to co-design that aims at a high intensity of stakeholder engagement.
- 2. Land use requirements: it is advisable to look for plots whose land use requirements fit with the intended use of the nature-based solutions. If land use is not in line with the envisaged use, another location should be chosen, which can affect the timing and intensity of co-design.
- 3. Nature-based solutions on private or public land: most of the naturebased solutions (in proGIreg) are located on public land, with reason. Private land ownership often requires lengthy negotiations and a defined concept of use. Private landowners frequently have a lack of incentives for renting out plots for co-designing nature-based solutions, also concerning the uncertainty with what is going to happen after the termination of the project.
- 4. Construction and safety regulations and standards: check early if the envisaged nature-based solutions and its use comply with given construction and safety standards (i.e. accessibility of green roofs, statics of a building) and if there are any applicable permits that have to be applied for. Applications might delay the co-design and co-implementation process.

Learn more in the 'Guidelines for co-designing and co-implementing green infrastructure in urban regeneration processes' report.

## **Roadmaps for Follower Cities**

To ensure the **Follower Cities could** learn and eventually implement their own nature-based solutions, based on the lessons learned in the Front Runner Cities, **a roadmap** was developed to help guide them. The roadmap is structured as a step-by-step journey, accompanying Follower City from the preparatory work phase (focused on the preliminary activities that should be consolidated before starting to plan the transformation of Urban Regeneration Areas) to the final design of strategies and action plans towards the integration of naturebased solutions into the local context. The retrospective characteristic of the roadmap is supported by the replication toolkit, which provides a two-level structured summary of important findings and lessons learnt of co-designing



and co-implementing nature-based solutions in Front Runner Cities: the strategic level and the operational level. The Replication Toolkit also presents recommendations on how to deal with potential challenges and barriers throughout the proGIreg process. The strategic level Replication Toolkit supports the overall process of Urban Plan development with the help of the step-by-step roadmap.



### Figure 11 The roadmap for Follower Cities

The Roadmap shows Follower Cities how to build a coherent strategy towards the integration of nature-based solutions in the local context, gathering past knowledge created during the implementation phases and converting it into innovation while follower cities should use the Replication Toolkit as a constantly evolving atlas of proGIreg best practices and lessons learnt. Explore the full Roadmap towards urban planning in Follower Cities.

Following the design of the roadmap, several **stakeholder engagement** events enabled the Follower Cities to gather important insights to anticipate the next steps of the roadmap, aimed at defining a long-term vision and directions for



the development of local urban plans. It also provided the opportunity to assess stakeholders' willingness to contribute to the proGIreg local project scope. Read more in the **Report on the Follower Cities**' stakeholder set-up.

### Implementing nature-based solutions

The **common methodology for implementation** developed in the project supports the planning of the nature-based solutions interventions and explicates what has been done with stakeholders. In addition, it demonstrates a great source of knowledge and methodological tools to learn about and replicate proGIreg interventions, read the report on <u>Common Methodology for Imple-</u> <u>mentation</u> to see the planning frame and structure developed. The proGIreg **Implementation Plan** frame utilised in other contexts to support the planning of nature-based solutions.

Once the initial implementation plan is developed, monitoring of progress and consequent adjustments to the plans at the core of co-implementation within the proGIreg. Learn of each living labs implementation plan in The Front Runner Cities Implementation Plan report to gain an understanding of how the complete implementation plans look and can vary from one another.

The integration of **all the proGireg tools** (nature-based solutions timeline, risk assessment analysis, implementation plan) will allow to support, coordinate and facilitate the physical interventions, and support the Front Runner Cities to coherently report the efforts, challenges and results. The results of the report indicate that the implementation phase is longer, more complex and varied than expected. The role of cities is therefore central to achieving goals. Read the **Implementation Monitoring Report n.1 to learn more** about how the nature-based solutions are actually implemented.

Explore the proGIreg Planning and Implementing Nature-based Solutions website for more information and access all the current and upcoming reports on the full implementation work.

