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Partner organisations

No.	Name	Short name	Country
1	Local Governments for Sustainability	ICLEI	Germany
2	Fachhochschule Südwestfalen	SWUAS	Germany
3	Science and Technology Park for the Environment, Turin	EnviPark	Italy

Abbreviations

NBS: nature-based solutions

proGlgreg: productive Green Infrastructure for post-industrial urban regeneration

GI: green infrastructure

FRC: front-runner cities

FC: follower cities

Executive Summary

The report on non-technological barriers beyond the project is part of WP 5 “Market readiness, barriers, and upscaling” of the EU HORIZON 2020 project proGlgreg (productive Green Infrastructure for post-industrial urban regeneration). The interventions planned in the proGlgreg front-runner cities (FRC) all embrace the concept of NBS, a fairly recent topic for some cities. Therefore, co-design and co-implementation processes of NBS encounter a variety of challenges, either in technical, financial or social terms.

This report builds on the research developed for the proGlgreg deliverable 5.3 “Report on non-technological barriers within the project” which investigates the barriers that proGlgreg FRC and FC encounter in the implementation of their NBS projects. This document expands this analysis including a more complete literature review and collecting the experience of external cities to the project from around the world. In addition, it deepens the research and analysis of implemented solutions to overcome those barriers. Keeping the focus on the non-technological obstacles to NBS planning, development and maintenance, the report presents the results analysing three different groups of barriers and solutions:

- Institutional (administrative, legislative, governance) barriers
- Social and cultural barriers
- Financial and market barriers

Exploring the topic in cities beyond the proGlgreg project has shown that they encounter similar barriers when implementing NBS, but also has shed light in finding concrete solutions to overcome encountered barriers.

The main outcomes of these report can be summarized as follows:

Mainstreaming of different types of NBS is needed to overcome the barriers that cities encounter in the development of such projects; this can be done either through capacity building or integrated coordination between the local government and relevant stakeholders. Cities need to prepare both technically and organisational-wise to include green solutions in their daily projects and activities. Environmental measures must be a priority for local agendas and should be incorporated into traditional planning practices. In addition, cities need guidance and funding to be able to implement the transition towards more sustainable and resilient development, especially around the creation of planning toolkits for local administrations and the impulse towards the creations of national environmental standards.

Community participation in NBS projects has been highlighted as a key aspect to deliver high quality results. In this regard, the socio-cultural barriers that emerged during the research are generally related to the lack of communication between the local government and the citizens. This issue has been easily solved by cities implementing strong communication strategies and campaigns, increasing the project visibility of the project and involving urban communities in decision making.

Another important aspect for the development of NBS in cities is their economic feasibility. Many local governments have encountered issues attracting local investments to sustain such projects. The lack of coordination between public and private spheres, but also the lack of knowledge and of a coherent and comprehensive plan within the city administration make it often difficult to engage with investors. To make sure that financial opportunities for NBS projects are available at the local level, structural changes in local policies and strategies should be implemented, while mainstreaming NBS into traditional planning processes.

The outcomes of this report, in combination with lessons learnt from the implementation process in the FRC will be used to shape the approach to the replication events which is revised once more to accommodate for covid-19 related delays. This deliverable is also valuable as it showcases local progress, lessons learnt on NBS through practical application and ways to overcome the barriers experienced, in addition to proGlgreg cities, which may also be invited in external project activities, such as the replication workshops.

1. Introduction

1.1. Introduction to the project

Productive Green Infrastructure for post-industrial urban regeneration (proGlgreg) 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 deindustrialisation, have been – or will be - developed, tested and implemented in a Living Lab approach in four FRC: Dortmund (Germany), Turin (Italy), Zagreb (Croatia) and Ningbo (China). These NBS will help create productive green infrastructures that not only help improve living conditions and reduce vulnerability to climate change, but also provide measurable economic benefits to citizens and entrepreneurs in post-industrial urban districts.



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

In the meantime, the FC of Cascais (Portugal), Cluj-Napoca (Romania), Piraeus (Greece) and Zenica (Bosnia and Herzegovina) closely follow progress in the Living Labs, engage in city-to-city exchanges and interact with local stakeholders aiming to replicate those NBS that are most suitable in their own context.

The NBS to be tested in the FRC and replicated in the FC are:

- 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 farms and gardens
- NBS 4: Aquaponics
- NBS 5: Capillary GI on walls and roofs
- NBS 6: Making post-industrial sites and renatured river corridors accessible for local residents
- NBS 7: Establishing protocols and procedures for environmental compensation at local level
- NBS 8: Pollinator biodiversity improvement activities and citizen science projects

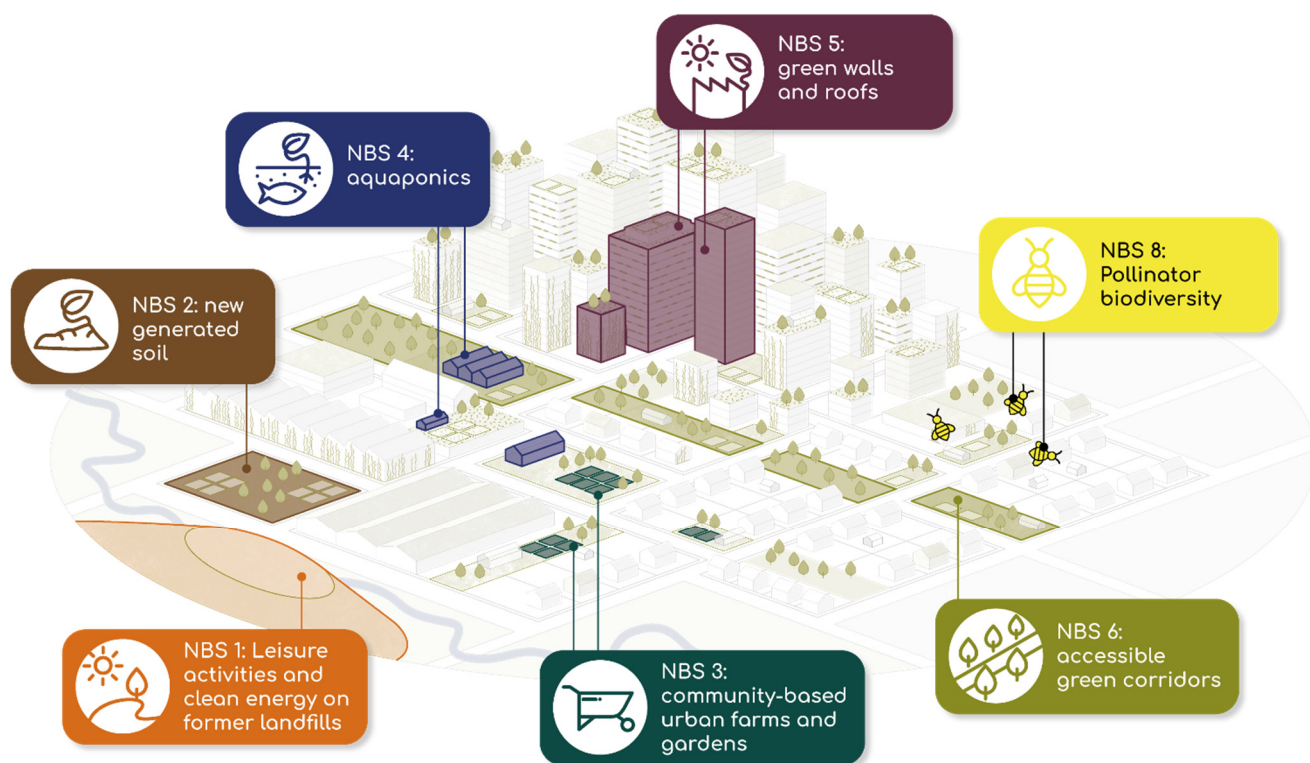


Figure 2 - Spatial representation of proGREG NBS, RWTH

1.2. Introduction to WP 5 and Tasks 5.1 and 5.2

WP5 builds on the NBS pilot implementation in WP3 and the benefit assessment and monitoring during and after the NBS pilot implementation in WP4. ProGREG's overarching objective of demonstrating NBS integration into (partly) self-sustained business models requires a deeper analysis of the possible bottlenecks of implementation of NBS before they are getting ready for entering the market.

While investigating barriers to implement NBS, WP 5 also aims to find solutions to overcome them, and to develop a catalogue of business models for NBS, that also considers the multiple benefits that they provide for social, ecological and economic regeneration.

The identification of barriers is divided into an analysis of technological barriers (Task 5.1, led by ENVIPARK) and non-technological barriers (Task 5.2, led by ICLEI). For this second task, the research considers both internal case studies – i.e. on FRC and FC involved in the project –, as well as external – i.e. on cities around the world that don't take part in proGREG's activities.

The work within tasks 5.1 and 5.2 aims to produce five deliverables [figure 1], namely:

- D5.1 Standardised questionnaire on technological and non-technological barriers
- D5.2 Report on technological barriers
- D5.3 Report on non-technological barriers within the project
- D5.4 Report on non-technological barriers beyond the project
- D5.5 Synthesis of barriers and solutions to overcome them

In particular, D5.1 contains a standardised questionnaire to support the research developed for D5.2 and D5.3. Building on that, annex 1 of D5.4 (“Survey about non-technological barriers for external cities”) is an adapted survey with tailored questions for a broad external public to the project. This represented an important tool to conduct the research for this deliverable¹.

All results and considerations developed in the framework of D5.2, 5.3 and 5.4 will be summarised and discussed in D5.5, presenting a synopsis of barriers, which need to be overcome for a better implementation and upscaling of NBS for post-industrial urban regeneration.

This work also feeds into WP6 and specifically Task 6.2 Replication workshops. The outcomes of this report, in combination with lessons learnt from the implementation process in the FRC will be used to shape the approach to and agenda of the replication events which are revised once more to accommodate for covid-19 related delays and altered implementation and replication timelines. Opposite to previous plans, the local replication events will now be organised ca. 6 months after the first round of international events (all under Task6.2).

In this way, FC still have the possibility to participate in the replication workshops taking place in autumn 2021, aligned to the ‘Roadmap towards urban planning in the FC’ (D2.6) developed by URBASOFIA under Task 2.3. In addition to the FC, external cities will be invited to the international workshops; some of these invitees will be identified among the respondents to the D5.4 survey, judging from the relevance of the projects they are implementing.

Each replication workshop will be a tailor-made event co-organised by ICLEI and the respective FRC to showcase local progress, lessons learnt on NBS through practical application and ways to overcome the barriers experienced, but also to meet the interest and learning needs of the FC.

¹ See chapter 2.1 “Methodology”

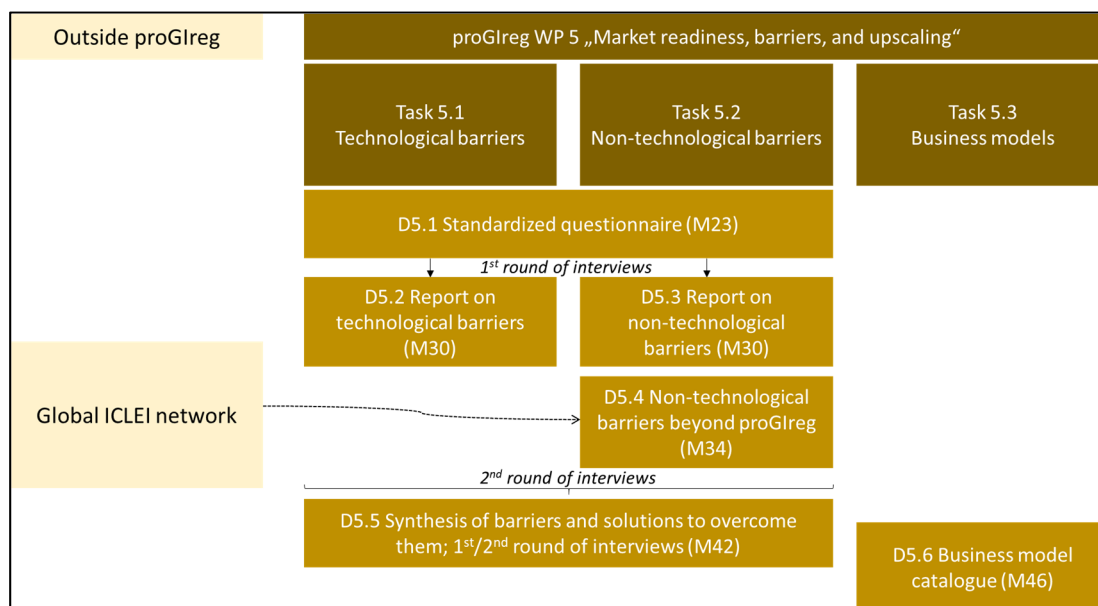


Figure 3. Sequence of WP5 deliverables on barriers and business models

1.3. Introduction to the deliverable: non-technological barriers beyond proGReg

Industrial decline, together with climate change and increasing urbanisation have resulted in several societal challenges for urban areas, making urban regeneration processes necessary for improving quality of life, protecting human health and enhancing resilience. NBS have gained an increasing importance in urban regeneration to address these challenges. However, the body of conceptual and practical knowledge of NBS remains fragmented in regard to its broader significance for tackling societal challenges.

Building on the results of proGReg deliverable 5.3 – the report on non-technological barriers within the proGReg project –, this document aims to deepen the analysis on the non-technological barriers, considering it an important step for the replicability of NBS within and beyond the project. By including cities from different geographical areas in Europe and in the rest of the world, this research gives a broader understanding of the barriers encountered at the local level when implementing green infrastructure solutions. In addition, building on the experience of cities where NBS have been consolidated and scaled-up over time, this deliverable proposes solutions to overcome some of the barriers identified.

The report was developed following a research approach, which was agreed upon between the partners involved in this task, namely ICLEI Europe, SWUAS and EnviPark and responds to three main goals:

- Presenting an overview of the barriers that cities face when implementing, scaling-up and replicating NBS
- Including the barriers encountered by city partners in proGlgreg in a broader and more comprehensive scenario
- Identifying possible solutions to overcome the barriers identified

To reach these objectives, the report contains:

- a comprehensive inventory of the non-technological barriers to the implementation of NBS in urban contexts
- a comprehensive inventory of possible solutions to overcome the presented barriers, including successful case studies from around the world

In general, according to the research approach developed, the non-technological barriers have not shown a particular relation to the analysed NBS. For this reason, the document presents the barriers and solutions grouped according to their category (namely institutional (administrative, legislative, governance), social and cultural and, financial or market barriers) rather than to any specific NBS they could refer to. After a brief description of the cities involved in the research, the report is structured in three main chapters (chapters 4-6), each analysing one of the barriers' categories. Each chapter is itself divided in three sections:

- a general introduction on the barrier categories
- an inventory of the barriers identified beyond the proGlgreg project
- an inventory of the solutions to the barriers identified beyond the proGlgreg project

The general introduction of each barrier category aims to highlight its relevance for cities implementing NBS. The two inventories, on the other hand, are used as a framework to discuss the barriers encountered by FRC and FC within the proGlgreg project and the proposed solutions to overcome them – currently under implementation. The report, in fact, aims to be used as a basis for the replication activities to support decision-making in both FRC and FC. A final section summarises the information collected, providing suggestions for cities implementing NBS.

1.4. What are non-technological barriers?

Aiming at a detailed understanding of the barriers that cities encounter when implementing NBS, proGlgreg differentiates and analyses the technological and non-technological challenges separately.

The non-technological barriers are those obstacles not related to the technical and technological development and implementation of NBS within the project framework. The previous analysis on non-technological barriers - detailed in D5.3 – entailed a categorisation in three main groups, which are a fundamental basis for the research in this document.

1. Institutional (administrative, legislative, governance) barriers include:

Policies, guidelines, or procedures that are not favourable for implementation and upscaling; insufficient legislation and policies that would facilitate procedures, challenges linked to government assistance or political support, unfavourable planning schemes and more.

2. Social and cultural barriers include:

Human or society induced challenges and constraints that are originating from social norms and/or cultural values; they may also refer to education, awareness, capacity building, stakeholder management and priorities, social inclusion and cohesion issues and more.

3. Financial or market barriers include:

Constraints to entry in financial market, lack of funding, lack of mainstreaming processes for NBS that will bring the necessary funding, inadequate or ineffective financing schemes, unsustainable funding processes and more.

2. Methodology

The research methodology of deliverable 5.4 was developed in two consecutive stages:

1. Desk research to collect and analyse existing information and data on NBS implementation, obstacles, challenges and opportunities, maintenance and monitoring processes and successful NBS and ecosystem-adaptation case studies.
2. An online survey to identify emerging challenges and opportunities from previous or ongoing projects implemented by external to proGlgreg cities.

2.1 Desk research

Firstly, the analysis was conducted focusing on one NBS at a time. The eight NBS that FRC and FC are implementing in the framework of proGlgreg were analysed including the experience of cities and research institutes not involved in the project. The methodology implemented followed two main steps for the analysis of each NBS:

1. Barriers identified...

- within proGlgreg (through interviews conducted in preparation for D5.3)
- in the framework of other NBS projects or by European institutions working on NBS

2. Solutions identified to overcome barriers...

- in the framework of external projects or by other institutions working on NBS

Internal proGlgreg documents and research results were consulted for the identification of barriers within the project. More specifically, the following deliverables were reviewed: Spatial Analysis Methodology (D2.1), Spatial analysis in front-runner and follower cities (D2.2), Roadmap towards urban planning in Follower Cities (D2.6), Guidelines for co-designing and co-implementing green infrastructure in urban regeneration processes (D2.10), Implementation methodology (D3.1), FRC Implementation Plan (D3.2) and Implementation Monitoring Report n.1 (D3.3). All deliverables are available at the project website. In addition, barriers and possible solutions from external projects were identified through online research and participation in relevant webinars. The online research included the consultation of fact-sheets, reports and deliverables produced in the framework of international projects working on NBS and by various research institutes. These resources are summarized in the table below:

Table 1. Projects and institutions used as reference for the desk research

EXTERNAL PROJECTS	CleverCities
	Connecting Nature
	EdiCitNet
	GrowGreen
	Klimatek
	ThinkNature
	UnaLab
	UrbanGreenUp
	UrbiNat
INSTITUTIONS	BCN UEJ
	ecologic Institute
	EPA
	European Commission

	MID Sweden University
	Nature-based solutions initiative
	Nature-based solutions institute
	Politecnico di Milano
	Trinity College Dublin

2.2 Online survey

The second phase of the research entailed the development and dissemination of an online survey investigating the non-technological barriers that external cities outside of the proGReg project have encountered when implementing NBS, but also exploring the solutions they have implemented to overcome such barriers.

The survey was based on non-technological barriers previously detailed in the deliverable D5.1 and adapted to suit the external public questionnaire². The data was collected from a range of external cities of the project, also including local governments involved in proGReg sister projects. Cities were selected and directly contacted according to their experience in implementing one – or more – of the eight proGReg NBS. The survey did not explicitly ask for other NBS, apart from the eight proGReg NBS, to ensure that a qualitative comparison of results would be possible. Some open questions allowed for the respondents to elaborate further on their NBS projects, in case they did not fall explicitly within the eight NBS categories. Cities had the opportunity to complete the survey more than once to report on different barriers and solutions for different groups of NBS.

ICLEI Europe identified 32 external cities from the organisation's network, which are working on NBS (implementation and monitoring) and which received a personal invitation to the survey. ICLEI staff expected a 70% response rate, the actual response was 40%. In addition, the survey was sent to all NBS projects in which ICLEI is involved (CLEVER Cities, REGREEN, Connecting Nature, CONEXUS, GoGreenRoutes) and disseminated through NetworkNature. Different ICLEI Secretariats around the world were also asked to disseminate the survey within their regional reach. This methodology ensured the geographical distribution of respondents aiming at including experiences from different socio-

² See Annex 1 "Survey about non-technological barriers for external cities"

economic and environmental contexts. In addition, the survey was circulated through ICLEI's Urban Resilience newsletter and social media (i.e. ICLEI Europe Twitter account).

The majority of inputs on NBS under research came from the European continent, as shown in figure 2. ICLEI Europe's work focuses on cities in Europe and the Middle East. Outreach to other continents took place through social media and other ICLEI offices, however, ICLEI Europe had no control of the level or intensity the promotion of the survey received outside of Europe.

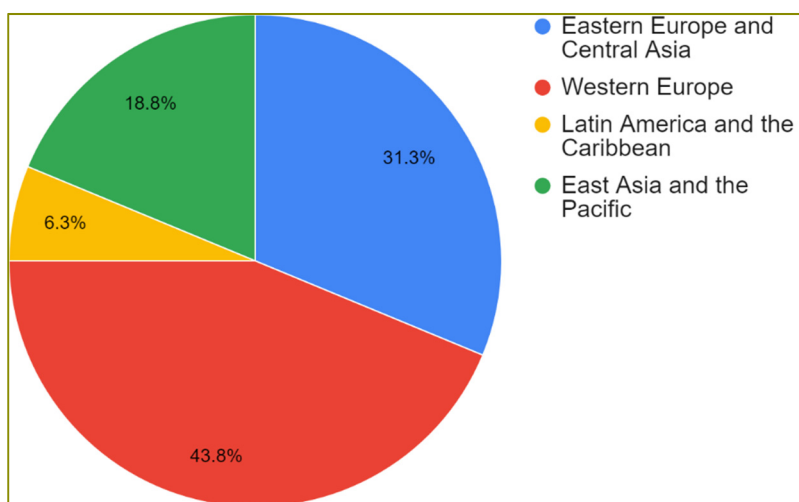


Figure 4. Geographical distribution of survey respondents

3. The cities beyond the project: sample overview

Fourteen cities (out of 32 directly contacted within the ICLEI network) across ten countries and four world economic areas have participated in the survey for this deliverable developed by SWUAS, ICLEI Europe and EnviPark³ and sent to participants in June 2021. The following list encompasses the cities that completed the survey:

- Athens, Greece
- Cagayan de Oro city, Philippines
- Glasgow, Scotland **
- Larissa, Greece
- Malmö, Sweden
- Mexico City, Mexico **
- Paris, France
- Puerto Princesa city, Philippines
- Science city of Muñoz, Philippines
- Tallin, Estonia and Helsinki, Finland ***
- Tampere, Finland
- Valencia, Spain *
- Velika Gorica, Croatia **
- Wroclaw, Poland *

** cities that reported different barriers and solutions for different NBS*

*** cities that reported the same barriers and solutions for several NBS*

**** one respondent for NBS implemented in both cities*

The majority of city representatives who responded to the survey work in the sustainability or green infrastructure development office of the local administration and reported on one or more NBS developed in the framework of a specific NBS project. Interestingly, more than 40% of them have been working for a project funded by the EU Horizon2020 programme, while more than 30% only received local or regional public funds. In table 2 the NBS projects implemented in each city are presented, while table 3 shows the analogy between the NBS developed in the framework of those projects and those that FRC and FC are implementing within proGlgreg. In particular, while the majority of respondents could identify similarities with the eight NBS categories proposed, some others specified a different one. For these cases, it

³ See annex 1 “Survey about non-technological barriers for external cities”.

was the author of this report who analysed the project proposed and indicated, when possible, an analogy (indicated with a red cross in table 3).

Aiming at analysing the socio-economic consequences of the projects presented, the survey investigated the involvement of non-professionals in NBS activities and highlighted that more than 70% of the projects entailed co-created activities with citizens and urban communities.

Table 2. NBS projects developed in external cities

City	Abbreviation	Project
Athens	At	Natural Capital Financing Facility (NCFF)
Cagayan de Oro city	CO	Cagayan de Oro City Eco Park
Glasgow	GL	Connecting Nature
Larissa	La	Larissa Municipal Garden
Malmö	Ma	Clever Cities
Mexico City	MC	Green Infrastructure Program
Paris	Pa	Promoting NBS
Puerto Princesa City	PP	Gintong Butil Agricultural Farm
Science city of Muñoz	Mu	Bakuran ko Gulayab ko (My yard, My vegetable garden)
Tallin and Helsinki	T/H	B.Green
Tampere	Ta	KIEPPI
Valencia	Va	ARCH
		GrowGreen
Velika Gorica	VG	ReGreen
Wroclaw	Wr	GrowGreen

In the proGReg front-runner cities, eight different nature-based solutions create productive green infrastructure that not only helps improve living conditions and reduce vulnerability to climate change, but also provides measurable economic benefits to citizens and entrepreneurs in post-industrial urban districts. The following table shows the distribution of these NSB across the external cities that have responded to the survey and have highlighted projects that are classified as one of the eight proGReg NBS.

Table 3. NBS implemented in external cities

	At	CO	MC	La	Ma	GL	Pa	PP	Mu	T/H	Ta	Va	VG	Wr
NBS1 Leisure activities and clean energy on former landfills		X										X		
NBS2 New regenerated soil			X											
NBS3 Community-based urban farms and gardens				X		X		X	X	X	X	X	X	X
NBS4 Aquaponics											X			
NBS5 Green walls and roofs			X			X				X		X	X	
NBS6 Accessible green corridors	X				X	X	X			X	X	X	X	X
NBS7 Local environmental compensation processes			X									X		
NBS8 Pollinator biodiversity			X			X						X		X

4. Institutional barriers

4.1. Introduction to the institutional barriers

The terminology “institutional barriers” in the context of the proGReg project refers to the administrative, legislative and governance issues that can impede the local implementation of NBS⁴. As described in the analysis of the results in D5.3, the category of institutional barriers was identified as the most recurring obstacle through different NBS development in proGReg cities by NBS [table 4]. Institutional barriers were highlighted by FRC and FC as the most important barrier to be considered in the development of green infrastructure solutions.

Table 4. Importance of barriers (institutional/social/financial) encountered in proGReg cities by NBS

	proGReg FRC and FC								
	DO	TU	ZA	Cas	Cluj	PIR	ZEN	NING	overall
NBS 1	S I						F		
NBS 2		S I					I F		
NBS 3		S	S I	F	I			S	
NBS 4	I F	I	I						I F
NBS 5	I F	I F	I F				I F S		
NBS 6			I	F	F	I F	S		

⁴ See chapter 1.4 “What are non-technological barriers?”

NBS 7		I F	I F					I	
NBS 8		S		S		F			I

Legend:

I institutional barriers

F financial and market barriers

S socio-cultural barriers

The analysis of survey results by external cities to the project confirmed this trend [figure 3]: only one respondent affirmed that no institutional barriers were encountered when implementing an urban agriculture project, and only one could not indicate precisely if this type of challenges were found.

Local governments, thus, strictly depend on institutional relations and political strategies and frameworks. These have a major impact on the development of local projects in different phases. In the following subchapter, concrete barriers within this category are presented, and are prioritised according to recurrence in the different case studies.

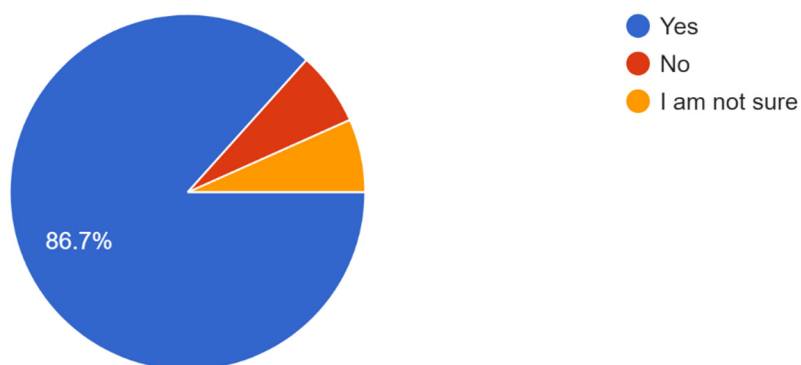


Figure 5. proGlgreg survey to external cities – answers to question 3.1 “Have you encountered any institutional or administrative barriers to the implementation of the project?”

4.2. The inventory of institutional barriers beyond the project

The desk research and the survey to external cities show that, even if the institutional barriers encountered by FRC and FC⁵ are also found in different contexts, some others exist.

To present the inventory of institutional barriers beyond the project, the following table (Tab. 5) introduces the institutional barriers encountered by FRC and FC through the survey answers, but also through desk research:

- **CODE:** each barrier is coded 'Ix' and stands for 'Institutional' followed by the number of each barrier)
- **CATEGORY:** classifies barriers according to the following sub-categories: **administrative (A), legislative (L) and governance (G).**
- The fourth column presents the percentage of survey answers each barrier received, and in particular in relation to the answers to question 3.2 "[...] have you encountered any of the following institutional or administrative barriers?"⁶. This column indicates the percentage of cities that encountered the indicated barrier during the development of their NBS project.

Table 5. Inventory of institutional barriers beyond the project

Code	Institutional barrier	Category	% of responses
I1	Lack of institutional understanding of the future benefits of NBS	A Administrative	67%
I2	Lack of regulations, institutional frameworks and procedures for NBS projects	L Legislative	60%
I3	Lengthy and time-consuming bureaucratic processes	A Administrative	53%
I4	Limits in implementation to comply with COVID-19 emergency measures	G Governance	47%
I5	Limited awareness about the potential of NBS to address urban issues	G Governance	47%

⁵ See proGREG deliverable 5.3 "Report on non-technological barriers within the project"

⁶ See annex 1 "Survey about non-technological barriers for external cities".

I6	Institutional fragmentation and difficult cooperation between institutional departments	G Governance	47%
I7	Limited flexibility of local policies	Legislative	40%
I8	Lack of experience/knowledge in municipal departments	A Administrative	40%
I9	Lack of integrated planning frameworks that include the application of NBS	L Legislative	40%
I10	Administrative hesitance towards innovation	A Administrative	40%
I11	Absence of standards or official data	G Governance	33%
I12	Lack of coordination of institutional bodies with external partners and incapacity to find synergies with local stakeholders	A/G Administrative /Governance	27%
I13	Lack of political will due to the lack of immediate benefits of the project	G Governance	27%
I14	Limited flexibility of national policies	L Legislative	20%
I15	Corruption and collusion	G Governance	13%
I16	Lack of institutional transparency	A Administrative	0%

In addition to the previous barriers, the survey uncovered a number of other challenges that proGlgreg FRC and FC did not highlight as particularly relevant in the context of NBS implementations. These barriers are presented in the following table 6.

Table 6. Additional institutional barriers encountered in cities beyond the project

Code	Institutional barrier	Category
I17	Need to involve a high number of stakeholders since the planning of the project	G
I18	Lack of understanding of the relation between NBS and biodiversity in local institutions	A

I19	Discontinuity in government cycles	G
I20	Improper management of funds	A/G
I21	Lack of natural capital accounting and impact assessment	A

The tables show that complex governance structures, complicated legislation and unclear distribution of responsibilities generate the highest number of barriers to the implementation of NBS in cities.

Summarising, the institutional barriers depend on a few main factors:

- The lack of knowledge around NBS importance and co-benefits among local decision makers
- The rigid local governance structure
- The lack of capacity building and training guidance regarding the local implementation of NBS at local level
- The lack of coordination between different levels of governance
- Other institutional or external contingencies

The next subchapter investigates the solutions to these barriers, presenting how cities were able to overcome the institutional problems encountered.

4.3. The inventory of solutions to institutional barriers beyond the project

An analysis of existing literature, the contribution of the on-going work in the proGlgreg FRC and FC and from the survey results of external cities to the project that participated in the survey shows that local governments can address institutional barriers focusing on three main actions:

- **Building capacity** for NBS management locally. In particular, increasing the knowledge of local administrators and politicians regarding green infrastructure solutions and raising awareness on the possible benefits of nature-based solutions.
- **Improving the coordination** between local departments, with other levels of governments and with external institutions.
- **Implementing structural changes of the legislative body.** This type of processes needs longer periods to become effective but can generate a long-term improvement and streamlining of the local approach to NBS development.

More specifically, the following table (7) shows an inventory of concrete solutions to institutional barriers. It classifies them according to the three main actions described above

while relating them to the barriers described in the previous chapter. The code for each barrier, presented in column 3, is taken from Table 5 above.

Table 6. Inventory of solutions to institutional barriers

Category	Solution	Impacted barriers
Building capacity	establishment of independent environmental bodies	I10, I13, I21
	creation of planning toolkits for local administrators to plan and develop NBS (<i>in particular, this was implemented for local environmental compensation processes but can be easily replicated for other green solutions</i>)	I1, I5, I8, I12, I18
	“formalisation” and institutionalisation of different informal tools used by environmental practitioners	I1, I2, I5, I18
	inclusion of a specialised manager encharged of NBS and biodiversity in the administrative body	I5, I8, I10, I21
	creation of a “local environment and natural resources” office	I10, I13, I21
	development of a local management plan for GI and other NBS	I9, I13, I21
	increased coordination with local universities and research institutes to develop new data at the city level	I1, I5, I8, I11
Improving coordination	development of digital tools to enhance the communication and participation of different municipal departments	I1, I8, I18
	organisation of periodic talks and coordination meeting with all institutional bodies involved in the project	I1, I3, I6, I20
	definition of formal agreements with different departments that could bring value to the project	I2, I6, I9
	ensure the continuity between different NBS projects, implementing linear and coherent actions	I3, I9, I12, I20
	taking each NBS project as an opportunity to collect evidence and experience to improve existing laws or create new ones	I5, I8, I13
Implementing structural	mainstreaming internal rules and solutions adopted locally for further projects development	I2, I3

	engaging for the creation of national environmental standards	I2, I5, I10, I11, I13
	referring to environmental standards from neighbouring countries, when national ones are not available	I2, I5, I10, I11
	including flexible elements in the development or improvement of local policies	I3, I4, I7
	mainstreaming GI and NBS into traditional planning processes	I7, I9, I10
	making NBS eligible for local grants and certifications	I12, I20

5. Socio-cultural barriers

5.1. Introduction to the socio-cultural barriers

The socio-cultural barriers are related to engaging citizens in the NBS design and development process or to their use of the urban space when the green solution is implemented. These types of barriers depend on both social and cultural aspects, tending to be site-specific. However, the research approach highlighted some trends and common challenges encountered throughout different geographical areas.

Among the cities that participated in the online survey, 73% developed NBS projects entailing co-creation activities with local communities. Surprisingly, a significant 20% is not sure whether they took place, something that shows that the terms ‘co-creation’ or ‘co-design’ are not mainstreamed in all contexts [figure 4]. In this context, 60% affirm that socio-cultural barriers were encountered during the planning or implementation of the project. Comparing this data with the presence of institutional (87%)⁷ and financial (67%)⁸ barriers, the socio-cultural aspects appear to be the least common, but still significant (60%) to generate barriers to the development of NBS in cities.

⁷ See chapter 4.1 “Introduction to the institutional barriers”

⁸ See chapter 6.1 “Introduction to the financial and market barriers”

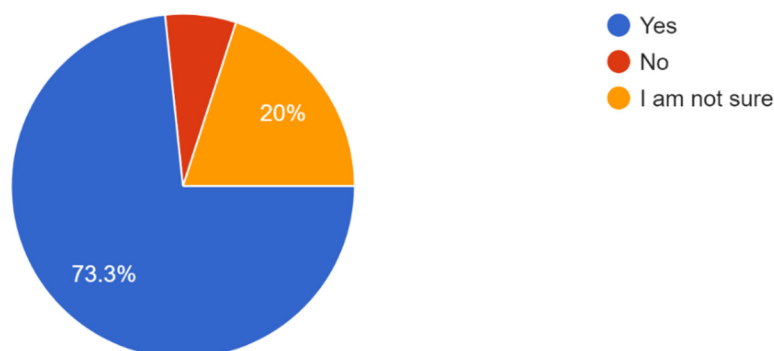


Figure 6. proGlgreg survey to external cities – answers to question 2.4 “Did your project entail any co-created activity with citizens or local communities?”

5.2. The inventory of socio-cultural barriers beyond the project

Of the three types of barriers, the socio-cultural barriers are the least common in NBS implementation. This could explain why a fewer number of them compared to the other categories can be encountered in literature. Similarly, this would justify why FRC and FC on one side, and external cities participating in the survey on the other, mentioned a much lower number of socio-cultural barriers compared to the institutional ones.

The following table (Tab. 8) represents an inventory of the socio-cultural barriers found in literature and highlighted by proGlgreg cities. Each socio-cultural barrier receives a code that can be seen on the first column of the table. Then, each socio-cultural barrier receives an S or a C depending on justification provided by the survey answers, which may put more emphasis on **social (S)** or **cultural (C)** aspects.

These two components are strongly related and generally determining together the identified barriers, this report highlights when the cultural aspects could play a relevant role in the implementation of NBS (bringing to significant differences depending on the local context). The fourth column of Table 8 shows the results of the external cities’ questionnaires in relation to socio-cultural barriers.

Table 7. Inventory of socio-cultural barriers beyond the project

Code	Socio-cultural barrier	Category	% of responses
S1	Lack of communication between the city administration and local communities	S	64%

S2	Low social confidence/awareness in the social/urban/environmental benefits of NBS	S	55%
S3	Concerns about the cost of the project (linked to lack of acceptance of the importance of NBS)	S	45%
S4	Mistrust in local governments	C	45%
S5	Low social confidence/awareness in the economic benefits of NBS	S	36%
S6	Low social acceptance of the project	S	28%
S7	Concerns about green gentrification	C	28%
S8	Lack of long-term commitment of communities involved in the project	C	28%
S9	Vandalism/damages to physical elements of the project	S	18%
S10	Lack of acceptance of public-private projects	S	9%

Legend: *social (S) or cultural (C)*

The representatives of local governments responding to the survey also had the opportunity to include additional socio-cultural barriers not classified within the previous options as indicated in table 9.

Table 8. Additional socio-cultural barriers encountered in cities beyond the project

Code	Socio-cultural barrier	Category
S11	Lack of understanding of the relation between NBS and biodiversity in local urban communities	S
S12	Social conflicts regarding the localisation of the NBS	S/C
S13	Lack of sense of ownership of the project	C
S14	Difficulties to include co-creation activities in the general management of NBS projects	C

Legend: *social (S) or cultural (C)*

In general, main groups of socio-cultural barriers can be identified:

- The lack of knowledge of social communities on NBS
- The uncertainty about the consequences of NBS implementation in the urban scenario (that could generate changes in the everyday life of citizens)
- The lack of willingness or possibilities to actively participate in the project
- The contrasting interests of local communities in public space
- The lack of trust in the municipal staff involved in the project

Within this group, there are cultural factors that determine the importance or seriousness of barriers for project continuity, while they can result in low participation among local communities. In the following subchapter, the presented solutions to socio-cultural barriers tackle more often the challenges with a prevalent social component, than those with a cultural one. These, in fact, require long-term processes to raise awareness and build trust within different communities.

5.3. The inventory of solutions to socio-cultural barriers beyond the project

In general, the socio-cultural barriers are not highlighted by the cities that responded to the survey as an impediment to achievement of the objectives of NBS projects. Nonetheless, building on the literature review and the cities experience (within and beyond proGlgreg) it can be understood that two main factors can help local governments to overcome socio-cultural barriers when implementing NBS:

- **To improve the communication** with citizens, raising awareness of the project but also in general on NBS, GI and biodiversity in urban spaces
- **To enhance the sense of ownership** of the project, while building trust between partners and stakeholders

Building on the concrete experience of cities (in literature and within and beyond proGlgreg), the following table (10) presents an inventory of solutions to the socio-cultural barriers that have been highlighted in the previous subchapter.

Table 9. Inventory of solutions to socio-cultural barriers

Category	Solution	Impacted barriers
Improving communication	openly sharing information and data about the project with different local communities through social media channels	S1, S3, S4, S7, S10, S11
	placing physical signs to explain the NBS project on-site	S1, S11

	developing digital tools to increase the knowledge about NBS, GI and biodiversity	S1, S2, S11
	increasing the project visibility through participation to different events and building connections with other local initiatives and stakeholders	S1
Improving communication + enhancing the sense of ownership	organising social events and other dissemination activities in the NBS project site	S2, S5, S6, S8, S11, S13
	organising open site visits, meetings and site tours	S2, S6, S8, S11, S13
	organising awareness raising campaigns with set goals and a specific programme of activities to involve and engage with local communities	S1, S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S13
Enhancing the sense of ownership	asking for feedback, taking actions accordingly, and disseminating results	S1, S4, S6, S7, S8, S12, S13, S14
	giving the possibility to people involved in the project to learn about trust building, inclusive communication and social learning	S2, S3, S4, S5, S6, S7, S8, S9, S10, S11, S12
	Involving professionals (<i>such as landscape architects</i>) in the planning and development of the NBS project	S2, S6, S9, S13

Legend: social (S) or cultural (C)

6. Financial and market barriers

6.1. Introduction to the financial and market barriers

The accessibility to financial opportunities, the fulfilment of capital requirements, the compliance with market rules: all represent challenging aspects for the success of NBS projects.

Throughout the literature, access to financial resources is often considered as a major obstacle that cities encounter to develop their green programmes. In fact, different authors propose innovative solutions to make NBS more attractive for different sectors and understand their complexity and value, reaching different financial sources and highlighting their importance in the urban market.

The survey to external cities developed in the framework of this research revealed interesting results, complementing the information of the desk research. In fact, 67% of city representatives involved in the survey indicate that they had to deal with this type of barriers to implement NBS locally. This percentage shows that cities have more often encountered financial and market barriers than social barriers; but also, that the former are still much less common than the institutional barriers. Interestingly, 20% of survey respondents cannot clearly state if the financial and market issues were encountered in that process [figure 5]. This is the highest number of indecised respondents compared to the other barrier categories. Possibly, this depends on an unclear understanding of the barriers included in the “financial and market” category and the uncertainty regarding the future of the project (when it is still under development).

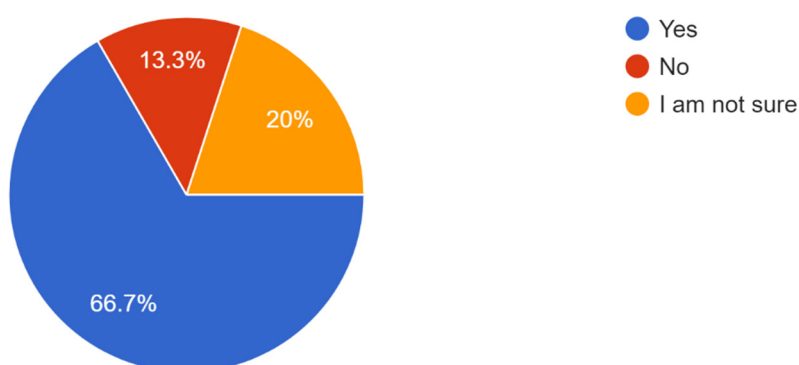


Figure 7. proGlgreg survey to external cities – answers to question 3.7 “Have you encountered any financial/market barriers to the implementation of the project?”

6.2. The inventory of financial and market barriers beyond the project

Both the literature review and proGlgreg FRC and FC identify several barriers that depend on financial and market aspects. Differently from what was presented for the other categories, a minor number of external cities identifies similar barriers. Nonetheless, it is possible to highlight a few quite common issues that cities encounter when facing financial and market barriers.

Table 11 below presents these types of barriers, classifying them according to their **financial (F) or market (M)** character, and shows the percentage of responses for each barrier.

Table 10. Inventory of financial and market barriers beyond the project

Code	Financial and market barrier	Category	% of responses
F1	Lack of private investment	F	54%
F2	Lack of local/regional funding	F	54%
F3	High costs of NBS maintenance	F	46%
F4	Lack of case-studies to demonstrate the profitability of NBS projects	M	46%
F5	Lack of clear market objectives and opportunities	M	46%
F6	Concerns of local representatives about the long-term viability of the project	F	38%
F7	Lack of national funding	F	31%
F8	High costs of installation for NBS	F	31%
F9	Lack of attractiveness for potential investors	M	24%
F10	Budget constraints or cuts due to the COVID-19 pandemic	F	24%
F11	Dependency on volunteers	F	15%
F12	Long payback time	M	8%
F13	Lack of international public funding (e.g. EU funding)	F	8%

Some additional inputs collected from cities external to the proGlgreg project show again that a context specific perspective is necessary to understand the financial and market issues that cities encounter throughout the world. The following table 12 presents these additional barriers.

Table 11. Additional financial and market barriers encountered in cities beyond the project

Code	Financial and market barrier	Category	
F14	Lack of actors in the local market to offer innovative NBS approaches to the city	M	
F15	Lack of targeted local budget for NBS implementation	F	
F16	Lack of local funds for NBS maintenance and monitoring	F	
F17	Lack of partering organisation to cover maintenance costs	F	
F18	Silos approach to NBS financing, not considering the environmental, social and health benefits of the economic investment	F	

Legend: *financial (F) or market (M)*

Looking at the barriers in the two tables above, a few factors can be identified that characterise the financial and market issues described and that represent main obstacles for local governments implementing NBS:

- Lack of funding from both public and private sources
- Lack of knowledge regarding NBS projects and their economic sustainability
- Difficult economical management of NBS projects in the long term
- Low involvement of local investors in the development of NBS projects

Analysing the results presented, in general, that lack of funding is the most recurrent financial issue for cities, while many concerns relate to the economic maintenance of the projects in the long term. This specific factor plays an important role because it influences the possibility of attracting private investments, while it emphasizes that NBS projects may not feasible to maintain if the funds are coming only from the public sector. These are the main aspects addressed in the following subchapter, presenting successful measures to overcome the highlighted financial and market barriers.

6.3. The inventory of solutions to financial and market barriers beyond the project

Literature demonstrates that providing the necessary funding represents a significant hurdle for many local governments when kick-starting an NBS project. For on-going projects, however, finding solutions to the barriers presented in the previous subchapter seems to be usually possible, judging from the survey answers. Table 13 is an inventory of solutions to financial and market barriers that cities can encounter during the implementation of NBS projects. In particular it shows that cities should aim to two main aims:

- To **increase the attractiveness of the project** for private and public investments
- To **find external financial support** through different activities and initiatives

Table 12. Inventory of solutions to financial and market barriers

Category	Solution	Impacted barriers
Increasing the attractiveness of the project	Combining and integrating different NBS	F6, F9, F13
	Creating multi-functional spaces that can be used by different people	F5, F6, F9, F12, F17, F18
	Providing incentives at the local and regional level to reduce the initial costs for privates	F6, F9, F17
	Ensuring accessible fees for rented spaces to promote their usability in the long term	F6, F9, F17
	Increasing the visibility of the project through involving different institutions, companies and other stakeholders	F17
	Collecting new data and case studies to give a scientific proof of the feasibility of NBS projects in different contexts	F4, F5, F6, F14, F18
Finding financial support	Mainstreaming of NBS as a tool for promoting sustainability (enhancing environmental compensation processes, including plant donation from part of private stakeholders or companies)	F5, F6, F9, F12, F18
	Collecting donations	F1, F2, F3, F7, F13, F15, F17
	Creating gift cards and vouchers to use the NBS spaces, fostering the economical activity of the process even during the winter period when green solutions are less usable	F1, F2, F3, F7, F9, F13, F15, F17

7. Conclusions

Exploring local realities beyond the proGlgreg project, this document has presented the analysis of the barriers that cities encounter when implementing NBS, and finding concrete solutions to overcome encountered barriers. Barriers generally belong to three main categories: institutional, socio-cultural and financial and market. Although, as one barrier of a specific category can determine or impact on another barrier of a different group, in the same way, the solutions provide transversal opportunities for tackling barriers throughout multiple categories. In addition, both the literature review and the survey answers highlight that especially the institutional barriers, when combined with financial ones can hinder the achievement of specific NBS projects' goals.

For example, complex legal and regulatory frameworks in relation to land-use at local level, when combined with limited funds, available only during the lifespan of a H2020 project or similar, may lead to extreme delays that will hinder the finalisation of a pilot implementation process. However, cities report that it is possible to find solutions to overcome all barrier groups and thereby meet the expected results in most cases [figure 6].

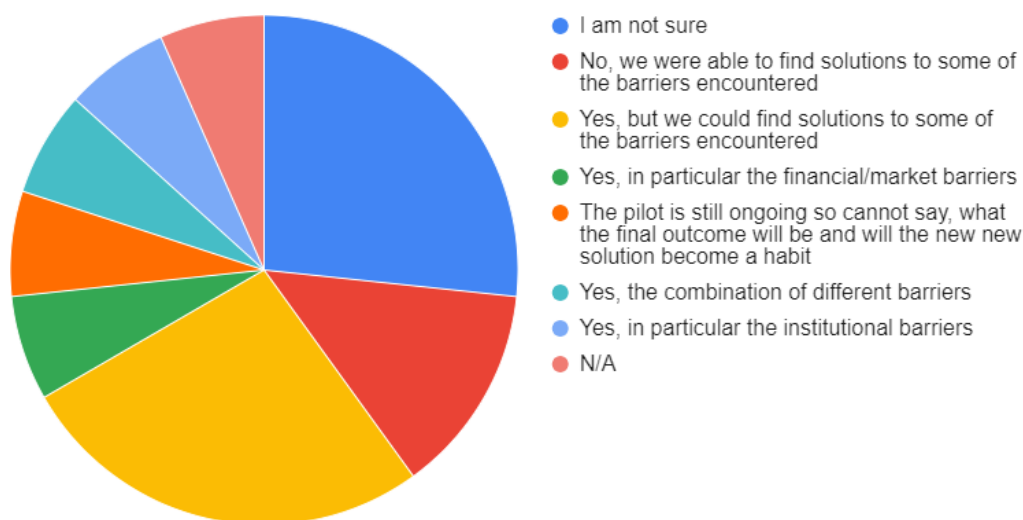


Figure 8. proGlgreg survey to external cities – answers to question 4.1 “Did some of the barriers indicated above compromise the achievement of the set objectives of the project?”

More specifically, the previous chapters highlight that some barriers are commonly encountered by cities implementing NBS. The following table gives an overview of the most frequently observed barriers (encountered by more than 30% of respondents to the survey), classifying them according to their group and to their importance (the barriers encountered by more than 50% of interviewees are highlighted in red), while relating them to the solutions found. In particular, in the next graph the interactions between different categories are highlighted.

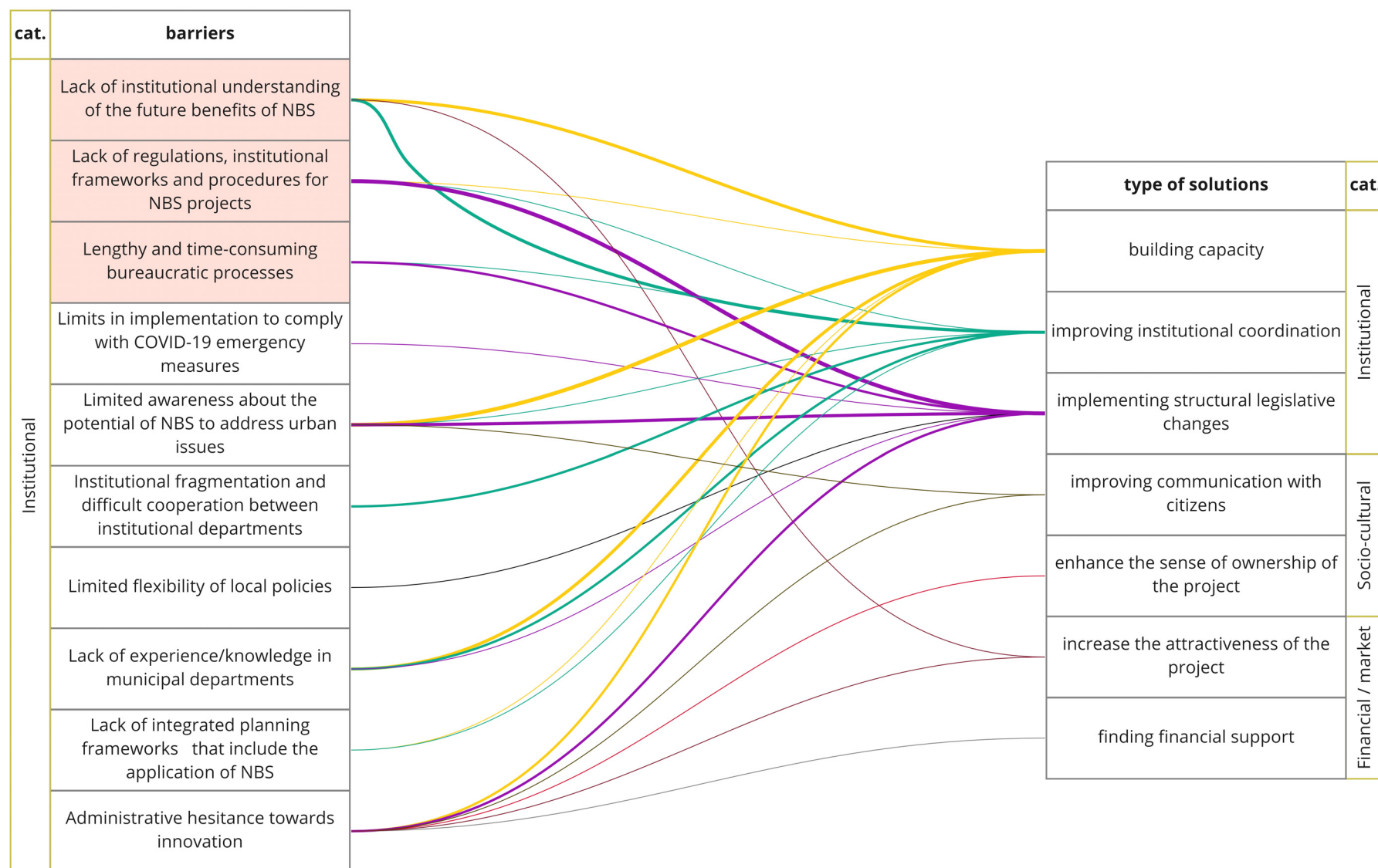


Figure 9. Institutional barriers and solutions to them

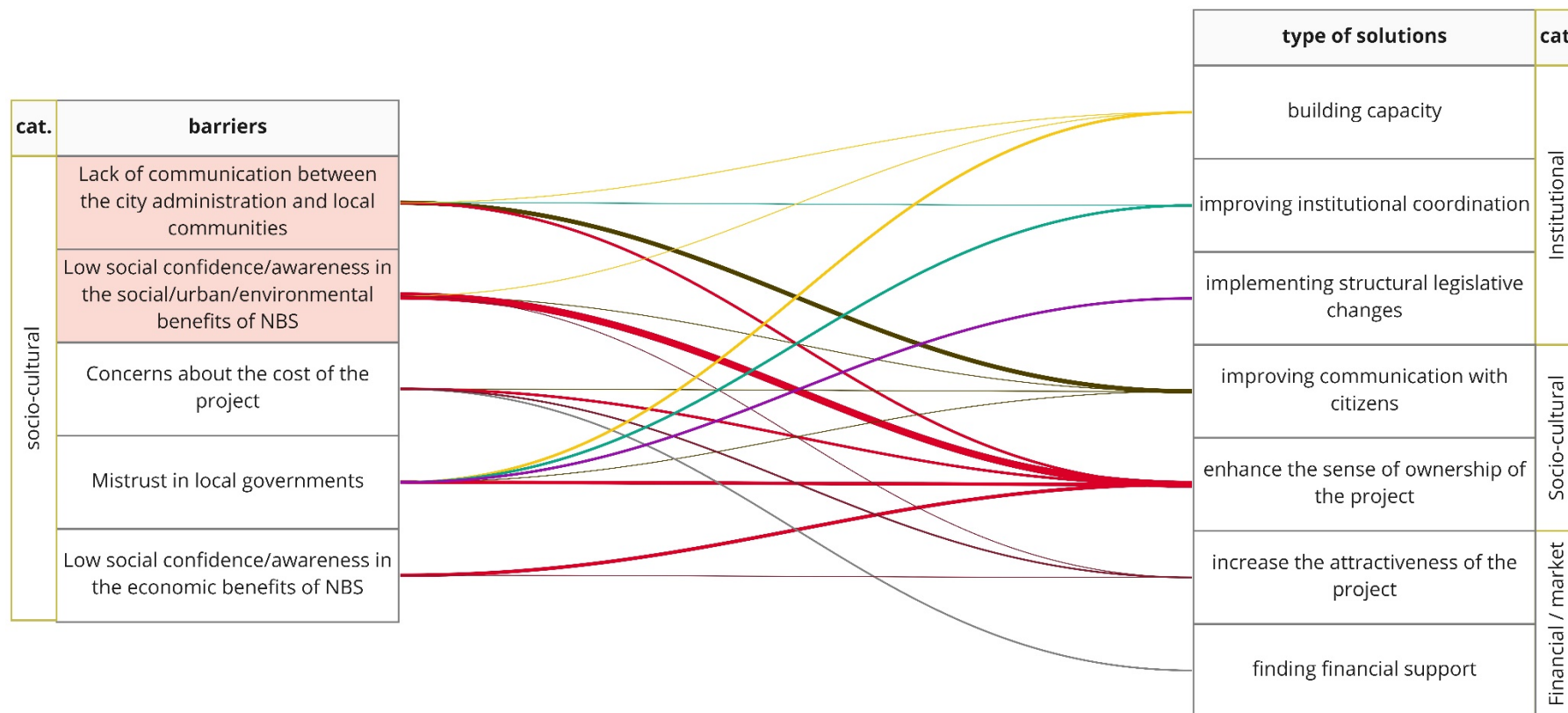


Figure 10. Socio-cultural barriers and solutions to them

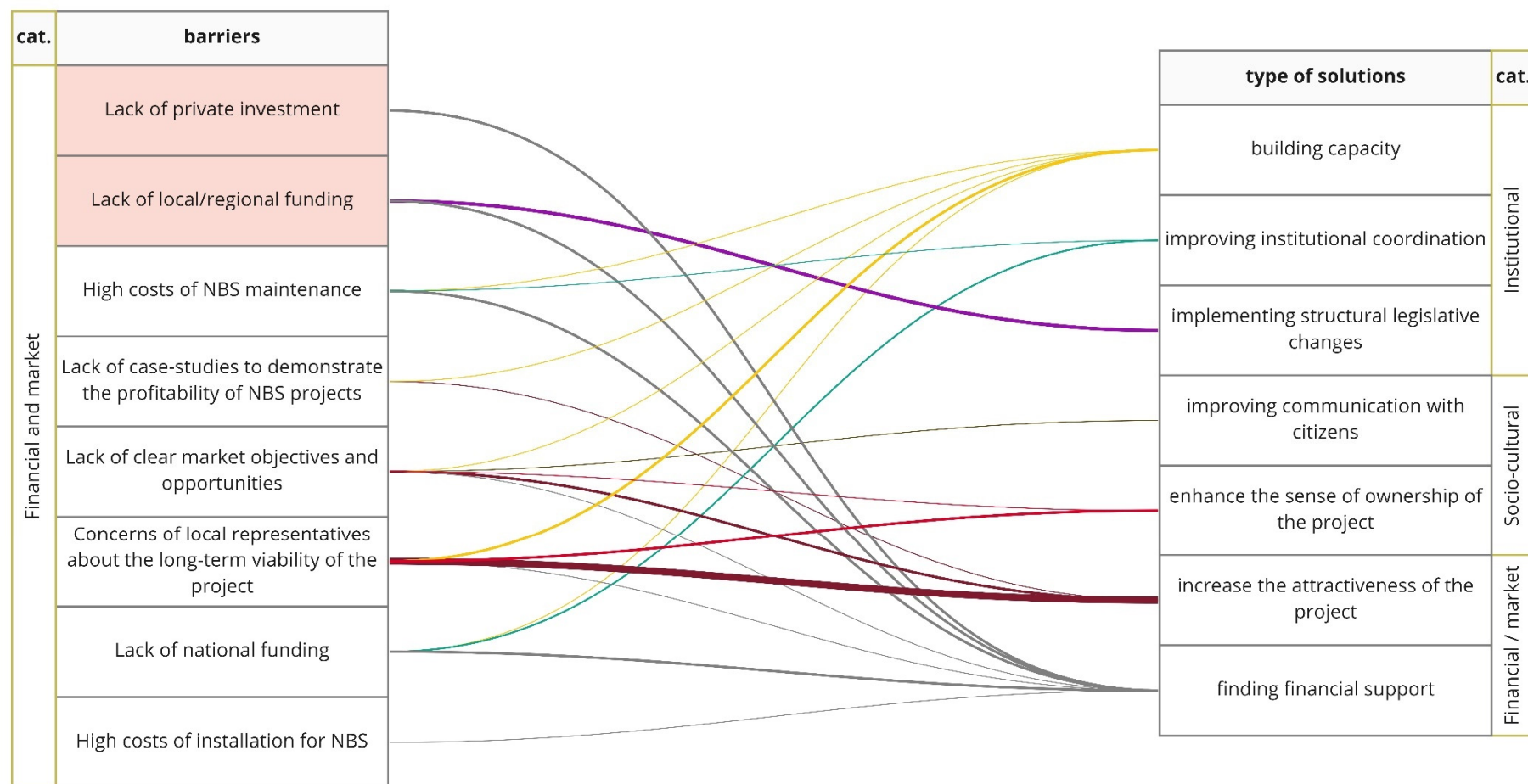


Figure 11. Financial and market barriers and solutions to them

Building institutional knowledge

The schemes provided above demonstrate that the mainstreaming of different types of NBS is needed to overcome the barriers that cities encounter in the development of such projects. This needs both capacity building and integrated coordination between the local government and relevant stakeholder. In fact, concluding on the analysis presented, cities need to prepare both technically and organisational-wise to include green solutions in their daily projects and activities. Thus, environmental measures must be a priority for local agendas and should be incorporated into traditional planning practices. In this process, cities need guidance and funding to be able to implement the transition towards more sustainable and resilient development. In fact, the identified solutions that have the highest impact on institutional barriers are the creation of planning toolkits for local administrations and the impulse towards the creations of national environmental standards. Both measures contribute to awareness building and to the development of – missing or inadequate – knowledge.

Communicating with local communities

On the other hand, community participation in NBS projects has been highlighted as a key aspect to deliver high quality results. Citizen engagement represents an added value that local administrations should aim to more and more frequently. In this regard, the socio-cultural barriers that emerged during the research are generally related to the lack of communication between the local government and the citizens. This issue has been easily solved by cities implementing strong communication strategies and campaigns. By creating dissemination tools, increasing the visibility of the project and involving urban communities in decision making, local administration have the opportunity to tailor their programmes according to actual local needs and make them socially sustainable in the long term.

Mainstreaming financial and institutional solutions

Finally, another important aspect for the development of NBS in cities is their economic feasibility. Many local governments have encountered issues attracting local investments to sustain their projects. The lack of coordination between public and private spheres, but also the lack of knowledge and of a coherent and comprehensive plan within the city administration make it often difficult to engage with investors. To make the project attractive, in addition, targeted strategies need to be implemented. In particular, the diversification of green solutions within one programme decreases the possibilities of failure, while attracting a higher number of stakeholders. It is clear from the schemes above that the financial and market barriers are not only related to strictly financial solutions, but rather to their combination with innovations at the institutional level. To make sure that financial opportunities for NBS projects are available at the local level, structural changes in local policies and strategies should be implemented, while mainstreaming NBS into traditional planning processes.

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Annex 1

Introduction to the survey for participants

Invitation

We would like to invite you to take part in a research study. Before you decide, we will explain why the research is being done and what it requires from you. Please take your time to read the following information carefully. Ask questions if anything is not clear or if you would like more information.

This study is part of the European proGireg project that is funded by the European Union's Horizon 2020 research and innovation programme (www.progireg.eu), focusing on nature-based solutions implemented in different European and Chinese cities. Nature-based solutions are natural and semi-natural areas within the city that may provide environmental, social, and economic benefits. Examples of nature-based solutions are green and blue spaces such as parks, public gardens, and rivers.

What is the purpose of the study?

This survey collects international experiences from cities implementing NBS through various projects, initiatives or interventions. This exercise aims to learn about barriers – and potential solutions – encountered by local governments when developing green interventions and implementing or scaling-up Nature-Based Solutions (NBS).

Why have I been invited to participate?

You have been invited to participate because your city has implemented NBS projects recently and your experience can provide important insights to the development of our research.

Do I have to take part in the study?

Participation in the study is voluntary, so you may decide if you would like to take part. After reading the description of the study, you can raise any questions and then make your decision. You are free to withdraw from the study at any time.

What will happen if I take part in the study?

Participating in this study is simple; we ask you to respond to a questionnaire that will take about 15 minutes of your time. The questionnaire will include questions on your experience with nature-based solution's barriers, and possible solutions to them. We will treat all the information that you provide with confidentiality. In the questionnaire, we will not ask you for

any information that could identify you (such as your address, telephone number, or date of birth). Your name will not be linked to the information you give us in the questionnaire.

Are there any expenses or payments?

This study does not involve any expenses or payments on the part of the participants.

What are the disadvantages or risks of taking part in the study?

Taking part in this study does not present any disadvantages or risks.

What are the possible benefits of taking part in the study?

We cannot promise that the study will help you personally, but the information we get from the study will help to increase our understanding of the barriers encountered during the implementation of nature-based solutions. Your city will gain visibility in our publication as a contributor to the study.

What will happen to the results of the research study?

The results of the study will be published in a report about non-technological barriers (namely institutional, social and cultural, financial or market barriers) beyond the proGireg project. This document will be shared with all cities participating in this survey.

Regular updates on the project can be found on the proGireg website: www.progireg.eu. In none of the reports or publications will you be identified or will any data be given that could identify you.

How do we process the information we collect and how do we guarantee the confidentiality and protection of your personal data?

The only personal data collected in this study will be asked in the following section "personal information". The data will be treated according to the European Regulation of personal data protection (EU2016/679). We will not collect any other personal data and all the questionnaires are anonymous.

Further information and contact details

If you have a concern or question about any aspect of this study, you can contact Luca Arbau at luca.arbau@iclei.org who will do their best to answer your questions. If you are dissatisfied and wish to make a formal complaint or request the destruction of your personal data you may contact ICLEI European Secretariat in Freiburg (Germany): +49 761 36 89 2-0; iclei-europe@iclei.org

You can edit your responses until the survey is closed on Monday 21 June, 2021. Questions marked with an asterisk (*) are required.

If you have developed more than one NBS project and you would like to report on them, you should repeat this same questionnaire focusing on one project at a time.

We are looking forward to your input and to learning more from your experience!

Section 1: Personal information

3. Please give us your consent to process the information you provided with this survey:

- I voluntarily agree to participate in this research. I also allow the organisers to analyse, publish and distribute the given information royalty-free, in all forms and in all media. The consent is given without a temporal or spatial limit and can only be withdrawn on a solid ground.

4. Your world region (the division is taken by the World Economic Forum)

- Eastern Europe and Central Asia
- Middle East and North Africa
- East Asia and the Pacific
- Latin America and the Caribbean
- North America
- South Asia
- Sub-Saharan Africa
- Western Europe

5. Your city

(open answer)

6. Your department and position

(open answer)

Section 2: General information about the project or initiative developed

7. How is the project or initiative called?
(Open answer)

8. How was the project funded?

- Local/regional public funds
- National public funds
- European Commission "Horizon2020" programme
- International funds
- Private funds
- Other (specify)

9. Which of the following categories would you best identify your project with (more than one answer is possible)?

- Leisure activities and clean energy on former landfills
- New regenerated soil
- Community-based urban farms and gardens
- Aquaponics
- Green walls and roofs
- Accessible green corridors
- Local environmental compensation processes
- Pollinator biodiversity
- Other (specify)

10. Did your project entail any co-created activity with citizens or local communities?

- Yes
- No
- I am not sure

11. Where can we find more information about the project? Please indicate a website:
(open answer)

Section 3: Barriers to the implementation of NBS

12. Have you encountered any institutional or administrative barriers to the implementation of the project?

- Yes
- No
- I am not sure

13. If your previous answer is yes, have you encountered any of the following institutional or administrative barriers (more than one answer is possible)?

- Limited flexibility of local policies
- Limited flexibility of national policies
- Lengthy and time-consuming bureaucratic processes
- Lack of experience/knowledge in municipal departments
- Lack of political will due to the lack of immediate benefits of the project
- Lack of institutional understanding of the future benefits of NBS
- Lack of regulations, institutional frameworks and procedures for NBS projects
- Lack of institutional transparency
- Lack of integrated planning frameworks that include the application of NBS
- Administrative hesitance towards innovation
- Limited awareness about the potential of NBS to address urban issues
- Absence of standards or official data
- Corruption and collusion
- Institutional fragmentation and difficult cooperation between institutional departments
- Lack of coordination of institutional bodies with external partners and incapacity to find synergies with local stakeholders
- Limits in implementation to comply with COVID-19 emergency measures

14. Have you encountered any other institutional or administrative barriers? And could you indicate which were more difficult to overcome in your context?
(open question)

15. Have you encountered any social/cultural barriers to the implementation of the project?

- Yes
- No
- I am not sure

16. If your previous answer is yes, have you found any of the following social/cultural barriers (more than one answer is possible)?

- Low social acceptance of the project
- Low social confidence/awareness in the social/urban/environmental benefits of NBS
- Low social confidence/awareness in the economic benefits of NBS
- Concerns about green gentrification
- Concerns about the cost of the project
- Vandalism/damages to physical elements of the project
- Lack of acceptance of public-private projects
- Mistrust in institutions
- Lack of long-term commitment of communities involved in the project
- Lack of communication with local communities

17. Have you encountered any other social/cultural barriers? And could you indicate which were more difficult to overcome in your context?
(open question)

18. Have you encountered any financial/market barriers to the implementation of the project?

- Yes
- No
- I am not sure

19. If your previous answer is yes, have you found any of the following financial/market barriers (more than one answer is possible)?

- Lack of private investment
- Lack of local/regional funding
- Lack of national funding
- Lack of international public funding (e.g. EU funding)
- High costs of installation
- High costs of maintenance

- Lack of attractiveness for potential investors
- Long payback time
- Dependency on volunteers
- Concerns about the long-term viability of the project
- Lack of case-studies to demonstrate the profitability of NBS projects
- Lack of clear market objectives and opportunities
- Budget constraints or cuts due to the COVID-19 emergency

20. Have you encountered any other financial/market barriers? And could you indicate which were more difficult to overcome in your context?
(open question)

21. Have you encountered any other non-technological barriers to the implementation of the project?

- Yes
- No
- I am not sure

22. If your previous answer is yes, please elaborate on the barriers you have encountered:
(open question)

Section 4: Solutions to the barriers encountered

23. Did some of the barriers indicated above compromise the achievement of the set objectives of the project?

- Yes, in particular the institutional barriers
- Yes, in particular the social/cultural barriers
- Yes, in particular the financial/market barriers
- Yes, the combination of different barriers
- Yes, but we could find solutions to some of the barriers encountered
- No, we were able to find solutions to some of the barriers encountered
- No, we were able to find solutions to all the barriers encountered
- I am not sure

- Other (specify)

24. In case you were able to overcome institutional and administrative barriers as indicated above, please specify on relevant solutions you have identified and/or implemented:
(open question)

25. In case you were able to overcome the social/cultural barriers as indicated above, please specify on relevant solutions you have identified and/or implemented:
(open question)

26. In case you were able to overcome the financial/market barriers as indicated above, please specify on relevant solutions you have identified and/or implemented:
(open question)

27. In case you were able to overcome the other non-technological barriers as indicated above, please specify on relevant solutions you have identified and/or implemented:
(open question)

Section 5: Final considerations

28. What else would you like to tell us in regard to encountered non-technological barriers?
(open question)