URBREATH [101139711]

Systemic Integration of Transformative Technical and Nature-based Solutions to Improve Climate Neutrality of European Cities and Regions and tackle Climate Change: the URBreath Approach

URBREATH

D7.7: Framework for Collaborative Holistic Procurement Models with Case Studies

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	2) development of a tool which maps the potential public (local, regional, EU) and private sources and instruments of NBS financing along with a guidance to access them 3) description of the extent to what this tool enables the URBREATH frontrunner and follower cities to identify the most suitable financing sources for scaling up NbS and on-ground implementation of investment plans.

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Executive Summary

Nature-based Solutions (NbS) provide multiple benefits for both people and the planet. Considering the current planetary crises – such as biodiversity loss and climate change – NbS need to be rapidly scaled up. Achieving this will require substantial financing. However, municipal budgets are often limited, and private financing is less accessible because NbS typically do not generate financial returns. This makes innovative approaches to financing and procurement essential.

Fortunately, there is a wide range of funding sources, financial instruments and procurement approaches that can be combined to support NbS implementation. By developing a business plan, assessing costs against potential revenue and evaluating the positive impacts of the planned NbS, municipalities can identify the most suitable financing approach for their planned NbS project.

In addition, cities can adopt co-creative and innovative procurement methods to reduce costs, increase innovation and create more sustainable NbS outcomes. Applying the collaborative holistic procurement framework can help municipalities procure and finance more NbS, resulting in greener and more liveable cities.

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List of Terms and Abbreviations

Abbreviation	Definition
CAPEX	Capital expenditure
CEB	Council of Europe Development Bank
D	Deliverable
DFI	Development finance institution
EBRD	European Bank for Reconstruction and Development
EC	European Commission
EEA	European Economic Area
EIB	European Investment Bank
EIT	European Institute of Innovation & Technology
ERDF	European Regional Development Fund
EU	European Union
EUI	European Urban Initiative
FLC	Follower city (Kajaani, Aarhus, Parma, Athens, Pilsen are follower cities)
FRC	Front-runner city (Tallinn, Leuven, Madrid, Cluj-Napoca are front-runner cities)
GAIA	Green Area Inner-City Agreement
GEF	Global Environmental Facility
ITI	Integrated Territorial Investment
KIC	Knowledge Innovation Community
MDB	Multilateral development bank
MFI	Multilateral finance institution
NbS	Nature-based solution
NGO	Non-governmental organisation
OPEX	Operational expenditure
PCP	Pre-commercial procurement
PES	Payment for Ecosystem Services
PMC	Preliminary market consultations
PPI	Public Procurement of Innovative Solutions
PPP	Public-Private Partnerships
R&D	Research and development
SP	South Pole
T	Task
TURF	The Urban Resilience Fund
WP	Work package

1 Introduction

Nature-based Solutions (NbS) are interventions inspired and supported by nature that deliver environmental, social and economic benefits in a cost-effective way while strengthening climate resilience and adaptation. [1] In urban areas, NbS can take many forms, including parks, green roofs and facades, community gardens, restored wetlands, stormwater ponds or permeable surfaces. These elements help clean the air and reduce heat through shading and evapotranspiration, creating cooler, healthier and more comfortable environments for people. Green spaces in cities also provide valuable areas for leisure and recreation, improving overall quality of life.
Beyond these local co-benefits, NbS also bring wider environmental benefits: vegetation absorbs carbon dioxide and supports climate mitigation; soils and wetlands filter water, store rainfall and help manage floods, thereby strengthening climate adaptation; and a greater diversity of plant life supports richer urban biodiversity. In the light of intensifying climate impacts, the ongoing loss of biodiversity and growing pressures on public health in cities, scaling up Nature-based Solutions is becoming increasingly essential for liveable, resilient urban environments.

However, implementing more NbS requires financial resources – both for the initial investment and for the ongoing maintenance. Usually, municipalities finance parks and other urban greening projects through their municipal budget. Yet, these budgets are often already stretched and are not sufficient to support NbS at the scale required. Especially considering the high upfront investment in NBS, while the benefits (e.g. climate resilience, biodiversity, health improvements) mainly appear in the longer term, makes it challenging for municipalities to finance NBS on a larger scale. Traditional short-term funding cycles do not align well with this timeline.
Engaging private-sector financing is an option, but a challenging one, as NbS typically generate little to no direct revenue and are largely considered public goods. Furthermore, there is a high risk perception by investors. As a result, traditional financial instruments such as debt and equity are rarely suitable for these types of interventions.
Hence, to close the gap, additional and innovative financing models are needed. Financing must accommodate shared responsibilities and incentives, since NbS often involves not only the municipality itself, but also private developers and citizens (complex stakeholder engagement). Collaborative or blended finance models help align interests. Moreover, innovative approaches to procurement can help to reduce costs, stimulate innovation, lower the risk and increase the sustainability and success of NbS projects.

1.1 Purpose and Scope

The purpose of this report is to support cities in identifying suitable financing sources for scaling NbS and to inspire them to apply innovative procurement approaches. The focus lies on municipalities and the implementation of NbS in urban areas. While the report takes a European perspective – as it is

developed for European cities – many of the insights and approaches are relevant and applicable to cities beyond Europe as well.

1.2 Connection of Task 7.4 with other Tasks of Work Package 7

The report is part of work package 7, "Scaling up, out and deep through Knowledge Transfer, Capacity Building and Financial Sustainability". Of the different sub-topics of the WP, this report relates to the "Financial Sustainability" – in order to scale up the implementation of NbS projects. The report is linked to task (T) 7.4, "Collaborative procurement models and Innovative financing instruments and structures". The main activity (1) describes what needs to be done, which is described in this report. The main activity (2) is about developing a framework for collaborative holistic procurement models, which is also described in this report.

Below are inputs from other tasks in WP7, which have been used for this report, as well as outputs from this report which will be used in other tasks of WP7.

Inputs:

- The preparations and material for module 3 of the Training mission (T7.1) have been used and been built upon to write this report.

Outputs:

- The results of activity (1) of T7.4 and especially the tool with sources and instruments of NbS funding will be integrated into the urban greening investment plans (T7.3) for the FRCs.
- Furthermore, this tool will also be integrated into the project development reports for the FLCs (output of T7.2).

1.3 Connection of Task 7.4 with Tasks in Work Packages apart from WP7

Regarding links to other work packages, the following inputs have been used:

- Description of the tools developed as part of Task 3.5 and the related deliverables (D3.7 and D3.8), and especially what they examine, which urban characteristics they reveal and in what way the results serve as an evidence base for T7.4.
- The development of KPIs and their categorisation, which was made for T5.6 ("Performance evaluation and impact assessment"), was used for the section on results-based finance.
- The development of the collaborative holistic procurement framework uses the stakeholder mapping under T6.1 ("NbS sites implementation plans and monitoring") and D8.5 Exploitation and Business Plan and Commercialization action report as input sources.
- Information from D6.7 - Procurement and city preparation for NbS intervention - V1 connected to T6.3 - Procurement and cities preparation for interventions was used in section 2.4.

There was no useful output from T5.5 that could be used in this report.

Furthermore, the following outputs will be used in other work packages:

- The collaborative holistic procurement framework will feed into T6.3 ("Procurement and cities preparation for intervention").

1.4 Methodology and Structure of the Deliverable

This deliverable was mainly written based on information collected for and presented in the module 3 of the training mission (T7.1) held by South Pole in June 2025 (M18). For sections 2.1 and 2.2 information partly comes from reference [2]. Sections 0 and 2.4 were developed specifically for this deliverable. The content for section 0

How to Identify the Most Suitable Financing Instruments and Approaches for NbS is based on South Pole's knowledge. The content for section 2.4 *Processes to Mobilise Financing for NbS* is based on South Pole's internal knowledge and was adapted to financing of urban NbS as well as modified and complemented based on information from the FRCs about their financing processes. Information about Preliminary Market Consultations (section 3.2.3) was collected from a webinar organised by Francesco Molinari (POLIMI) and South Pole in M21.

After the introduction in chapter 1), the report is structured into two main parts: Chapter 2, *Sources and Instruments for NbS Financing with Guidance on How to Access Them* and Chapter 3, *Framework for Collaborative Holistic Procurement Models*. Chapter 2 lays the foundation of the topic and its insights directly feed into Chapter 3— particularly into section 3.3 on innovative financing approaches.

Within Chapter 2, the first two subchapters (2.1 and 2.2) provide the necessary context to understand the financing mechanisms and processes introduced in subchapters 0 and 2.4. Chapter 3 is then organised into three subchapters, each representing one of the key pillars of the proposed procurement framework. Chapter 4 then wraps up the discussed in a conclusion.

2 Sources and Instruments for NbS Financing with Guidance on How to Access Them

In this chapter, different financing sources as well as financing instruments for NbS projects in cities are described. The description is followed by guidance on how to access the financing in order to support the municipalities.

2.1 Sources of NbS Financing

Financing sources refer to where the funds originate, i.e. which entities provide them. The sources are divided into two main categories: public finance and private finance.

2.1.1 Sources of Public Finance

In this subsection, the sources of *public* financing of NbS in cities are presented, along with guidance on how to access them. The sources are organised from a local to a global level. Most of the public sources are already known by municipalities, which is why they are described in a lower level of detail and only examples (not full case studies) are described. Furthermore, public financing – especially how to access the money – can differ a lot between municipalities, regions and countries, which is why they are described more in general and not for specific municipalities, regions or countries.

However, what is common among the sources of public financing is that the money originally comes from taxpayer money – which is locally, regionally, nationally or globally managed. Further, public financing mechanisms are generally characterised by high levels of formalisation and administrative complexity.

2.1.1.1 Municipal Sources of Finance

There are different types of municipal financing sources for NbS in cities, as described below. Note that the first three sources come from taxpayer's money, while the last two come from the municipality itself, companies or individuals.

Municipality budget

Municipal budgets refer to the regular, usually annual, municipal budget approved by the municipal authority. Typically, a share of this budget is already allocated to urban green areas, such as parks and this allocation often represents the most readily available source of funding for NbS. One option is to adopt a so-called "green budgeting" approach, whereby a specific part of the municipal budget is earmarked for green, or environmental, or climate-related interventions, such as NbS. In most cases, stakeholders are involved in deciding how these budget allocations are used.

If the available funds are insufficient for the intended NbS, the city can work to increase the allocation in future budget cycles or combine budgets from different municipal departments (e.g. road and traffic, water, education, public health or public safety, depending on the project). If this still does not cover

the full cost, municipal funding can be complemented with other sources, or the NbS project may be financed entirely through an alternative funding stream (see subsequent chapters).

Specialised municipal programmes and funds

Often, municipalities have specialised programmes and funds for specific purposes. In some cases, they are devoted to nature, biodiversity, (environmental) sustainability or climate, which is useful for NbS projects. Depending on the NbS project, programmes or funds targeting e.g. road safety, schoolyards, clean water or air can also be relevant.

Two examples here are the "Grey into Green" programme in Wroclaw (Poland), and the Sustainability Fund and Amsterdam Climate & Energy Fund. The goal of the "Grey into Green" programme is to green public schools and preschools backyards. Thanks to this programme, children can play and spend their free time in a safe, friendly and green area. They also have an opportunity to grow vegetables, learn about rainwater gardens or observe pollinators on meadows and, eventually, get acquainted with NbS and their role in climate change adaptation. [3] The funds of Amsterdam on the other hand have invested in over fifty projects in the areas of climate, sustainability and air quality through two revolving funds totalling approximately 30 million EUR. More information can be found in this case study in the C40 Good Practice Guide.

CASE STUDY:

MADRID CO_2MPENSA

Madrid Compensa is a CO_2 compensation programme by the City of Madrid where different entities contribute to urban greening and in return receive a certificate. The following entities can join the programme: public entities, private entities and social entities/ neighbourhood communities.

Financing: The participating entities have two options: Either they make a financial contribution to Madrid City Council, which then carries out tree plantation; or the entity carries out tree planting itself – reducing costs for the municipality for tree planting. [4]

Link: Information about Madrid Compensa on Madrid's website

(Note: the pictures in the case studies come from the linked source)

Municipal subsidies

Subsidies are typically granted through individual calls for relatively small projects that can be supported with a fixed financial amount. In such cases, the municipality covers part of the cost of a product or service – or provides the subsidy directly to the purchasers. When these subsidies target areas such as climate adaptation or green roofs, they can serve as a useful financing source for NbS.

Two examples of municipal subsidies are the 'Ghent platform' and the 'Green roof subsidy' in Rotterdam. The Ghent platform allows project initiators to apply for a municipal subsidy, with a total fund of 55,000 EUR per year allocated by the city specifically for this purpose. Each project can receive up to 5,000 EUR in municipal funding, with options to apply for 25%, 50%, or 75% funding. Through the platform, urban farming and so called "Edible streets" have been financed. [5] The second example of Rotterdam is a support for the construction of green roofs (greenery, water retention systems, solar panels) - more information on it can be found on the website of INTERLACE Hub.

Shadow pricing and additional tax

Shadow pricing can be applied by a municipality - potentially in the form of an internal climate tax - to reduce its carbon footprint and promote sustainable procurement practices. In simple terms, it involves an artificial price put on top of the normal cost of high-emission products and/or on travels (especially flights). High-emitting products may include fossil fuels, food items with a high carbon footprint or negative health impact, as well as electronics and office supplies.
The purpose of the shadow price is to influence purchasing decisions by incorporating the environmental impact of products into their cost structure. In addition, any revenue generated through such a tax can be reinvested in climate initiatives, including NbS.

An additional tax works in a similar way but does not need to be applied to products purchased by the municipality. Instead, it can be applied on other products or services purchased by citizens that have a negative environmental impact, where the municipality has the authority to raise taxes. When such a tax targets harmful products or activities it follows the so-called polluters-pay-principle, whereby those responsible for environmental damage contribute to addressing it. Alternatively, revenue from new or existing taxes, such as a tourist tax, can be allocated to fund NbS.

An example of an additional tax is the tourist tax in Barcelona, which goes to financing climate mitigation and adaptation. The tourist tax is a fee that tourists who visit the city pay when they are in a hotel or in a tourist apartment. The revenue goes to the installation of energy efficient heat pumps and solar panels in all the city's 170 public schools over six years, replacing old gas-powered heating systems. The benefit is that it doesn't come at an extra cost for the citizens of Barcelona – however, the financing base is varying, which makes the income unpredictable. More information can be found in this article about Barcelona's tourist tax.

Levy/ remaining funds of an existing levy
Municipalities often already raise levies on certain goods and services, such as waste collection and water management. They may introduce a new levy whose revenue is used to finance NbS or alternatively allocate a portion of an existing levy for this purpose.

2.1.1.2 Regional Sources of Finance

At the next geographical and political level, various regional or sub-national financing sources can support NbS in cities. Funding may flow either from the national to the regional level, or – depending on the country – regions may have their own tax base and therefore their own funding mechanisms. As with most municipal sources, these funds ultimately originate from taxpayers. Regional sources of finance can generally be classified into three categories, as described below.

Budget
NbS projects in cities can be financed directly from a regional budget when dedicated funds are available. Similar to the municipal level, regions can also implement green budgeting (see description above), allocating a defined share of their budget specifically to environmental or climate-related interventions.

One example of regional budgeting is the French region of Brittany, where 1% of the annual budget is allocated to ecological purposes.[6]

Funds
When the region maintains a dedicated fund for financing NbS – or for climate and environmental actions more broadly – this fund can also be used to support NbS projects in cities. To make the process more inclusive and co-created (see chapter 3.1 for further explanation on the importance of co-creation), participatory budgeting can be applied to decide how the funds should be allocated. Unlike municipal funds, however, regional funds often require a formal application process, meaning that financing is not guaranteed.

An example of such a fund is the Oplandspuljen, a peri-urban development fund for Aarhus. With a budget of 6.7 million EUR, it is primarily allocated through participatory budgeting in local communities. Several projects supported by this fund involve Nature-based Solutions.

Subsidies
As with municipal subsidies, regions can provide financial contributions covering part - or all – of the cost of specific goods and/or services. Regional subsidies can be used for urban NbS when they support activities or investments related to the intended project.

An example of a regional subsidy is the LRM (Limburgse Reconversie Maatschappij), established by the Flemish government in Belgium. Its funding supports initiatives such as urban farming, bee plants, green corridors and park development.[7]

2.1.1.3 National Sources of Finance

Moving one level up, municipalities can access financing from national sources to support NbS projects. Examples of national sources include national governments, government agencies, central banks, national development banks, sovereign wealth funds and state-owned enterprises. National financing sources for urban NbS can generally be grouped into three categories, as described below.

Funds

In some countries, national governments maintain dedicated funds to finance climate adaptation, biodiversity and environmental initiatives, which can be used to finance urban NbS. As with regional funds, national funds often require a formal application process, meaning funding is not guaranteed.

One example is the Realdania (the LAVA Project) in Denmark, which supports sustainable urban development, climate adaptation and green solutions, including Nature-based Solutions. Its funding originates from real estate, mortgage financing and banking. Another example is the Lokale og Anlægsfonden (The Danish Foundation for Culture and Sports Facilities) in Denmark, which finances community-focused public spaces and projects that contribute to the green transition. A third example is the Recovery and Resilience Plan (PNRR) in Italy, which includes financing for large-scale nature projects such as the planting of 6.6 million trees in metropolitan areas and the restoration of riparian ecosystems in the Po Valley.[8]

Subsidies

Some national governments have subsidies for climate adaptation and environmental protection, which can be used to co-finance NbS projects. While subsidies are most commonly directed toward the private sector, some may also be accessible to municipalities.[9]

An example of national subsidies in practice is the funding of climate adaptation measures in Malmö, where green roofs and other NbS elements are supported through a mix of public funding, including national subsidies.[10]

Tax incentives

Tax incentives or tax reductions are generally aimed at private sector stakeholders. However, municipalities should be aware of these schemes, as they may help mobilise private-sector participation in local NbS projects. As with municipal taxes, national tax incentives often apply the polluter-pays-principle by placing taxes on products and services with a negative environmental impact.

One example comes from France, where private land within Natura 2000 sites benefits from several tax reliefs. These include exemptions from property taxes for undeveloped land, reduced inheritance taxes for unbuilt property transferred within these sites and income tax deductions for costs associated with managing Natura 2000 areas.[9]

2.1.1.4 *European Financing Institutions and the EU Commission*

At the European level, various financing institutions and several programmes of the European Commission provide funding opportunities for NbS in cities. Each programme and institution has its own eligibility criteria and geographical coverage, meaning that municipalities must assess which options are relevant for their specific context and for the intended NbS project. The programmes and institutions listed below are ordered from more to less well known and from those typically providing grands to those primarily offering loans. Note that this is not an exhaustive list of all EU funding options, but rather a selection of those most relevant to NbS and the urban context. Municipalities may need to conduct additional research to identify the most suitable funding option for their projects. It is also important to monitor newly launched funding programmes, as EU funding instruments are updated and expanded on a continuous basis.

Horizon Europe Programme

Horizon Europe is EU's key funding programme for research and innovation. It addresses climate change, supports the achievement of the UN's Sustainable Development Goals and boosts the EU's competitiveness and economic growth. Legal entities from EU member states and associated countries are eligible to participate. Horizon Europe comprises several programmes and funding opportunities; URBREATH itself is funded through this framework. URBREATH is part of the Urban Greening and Renaturing Cluster together with four Horizon Europe sister projects ReGreeneration, ClimaGen, GreenIncities and Commit2Green. Together, the cluster forms a collaborative ecosystem that drives nature-positive and climate-resilient urban transformation across Europe.

Horizon Europe also includes a set of research and innovation *missions* designed to increase the effectiveness of funding by focusing on clearly defined targets. Two missions particularly relevant to NbS are the "Adaptation to Climate change mission" and the "Climate-Neutral and Smart Cities mission". The latter – also known as "100 Climate-Neutral and Smart Cities by 2030" – provides funding and technical support, including access to City Finance Specialists and the Climate City Capital Hub. Increasingly, this mission also addresses climate adaptation rather than focusing solely on climate mitigation.

In addition, Horizon Europe comprises thematic clusters that offer funding. Two clusters are especially relevant to NbS: Cluster 5, which focuses on Climate, Energy and Mobility and Cluster 6, which covers Food, Bioeconomy, Natural Resources, Agriculture and Environment.

European Institute of Innovation & Technology (EIT) Climate-KIC (Knowledge Innovation Community)

The EIT Climate-KIC offers several programmes that support NbS for climate adaptation. One of these is Pathways2Resilience, funded under the Horizon Europe Programme, which develops adaptation strategies supported by extensive learning programs – potentially including NbS in cities.

EU LIFE Programme

The EU LIFE Programme is the EU's primary funding instrument for environment and climate action. It is structured into various sub-programmes, several of which are highly relevant for urban resilience and adaptation – particularly the Environment Sub-Programme and the Climate Action Sub-Programme.

The Environment Sub-Programme funds projects that develop, test and demonstrate policy or management approaches in areas such as air quality, water and the urban environment. It supports pilot and demonstration projects, including those that implement green infrastructure solutions like green roofs, rain gardens and sustainable urban drainage systems. The Climate Action Sub-Programme focuses on mitigation and adaptation measures. It supports interventions that enhance the resilience of urban areas to climate impacts, including NbS projects addressing urban heat islands, flooding and other climate-related risks.

EU development programmes (Interreg Europe)

Interreg Europe is an EU co-funded programme, that promotes interregional cooperation. It aims to reduce regional disparities in development, growth and quality of life in and across Europe's regions. The programme consists of several regional sub-programmes, such as those for the Baltic Sea Region, North Sea Region and Öresund-Kattegat-Skagerrak.

European Regional Development Fund (ERDF)

The ERDF strengthens economic, social and territorial cohesion in the European Union by addressing regional imbalances. It supports investments aligned with a "smarter, greener, more connected and more social Europe". One of its key priorities – "a greener, low-carbon and resilient Europe" – is particularly relevant for financing NbS.

European Urban Initiative (EUI)

The EUI provides funding to test and scale innovative urban solutions. Through the EUI-Innovative Actions instrument, it co-finances up to 80% of a project's activities with funding up to 5 million EUR from the European Regional Development Funds (ERDF).

Integrated Territorial Investment (ITI) funding

ITI is a funding mechanism that facilitates the implementation of territorial strategies requiring financing from multiple sources. It promotes a more local, "place-based" approach to policy making within the European Structural and Investment Funds.

European Economic Area (EEA) grants

The EEA provides various grants with the "Environment and Ecosystems" being particularly relevant for NbS. For example, it supports initiatives that reduce pollution of air, water and soil and helps address mismanagement of natural capital. These grants are only available to countries within the EEA.

European Investment Bank (EIB)
The EIB is EU's lending arm and the largest multilateral lender. It finances projects both inside and outside the European Union. Since 1958, it has a long-standing focus on supporting projects in less-developed regions and advancing cohesion throughout Europe.

Council of Europe Development Bank (CEB)
The CEB is a European multilateral development bank providing loans to co-finance projects in any of its 43 member states. Its support focuses on enhancing climate resilience for vulnerable populations and helping communities respond to climate-related and other disasters. While its core mandate is social, its alignment with the Paris Agreement means that NbS can be integrated into the solution it finances.

European Bank for Reconstruction and Development (EBRD)
The EBRD operates across three continents to support the transition to prosperity and sustainable, well-functioning market economies through financing, advisory services and policy reform.

Its Green Cities programme is particularly relevant for NbS in cities. This programme supports cities in developing a long-term vision through a Green City Action Plan, stimulating green investment– including investment in Nature-based Solutions. It promotes the integration of resilience, digital and smart solutions, gender and economic inclusion and in the mobilisation of private capital. Participating cities may also benefit from grants, concessional loan financing for sustainable infrastructure and opportunities to network and share knowledge with other Green Cities and partner organisations. Eligibility is limited to cities within an EBRD region.

2.1.1.5 Global Sources of Finance

On the highest level, there are global sources of financing for NbS. Note that most of these sources are only accessible for NbS projects through top-down approaches or project combinations (of some projects which generate revenue and other projects which do not generate revenue). Furthermore, to some institutions only countries – and not cities – can apply. In such cases, a city needs to group with other cities in its country or collaborate with the national administration. Therefore, global sources would only be applicable for larger NbS projects – if at all.

On a global level, the financing for NbS mostly happens via development finance institutions (DFIs). DFIs are publicly owned organisations and a significant number of developed countries, including all G7 members, own DFIs. There are also DFIs that are owned jointly by several countries, such as the World Bank's International Finance Corporation. DFIs are often willing to take on greater commercial risk than private investors (as described in section 2.1.2 below) in order to support businesses or sectors with strong positive development impact. This allows them to invest in companies in countries that are most in need of financial support but are frequently considered too risky for private investors. [11] Furthermore, DFIs typically provide long-term credits, which also reflects their higher risk tolerance. Global sources of financing can generally be categorised into bilateral development finance institutions and multilateral finance institutions (MFIs), which are described below.

Bilateral development finance institutions

These finance institutions are set up by individual countries to provide financing to selected partner countries, which is why they are referred to as "bilateral". These funds are usually funded by development money and therefore money comes from countries of the OECD Development Assistance Committee, which has 33 members. Each of the countries have their own criteria and recipient countries, making it impractical to cover them in detail in this report. Some examples include France's Proparco, the Dutch entrepreneurial development bank FMO, Norway's Norfund and the Swiss Investment Fund for Emerging Markets (SIFEM).

Multilateral finance institutions

An MFI is an international financial institution chartered by two or more countries to encourage economic development in low- and middle-income countries. MFIs include Multilateral Development Banks (MDBs) and international multilateral development funds.

Unlike commercial banks, MDBs do not aim solely to maximise profits for their shareholders. Instead, they focus primarily on achieving development goals such as ending extreme poverty and reducing economic inequality. [12]

An international multilateral fund is a financial mechanism established through the cooperation of multiple countries to advance a specific international objective. These funds are typically established by international agreements or treaties and are funded by contributions from participating countries. They are managed by a governing body, often an international organisation and provide support to developing countries to help them meet their obligations under international agreements. One example is the Global Environmental Facility (GEF), which brings together several multilateral funds to address the planet's most pressing challenges in an integrated manner. Its financing enables developing countries address complex issues and progress toward meeting global environmental goals.

2.1.2 Sources of Private Finance

In this subsection, the sources of private financing for urban NbS are described. These sources are less known to and used by municipalities but can be very useful as a complement to or instead of public financing, if public sources are not sufficient or not available for the intended NbS project. The different sources of private financing are described below and are ordered from more profit-driven organisations to less profit-driven communities and individuals. For each source, different types of that source are listed, as well as advantages and drawbacks of that source.

When having a private source of (co-)financing the NbS, the following elements are generally important:

- The project needs to generate revenue – it needs to have a clear value proposition and give a return on the investment by the private actor.
- The project planning needs to show clear and measurable co-benefits, i.e. data on positive results of the project from a social, environmental and/or economic point of view. The funders are often interested in creating local results. Read more about this in subsection 3.3.1.

- The project needs to show long-term stability, giving confidence to the private party that the project will be maintained and deliver results over time.
- The project needs to be good, visible and innovative, and which the financier can communicate about. This can give it an improved image/ PR value, reputational gains, visibility or customer attraction (within the local community).
- Private actors often want to keep financial and operational risks low. Therefore, offering blended finance or public guarantees (as a security), or sharing risks with the public sector are useful approaches to reduce investment risk. The project needs to be well planned and easy to manage from the private side.
- The project needs to have a transparent project structure with clear roles of the public and private actors, clear timelines, budget use and risks.
- A good governance is also beneficial, including reliable coordination, clear responsibilities and regular reporting.
- It is possible to incentivise investment through shared ownership or performance-based payments.

2.1.2.1 *Businesses*

Businesses can take many forms, including adaptation-focused companies, investor-owned utilities or social enterprises. They also vary widely in size, ranging from micro, small and medium enterprises up to large corporations and multinational companies.

Businesses can contribute financially to NbS projects in several ways, for example through voluntary donations, in-kind contributions and sponsorships; through mandatory taxes, levies or fees based on the polluter-pays-principle; concessional fees (for the right to operate a business (on the NbS site), such as a restaurant, café, bike rental or access to swimming area for which people pay – which can be called 'NbS as a service' since a service is offered in the NbS area); or through direct investments that expect a financial return (further details on investors are provided in the section below). A specific example of a levy can be found in so-called Business Improvement Districts, which charge an annual levy to businesses in a certain area, of which the money can be used for environmental purposes. In section 2.2 *Instruments of and Approaches to NbS Financing* different instruments of financing, partly from businesses, are described.

Businesses also differ in their motivations for contributing with financing to an NbS project. For voluntary donations and sponsoring, motivations may be intrinsic, such as a desire to take responsibility or support community well-being, often through corporate social responsibility budgets. Extrinsic motivations may include improving reputation, enhancing the sustainability and resilience of operations or advancing the company's mission, ambitions and strategic goals, when these align with the benefits generated through the NbS project. Other companies, such as insurance companies, may have a clear financial incentive to support NbS for climate adaptation, as these measures can reduce expected losses from extreme weather events, that affect health, property and infrastructure. When

contributions arise from taxes, levies or fees, companies are motivated by regulatory compliance. In the case of investments, the primary motivation is financial, contributing to the company's overall profitability.

Table 1: Advantages and Drawbacks of Financing from Businesses [2][1]

Advantages	Drawbacks
Significant financial and technical resources to contribute to NbS projects.	Their engagement might be contingent on the perceived benefits to their operations or compliance with regulatory requirements.
Potential for long-term investment in regional NbS efforts due to their vested interest in the regions they operate.	Businesses may need to prioritise their business interests, which might not always align with local adaptation priorities.
Ability to foster partnerships with regional authorities and other stakeholders, enhancing the scale and impact of NbS projects.	

As a business's motivation can depend on its own sustainability priorities, resilience needs, mission, ambitions and goals, the non-monetary benefits of the NbS must be aligned with the company's overall values and strategy. They also need to be clearly highlighted in proposals or pitches by municipalities who want to receive financing from those businesses. Some examples of such benefits and the respective beneficiary (and therefore possible business financing partner) are shown in the table below.

Table 2: Benefits of NbS and Matching Business Beneficiary Which Can Contribute with NbS Financing

Benefit	Beneficiary
Air quality/ public health	Health insurance company
Lower risk of flooding	Real estate companies and real estate insurance companies
Recreational spaces	Organisations upholding family values
Pedestrian accessibility/ attractivity	Local commerce (better frequented)
Biodiversity/ natural beauty	Tourist organisations
Neighbourhood attractiveness	Real estate / landlords

[1] This source has been used for all advantages and drawbacks of sources, instruments and approaches of financing.

CASE STUDY:

DUBLIN'S GREEN SPACE REQUIREMENTS

Dublin's 2016–2022 Development Plan envisions a sustainable and resilient city, promoting Nature-based Solutions such as green roofs, living walls and sustainable drainage systems to reduce flooding and cut CO_2 emissions by 20%. The city prioritises biodiversity, committing to ecological corridors, new wetlands and the reopening of streams to help species adapt to climate change.

Financing: Under the Development Plan, developers of residential areas who cannot fulfil the 10 % green space requirement must make a financial contribution to providing a new park in the area in question, improving an existing park and/or enhancing amenities in line with the city's Parks Strategy.

Link: Case study in Oppla database

Other examples include Edinburgh and Bari

CASE STUDY:

GRANTON COMMUNITY GARDENS

The Granton Community Gardens include sustainable production of local food, along with educational opportunities. It has resulted in greater community involvement and greater social interaction and cohesion.

Financing: Businesses made contributions, either financial or in-kind as part of their Corporate Social Responsibility Programme.

Link: Case study in Oppla database

2.1.2.2 *Asset Owners and Institutional Investors*

Examples of asset owners and institutional investors include pension funds, investment trusts, asset managers, institutional investors, faith-based investment groups, insurers, reinsurers, impact investors (e.g. family funds) – and the municipality. What they have in common is that they manage revenue-generating assets, which can be invested in initiatives such as NbS projects. This case is more likely than seeing the NbS as an investment, unless the NbS includes a revenue-generating component. Some investors such as family offices or investment trusts, however, do not expect a high return on the investment (if any at all) and could invest in an NbS – however they expect the invested capital to be paid back (unless it is a grant).

Table 3: Advantages and Drawbacks of Financing from Asset Owners and Institutional Investors

Advantages	Drawbacks
Targeted support: They are focused on specific causes or objectives.	Rigidity in purpose: They have limited flexibility due to predetermined objectives.
Diverse investment portfolio: They can invest in different real estate types.	Limited capital appreciation: There is an emphasis on income over long-term capital growth.
Income generation focus: They have a regular income stream from investments, such as in property.	They may have specific criteria for investment that could limit eligibility for certain projects.

CASE STUDY:

THE PARKS TRUST

The Parks Trust is an independent charity responsible for managing green spaces in Milton Keynes, UK. Established in 1992 by the Milton Keynes Development Corporation.

Financing: The Parks Trust is self-financing, generating its income from a property and investment portfolio endowed to it at its inception.

Link: The Parks Trust Homepage

2.1.2.3 *Private Investors*

Examples of private investors are project developers, venture capital investors and angel investors. The latter two are however very unlikely to invest in NbS, since they usually invest in businesses and expect

a high return on their investment. This leaves project developers as a more realistic category of private investors for NbS.

Table 4: Advantages and Drawbacks of Financing from Private Investors

Advantages	Drawbacks
The potential for significant funding, including the ability to leverage private sector investment for a public good, especially in the realm of climate-resilient infrastructure.	Typically seeking financial return – a drawback since NbS usually do not give a financial return.
Potential for creating lasting infrastructure and environmental assets that contribute to regional adaptation goals.	Difficult to structure climate adaptation projects to meet return expectations.

CASE STUDY:

THE PARIS CLIMATE BOND

Launched in November 2015, the Paris Climate Bond is a significant financial initiative aimed at funding climate mitigation and adaptation projects in Paris. Total value of 300 million EUR and a maturity date in May 2031.

Financing: Private investors interested in contributing to the city's sustainability receive a 1.75% annual profit rate. This money comes from reduced costs thanks to a reduction in energy consumption by the city, coming from energy efficiency projects covered by the bond.

Link: Case study on the project from Climate ADAPT

2.1.2.4 *Associations, Professional Bodies and Non-governmental Organisations*

Membership organisations and professional associations represent and support specific professional or industry sectors, or work towards certain goals beneficial for the society. They offer a range of services, including networking, professional development and access to industry-specific resources. Many have funding mechanisms to support projects that benefit their members or contribute positively to their industry or the broader community.

Table 5: Advantages and Drawbacks of Financing from Associations and Professional Bodies

Advantages	Drawbacks
Focused funding: They have targeted support for specific industry sectors or professional fields.	Narrow focus: There is a limited scope of interest, primarily supporting initiatives within their specific field.
Networking opportunities: They give access to a wide network of professionals and industry experts.	Competitive funding: There is high competition for available funds within the industry or sector.
Resource availability: There is a potential access to specialised resources and expertise.	Membership restrictions: The benefits are often limited to members or closely aligned entities.

CASE STUDY:

OBRAT CULTURAL ASSOCIATION

A cultural association, Obrat, approached the municipality, which owned a derelict construction site, to transform it into a community space. The City of Ljubljana (Slovenia) agreed to lease the land for free.

Financing: The community is developing the site → no cost for the city

Link: Article on the project "Urban Gardening to Connect People With Nature in the City"

Non-governmental organisations (NGOs) are independent entities that operate outside government control. They typically focus on social, environmental, or humanitarian goals. NGOs in the context of NbS work towards influencing policy, sharing knowledge and enhancing the capabilities of communities and organisations.

Table 6: Advantages and Drawbacks of Financing from NGOs

Advantages	Drawbacks
Access to unique funding: Ability to tap into funding sources not available to (local) governments.	Resource constraints: May face limitations in terms of resources and funding.
Flexibility: Often more agile and innovative compared to (local) government entities.	Dependence on donor agendas: Activities can be influenced by donor priorities.
Community trust: Typically enjoy a high level of trust and engagement from local communities.	

Sometimes these organisations cannot contribute financially, but do so instead with networks, knowledge or engaged members who can help out with different tasks, such as tree planting. They can also contribute to making the project more visible, which can help secure financial support later.

2.1.2.5 Foundations and Trusts

Trusts are legal arrangements managing assets for various purposes, including asset protection, care for incapacitated individuals and inheritance management. Foundations, often used interchangeably with trusts, can take various forms, including trusts or companies limited by guarantee. They are established for specific purposes, like environmental protection or social welfare.

Table 7: Advantages and Drawbacks of Financing from Foundations and Trusts

Advantages	Drawbacks
Flexible funding: There is a potential for unrestricted or broadly directed funds.	Variable focus: Philanthropic interests may shift, affecting long-term funding reliability.
High impact: They have a capacity to fund large-scale or transformative projects.	Limited direct focus on NbS: There are fewer initiatives specifically targeted at NbS.
Global reach: They have an ability to fund initiatives across various regions and contexts. (less relevant for NbS on a city-level though)	

CASE STUDY:
FONDAZIONE CARIPLO

The Fondazione Cariplo is an entity helping civil society organisations and institutions serve communities. It has a program area named Environment, within which they have the program F2C – Fondazione Cariplo for Climate.

Financing: The foundation includes different types of assets: liquid investments, equity stakes, diversified illiquid investments and other assets.

Links: Website of Fondazione Cariplo; F2C programme; Case study in Oppla database

2.1.2.6 Community Entities

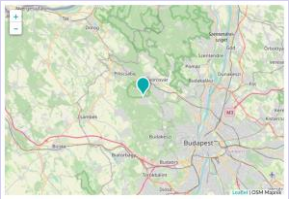
The most common types of community entities which can provide financing are community development companies, community development financial institutions and community land trusts, whereby the last type can be most relevant for NbS, unless there is a strong focus on social impact. Community land trusts are non-profit entities that hold and manage land on behalf of a community, ensuring long-term stewardship of community assets like affordable housing, commercial spaces, civic buildings – and community gardens (one type of NbS).

Table 8: Advantages and Drawbacks of Financing from Community Entities

Advantages	Drawbacks
The local representation and impact of community entities engage people and is better fulfilling their needs.	Limited geographical scope: It is primarily serving a specific neighbourhood or town, which may limit the scale of impact.
Collaborative funding opportunities: They have an ability to leverage philanthropic and other funding sources for community projects.	Capability: Community entities may have limited resources, requiring additional support for engagement and project involvement.
Increased ownership and credibility of projects, generating necessary buy-in and confidence from financing entities.	Resource constraints: Community entities are often reliant on external funding, which may fluctuate over time.

CASE STUDY:

COMMUNITY GARDEN AT THE VILLAGE OF NAGYKOVÁCSI



Observing the situation, some local people decided to create a community garden where people can work together and where they have the possibility to acquire gardening skills. Students participate in the works as well.

Financing: Private Finance Initiative – all costs are covered by the community.

Link: Case study in Oppla database

2.1.2.7 Households and Individuals

The most common types of households and individuals are visitors/ tourists, consumers, property owners, non-professional investors, high-net worth individuals and citizens. The original sources of the money are mostly either their usual bank accounts, or savings. The financing is then flowing via e.g. visitor fees, utility bills, lottery tickets, taxes, financial contributions and fees. Advantages and drawbacks differ between these different channels – as an example see below *Advantages and Drawbacks of Financing from Individuals – via a Lottery Fund*.

Table 9: Advantages and Drawbacks of Financing from Individuals – via a Lottery Fund

Advantages	Drawbacks
A significant revenue generation potential for good causes, including climate adaptation initiatives.	Dependence on government mandates to allocate lottery proceeds towards climate adaptation.
Established legal and operational frameworks in many jurisdictions.	The allocation of funds is subject to political and policy considerations, which may prioritise other areas.

CASE STUDY:

UK LOTTERY FUNDS

In the UK, The National Lottery Community Fund and The National Lottery Heritage Fund are public bodies responsible for distributing funds raised by the National Lottery. These funds are allocated to a variety of projects that deliver public benefits, including those focused on nature and the environment.

Financing: Individuals buying lottery tickets.

Link: GrowGreen project report;

The National Lottery Community Fund; The National Lottery Heritage Fund

CASE STUDY:

FONDS STADTGRÜN

One example of a fund that relies solely on donations is the fund "Stadtgrün" in Dresden. With the donations by private individuals who want to contribute to nicer parks, a contribution is made to the creation and maintenance of parks, green spaces as well as securing and maintaining the tree population. Other examples are monuments, fountains, or playgrounds. Donations can be made for specific projects, for specific trees, or in general.

Financing: The financing happens only through donations and does not create any additional cost for the public administration.

Link: Case study in Oppla database; Website of "Fonds Stadtgrün"

2.1.2.8 Crowdfunding

Crowdfunding refers to the practice of many individuals contributing financially to support a specific project, person, or small business. Typically, no financial return is provided, although contributors may receive a small gift or some other form of appreciation. In the case of NbS, money can be collected to finance a certain NbS project. It needs to be explained why crowdfunding is needed from citizens, since it is usually the municipality which is paying for parks and other urban greening from the municipal budget. Due to the uncertainty regarding the amount of money that can be raised, it is advisable to combine crowdfunding with other sources of financing.

Table 10: Advantages and Drawbacks of Financing via Crowdfunding

Advantages	Drawbacks
Engages people	No guaranteed funding
Everyone can contribute, since it is possible to contribute with just a small amount of money.	Need to do active outreach to reach a wide audience.

CASE STUDY:

THE GHENT CROWDFUNDING PLATFORM

The Ghent crowdfunding platform is an innovative initiative for climate adaptation projects.

So far, it has funded two NbS projects: urban farming in a social housing quarter and 'edible streets,' where facades along streets are adorned with planters.

Financing: Supporters can donate a minimum of 5 EUR, with the total amount raised serving as an indicator of community support.

Link: Crowdfunding Platform

2.2 Instruments of and Approaches to NbS Financing

The following chapter looks at tools and mechanisms used to mobilise, structure and manage financial resources for projects – so called financing instruments or approaches. There is a variety of different financing instruments and approaches available, all of which are described in more detail below including advantages and disadvantages of the respective instrument. The first three sections are about the financing instruments, namely grants, debt and equity. The last two sections are about the approaches to financing, namely blended finance and results-based finance.

2.2.1 Grants

A grant is an amount of money that a government, private entity or any other institution gives to an individual or to an organisation for a particular purpose. A grant does not need to be paid back but the recipient is expected to use the funds from the grant for their stated purpose. Grants are thus fully concessional. Grants may be able to fund a part or the whole project, reducing the cost and/or increasing the financial viability. Grants can be provided both during an ongoing project as well as early in the project cycle, e.g. for research and development, to address early-stage barriers and demonstrate viability. They can provide 100% of funding costs or can require an element of co-funding. Grants normally come with some requirements on outputs and/or reporting. For example, results-based grants are a variation which link payment to certain milestones. Grants are particularly useful when projects have high societal benefits, but commercial potential is low, or to help support early-stage development or de-risking to make a project investment ready, such as through technical assistance. Grants can come from public actors such as the European Commission (EC), a national or regional government or another publicly funded agency, or private sources such as philanthropies. Due to the many different grants which exist on different levels, cities need to determine which grants provide funds for NbS in cities.

Table 11: Advantages and Drawbacks of Grants as a Financing Instrument

Advantages	Drawbacks
No monetary repayment needed	Higher degree of reporting requirements
Due to the absence of a repayment requirement, projects without clear revenue streams become feasible	Grants often only fund one stage of a project making it difficult to finance it in its entirety
	Restrictive eligibility requirements
	Heavy competition for limited funds
	Complex funding landscape/Difficult to identify opportunities

CASE STUDY:

THE URBAN ADAPT

The Urban Adapt project in Rotterdam focuses on enhancing climate resilience through two key measures:

- the development of a tidal park and green spaces
- supporting a neighbourhood initiative aimed at engaging local communities in transforming grey urban areas to green spaces

Financing: Contribution of 2.7 million EUR from the EU LIFE programme.

Links: EC LIFE Public Database; URBAN ADAPT website

2.2.2 Debt Instruments

A debt instrument is a financial tool used to raise capital, representing a documented and binding obligation between two parties. It involves one party lending funds to another, with the specific repayment method, interest and schedule outlined in a formal contract. Debt is often a preferred method for raising funds because its defined repayment schedule can reduce risk for both the lender and borrower, sometimes resulting in lower interest rates. However, debt instruments need to be paid back (with interest), which is why a revenue stream is needed in the NbS. Alternatively, the NbS can include a commercial sub-project which brings an income, or the NbS is part from an overarching commercial solution which has a revenue, or the non-commercial NbS can be bundled with commercial projects, or money can come from another source (e.g. municipal budget), which can pay back the loan and the interest. Common examples of debt instruments include loans and bonds, which are described in more detail below.

2.2.2.1 Loans

A loan is a vehicle in which a sum of money is lent to another party in exchange for future repayment of the original amount. In many cases, the lender also adds interest to the principal value, which the borrower must repay in addition to the original balance. The rate of interest varies by source.

Table 12: Advantages and Drawbacks of Loans as a Financing Instrument

Advantages	Drawbacks
Relatively quick access	Revenue stream needed to finance repayment (and interest)
Available for small as well as large sums/ project sizes	Challenging to obtain for NbS projects unless they are bankable
Possibility of portfolio approach: Not all project within the portfolio need to generate returns.	
Option of long-term and low interest loans	

CASE STUDY:

ATHENS URBAN RESILIENCE STRATEGY

The city of Athens took a loan, which will enable the city to incorporate more innovative green infrastructure solutions, enhancing the city's resilience and sustainability.

Financing: Loan of 55 million EUR for the Resilience Strategy, including 5 million EUR for green and water-related infrastructure. The loan was given by the EIB's Natural Capital Finance Facility.

Links: EIB press release; EIB story

2.2.2.2 Bonds

A bond represents a loan made by an investor to a borrower (typically corporate or governmental) and is a fixed-income instrument, meaning an instrument that provides investors with a fixed, predictable income stream over a set period in exchange for lending money. The value of the bond is paid by investors to the issuing entity in exchange for guaranteed repayments. This requires avoided costs or increased revenues from bond-financed activities. Bondholders receive an annual interest payment until the bond matures, known as a 'coupon rate'. Bonds are a standard financing tool but have in recent years been expanded upon to support sustainability objectives. As the bond market has matured, institutions have increasingly focused on ensuring more robust standards for the use of proceeds from the issuance of bonds, meaning that there are a range of different types of bonds and regions will need to consider the most appropriate variation for their project. Some variations include green bonds and climate bonds.

Table 13: Advantages and Drawbacks of Bonds as a Financing Instrument

Advantages	Drawbacks
Possible to raise large sums	Need of a revenue stream for repayment, which is not common in NbS projects.
Low interest rates over the long-term	Time and cost involved in necessary preparatory work such as institutional setup and verification.
Possibility of portfolio approach: Bonds can be used to fund a range of projects, not all of which must have a return, as long as the institution can make the coupon repayments to bond purchasers.	
Green bonds can enhance the issuer's reputation, showcasing commitment to green growth and sustainable development.	

CASE STUDY:

GOTHENBURG'S GREEN BOND PROGRAM

Gothenburg developed an instrument called "Green Bonds", the first one issued in 2013. Proceeds from this instrument could be invested in climate solutions like electric cars or biogas – or a wadden sea, for wading birds.

Financing: Gothenburg borrows money from the financial market (mainly mainstream investors) for investments that benefit the environment – and Gothenburg will need to pay back the money at a certain time.

Links: Gothenburg Green Bonds investment projects; Green Bond Impact Report; UNFCCC

2.2.3 Equity

In equity financing, funds are raised by selling shares (stocks) on the capital market. Through this type of transaction, investors purchase a portion of a company's equity in the form of shares, thereby becoming partial owners of the business. Unlike debt financing, equity does not require repayment; instead, investors expect returns through dividends or increases in the value of their shares. Equity financing is typically used by companies seeking to scale their operations, invest in innovation, or strengthen their capital structure.

Equity in the case of NbS is a direct participation of a third party, which becomes a co-owner of the project. Equity investors/ third parties typically hope for attractive dividend payments as return on the investment or a buyout opportunity with an upside (profit) once the project reached further scale or maturity. Equity financing can fund NbS projects in the private sector, as well as supporting the growth and development of companies specialising in adaptation goods or services.

Table 14: Advantages and Drawbacks of Equity as a Financing Instrument

Advantages	Drawbacks
Selling shares brings in knowledge of investors	Profits need to be shared
No loan to repay (i.e. monthly)	Loss of control
Equity contributions are typically longer-term than conventional credits and can thus increase credit worthiness	Potential revenue pressure from investors
Suitable for capital intensive, high-risk, innovative or niche projects	Potential conflict due to shared ownership

CASE STUDY:

THE URBAN RESILIENCE FUND (TURF)

TURF aims to support cities in designing and investing in highly impactful, sustainable and resilient urban infrastructure, including NbS. The fund's main objective is to develop essential infrastructure, as outlined in city resilience plans, to respond to growing needs. It has three windows that focus on Africa, Europe and early-stage projects.

Financing: TURF is a 500 million EUR blended finance/ equity fund. Seven development finance institutions (DFIs) and private investors (such as pension funds) are involved in equity programmes across the fund. Note that the NbS should have revenue-generating components to be able to pay back the equity.

Links:
TURF article by WEF, TURF on EIB's website

2.2.4 Blended Finance

Blended finance is an approach that strategically combines public funds (concessional capital) with private commercial capital (non-concessional). Specifically, it is the use of catalytic capital from public or philanthropic sources to increase private sector investment. As such, it is not just the presence of concessional public, philanthropic and/or commercial capital in the same investment but can also involve the strategic use of risk-tolerant capital from public and philanthropic sources to de-risk and attract larger sums of capital available from private finance. In doing so, it aims to deliver risk-adjusted returns in line with market expectations.

Rather than an instrument itself, it is a structuring approach that allows organisations with different objectives to invest alongside each other while achieving their own objectives (whether financial return, social impact, or a blend of both). This approach is recommended if it is not possible to get enough money from either a private or a public source, but when it is feasible to get financing from both a private and a public source. Using blended finance is also of an advantage if the municipality needs expertise from the private sector.

Table 15: Advantages and Drawbacks of Blended Finance

Advantages	Drawbacks
Blended finance helps de-risk projects that may be too risky for more commercial capital to consider on their own.	Limited transparency and democratic accountability
Improving commercial viability: Blended finance lowers financing costs or can provide risk mitigation instruments to increase attractiveness to investors.	Potential conflict of priorities, e.g. funds set up with mandates for mitigation and adaptation selecting a higher proportion of mitigation investments due to their ease compared to adaptation.
Blended finance can increase capital leverage.	Often difficult to structure, which implies high transaction costs.
Market making: The use of blended finance approaches alter over time and can be used to help build and develop a market or sector, helping free up capital over time for new development projects or to focus in other areas.	

CASE STUDY:

THE LAND TRUST

The Land Trust is a UK-based charity that specialises in managing endowment funds for the maintenance of public land. The Trust acquires and manages public spaces, using the interest earned or annual income generated from these sites to support their annual budget.

Financing: Their funding model involves calculating the amount needed to create a sustainable endowment fund for each site and then sourcing this funding primarily from the public sector, with about 90% of their current funding coming from this source. Additional revenue may be generated from commercial uses of the site, such as car parking.

The funds are invested and the interest generated is used to maintain the site indefinitely.

Links: The Land Trust Website

2.2.5 Results-based Financing

Results-based financing is an approach where the finance is provided purely or partly based on the achievement of particular outcomes and targets. The expected results are included in a contract for delivery of works and payment is made once evidence is provided that such works have achieved the outcomes. Results-based financing can be used when it is possible to measure non-monetary returns and when there is a company or another actor which would be willing to pay for those returns. They can be helpful because they focus on outcomes, leaving more flexibility about the exact route by which they are achieved, allowing potential for efficiency or innovation.

To know if the target has been achieved or not, quantitative or qualitative measurements must be set up. In the context of URBREATH, this is done based on Key Performance Indicators (KPIs), which have been chosen by each city for the following areas: Mobility, Biodiversity, Environment & Pollution, Climate Resilience, Liveability & Social Justice, Knowledge & Awareness, Governance & Participatory Planning and Local Economy. Once KPIs have been defined, appropriate methods for measurement must be implemented, which may involve the use of sensors, surveys, specialised software or digital tools. To ensure continuous monitoring, structured processes need to be established. Ideally, these are supported by dashboards and advanced digital systems, such as digital twins, to enable transparent, reliable and user-friendly presentation of performance data.

Since the payment often is provided only after a result has been achieved, financing for the upfront investment needs to come from another instrument: either the municipality has budgeted for this, or it can get a grant for it, or it can take a loan or issue a bond for the capital expenditure for implementing the NbS.

Table 16: Advantages and Drawbacks of Results-based Finance

Advantages	Drawbacks
Diversification potential through different sources of finance	Administratively challenging and complex to set up
Strengthens links between finance and adaptation impacts through requirements on particular results or outcomes in projects	Limited evidence of effectiveness, due to limited examples
	Can be challenging to measure or calculate the results
	Financing might only be given after the results have been achieved, meaning that another form of financing is needed for the initial investment.

CASE STUDY:

GAIA (GREEN AREA INNER-CITY AGREEMENT)

GAIA is a model in Bologna, Italy, designed to finance urban tree planting through a unique carbon footprint compensation scheme for businesses. Companies voluntarily participate by calculating their CO_2 emissions via the project's website and select a level of partnership for carbon neutralisation…

Financing: … with contributions ranging from 200 EUR to 4,200 EUR or more.

The funds are invested and the interest generated is used to maintain the site indefinitely.

Links: Case study from Climate ADAPT

2.3 How to Identify the Most Suitable Financing Instruments and Approaches for NbS

If a municipality does not have (enough) money to finance a planned NbS it needs to find other sources of financing and determine which instrument(s) it should use to access that financing. To guide cities in the identification of the most suitable financing instrument and approach for the NbS, two decision trees have been developed and are shown below. To use the first graphic an investment plan must be made, showing the costs and any income or potential other benefits.

Figure 1: Identification of type of financing instrument when the business plan of the NbS includes a financial return

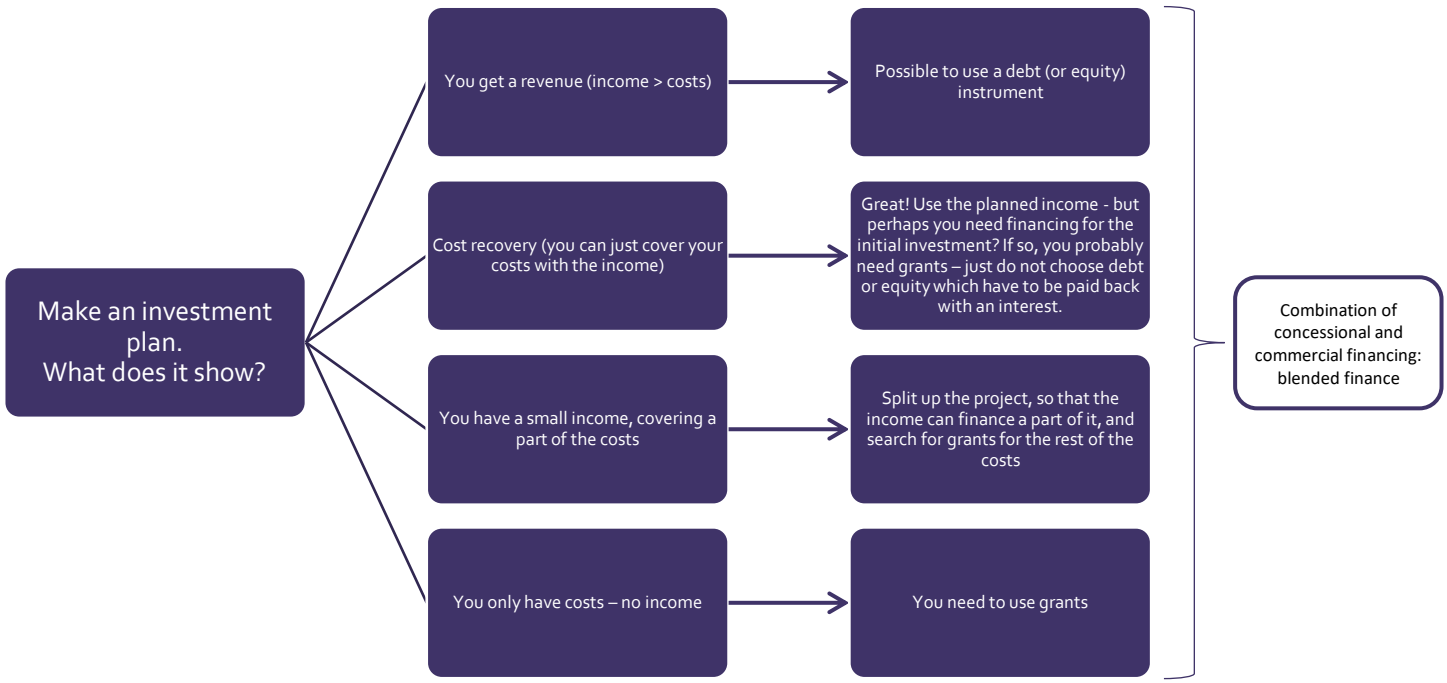
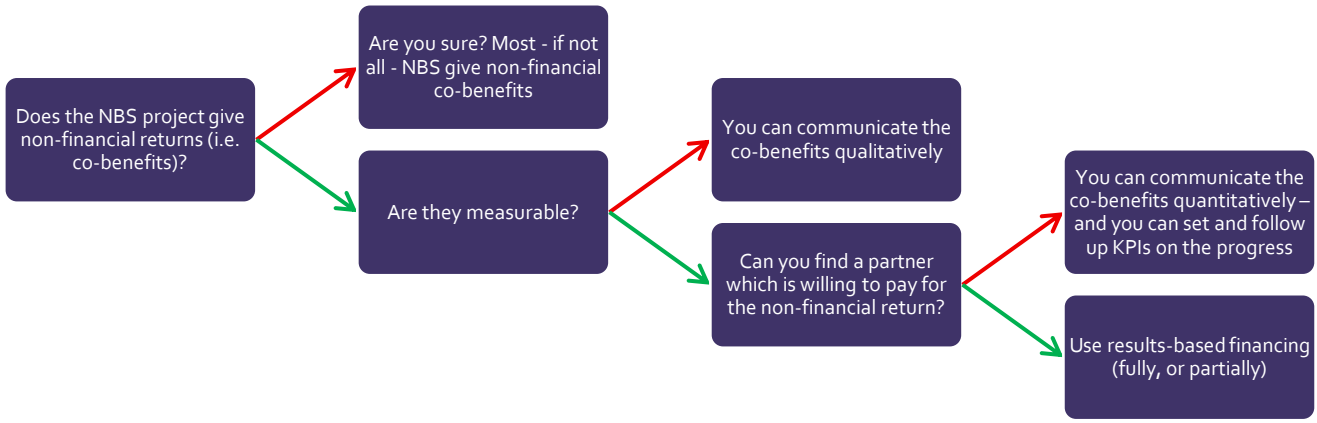


Figure 2: Decision path towards results-based financing (red arrow = No, green arrow = Yes)



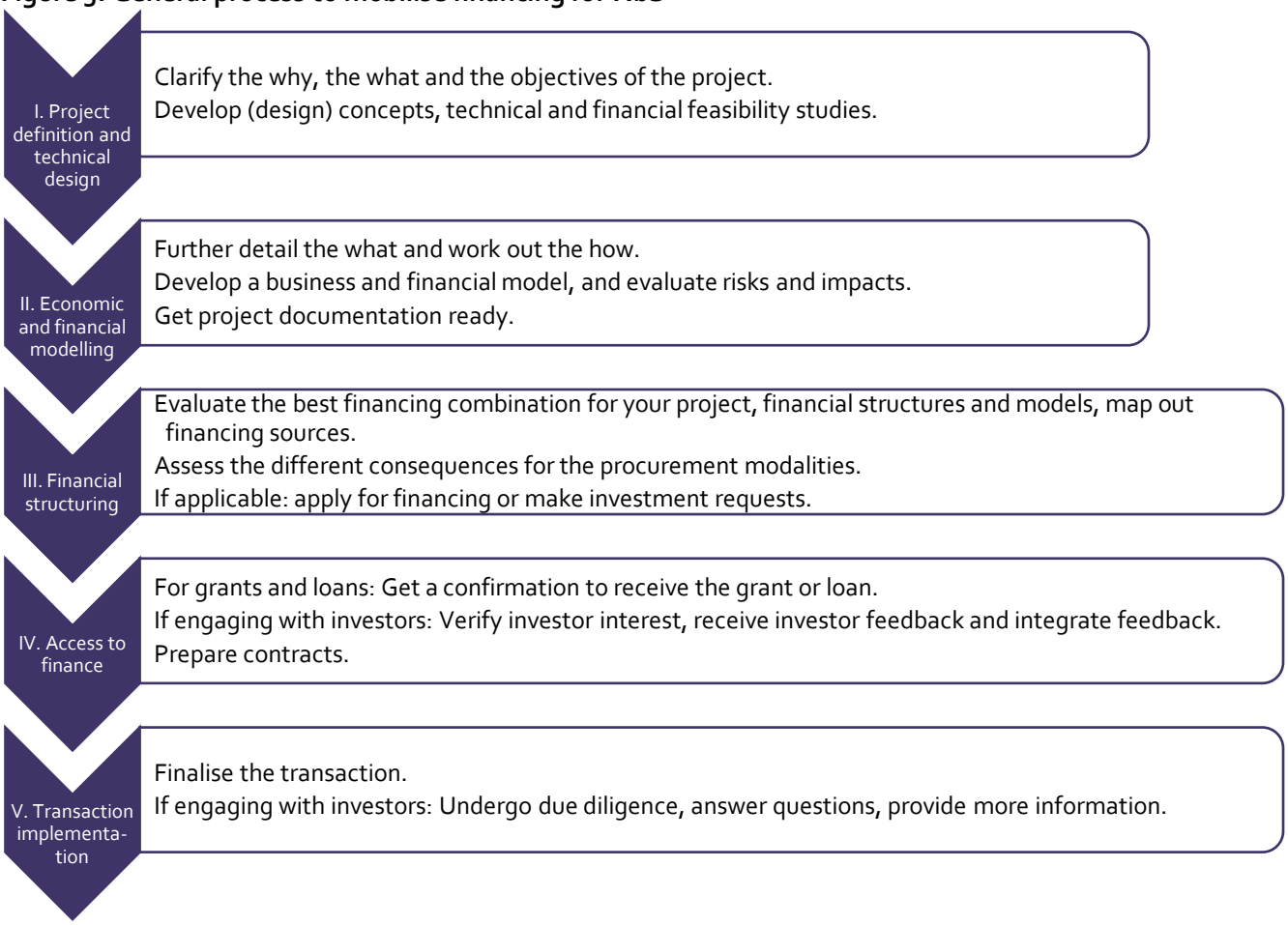
The graphs show pathways for accessing all previously described financing instruments and approaches: grants, debt and equity instruments, blended finance and results-based finance. Equity finance is written in brackets since it is very unlikely to be used to finance a publicly planned NbS. See section 3.3 for more information on how to combine different projects and combine different sources and instruments for financing NbS.

The graphs above are limited to the financial structuring of a project. For the full process on how to get a project financed, read the next section.

2.4 Processes to Mobilise Financing for NbS

To help cities mobilise financing for NbS, the process on how to do this is described in this section. To go through the process and to mobilise financing in the best way, it is essential to have the knowledge from previous sections in this chapter. In the figure below the general process to mobilise financing for NbS is shown. Before the process is started, it is recommended to have done a general plan of work and an urban greening investment plan to use as a starting point.

Figure 3: General process to mobilise financing for NbS



Step I. is before the actual financing process but is shown in the general process for completeness. In this step it is recommended to engage with stakeholders. In step II., the budget needs to be defined, based on existing financial allocations and directly informed by the identified needs, rather than open-ended planning. [13] As part of this step the investment priorities and strategic interventions need to be justified. This can be helped by outputs of tools from URBREATH's Task 3.5 and the related deliverables (D3.7 and D3.8), which reveal important urban characteristics. For steps II. and III. the knowledge about sources and the guide from the previous section (section 0) need to be applied. Step III. includes assessing how procurement is impacted by the best financing combination since the type

of procurement depends on the total budget for purchasing services and goods. Step III. also includes to strengthen cost-benefit narratives required for funding applications, which also can be helped by outputs from the tools from Task 3.5. After the last step the project can be implemented, whereby it is recommended to (again) engage with stakeholders.

Project preparation is key to embed strategies to mobilise finance into project planning from the start. Municipalities have the option to seek support from relevant specialised project preparation and technical assistance facilities. Here are some strategies to mobilise finance in project preparation:

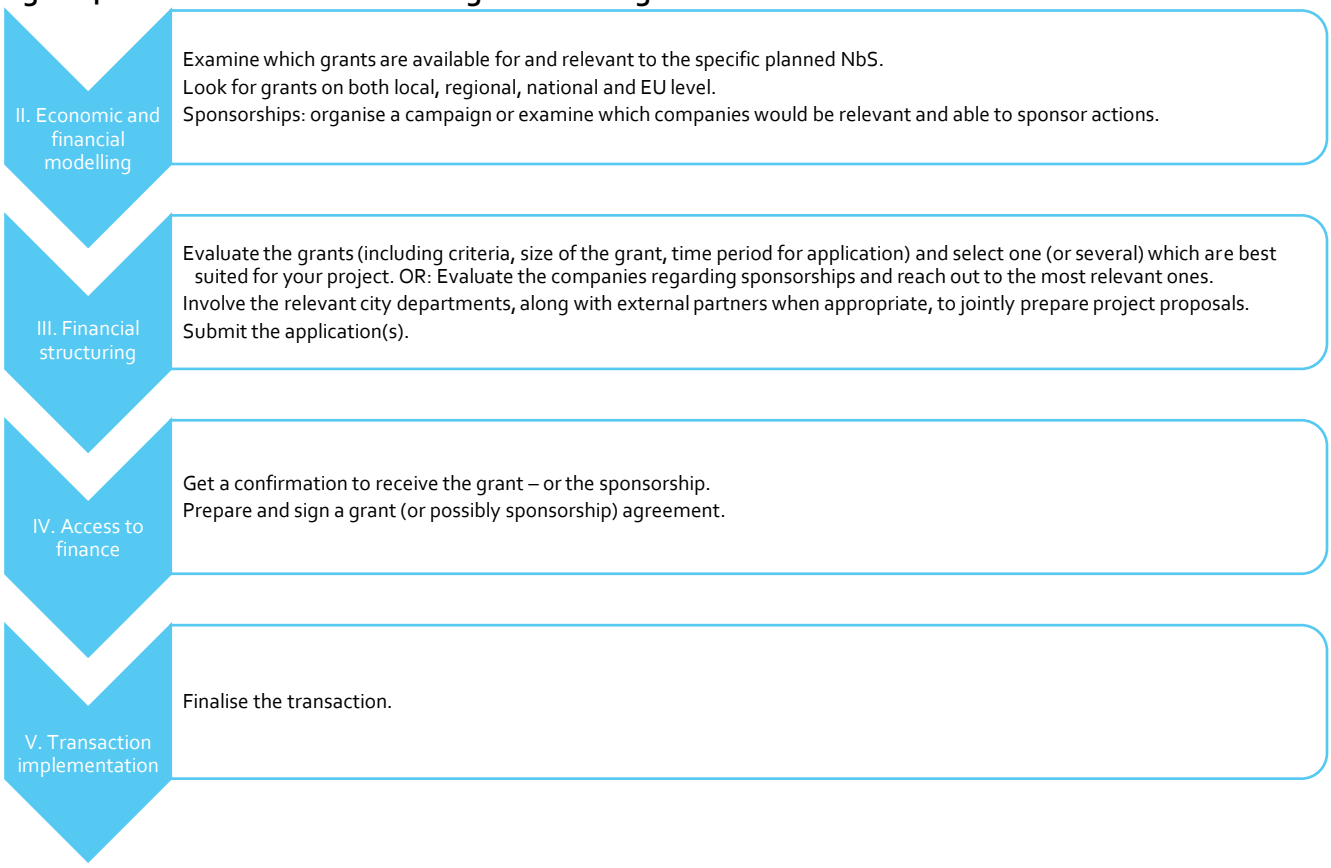
- Include revenue generation options already into early planning steps for NbS projects
- Evaluate options to combine the project with revenue generating activities
- Inform yourself about monitoring and evaluation tools to include into project planning, ensuring that benefits can be captured, quantified and/or even monetised
- Involve stakeholders that could contribute to financing or cost reduction of NbS in early planning stages
- Think about potential investors/ financing mechanisms early on and include their mobilisation/ structuring in project planning

When investors are needed to invest in NbS, those first need to be found, which can be challenging. On the other hand, there are investors who are looking for investment opportunities, which can be challenging for them. Therefore, strategies to help the project initiator to find financing partners can help channel the needed financing partners. They can be in the form of matchmaking platforms, partnership brokers and collaborative marketplaces. These can be set up by the municipality, developed in partnership with an organisation (e.g. business, foundation or an NGO), or developed independently by the other organisation. An example of a matchmaking platform is the Local Investment in Nature Cornwall (LINC), which performs match-making between local (urban greening) project developers and private investors. It also provides project development support for project sellers to become investment ready. An example of a partnership broker and collaborative marketplace is the Landscape Enterprise Networks (LENs).

In the subsections on the following pages, the processes for each financing instrument and approach are described. Since the first step, project definition and technical design, is the same for each instrument and approach, that step is left out in the specific processes.

2.4.1 Process to Mobilise Financing via Grants

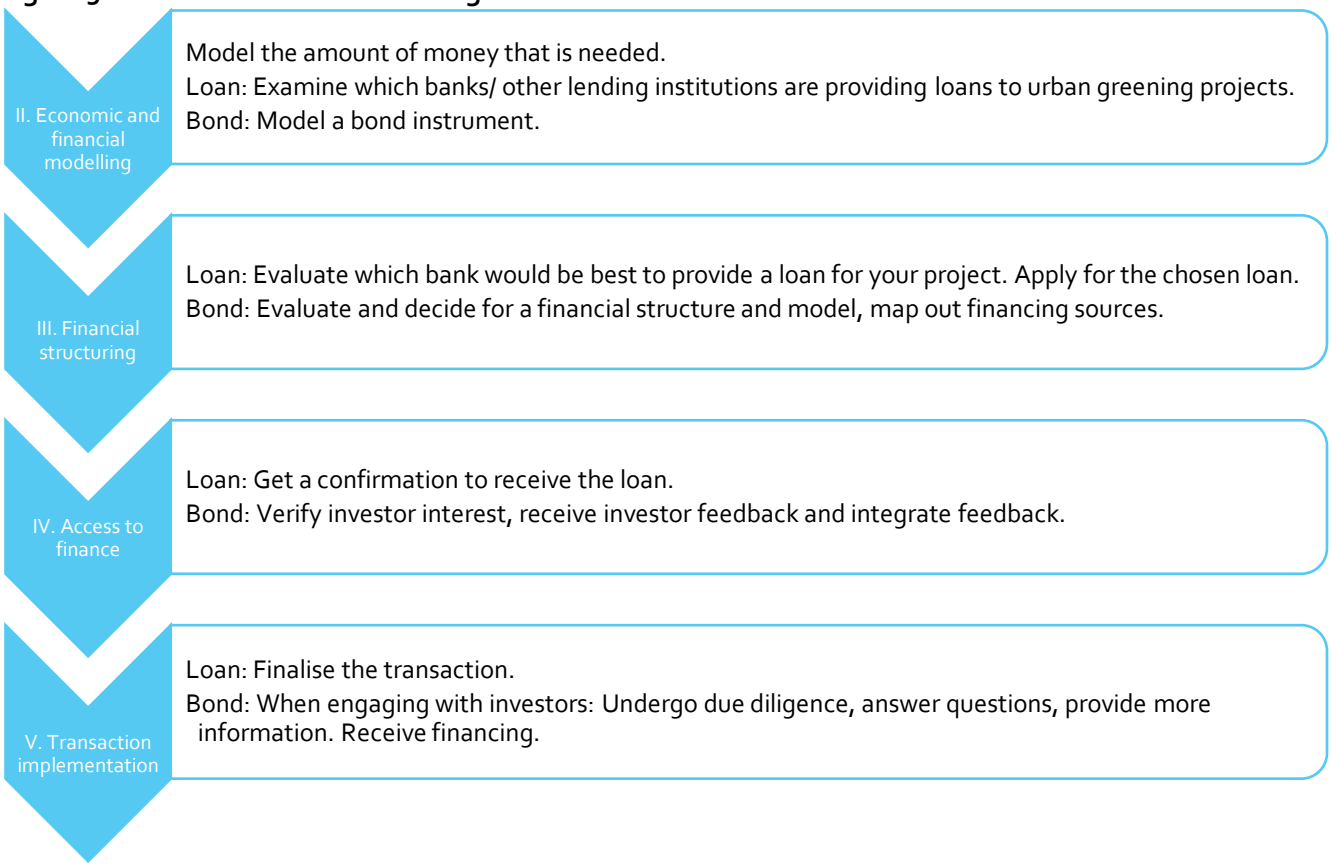
Figure 4: Process to mobilise financing for NbS via grants



Financing from (national) calls are usually partial, requiring municipal co-financing. These opportunities are irregular and often highly competitive. In the case of grants from companies (sponsorships), companies can either approach the city or respond to specific greening campaigns organised by the city (step IV.). [14] In exchange for the financial (and creative) contributions from the company – such as landscaping, planting and maintenance – adopters usually receive formal recognition through a plaque, visible logo or inscription expressing public gratitude. [15]

2.4.2 Process to Mobilise Financing via Debt Instruments

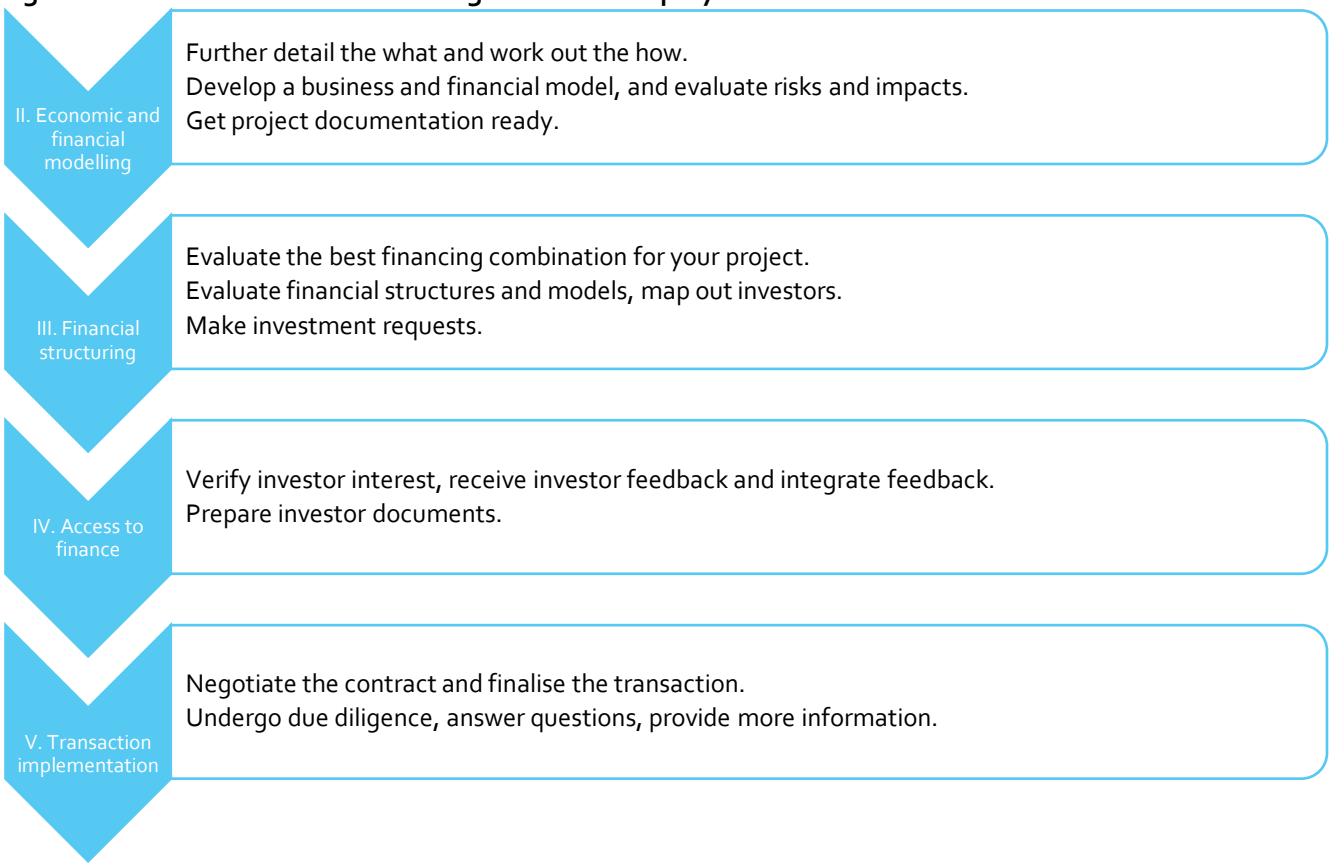
Figure 5: Process to mobilise financing for NbS via debt instruments



After the described process above, the loan needs to be paid back over time (including interest and possibly finance charges). For bonds, these can be paid to the investors back after completion of the project. However, until the bond matures, the investors receive an annual interest payment.

2.4.3 Process to Mobilise Financing via Equity

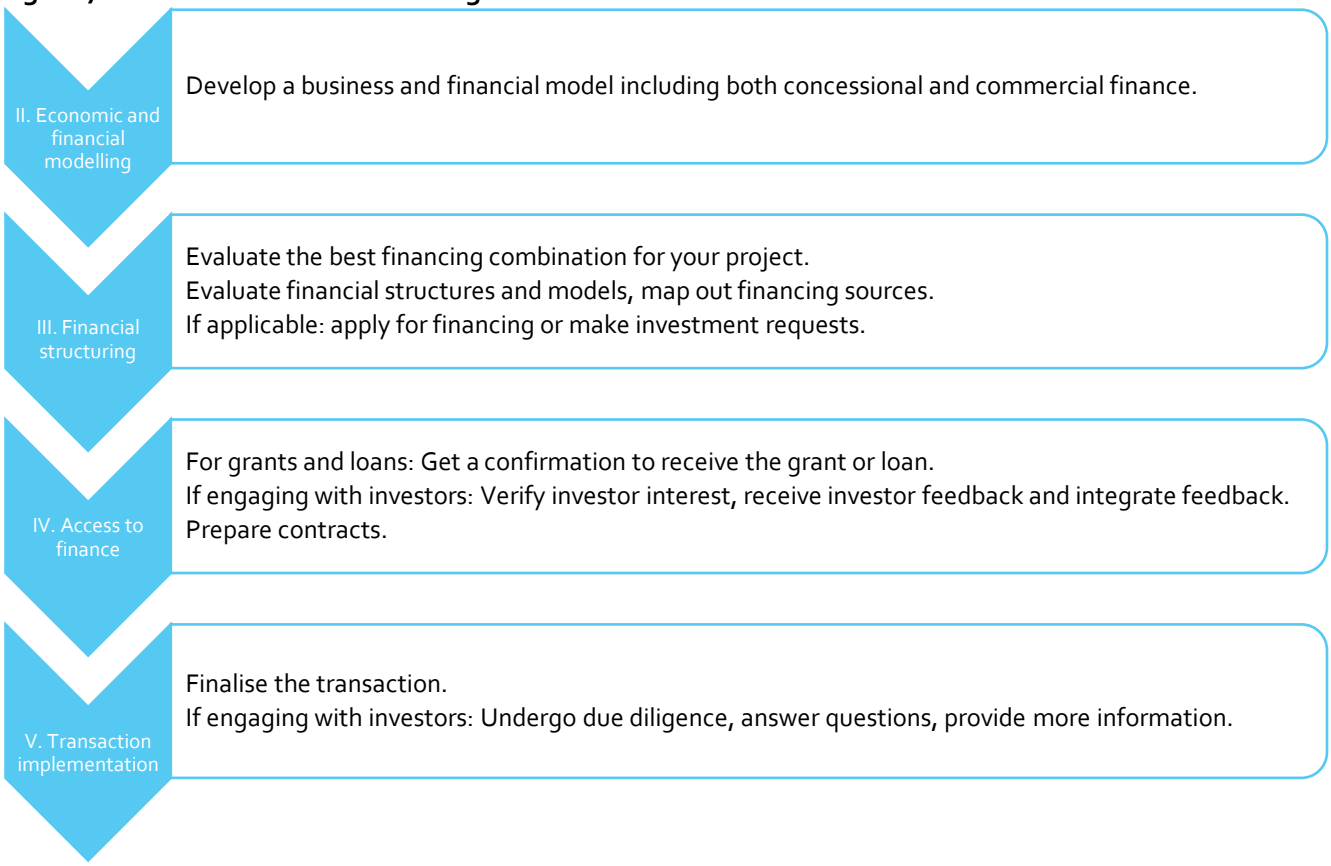
Figure 6: Process to mobilise financing for NbS via equity



After the described process above, the dividends need to be paid back over time, as a return on the investment. Possibly, the investors can get the opportunity to buy out the NbS once it reached further scale or maturity.

2.4.4 Process to Mobilise Financing via Blended Finance

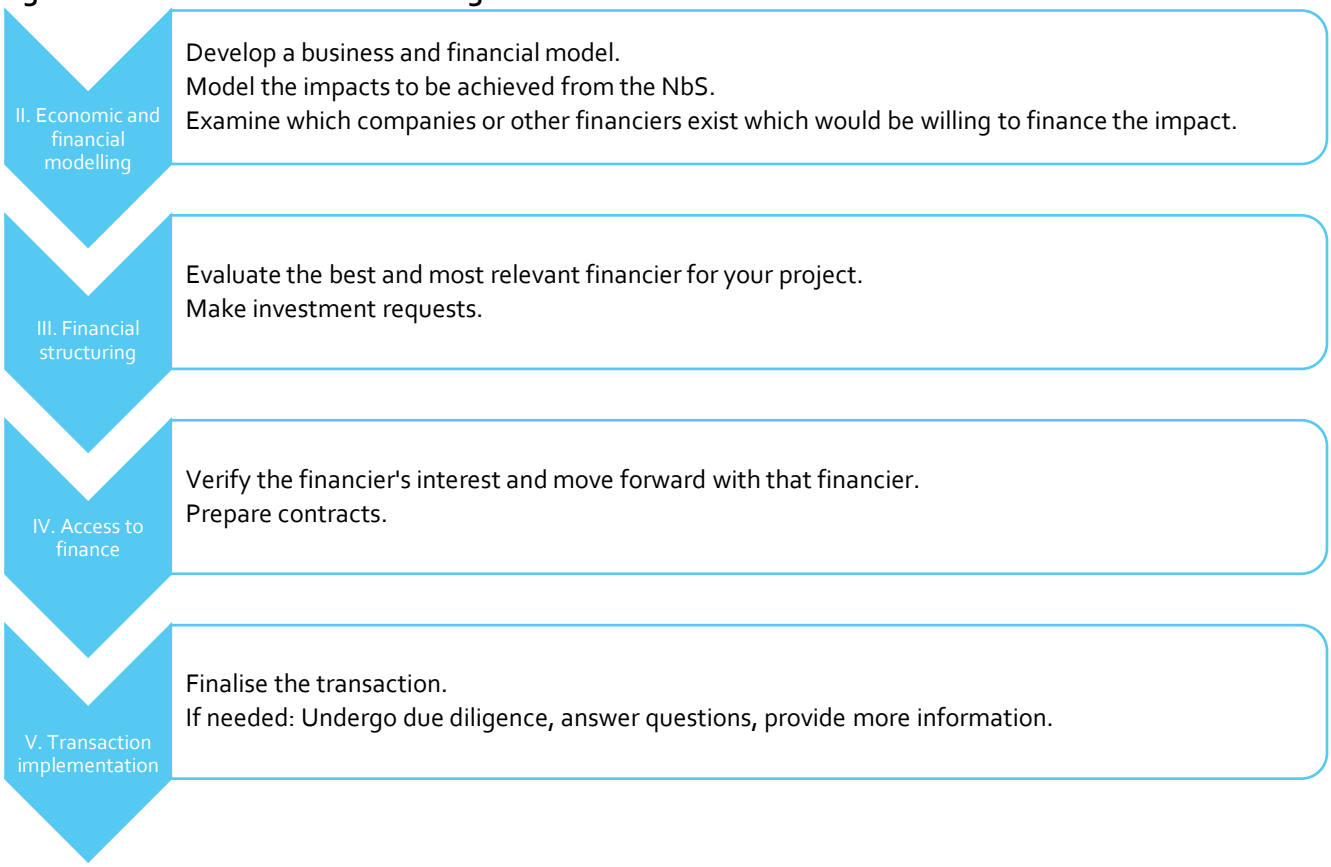
Figure 7: Process to mobilise financing for NbS via blended finance



For blended finance, the exact process depends on which instruments are chosen. Therefore, different options are shown in the graphic above, similar to the general process in
Figure 3.

2.4.5 Process to Mobilise Financing via Results-based Finance

Figure 8: Process to mobilise financing for NbS via results-based finance



After the last step, a baseline assessment of the chosen KPIs to measure the impact needs to be done, in case it hasn't been done yet. After the implementation of the project, the KPIs need to be monitored and communicated to the financing partners, to receive the financing.

3 Framework for Collaborative Holistic Procurement Models

While most cities follow standard procurement procedures, there are options to reduce cost, increase innovation and have more sustainable projects by using collaborative holistic procurement models. The word collaborative means to involve stakeholders from the start of a project or process. The word holistic means to start with your end goal in mind and consider the entire lifecycle of a project: from design and planning to implementation and ongoing maintenance. There are procurement rules, which need to be followed, but there is room for innovative approaches – especially for the innovative approaches to procurement which the EU has described.

In Figure 9 below the framework for collaborative holistic procurement models is shown, with its three pillars: co-creation, innovative approaches to procurement and innovative approaches to financing. The third pillar reflects information from chapter 2.

Figure 9: Framework for collaborative holistic procurement

The following subchapters will outline several innovative, collaborative approaches that can support a successful procurement process. There is one section for each pillar of the framework.

3.1 Co-creation

One way to enhance the chances of a successful procurement for an NbS project is to involve citizens, local businesses, community organisations and other stakeholders from the very beginning of an NbS project through so called co-creation. Co-creation plays an increasingly important role in the design, development and procurement of NbS projects in urban environments. Unlike traditional top-down planning approaches, co-creation actively involves all stakeholders in shaping both the vision and the practical design of an NbS intervention.

This **participatory approach** is grounded in the understanding that NbS projects deliver benefits that extend beyond environmental improvements – they influence social dynamics, local identity, economic activity and long-term resilience. By giving stakeholders a meaningful voice early in the process, co-creation strengthens ownership, builds trust and increases the likelihood that the project will be used, valued and properly maintained over time.

There are many different stakeholders in a city, which are relevant to involve when developing an NbS. Stakeholders in URBREATH are grouped into six primary categories, based on their institutional roles, interests and potential contribution to or impact from the project:

- Public authorities
- Scientific and research communities
- Urban practitioners and planners
- Private sector and industry
- Civil society and community organisations
- Citizens and end-users

More detailed information, on the specific stakeholders, can be found in the D8.5, Exploitation and Business Plan and Commercialization action report.

To determine, which stakeholders exist and which ones are relevant to include in co-creation of NbS, a stakeholder mapping needs to be performed. A methodology for it is described in D8.5. In the URBREATH project, Tallinn Technical Institute performed such a mapping with the nine participating cites as part of developing their Plans of Work for their pilot NbS projects. The stakeholders were clustered into four types of stakeholders: governmental, university, community and industry.

In practice, co-creation can take many forms, from collaborative design workshops and community-led idea generation to joint planning processes between public authorities and private companies (see also chapter 0). The public sector does not simply "procure" an NbS project, instead it works alongside future users to ensure that the intervention reflects local needs. As a result, NbS projects become more context-specific, socially embedded and functionally resilient.

Co-Creation also offers several practical benefits that can significantly improve project outcomes. First, involving stakeholders early can **reduce costs**, as local insights often identify simpler, more targeted and cost-effective solutions. Second, the **quality of the final design typically improves,** since it incorporates diverse perspectives that technical experts alone may overlook. Third, co-creation fosters i**nnovation,** as collaborative dialogue encourages creative thinking and the integration of unconventional ideas or hybrid solutions. Additionally, participatory approaches lead to **stronger buy-in**, which is essential for NbS projects that require behavioural change, community stewardship or long-term maintenance.

In particular, co-creation should prioritise the **inclusion of vulnerable and marginalised communities**, who often face the greatest need for environmental, social and health-related interventions and yet are the least represented in traditional planning processes. Vulnerable groups – such as low-income households, ethnic minorities, the elderly or people with disabilities – very often have limited access to green spaces, suffer disproportionately from environmental stresses (for example through heat, pollution or flooding) and therefore would benefit most from NbS. Studies show that inclusive green infrastructure planning can significantly improve social equity, foster community cohesion and ensure that all population segments benefit from improved urban environments. [16]

In summary, co-creation is a powerful approach for enhancing the effectiveness, acceptance and long-term viability of NbS projects. By engaging citizens, businesses and other partners – including vulnerable and underrepresented groups - in a meaningful way, it helps ensure that NbS interventions deliver maximum environmental, social and economic value while fostering shared responsibility for their success. As such, co-creation should be considered a cornerstone of innovative procurement strategies for Nature-based Solutions.

CASE STUDY:

SWIMMING POND WITH POPULATION CONSULTATION

Bonstetten, a municipality outside the city of Zurich, had several natural ponds on its premises but no public swimming facilities. After members of the local administration proposed transforming one of the ponds into a swimming area, the municipality conducted a comprehensive survey to assess the population's needs and expected usage. In accordance with Swiss regulations, the project must then be submitted to a public vote, as the investment exceeds 1 million CHF. Financing for the project comes from the municipal budget.

Procurement approach: Co-creation: design NbS in a participatory way

Links: Results of Public Survey

3.2 Innovative Approaches to Procurement

Next to co-creation, the following subchapter will look at the second pillar of the "Framework for Collaborative Holistic Procurement Models" (see chapter 3), specifically at a variety of innovative approaches that can support a successful procurement process. Each approach will be described in detail in the following subsections.

3.2.1 Pre-commercial Procurement (PCP)

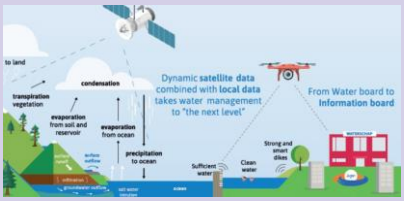
Pre-commercial procurement is an innovation-oriented procurement approach that allows public authorities to commission research and development (R&D) services when no commercially available solution can adequately meet their needs. Rather than purchasing a finished product, the public buyer supports the development of novel solutions – ranging from early feasibility studies, prototyping and field-testing – with several competing suppliers involved at each stage. This phased and competitive design ensures that only the most promising solutions advance, while enabling public authorities to test functionality, costs and scalability in real-life conditions before committing to a market purchase.
A key advantage of PCP is that it operates under market conditions, sharing both risks and benefits of the innovation process between contracting authorities and suppliers. Because the output is R&D services – not yet a finalised product – PCP remains exempt from standard EU public procurement rules, avoiding distortions of competition and preventing public buyers from inadvertently favoring one supplier over others.

For NbS, PCP is particularly relevant where desired outcomes involve new materials, monitoring systems, climate-resilient designs or multifunctional green infrastructure that the market currently does not offer (or not in the form needed by the city). By enabling municipalities to co-shape innovation, PCP helps steer private-sector R&D toward societal challenges such as flood resilience, urban cooling and biodiversity restoration. At the same time, suppliers benefit from early-stage support to develop commercially scalable solutions with future market potential – both domestically and internationally.
In short, PCP supports systematic innovation before procurement: it reduces uncertainty for later investments, enhances knowledge transfer between public administrations and businesses, and builds a stronger market for cutting-edge climate and environmental solutions. For cities aiming to deploy ambitious NbS, PCP can therefore serve as a highly effective accelerator of technology and design, bridging the gap between vision and market-ready implementation. [17]

CASE STUDY:

PCP WISE: PROCUREMENT FOR WATER MANAGEMENT INNOVATIONS

"Pre-Commercial Procurement for Water management Innovations from Space for European climate resilience" is a fully funded opportunity aimed at fostering partnerships



between European public buyers and private sector innovators.

The goal is to co-design innovative, climate-resilient solutions by developing advanced water intelligence systems that integrate Earth Observation (EO) data, in-situ measurements, and AI-driven analytics to anticipate, prevent, and mitigate water-related crises—such as floods, fires, and land subsidence—in both urban and rural contexts.

Procurement approach: Pre-commercial procurement

Links: Project Website

3.2.2 Idea Contests

Next to Pre-commercial Procurement, idea contests are another innovative approach that municipalities can use to stimulate creative, high-quality, high impact solutions for NbS interventions. Idea contests invite individuals, organisations or multi-actor teams to propose innovative ways of tackling local environmental challenges – for example, improving urban greening, strengthening climate resilience and manage stormwater naturally to reduce street flooding. [15] Unlike traditional procurement procedures they are designed to unlock early-stage innovation and tap into the creativity of a broad range of stakeholders, including citizens, NGOs, businesses, universities and research institutions.

Idea contests can take many different forms depending on the organiser and target audience. Community-focused contests encourage local residents to share ideas that reflect their everyday needs, while public-sector-led contests and (international) competitions can be used to generate innovative proposals directly aligned with policy priorities. Social media-driven contests and innovation challenges run in collaboration with universities may bring forward more experimental visions. Municipalities can either run these contests independently or partner with academic or civil-society organisations to broaden outreach, enhance legitimacy and strengthen technical evaluation of submissions.

There are several benefits associated with using idea contests in the early stages of NbS development. They can stimulate innovation by surfacing unconventional solutions that may not appear through standard market research. They support community engagement and help raise public awareness around local environmental challenges and opportunities. Additionally, contests foster knowledge

sharing and capacity building, helping stakeholders better understand NbS approaches and co-create more robust solutions. Through publicity and competition, participants are often motivated to refine ideas to a higher quality and technical standard, making the outcomes more implementable. In some cases, winning proposals may also receive seed funding or follow-up support – creating a concrete pathway toward piloting or scaling successful concepts. Overall, idea contests bring creativity and societal input into the procurement ecosystem and can serve as an effective first step in shaping NbS projects before moving into structured procurement or development processes.

CASE STUDY:

SUPERBARRIO – IDEA CONTEST

SuperBARRIO is an open-source video game app developed to boost participatory urban planning. It allows ordinary citizens – not just architects or planners – to visualise their neighbourhood in 3D and propose modifications, such as adding green spaces, mobility elements or public-amenity features. Players receive feedback based on impacts to accessibility, ecology, social interaction and other metrics, helping them understand trade-offs in design decisions. SuperBARRIO collects user input in a centralised database, enabling municipalities, planners and communities to analyse preferences and co-design urban environments in a democratic, data-driven way.

Procurement approach:
Idea contest with the help of an app

Link: Website of SuperBARRIO

3.2.3 Preliminary Market Consultations

As a third innovative procurement approach, this subchapter looks at Preliminary Market Consultations (PMCs). Preliminary Market Consultations is a structured dialogue between a contracting authority and market actors before a procurement procedure is formally launched. Its primary purpose is to gain insights into available solutions, technologies, supplier capabilities and cost implications. By doing so, PMCs help shape the subsequent tender strategy to ensure that requirements are realistic, technically feasible and commercially attractive.

From a legal perspective, PMCs are formally recognised in Directive 2014/24/EU, Article 40, which allows public buyers to consult independent experts, authorities and market participants to inform the development of their procurement plans – as long as principles of transparency, equal treatment and fair competition are fully respected. Importantly, industry input must never distort competition nor provide undue advantage to any supplier. Moreover, a PMC does not obligate the contracting authority to launch a tender or subsequently contract any of the consulted parties.

PMCs take place during the planning stage, before a call for tender is published. This early involvement helps authorities refine technical specifications, scope and budget and assess whether more advanced procurement tools – such as innovation partnerships (see chapter 3.2.4.1) or competitive dialogue (see chapter 3.2.4.2) – may be required. For NbS initiatives, which are often site-specific, PMCs are especially valuable because there are rarely standardised "off-the-shelf" solutions. Engaging the market early allows assumptions to be tested, feasibility issues to be identified and unrealistic requirements to be avoided – significantly reducing the risk of failed tenders.

PMCs also encourage supplier diversification by opening opportunities for SMEs, research institutions and specialised providers to present innovative solutions not yet widely commercialised. This reduces the risk of vendor lock-in and supports co-creation, building stronger buy-in form suppliers and end-users – an important factor for NbS projects requiring long-term community involvement.

To ensure fairness and legal compliance, PMCs must follow strict transparency rules. Authorities should publish open invitations, clearly state objectives and document all inputs – regardless of whether consultations take place online or onsite. Future tender content must never be revealed and no supplier should receive unfair advantage.

Overall, PMCs deliver multiple benefits: more realistic budgets, reduced procurement risk, better competition and stronger relationships with the market. While they require careful preparation and resources, they have become a key tool for de-risking procurement of innovative solutions such as NbS and ensuring strategies are informed, inclusive and market ready.

Table 17: Advantages and Drawbacks of Preliminary Market Consultations

Advantages	Drawbacks
Better specifications and more realistic budgets	Can be time- and resource-intensive
Encourages innovation and new solutions	It is not easy to situate within the procurement cycle
Reduces procurement risks	Can involuntarily generate bias or unfair advantage
Improves competition and SME access	Requires strict transparency
Builds trust with suppliers	Can pose legal challenges if mismanaged
Does not need to end into a call for tender	

CASE STUDY:

SMALL SCALE NBS IN KINDERGARTENS, POLAND

To improve access to urban greenery in densely built neighbourhoods, the city implemented a series of small-scale Nature-based Solutions focused on kindergartens. These eco- and social gardens offered new green play and learning spaces for children while also supporting local biodiversity. For the "open gardens" model, community user groups were involved in co-production, strengthening local ownership and social value. Early market engagement further enabled the city to identify sponsorship opportunities and broaden financing beyond its municipal budget, ensuring long-term implementation and maintenance.

Procurement approach:
Preliminary market consultation

Link: Case study in Oppla Database

3.2.4 Public Procurement of Innovative Solutions (PPI)

A fourth innovative area is the Public Procurement of Innovative Solutions (PPI) concept. PPI refers to the process in which the public sector acts as an early adopter or launch customer for innovative goods or services that are close to market maturity, or available only in limited quantities but not yet widely commercialised. PPI is formally supported by the 2014 EU Public Procurement Directive, which defines clear procedures enabling public authorities to procure innovative solutions in a legally sound and transparent manner. While these procedures differ in structure and application, they share a common principle: each allows for dialogue or negotiation phases between procurers and suppliers, facilitating the co-development, refinement or selection of innovative solutions tailored specifically to public-sector needs. This makes PPI a valuable tool for municipalities seeking cutting-edge approaches – such as Nature-based Solutions – to address complex urban challenge. The following subchapters will look at three procedures in detail.

3.2.4.1 Innovation Partnerships

Innovation partnerships are a specialised procurement procedure defined in Article 31 of the EU Public Procurement Directive 2014/24/EU, designed for situations where a public authority faces a need that cannot be met by any product or service currently available on the market. Rather than procuring an

existing solution, the authority collaborates directly with one or more suppliers to develop innovative products, services or works, and subsequently purchases the resulting solution once it has been successfully validated.

This integrated approach combines research, development, prototyping and commercial deployment within a single contract, reducing administrative complexity and accelerating market uptake of new solutions. Innovation partnerships are particularly relevant for urban NbS, where new designs or performance models may need to be tested before full-scale adoption. Application cases range from early-stage solution development and prototyping, through testing and creation of small experimental pilots, to large-scale procurement once the innovation has proven effective.

CASE STUDY:

PROCUREMENT OF DRAINAGE SYSTEMS IN DENMARK

The Municipality of Frederiksberg is increasingly affected by heavy rainfall, which overwhelms its ageing sewage network that was never designed to cope with today's climate conditions. To strengthen local resilience, the city set an ambitious goal to manage 30% of rainwater locally through nature-based and decentralised solutions. Because no suitable solution existed on the market, Frederiksberg opted for an Innovation Partnership procurement model to develop a tailored approach together with private partners. The process follows three key phases: a competitive selection phase, a research and development phase, and finally, the procurement and implementation of the jointly developed solution.

Procurement approach:
Innovation Partnership

Link: Report on public procurement of NbS with case studies

3.2.4.2 Competitive Dialogue

Competitive dialogue is a public procurement procedure used when contracting authorities cannot precisely define the solution needed at the beginning – making it particularly suited for complex and innovative NbS projects. The process begins by inviting selected economic operators to participate in a structured dialogue phase, following a contract notice that outlines the authority's needs and high-level requirements. During the dialogue, the authority and bidders work collaboratively to explore and refine different technical, financial or legal approaches, ensuring that proposed solutions are feasible and

well-aligned with the project goals. Once suitable options are identified, the dialogue is closed and the remaining bidders are invited to submit their final tenders, after which the procurement proceeds as a standard tender evaluation and award process. This approach supports innovation while maintaining fair competition, enabling municipalities to secure tailored NbS even when detailed specifications are not fully known in advance.

CASE STUDY:

ADJUSTING TENDER REQUIREMENTS TO MATCH SUPPLIER'S CAPABILITIES

The City of Wrocław sought design services for NbS demonstration sites under the GrowGreen project through a standard procurement procedure below the 30,000 EUR EU threshold. However, the first tender failed because the eligibility criteria were so strict that no proposals could be submitted. By subsequently relaxing several requirements to match real market capacity, the city was able to successfully complete the procurement process and move the project forward.

Procurement approach: Competitive dialogue

Link: Report on public procurement of NbS with case studies

3.2.4.3 Competitive Procedure With Negotiation

Another public procurement procedure is "Competitive procedure with negotiation", a flexible approach used when public authorities are unable to define all technical specifications upfront or when innovative solutions are needed. The process starts with a call for expression of interest, allowing any qualified economic operator to request participation. Based on predefined minimum requirements and award criteria, the most suitable operators are then invited to submit full tender applications. Throughout the process, the contracting authority may negotiate with bidders on all aspects of their proposals, except for the final tenders, ensuring that solutions can be adjusted and improved to better meet public needs. Negotiations can take place in multiple successive stages, progressively narrowing down proposals while maintaining strict principles of equal treatment and transparency among all participants. Once the authority decides to conclude negotiations, final revised tenders are submitted and evaluated according to the award criteria. This dynamic procedure encourages tailored, high-quality innovations while still safeguarding fair competition and procurement integrity.

CASE STUDY:

PROCUREMENT OF GREEN WALLS IN TURIN

The City of Turin in Italy aimed to secure a supplier to install 100 m² of green walls at selected locations and to provide full maintenance services for three years. Because the municipality needed to better understand and compare the technologies available on the market, it chose a Competitive Procedure with Negotiation, allowing in-depth dialogue with potential suppliers. Local residents were also involved in the evaluation process to ensure the solution would be well-received and practical for the community. Ultimately, the city selected the supplier whose technology proved the easiest to maintain, fulfilling both performance and long-term sustainability objectives.

Procurement approach:
Competitive procedure with negotiation

Link: Report on public procurement of NbS with case studies

3.3 Innovative Approaches to Financing

Nature-based Solution projects face a range of structural barriers that make their financing particularly challenging. As many NbS interventions generate public goods with diffuse or collective benefits, it is often difficult to incentivise private-sector participation or establish clear revenue streams. This lack of direct, predictable income means that traditional debt and equity financing models are typically not suitable. At the same time, public budgets – which remain the main funding source for NbS – are limited and often locked into siloed budgeting structures, reducing flexibility to support cross-sectoral projects, where different departments share the costs. NbS require long-term maintenance, which is costly and hard to budget because of the uncertainty of the maintenance. Furthermore, municipalities often have rigid procurement frameworks, not encouraging innovative approaches to procurement, as well as complex regulatory frameworks. Responsibilities and governance of departments can be fragmented and unclear.

Additional hurdles include the scarcity of robust financial data and high perceived risk among financial institutions. The lack of standardised performance metrics and proven business models creates a perceived financial risk for private investors, making it difficult to attract investors. Many benefits (cooling, health, biodiversity) are difficult to quantify and measure in financial terms. Another challenge is the complexity of stakeholder engagement, including the need to coordinate a diverse set of stakeholders from the public and private sectors, as well as citizens. Most importantly, the benefits of NbS often materialise only years later (while traditional financing expects short-term returns) and are not always directly attributable to specific interventions with high upfront costs (for design, land preparation and implementation), further complicating investment decisions and making investment less attractive.

Taken together, these challenges make it particularly difficult for Nature-based Solution projects to access financing through conventional means. This underscores the need for innovative financing models that can accommodate the unique characteristics of NbS. The following subsections outline several approaches that can help bridge this gap and enable a successful procurement process.

3.3.1 Highlighting Returns

Given the limited availability of conventional financing for NbS, clearly articulating their value proposition becomes essential. While NbS projects rarely generate direct monetary returns in the short term (if at all), they do provide a wide range of **non-monetary benefits** that hold substantial value for cities, communities and businesses. These co-benefits – often overlooked in traditional financial assessments – represent an important “return” on investment and can be strategically leveraged to strengthen funding proposals. As a help to strengthen the cost-benefit narratives required for funding applications, the results from the tools developed under Task 3.5 and the related deliverables (D3.7 and D3.8) can be used.

One of the most compelling argument lies in the ability of NbS to **improve the attractiveness and overall quality of an urban environment**. Greener public spaces, restored ecosystems and shaded pedestrian areas for example make cities more pleasant places to live and work, directly influencing

factors such as talent attraction, tourism and economic activity. Highlighting such improvement is particularly effective when engaging local governments, business associations and real estate stakeholders, as these groups often benefit from higher land values and a more favourable investment climate. Property and rent trends will be developed in the next phase of T3.5, which can help providing evidence for increased property prices and rents of properties close to NBS, which is useful for engaging with real estate companies.

NbS also play a critical role in **moderating urban temperatures** by reducing the heat-island effect. Cooler microclimates translate into more comfortable outdoor spaces, reduced building energy consumption and increased public safety during heatwaves. These are tangible benefits for energy providers, public health authorities and municipal climate departments, all of which bear the financial and operational burden of extreme heat events.

From a societal perspective, one could argue that NbS interventions contribute to **better population health**, which in turn reduces indirect public costs, such as expenses linked to respiratory illnesses or cardiovascular diseases. Numerous studies show that access to green areas correlates with improved long-term health outcomes and lower healthcare expenditures. Explicitly connecting NbS investments to these fiscal implications can be a persuasive argument when engaging for example public-health ministries or insurers.

Another significant value driver is the creation **of recreation and social areas**, which contribute to the mental and physical well-being of residents. Urban green spaces are associated with reduced stress levels, increased physical activity and stronger community cohesion. When proposals frame NbS as public health assets or community-building tools, they resonate with social departments, healthcare institutions and educational authorities amongst others, making cross-departmental funding more likely.

Furthermore, NbS can create **safe, engaging spaces for children and families**. This is especially the case when integrated into schoolyards, playgrounds and community areas, as such spaces improve child development, reduce accident risks compared to traditional hard-surface playgrounds and support social inclusion. These benefits again strengthen the case for co-funding by education departments, community organisations and parent associations for example.

Biodiversity-enhancing measures (for example pollinator corridors, the naturalisation of schoolyards or the restoration of waterways) also generate important ecological and educational returns. They promote **urban biodiversity**, support ecosystem resilience and create opportunities for environmental learning. Furthermore, the implementation of nature-based water purification systems (of rainwater or snow meltwater) **reduce the amount of environmental pollution** coming to natural waterways and groundwater. These outcomes appeal to environmental departments, NGO's and academic institutions, expanding the types of stakeholders willing to contribute financially.

Measures to allow flooding in green areas, rain gardens and an increased share of permeable surfaces can **reduce the flooding** in nearby buildings, which reduce costs for the society – for individuals and insurance companies. This is in the interest of citizens living in flooding-prone areas and insurance companies.

Returns from Nature-based Solutions can be captured in various ways – whether through **environmental** gains such as better air quality, carbon absorption and enhanced biodiversity, through **economic** value like increased urban attractiveness and higher real estate prices, or through **social** benefits including recreation, well-being and improved public health. To sum it up, effectively communicating the **full spectrum of non-monetary returns** can significantly enhance the credibility and attractiveness of NbS proposals. By framing NbS not as cost-intensive environmental projects but as multi-functional, cost-effective (compared to hard infrastructure), cross-sectoral investments with broad environmental, economic and societal value, you can engage a wider range of stakeholders and unlock more diverse financing sources.

3.3.2 Combining and Bundling with Commercially Financeable Projects

Another approach to enhance the bankability of NbS projects is to combine or bundle them with commercial, revenue-generating projects. This strategy allows NbS to benefit from financial flows associated with other economic activities, thereby reducing their dependency on scarce public budgets and increasing their attractiveness to external investors. Three models can be used to integrate or combine commercial components into/with NbS projects, each offering different ways to channel revenue towards the planning, implementation and/or long-term maintenance of NbS projects:

3.3.2.1 Integrating Commercial Activities

The first model involves integrating commercial activities directly into an NbS project. In this approach, the NbS project itself incorporates revenue-generating functions whose proceeds then can be used to finance parts of the intervention – especially operations and maintenance. Examples include cafés, restaurants or kiosks located within parks, rental services such as bikes or small boats, visitor or usage fees, or commercialised urban farming. While the revenue potential of these activities is typically modest compared to large-scale infrastructure projects, they can nonetheless create a steady income stream that helps cover ongoing costs. This model is particularly suitable for urban parks, waterfronts or multifunctional public spaces where visitor-facing services already exist or can be introduced without compromising ecological objectives.

3.3.2.2 Embedding Within a Larger Revenue-generating Project

A second model is to embed an NbS component within a larger revenue-generating commercial project. Here, the primary project – for example a real estate development, commercial district revitalisation or a mixed-use urban regeneration initiative – generates the bulk of the revenue, while the NbS constitutes a sub-component financed partially through the commercial project's financial flows. Because the commercial component typically has a clear business model, this approach can significantly increase investor interest and unlock private capital for NbS. A practical example is the "Urban Resilience Fund" where NbS forms part of broader climate-resilient urban development packages. This

model allows NbS elements to benefit from economies of scale, professional project development and established financing structures (see also chapter 2.2.3 for a case study).

3.3.2.3 Bundling With Revenue-generating Projects Into a Portfolio

The third model consists of bundling NbS with revenue-generating projects into a portfolio. Instead of linking NbS to a single commercial activity, bundling combines multiple interventions – some revenue-generating, some not – into a joint investment vehicle. The aggregated financial performance of the portfolio is then used to attract larger institutional investors who might not consider individual NbS projects due to their small size or limited returns. The revenue-generating projects within the portfolio effectively cross-subsidise the NbS project, ensuring that the overall financial package meets investor expectations. Municipal green bond programmes, such as Gothenburg's, illustrate how such bundling can be operationalised, with the bond proceeds allocated across a mix of green infrastructure, energy and resilience projects.

3.3.3 Reducing Costs

In addition to highlighting returns, and generating or leveraging revenue streams – improving the bankability of NbS projects can also be achieved by **reducing project costs**. Lowering capital expenditure (CAPEX) and operational expenditure (OPEX) directly improves the financial profile of NbS interventions, making them more feasible for municipalities and more attractive to potential investors. Because a significant portion of NbS financing challenges arise from limited public budgets and the absence of stable revenue streams, cost-reduction strategies can play a crucial role in enabling project implementation.

3.3.3.1 Reducing Costs in the Planning and Design Stages

In general, careful pre-planning helps to recognise alternatives and related cost factors. Digital tools can be used to optimise the use of resources. In the planning stage, solutions that require less maintenance can be prioritised. Using local and low-maintenance plant species (that fit the natural conditions) reduce watering and long-term maintenance costs. Planning for local materials and labour (possibly involving community participation) reduce procurement and transportation costs. Using local nurseries and local expertise also helps keep expenses down. Planning early and integrating NBS into existing infrastructure projects (e.g. upgrade of drainage systems, streets, mobility) avoid expensive redesigns later. Furthermore, it leads to cost sharing (across departments) and avoids duplication of work. Using existing (natural) assets also reduce costs. Enhancing and restoring existing green spaces, waterways or degraded areas instead of creating new ones from scratch saves resources.

In the design stage, multifunctional solutions can be designed to optimise the costs. Alternatively, the design can be simplified, and expensive materials can be avoided. Using recycled or cheaper materials where possible (reused soil, local wood) also reduces costs.

3.3.3.2 Reducing Costs in the Implementation and Maintenance Stages

Modular and phased implementation can be applied: Starting with small-scale interventions and expand gradually, spreading costs over time. Long-term maintenance agreements across multiple city parks allows economies of scale.

3.3.3.3 Shared Ownership or Maintenance Responsibilities

One approach to reduce costs is to establish **shared ownership structures**, where multiple parties (public, private, NGOs) are engaged to jointly own or manage an asset and contribute resources (financial or in-kind) to its development and maintenance. In this way, the expenses are distributed. Shared ownership structures can apply to various types of assets, including land, infrastructure, property, company resources or data and information systems. One possibility is for the municipality to have a partnership with a company doing the maintenance, or that the maintenance responsibilities are shared across different municipal departments. Another possibility can be for the municipality to pay for NbS as a service, meaning that the municipality pays a company a monthly fee for it to implement and maintain an NbS, instead of paying a high upfront investment for implementing the NbS. This reduces – or completely eliminates – the initially needed capital expenditure by the municipality, while increasing the operating expenditure.

By distributing responsibilities and financial commitments across several stakeholders, municipalities can significantly reduce their own budgetary burden. This approach is particularly useful in cases where for example schools, community organisations, utilities, businesses or private landowners all benefit from the project and therefore have a natural incentive to contribute.

CASE STUDY:

THE ADOPT A GREEN SPACE PROGRAMME IN ROMANIA

The Adopt a Green Space Programme is a municipal programme of Cluj-Napoca (Romania) through which companies, NGOs and other organisations “adopt” a public green space (square, park fragment, roadside strip) and commit to maintain or improve it, in partnership with the City Hall. The initiative started in 2012, and it is still active. Since then, 46 companies have been engaged.

Partners sign an agreement with the municipality. The city keeps ownership and sets technical standards, while adopters finance and carry out maintenance, small landscaping works, planting, furniture, etc. Application is done via a dedicated city-hall procedure (“Cerere – Adoptă un spațiu verde”).

The scheme strengthens corporate social responsibility, fosters long-term partnerships

and helps the city elevate its landscape to European standards. It also features institutional safeguards: the maintenance plan and protocol ensure that adopters hold responsibility for the space over time. [15]

Financing strategy: The project is financed via CSR contributions, sponsorship and in-kind resources from the adopting organisations. [18]

Link: Adoptă un spațiu verde

3.3.3.4 Involvement of NGOs and (Vulnerable) Communities

A fourth way to reduce costs is the **involvement of non-governmental organisations (NGOs)**. NGOs often bring valuable expertise in ecological restoration, community engagement, environmental education and volunteer coordination. They can contribute labour, technical know-how and access to grant-funding from philanthropic or environmental foundations. People from vulnerable communities (e.g. people with disabilities, low or no income) can be involved, especially in the maintenance of the NbS, for a meaningful contribution to society. They can be coordinated through an NGO, or via the municipality. For municipalities with limited internal capacity, partnering with NGOs can substantially lower both planning, implementation and/or maintenance costs while also increasing legitimacy and social acceptance of NbS interventions.

When partnering with NGOs, it is essential to formalise the collaboration in writing and clearly define the roles and responsibilities of both parties in order to reduce the risk of the NGO driving its own agenda rather than the agenda of the municipality.

Table 18: Advantages and Drawbacks of Involving NGOs

Advantages	Drawbacks
Access to unique funding through the NGO	Resource constraints
Flexibility	Dependence on donor agendas
Increased legitimacy	

CASE STUDY:

INVOLVING NGOS IN BRISTOL

Bristol (UK) seeks to involve the public, NGOs, businesses and research institutions in the planning, implementation and management of its green infrastructure, recognising the importance of working with local people, rather than imposing plans on them. The NGO contributed with inputs on how to design the green infrastructure.

Financing strategy: In this case, the NGO does not contribute financially to the project.

Links: Case study in Oppla database

3.3.3.5 Involvement of Academic and Research Institutions

Similarly to the involvement of NGOs, **the collaboration with academic and research institutions** can unlock cost efficiencies and reduce costs. Universities and research centres often have specialised knowledge and technical expertise in ecology, hydrology, urban planning, climate adaptation and monitoring which can be provided at no extra cost. They may also have access to research grants, student project teams and innovation programs that can support feasibility studies, design, environmental assessments and long-term monitoring and maintenance at reduced or no cost so that the municipality does not need to put man-hours into these tasks. Academic partnerships can also help generate robust data and evidence on the performance of NbS, strengthening funding proposals and improving decision making. Furthermore, (pilot) projects can be co-funded via research grants.

Table 19: Advantages and Drawbacks of Involving Universities and Research Institutions

Advantages	Drawbacks
Access to specific expertise	Often formalised partnership agreement needed (time-consuming to establish)
Long-term partnership potential	University or think-tank priorities may not align with NbS project objectives
Access to additional funding from research grants	
Engagement with broader network of stakeholders	

CASE STUDY:

THE IGNITION PROJECT

IGNITION was a project that aimed to develop innovative financing solutions for investment in Greater Manchester's natural environment to help increase the city region's resilience against the increasingly extreme impacts of climate change.

Working with Nature-based Solutions like rain gardens, street trees, green roofs and walls, helps tackling socio-environmental challenges such as an increase in flooding events, water scarcity, bad air quality, reduced biodiversity and worsened human health and wellbeing.

Financing strategy: Ignition was backed by a 4.5 million EUR grant from the EU's Urban Innovation Actions (UIA) initiative (original funds from the ERDF (European Regional Development Fund)) and was supported by 12 partners from local government, universities, NGOs and business.

Research results were provided by the Ignition project to the municipality without the municipality having to pay for it.

Links: Project website

3.3.4 Combining Sources and Instruments for Innovative Financing

Given the structural challenges facing NbS projects, relying on a singular funding source is often insufficient to bring projects to implementation. Instead, cities can adopt hybrid financing models that combine either multiple *sources* (public and private) or multiple *instruments* of financing to reduce risks, lower capital costs and mobilise a broader range of stakeholders. The following serves as an overview.

As described in subsection 2.1.1.1, the city can **combine budgets from different municipal departments** if the available funds in one department are insufficient for the intended NbS. Funds from for example the road and traffic, water, education, public health or public safety departments can be

combined, depending on the project. If this still does not cover the full cost, municipal funding needs to be complemented with other sources, or the NbS project may be financed entirely through an alternative funding steam.

A commonly used mechanism is **blended finance**, which combines public or philanthropic funding with private capital (see chapter 2.2.4 for details). Next to blended finance, this chapter introduces two additional mechanisms: payment for ecosystem services and public-private partnerships (PPPs).

Payment for ecosystem services (PES) are an increasingly recognised mechanism for mobilising financing for NbS projects by creating a direct financial link between ecosystem benefits and those who depend on them. Under a PES model, beneficiaries of specific ecosystem services – such as improved water quality, enhanced urban cooling or increased biodiversity – provide financial compensation to the entities responsible for maintaining or restoring these services. As such, landowners or managers are renumerated for the ecosystem services they provide.
Unlike traditional grant funding, PES establishes a more continuous and performance-based revenue stream conditional to the attainment of a specific objective, which can enhance both the financial sustainability and the perceived bankability of an NbS project. PES schemes can take various forms depending on the nature of their ecosystem service. For example, water utilities may pay upstream landowners or municipalities for river restoration activities that improve water quality and reduce treatment costs. Similarly, businesses in heat-vulnerable districts may contribute to the maintenance of green infrastructure that lowers temperature and improves working conditions. In an urban context, PES can for example support green roofs, permeable surfaces, urban forests or biodiversity corridors – especially when these interventions help reduce flooding or enhance resilience.
A key advantage of PES is that it aligns financial incentives with environmental outcomes, encouraging long-term stewardship rather than one-off investments. However, effective PES schemes require the ability to assess, quantify and monitor ecosystem services – tasks that may involve specific scientific expertise, baseline studies or impact metrics. Furthermore, another instrument of financing is usually needed for the upfront investment.

CASE STUDY:

ENGLISH WOODLAND GRANT SCHEME

The English Woodland Grant Scheme in the UK offers financial incentives to a range of stakeholders, including woodland owners, leaseholders, tenants, government departments and public bodies owning forest land. The grants aim to encourage sustainable forest management, enhance biodiversity, improve public access to woodland and contribute to the broader environmental and social objectives of the region.

Financing strategy: The scheme remunerates various parties for undertaking management activities or works that deliver environmental or social benefits.

Links: Report on PES with Woodland Case Study

Public-Private Partnerships (PPPs)

Public-Private Partnerships (PPPs) offer another pathway to finance NbS projects by leveraging the expertise, efficiency and capital of the private sector. PPPs are long-term agreements between a public institution and a private partner, whereby the private partner is involved in designing, building, financing, operating and/or maintaining part of an NbS project in exchange for contractual payments, revenue-sharing arrangement or long-term operational rights.

This structure can be particularly effective for larger or more complex urban regeneration projects, where integrating NbS elements into broader commercial developments can significantly enhance the project's financial and operational viability. PPPs allow risks and responsibilities to be shared between public and private actors based on their respective strengths. The private sector, for example, may assume construction or operational risks while the public sector provides regulatory support, land access or co-funding.

Table 20: Advantages and Drawbacks of Public-Private Partnerships

Advantages	Drawbacks
De-risking of project	Limited transparency and accountability
Improved commercial viability	Potential conflicts of priorities
Enhanced skill sets, knowledge and resources from both public and private investors	

PPPs can take several forms depending on how responsibilities, risks and financial flows are allocated between public and private actors:

- **Concession-based PPPs** transfer responsibility for financing, constructing, operating and maintaining specific assets to a private partner, who recovers costs through user fees or long-term contractual payments. This model is often used for complex infrastructure where the private sector can bring efficiency and innovation.
- **In- and outcome-based PPP**, the private sector is paid based on the achievement of predefined outcomes rather than specific activities. This approach incentivises performance and can be well suited for NbS projects where environmental results – such as reduced flooding or increased biodiversity – are central objectives. Payments are usually tied to measurable indicators.
- **Availability-based PPPs** provide payments to the private actor based on the continued availability and performance of services. The standards to which these services must be performed is specified by the contracting authority using objective and measurable criteria. An example in the adaptation sector would be paying for a flood defence to be available over a thirty-year period, rather than for its design, construction and maintenance. This structure offers predictable income for private investors while ensuring that public service standards are met.
- **Service contracts** fall at the low-engagement end of the PPP spectrum as they only contain a limited risk transfer to the private sector whereas stricter definitions of PPPs require significant risk transfer. Service contracts are typically short-term agreements (1–3 years) in which municipalities hire private operators to deliver specific tasks or maintenance services. As mentioned, they involve low risk transfer but allow the public sector to draw on private expertise for well-defined activities. Service contracts are often an entry point for smaller-scale or early-stage NbS interventions.
- Similar to service contracts, **management contracts** fall at the lower end of the PPP spectrum. They provide increased private-sector involvement compared to service contracts, however. Management contracts extend private-sector responsibility to the operational management of major components or entire facilities, usually over 2–5 years. While ownership remains public, the operational efficiency, technical competence and innovation are expected from the private partner. This type of PPP works well when cities seek improved performance without full-scale outsourcing.
- Finally, **affermage or lease contracts** grant private entities the right to operate, maintain and sometimes upgrade public assets over longer periods, typically 10–15 years. However, the private operator is not responsible for financing the investment. The private partner collects

revenue directly from users, taking on a greater degree of financial and operational risk. This structure is often used when significant operational improvements or cost recovery mechanisms are required.

4 Conclusions

Despite the challenges to financing NbS outlined in the introduction, there are numerous instruments and approaches available. The key task for cities is to identify the most suitable combination of funding sources and financing mechanisms for their planned NbS project. By using the decision-making tool in section 0 and following the processes described in section 2.4, cities can identify, evaluate and select the instrument(s) that best fits their needs and move forward with implementation.

To reduce cost, enhance innovation and ensure more sustainable NbS projects, cities can also apply collaborative holistic procurement models. This can be achieved through co-creative approaches, innovative procurement methods and forward-thinking financing strategies.

By adopting more innovative financing and procurement practices, cities can accelerate the implementation of NbS, resulting in greater biodiversity, climate resilience and improved wellbeing for people. In a world where seven out of nine planetary boundaries have already been exceeded [19], scaling up NbS is more important than ever.

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