Bringing cities to life, bringing life into cities

Supplementary Material A to Deliverable 5: Nature-based solutions framework for frontrunner cities – operational design template

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DOCUMENT PROPERTIES

Nature Document	*Deliverable 5:* Nature-based Solutions Framework for frontrunner cities
Work Package	WP2 Accelerator Masterplanning
Task Leader	DRIFT/Genk
	Coordinators of the report:
	Katharina Hölscher (DRIFT), Marleen Lodder (DRIFT), Marcus Collier (TCD), Niki Frantzeskaki (Swineburg University of Technology)
	Other contributors:
	Daan Sillen (DRIFT)
	Adina Dumitru (UDC)
Authors	Stuart Connop, Paula Vandergert, Sam Jelliman (UEL)
	Siobhan McQuaid (TCD)
	Mien Quartier, Katrien van de Sijpe, Peter Vos (City of Genk)
	Gillian Dick, Sean Kelly, Laura Mowat, Rania Sermpezi (City of Glasgow)
	Agnieszka Dziubala, Natalia Madajczyk, Agnieszka Osipiuk (City of Poznań)
	Isobel Fletcher (Horizon nua)
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Prelude

Nature-based solutions are sustainable solutions to respond to climate change pressures and changing socio-economic demands to city's infrastructures. They are valid alternatives to grey infrastructure investments that when designed and implemented carefully and effectively can deliver multiple benefits and in this way help our cities achieve strategic goals for sustainability, climate and social resilience, liveability and inclusion. Whereas there is mounting evidence for their effectiveness and the multiple types of nature-based solutions that can improve urban living, the design and the way to implement them requires tailoring to every city's context.

For this tailoring and translation of knowledge to fit every city's reality, co-production of knowledge is an essential mechanism. This document is exactly this, a framework co-produced between cities, researchers and small businesses (including consultancy services) that bring together all the necessary dimensions for a successful and effective implementation of nature-based solutions in cities. This framework is an output of collaboration of the Connecting Nature project team and it is set to not only capture the lessons and knowledge co-created during the process of implementation but also serve as a framework for future exploitation/expansion of nature-based solutions in the cities.

The following sections outline the guiding questions for each building block of the Nature-based Solutions Framework, which help cities to design large-scale nature-based solutions and to evaluate and learn from these processes. The questions are meant to be informative and guiding, cities are free to report on them in a way that reflects their specific contexts and objectives.

1. Introduction

Objectives of this section:

- Position NBS exemplar and process objectives

- Highlight diverse innovations in the beginning of the document

Overall throughout the document and in the introduction: Include pictures of the exemplar site before and after the exemplar implementation

>> Note: Please include dates that the pictures are taken and acknowledge sources or copyrights when applicable

a) **Introduce (brief) city context in relation to NBS implementation and scaling: what is the status quo, what are challenges and opportunities**

b) **Introduce exemplar: what it is, what are its aims, how it came about, what is the current status**

b.1 Introduction to your exemplar and including the narrative of vision for what you expect the exemplar to deliver in your city:

- Describe main aims and benefits, co-benefits

- Present expected scales of impact (see 1.b in Technical solutions section)

>> Note: Cities can include the narrative developed under the guidance of WP3 and definition of exemplar goals, sub-goals and process (goal/what/how) produced for the reflexive monitoring coaching calls

b.2 Timeline of implementation and current status

b.3 How the exemplar connects and delivers on existing urban agendas

> *>> Note: here it should be brief – the connection to strategic agendas comes back in governance section*
>
> *>> Note: Cities can use the governance context analysis and tables developed under the WP3 Synthesis Reports of year 1.*
>
> *>> Include here a statement on what makes the NBS strategy legally binding by connecting to existing policy plans*

>> *Note: There is some overlap between presenting the aims, benefits, scales of impact in the introduction and other sections (e.g. technical solutions & indicators), as well as between link to urban agendas and the governance section. It is up to the cities to deal with the overlap. Our suggestion is to introduce the aims and benefits and the link to existing urban agendas here, and to refer back to it in the other sections. E.g., in the technical solutions section it is about HOW the impact is to be achieved, in the indicators section about how it is monitored.*

c) Position this report: need for new processes and innovations to implement and scale NBS (exemplar)

c.1 Explain the big picture: why do you find the NBS framework necessary and how do all building blocks come together to facilitate NBS implementation and scaling?

c.2 Identify the innovations: what is innovative about this approach, what are the different types of innovations that you have developed from the NBS framework? (e.g. governance innovation: new types of approaches, social innovations, financial innovations, technical innovations)

c.3 Acknowledge the Connecting Nature project and how it aided the implementation of the exemplar

>> *Note: You can keep the reference to the CN project to a minimum – we will provide a one-pager to be included in the NBS framework reports of all cities.*

d) Target audience and engaging diverse actors

d.1 Include a statement about 'for whom is this document' and 'who has been involved in developing it'

d.2 Please explain in this framework report how you have engaged/plan to engage with all quintuple helix actors across all of the different building blocks (Technical (T), Governance (G), Co-production (C), Indicators (I) and Financing (F)) for your NBS exemplar

Quintuple Helix Actors	Who	Why you have chosen them	How have you / will you engage with them? Name the building block(s) you will engage with them for?
Education System Academia Higher Education Schools Kindergartens Other (define)	☐ ☐ ☐ ☐ ☐		
Economic System Industry(ies)	☐		

Firms	☐		
Services	☐		
Banks	☐		
Entrepreneurs	☐		
Other (define)	☐		
Political System			
National government	☐		
Local government	☐		
Policy makers	☐		
Law makers	☐		
Politicians	☐		
Other (define)	☐		
Civil society and Media	☐		
TV / Radio /Print - national / local (define)	☐		
Social Media	☐		
Specialist Media (environment)	☐		
Local communities	☐		
Community groups	☐		
NGO's			
Other (define)			
Natural environments of society			
NBS Experts from:	☐		
NGO's	☐		
Policy Makers	☐		
Opinion Leaders	☐		
Other (define)			

2. Technical Solutions: What is the nature-based solutions exemplar for ### city

<u>Objectives</u>

The following section, and the accompanying technical solutions guidebook, are designed to support the development of technical aspects of the design, delivery and legacy management of NBS exemplars. They do this by supporting cities in:

- Ensuring that the technical design of the NBS is shaped by different scales of influence: from a landscape ecosystem scale, through a city strategic scale, to a scale associated with the local needs associated with place;
- Capturing and communicating the potential benefits associated with these scales of influence to ensure that they are integral considerations through the indicator, financing, business models, entrepreneurship, co-creation, reflexive monitoring and governance phases of nature-based solution development;
- Ensuring technical aspects of the NBS are considered through the planning, delivery and legacy management phases to avoid loss of benefits/co-benefits and support the management of trade-off decisions;
- Connecting those involved in NBS delivery with good practice examples from around the world;
- Showcasing the processes the city went through in relation to NBS exemplar delivery to support others in sharing the vision and ambition for future NBS projects.

In order to support these objectives in relation to implementing and scaling-up of NBS, the technical section of the Framework comprises three components:

1. Documenting the technical solutions being implemented: reporting on the detailed design of the nature-based solution exemplar and its associated features;
2. A series of guiding questions to prompt cities to reflect and report on technical aspects of the planning, delivery and legacy management of the NBS;
3. Links to support tools, process guidelines, methodologies and approaches to aid cities in developing and delivering on the framework elements.

These three components have been shaped following a comprehensive review of nature-based solution literature, an exploratory process for understanding the past nature-based solution experience of the Connecting Nature frontrunner cities, and experience developed in previous nature-based solution projects. This following sub-sections support cities in addressing the first two of these components. The third component is addressed in the accompanying guidebook.

Format:

The format for this section encourages cities to approach the technical aspects of NBS delivery through a three-step process in relation to delivery. The three phases cover the 'lifespan' of the NBS exemplar: planning phase, delivery phase, and legacy phase.

N.B. Depending upon the progress of exemplar delivery, it is not necessary to complete all of the questions (although this maybe a useful process). The format is designed as a showcase for what has been completed and a guide for those embarking on each of the three phases to support decision-making based on NBS good practice.

Phase 1 – Planning

This phase includes consideration of the typology of NBS including its location and scale. This background information is underpinned by a series of guiding questions prompting consideration of the social, economic and environmental challenges of the location at a range of scales juxtaposed against prioritization of the types of benefits and co-benefits that can be achieved in this context, and the technical requirements for such design.

a) *NBS exemplar description – details of the scheme at its current planning stage*

- What is the name of the NBS exemplar?
- What type(s) of NBS does it include?
- Where is the location that the project is being delivered?
- What is the size of site?
- Brief description of technical design of the project:
- Technical design: (*plans/images*)

a) *NBS exemplar in relation to different nested scales – guiding questions to promote consideration of how the NBS exemplar can meaningfully deliver benefits over a range of scales*

Landscape scale:

- What is the broad landscape context (e.g. watershed, ecosystems, geology of the peri-urban and rural areas surrounding the city)?
- What challenges does the broad landscape face (environmental, social, economic)?

City scale:

- What is the city landscape context (e.g. watershed, ecosystems, geology)?
- What challenges does the city face as a whole (environmental, social, economic)?

Local scale

- What is the local landscape context of the site of the NBS exemplar (e.g. watershed, ecosystems, geology)?
- What are the needs of the locality of the NBS exemplar (e.g. what are the environmental, social, economic needs)?

Multi-scale:

- If your NBS exemplar is being delivered across multiple scales, how does your technical design balance variation across local scales (in terms of variation in social, economic, and environmental needs of place)?
- How does the technical design improve ecological connectivity in relation to local habitats/city-wide connectivity strategies/the broader landscape?
- How has accessibility been considered as part of the technical design?

b) **_Technical design for benefits, co-benefits, and trade-offs_** _– guiding questions to prompt consideration in terms of how benefits are designed for in the exemplar, what co-benefits might be achieved as a result of the design, whether co-benefits could be upgraded to benefits with more multifunctional design, and how trade-offs are approached._

Benefits

- How are social benefits related to the landscape/city/local scale being targeted through the NBS exemplar technical design?
- How are economic benefits related to the landscape/city/local scale being targeted through the NBS exemplar technical design?
- How are environmental benefits related to the landscape/city/local scale being targeted through the NBS exemplar technical design?
- How are biodiversity/ecological benefits related to the landscape/city/local scale being targeted through the NBS exemplar technical design?

Co-benefits

- What co-benefits (non-target/non-designed for benefits) are expected from the exemplar and how will the technical design help to deliver each one?
- Were any co-benefits upgraded to benefits through the technical design process (e.g. incidental co-benefits changed to benefits through change in technical design)? How was the design changed to deliver this?
- What is the expected scale of these benefits and co-benefits (spatial and timescale)?

Trade-offs

- Were any trade-offs identified in terms of benefits and co-benefits? If so, how were these balanced in the technical design (e.g. how did you prioritise the demands of the community vs broader city strategic objectives in relation to the technical design)?
- Are any local needs not targeted through the technical design of the NBS exemplar? Were any benefits not considered? Why?

c) **General technical planning issues** *– guiding questions focused on general aspects of delivering the technical design including general aspects of how data was used to inform design, who to involve, tools that were used, how to share knowledge from the scheme, and timelines.*

Technical design

- How was baseline data used to inform the design?
- What technical and operational tools did you need/use to design the exemplar (e.g. spatial mapping, iTree, SuDS planning tool)?
- Who were the key stakeholders for informing the technical design? How were they engaged in a shared vision?
- Was any expertise lacking in relation to the technical design? If so, how was this skills gap addressed?
- How is long-term resileince to future climate change built into the NBS technical design?

Knowledge sharing

- How are experiences of technical implementation of other NBS projects in your city being used to shape the exemplar?
- Did you compare your project to other EU/Global examples?
- How is the knowledge creation from addressing technical barriers being captured and shared within and beyond the project planning team?

Planning the technical design

- What were the timelines for planning? Were these sufficient for achieving a suitable design? If not, why not?
- What, if any, key technical barriers remain unresolved in relation to the NBS technical design planning?

Phase 2 – Delivery

This phase includes a description of the current status of the NBS exemplar in relation to delivery. This background information is underpinned by a series of guiding questions prompting consideration of the processes implemented to ensure delivery of the technical design is achieved, including choice of contractors, understanding of site conditions, sand sharing of learning.

a) **Delivery status** – *general information in relation to the status of the delivery, the duration of delivery, and issues associated with delivery timelines. This section is designed to report on what has been done for knowledge sharing and to promote retrospection.*

- What is the current status in relation to delivery?
- What are the timelines for delivery?
- How was the timeline for delivery determined?
- Were there any unforeseen delays in delivery? How were these managed?

b) **Delivery preparation** – *specific guiding questions to prompt consideration of the preparation required to deliver the technical aspects of the NBS exemplar. This is designed to focus thinking on the logistics of delivering the vision developed in the planning stage.*

- Was an environmental impact assessment (EIA) carried out for construction?
- Did the results of the EIA impact delivery of technical aspects of the design?
- Were contractors available that had expertise in this type of NBS design? If not, did they need training? How was this delivered?

c) **During delivery** – *general information on the specifics of the delivery process combined with guiding questions to prompt consideration of how to be better prepared for unforeseen eventualities in the delivery process.*

- What technical and operational tools were needed/used for delivery?
- Was there scope to react to new opportunities for benefits during delivery? How was this achieved?
- How were benefits prioritized if benefits were lost/reduced during delivery?
- Were any other unforeseen challenges related to technical delivery experienced during delivery? How were these dealt with?

d) **Post-delivery knowledge** – *general information about barriers that could not be resolved and knowledge exchange to support delivery of future projects.*

- What key technical barriers remain in relation to the NBS exemplar delivery?
- How is the technical knowledge creation from delivery, particularly the process of addressing barriers to delivery, being captured and shared within and beyond the project delivery team?

Phase 3 - Legacy

This phase includes general information on the specifics of the exemplar legacy planning and management. This is supplemented with guiding questions to prompt consideration of how to plan the legacy management to ensure continued technical performance of the NBS exemplar.

a) **Legacy management** – *consideration of legacy management planning and delivery to retain technical performance of the NBS exemplar in the long-term.*

- How was a legacy plan developed for managing and maintaining the NBS?
- What technical and operational tools are needed/being used for legacy management?
- Who is delivering the exemplar legacy management?
- Was there an appropriate skillset available for such management or was a training/apprenticeship scheme needed? If so, how was this established?
- Were local residents involved in maintenance through employment/enterprise opportunities or volunteer friends of/stewardship schemes? If so, how were these schemes established?

b) **Provision of benefits legacy** – *consideration of whether benefits will change over time through either need or maturing/management of the NBS exemplar. This includes consideration of whether flexibility for such change can be designed in from the beginning.*

- How are benefits expected to change over time?
- How is monitoring being used to inform management to ensure that technical performance is retained/enhanced?

- How flexible is the NBS scheme/strategy to future demands? How was flexibility built into the design?
- Are any mechanisms in place to change the design if the expected benefits are not delivered?

c) **Provision of benefits knowledge** – *consideration of unresolved barriers to the technical management of the exemplar for multiple benefits provision, including guiding questions on knowledge sharing.*

- Are any key technical barriers remaining in relation to the NBS legacy management?
- How is the knowledge creation from addressing technical barriers associated with legacy being captured and shared within and beyond the project legacy management team?

4) Reflection: opportunities and barriers

List and describe the main lessons learned from the technical solutions design and delivery in relation to the exemplar and its implementation. What additional skills and capacities could the team develop to strengthen your effectiveness in dealing with colleagues and partners

3. Indicators: Assessing the baseline and the transformation achieved with the nature-based solutions exemplar

- Please describe the timeline of the Exemplars implementation (from the project elaboration to the launch)

- What is the frequency planned for monitoring and evaluating the Exemplars?

Focus on the Exemplars objectives please answer the questions below: (*FRCs are completing this exercise in spreadsheet format as a preparation for the next Workshop on Indicators Co-Creation that will be held in Rotterdam. FRCs, please share the results of the spreadsheet here*)

- What are the main Exemplars objectives?
- What are the actions put in place to achieve each of the Exemplars objectives?
- Which are the exemplars objectives and actions planned that could help to address (or are directly associated to) the City Urban Agenda/KPIs?
- What is the scale of the impacts of those Exemplars objectives and actions ((1)macro: city, (2) meso: neighbourhood, or (3) micro: building/street)?

- What would be the time spent between the action and its effect?
- Does any objective and/or action boost the effect of another?
- Does any objective and/or action weaken the effect of another?
- Do you have any evaluations and/or indicators available to measure the achievement of each objective?

- Regarding each objective and action – Do you expect or wish a specific outcome for a particular social group?
- Do you think that this objective/action could result in some trade-offs among social groups?
- Are you planning to engage the public in the Exemplars decision-making and activities? How?

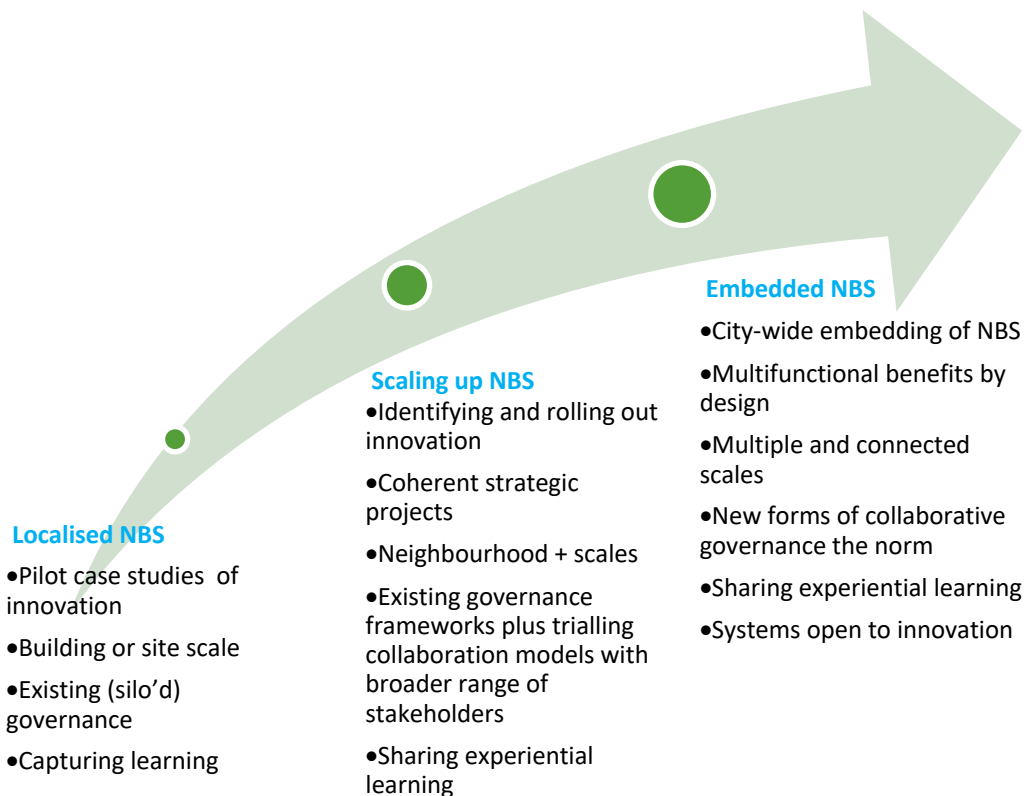*Reflection: opportunities and barriers*
List and describe the main lessons learned from the technical solutions design and delivery in relation to the exemplar and its implementation. What additional skills and capacities could the team develop to strengthen your effectiveness in dealing with colleagues and partners

4. Governance of nature-based solutions

Objective

This section presents how the NBS exemplar is to be governed. Governance of NBS supports and underpins the effective development, implementation and legacy of the exemplar. Governance includes the diverse actors – including city departments, city-led, partnership, social enterprises, private sector partners – as well as formal and informal structures, processes and rules that influence how these actors collaborate to deliver effective scaled-up NBS. This recognises that, so far, most NBS have been of limited scale and broadly have been funded by public funds. Scaling up NBS may require innovative thinking in terms of who is best placed to ensure development, delivery and ongoing sustainability of the NBS and how can effective governance networks be fostered.

Figure 1. Scaling nature-based solutions

Localised NBS
- Pilot case studies of innovation
- Building or site scale
- Existing (silo'd) governance
- Capturing learning

Scaling up NBS
- Identifying and rolling out innovation
- Coherent strategic projects
- Neighbourhood + scales
- Existing governance frameworks plus trialling collaboration models with broader range of stakeholders
- Sharing experiential learning

Embedded NBS
- City-wide embedding of NBS
- Multifunctional benefits by design
- Multiple and connected scales
- New forms of collaborative governance the norm
- Sharing experiential learning
- Systems open to innovation

As the 'co-production' section presents, a collaborative form of governance is the most effective approach to implementing scaled up NBS, not least because the multifunctional benefits that can be achieved (see the technical section) are often aligned with broader social, political and business priorities and goals of a city. This can be a significant challenge to the 'business as usual' way of working within public administrations and other organisations who are used to working in silos.

To help city teams work through the challenges of fostering a new way of thinking and working to deliver their exemplar, a number of stages are suggested.

4.1   Identify the departmental home(s) of the exemplar and legal framework

In this section, describe where the exemplar is positioned and what the legal framework for the implementation is.

Urban NBS governance refers to the range of actors who have a role in developing, stewarding and scaling NBS in cities, as well as the structural contexts that influence their interactions, and particularly influential are the organisational structures within city departments and how NBS are aligned with social, political and business priorities and goals. Therefore, the governance of NBS cannot be separated from urban governance of other policy priorities and goals such as mobility, health, climate resilience,and so it requires integrated approaches.

Embedding the exemplar within broader strategic delivery plans is a smart move for ensuring the longevity and strategic buy-in required for the exemplar to not only demonstrate the multiple benefits of scaled-up NBS, but also to show an effective way of collaborative working and doing to deliver multiple strategic objectives. The exemplar's value can therefore be realised beyond the exemplar itself as a role model for 'doing things differently'.

Guiding questions and steps

- Identify the home of the exemplar within the city departmental structure and which other departments are needed for successful implementation
- Identify the legal framework within which the exemplar will be implemented, for example by being formally integrated into the city spatial plan, climate resilience plan
- Identify the city strategic goals and KPIs at various scales (local/city/national/larger) that the exemplar helps to achieve

4.2 Develop an organisational project structure and collaborators

Once the strategic mapping of the exemplar has been done, a practical next step is to think about how the exemplar team can foster an operational structure to develop, implement and manage the exemplar so it delivers the multiple strategic benefits and embeds an appropriate collaborative model of working. Undoubtedly, this will include other city teams and external partners such as regional authorities, strategic developers. The team needs to analyse and reflect on the existing hierarchies and decision flows which can operate as barriers or opportunities for scaled up NBS.

Guiding questions and steps

- Map required partners/stakeholders/beneficiaries against phases of exemplar delivery – plan/design/implement/legacy
- Explore and identify governance networks and partners
- Who is responsible for what?
- Who will monitor/evaluate/make things happen?
- Who will be accountable and to whom?
- What is new in how this project is governed compared with your historic case studies?

4.3 Identify skills and capacities to overcome organisational barriers and deliver opportunities and strategies

A common challenge for cities is that organizational structures create departmental silos, so identifying the connections and opportunities for NBS to deliver multiple benefits is only the first stage in fostering the capacities and enabling environment to work in a cross-departmental way. The next stage is to analyse barriers and

opportunities. This is linked to the overarching organizational culture on the one hand, and to interpersonal skills and experiences on the other. The challenge for a team wanting to deliver scaled up NBS is therefore how you can ensure delivery if success requires establishing collaborative and accountable working practices with colleagues. This means you need to reflect on the barriers and opportunities to delivery of NBS, analyzing your organizational culture and experiences of NBS related projects already implemented.

Guiding questions and steps

- Analyse existing NBS experiences, barriers and opportunities to understand your organizational culture
- Think about how you will work with colleagues to open-up silos, enhancing multi benefits
- What personal/team qualities are needed to create and maintain effective collaborations?
- What advocacy and evidence can you use to make the case for collaborative working?
- What strategies can you use with colleagues who are resistant to collaboration?
- What additional skills and capacities could the team develop to strengthen your effectiveness in dealing with colleagues and partners? How can you develop those?

## 4.4   Reflection: opportunities and barriers

List and describe the main lessons learned from the governance of your NBS exemplar. Think of main opportunities and barriers.

5. Financing, Business and Governance Models: Mobilising and committing resources for the implementation of the nature-based solution exemplar

Objectives of this section:

Connecting Nature identifies three distinct phases in the planning and implementation of NBS from a financing perspective. Specific financing is required for the planning phase, the capital investment phase and the operational phase of NBS. This section of the framework document focuses on identifying sources of financing required for the up-front NBS capital investment costs and the development of a sustainable business model to identify how the ongoing operational costs of NBS will be covered. The costs of financing the planning phase are not covered in this document.

Figure 2. Phases of nature-based solutions financing
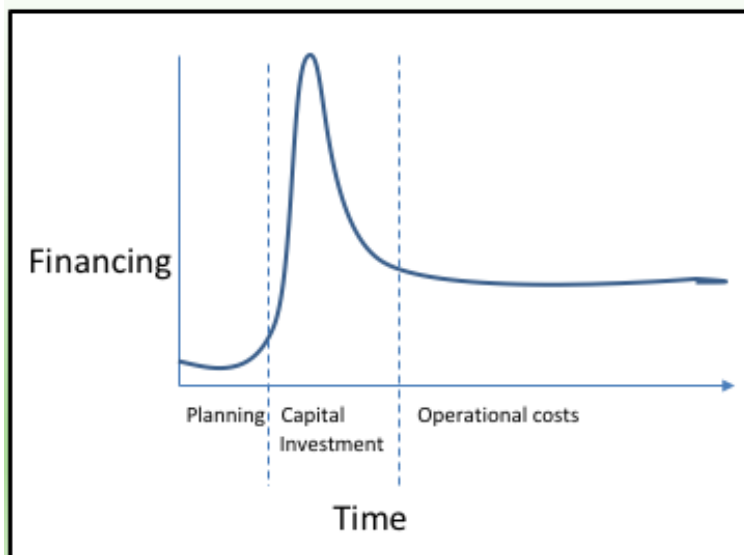
The objectives of this section for cities are to:
- Build an understanding of how NBS have been financed to date in cities and current NBS business models.
- Encourage cities to identify opportunities for innovation in the financing and business models of future NBS.
- Provide cities with tools to support the planning of new approaches to financing, business and governance models of NBS.
- Capture learning throughout the implementation process and through reflexive monitoring to identify appropriate adaptation and change strategies.

Format:

The format for this section encourages cities to follow a series of four steps in the planning and implementation of financing, business and governance models for NBS.

Figure 3. Steps in planning and implementation of NBS financing and business model

Step 1: Lessons learned from how NBS has been financed in each city to date

As a first step, we ask cities to reflect on past and current practices in the financing and business models of NBS and lessons learned from these experiences to identify challenges and potential enablers for future NBS financing.

Guiding questions for cities to reflect on in order to complete this step:

- How the capital expenditure costs of NBS have been financed to date in your city?
- How ongoing operational costs of NBS have been financed to date in your city?
- What is the governance structure of NBS in your city - how are NBS managed?
- Who are the key stakeholders involved in financing and governance – internally in your organisation and externally?
- What have been the main challenges and enablers to financing, business models and governance to date?
- What is the level of knowledge and skills of the Connecting Nature team in your city from a financing, business model and governance perspective? If skills gaps have been identified, how do you plan to address them?

(Note: to complete this step, it may be helpful for FRCs to refer to the analysis of financing, governance and business models of NBS case studies presented in the capacity building workshops Oct-Dec 2018.)

Step 2: Explore opportunities for innovation in financing, governance and business models

In this second step, we ask cities to explore potential opportunities for innovation in the financing, governance and business models of NBS.

Guiding questions for cities to reflect on in order to complete this step:

- What sources of financing have you identified to cover the upfront capital expenditure costs of future NBS?
- Have you identified any opportunities for new sources of financing of capital expenditure costs?
- Have you identified any opportunities for new sources of financing of recurring operational costs as part of a sustainable business model?
- Have you identified and changes in governance models which you would like to explore in future NBS e.g. new organizational structures/stakeholders who could be involved in the management of future NBS?

(Note: to complete this step, it may be helpful for FRCs to refer to the GrowGreen Guidebook on approaches to financing NBS circulated to cities or to examples of innovation in financing/business add governance models presented in the capacity building workshops Oct-Dec 2018 and in Milestone 2.)

Step 3: Planning the financing and business model of Connecting Nature NBS exemplars

In this step we ask cities to follow a business model approach to planning for the financing and sustainability of the NBS exemplars to be implemented in the Connecting Nature project. The financing plan identifies the upfront capital costs required and potential sources of financing. The business model planning approach asks cities to work out the costs required to sustain ongoing NBS activities, to consider how those costs can be reduced and to consider how to capture the value of NBS – both in terms of direct revenue generation and in terms of translating the wider value delivered by NBS (environmentally, socially and economically) into sources of ongoing operational revenue

Cities are asked to complete and present in this section a Business Model Canvas and Financing Plan (see below) for each of the NBS exemplars to be implemented in the Connecting Nature project.

It is recommended that this Business Model Canvas (BMC) and Financing Plan (see figure below) is completed with internal and external stakeholders as part of an internal and external co-creation process. The external co-creation process should extend beyond engagement between the city and citizens and involve all quintuple helix actors including academic, business and investment communities in the co-creation process.

Please explain in this framework report how you have engaged/plan to engage with all quintuple helix actors in developing the business model and financing plan for your NBS exemplar.

(Note: to complete this section we recommend using the NBS Business Model Canvas (BMC) tool and guidebook available in Documenta).

Figure 4. Business Model Canvas and Financing Plan for NBS exemplar(s)

Step 4: Implementation of financing and business model plans for specific NBS exemplar

In this section, cities are asked to translate the BMC and financing plan into an actionable implementation plan by identifying from a resource perspective, _**who**_ will be following up specifically on the plans for implementation of the financing and business models of NBS exemplars identified in Step 3 and to set out a timeframe and actions for implementation.

Implementation actions may involve follow up on:
- Preparation of applications/bids for funding/financing (where relevant).
- Engagement with investors and other stakeholders for alternative sources of financing
- Continued engagement of all stakeholders in preparation for implementation of business model.

**The co-production approaches identified in other sections of this framework report should inform engagement with stakeholders.**

Specific quarterly calls will be organized by TCD with the responsible person(s) on each team to follow up on progress on implementation of this planning.

Please complete the following Financing & Business Model Implementation Plan:

Name of NBS exemplar	Action to be undertaken (arising from BMC & financing plan)	Responsible person	Timeframe for implementation

**Cities are asked to reflect from a longer term perspective on how they will measure success in terms of financial, business and governance planning. Please identify potential indicators for measuring success here.**

Step 5: Reflection: opportunities and barriers
List and describe the main lessons learned and learning outcomes from the financing and business models of your NBS exemplar. Think of main opportunities and barriers.

6. Entrepreneurship

Objectives of this section:

Supporting a culture of entrepreneurship and the emergence and growth of enterprises related to NBS is a core objective of Connecting Nature contributing to the positioning of Europe as a global leader in innovation and implementation of NBS. Research and practice related to nature-based entrepreneurship / enterprises (NBE) is an emerging field.

In this section, the objectives are for cities to:

- Consider how nature-based solutions as a whole and more specifically NBE could contribute to the strategic goals and economic development priorities of the city.
- Build an understanding of how NBEs could potentially help to plan, deliver and sustain the nature-based solutions planned in each city.
- Understand the specific challenges and enablers nature-based enterprises face regarding start-up and growth and identify how the current innovation ecosystem in each city could be leveraged to address these challenges and support the emergence and growth of nature-based enterprises.
- Put in place a specific action plan to support the emergence and growth of NBE.
- Capture learning throughout the implementation process and through reflexive monitoring identify appropriate adaptation and change strategies.

Format:

The process of supporting NBE is envisaged as a series of 4 steps as shown in the figure below.

Figure 5. Steps in NBE development strategy
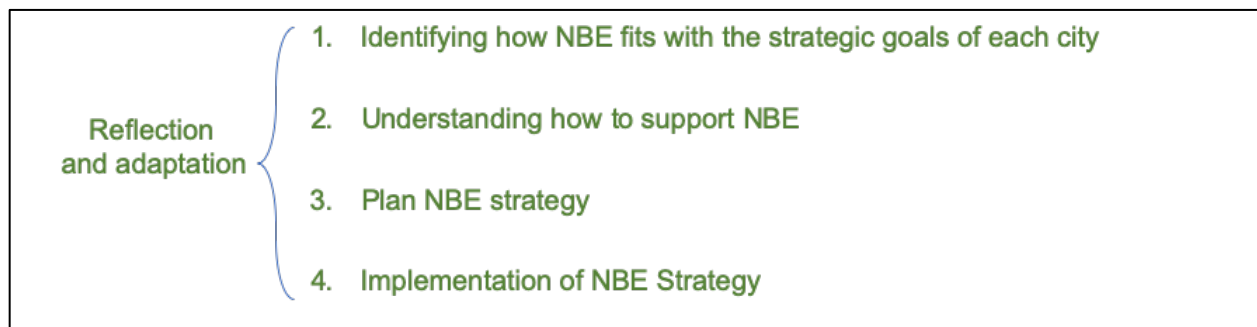
Step 1: Identifying how NBE fits with the goals of each city

Cities are asked to zoom out first of all and consider how NBS might fit with the overall economic development priorities of the city before zooming in and focusing on how NBEs might help to deliver NBS.

> *Guiding questions for cities to reflect on in order to complete this step:*
>
> - What are the priorities for economic development in your city? E.g. priority sectors for development, priority geographical areas for economic development, other economic priorities?
> - How can the planned NBS contribute to these economic development priorities?
> - For each NBS exemplar please consider, how could NBEs contribute to the planning, delivery, maintenance and sustainability of these solutions?

- What are the challenges and enablers from a city perspective in involving NBEs in the implementation of NBS?

(Note: to complete this step, it may be helpful for FRCs to refer to the presentation on NBE from the capacity building workshops Oct-Dec 2018 and the NBE workshop summary presented in Deliverable 19)

Step 2: Understanding how to support NBE?

This step considers what support is required to stimulate the start-up and growth of NBEs in each city.

Guiding questions for cities to reflect on in order to complete this step:

- From an NBE perspective what are the challenges and enablers to start-up and growth of NBEs? Do NBEs face specific challenges or enablers?
- Who are the main actors in the innovation ecosystem in each city (see figure)?
- How can these actors be engaged to stimulate a culture of nature-based entrepreneurship and support the emergence and growth of nature-based enterprises?
- What is the level of knowledge and skills of the Connecting Nature team in your city in terms of supporting the emergence and growth of NBE? If skills gaps have been identified, how do you plan to address them.

Figure 6. Innovation Ecosystem Actors
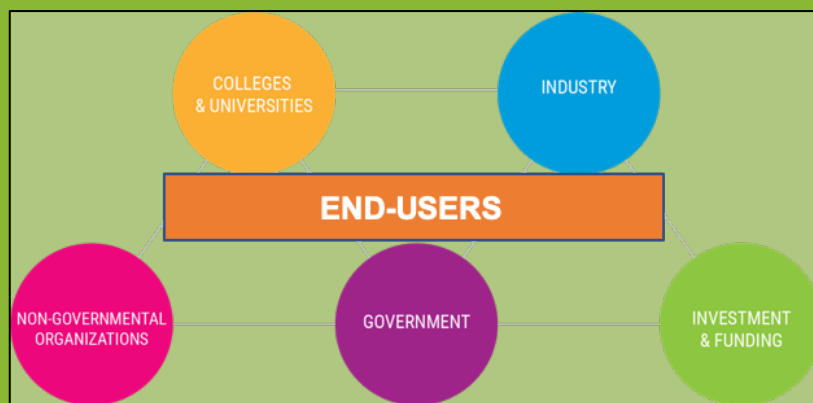
(Note: TCD and UCD are undertaking research in 2019 related to the first two questions. Cities will be asked to participate in this research so it is not expected that this section can be fully completed at this time. Initial answers to these questions are included in the NBE workshop summary presented in Deliverable 19).

Step 3: Planning NBE strategy

Building on the city-specific context identified in Step 1 and the research results emerging from Step 2, cities will be provided with guidelines to develop an NBE strategy in Connecting Nature before the end of 2019. It is recommended that this NBE strategy is prepared with input from internal and external stakeholders as part of an internal and external co-creation process. The external co-creation process should involve ecosystem actors as identified in step 2.

Guiding questions for cities to reflect on in order to complete this step:

- What are the primary objectives of your NBE strategy?
- How will NBE contribute to the implementation of your NBS?
- What measures are you putting in place to stimulate the emergence of a culture of nature-based entrepreneurship and to support the emergence and growth of NBEs?
- What innovation ecosystem actors have been engaged in the development of your NBE strategy and what actors are engaged in the implementation of the strategy?
- How will you know if your NBE objectives have been achieved? How will impact be measured?

(Note: It is not expected that this section can be fully completed at this time for all cities but preliminary responses from FRC are welcome).

Step 4: Implementation

In this section, cities are asked to translate their NBE strategy into an actionable implementation plan by identifying from a resource perspective, *who* will be following up with ecosystem actors and on specific measures to support the emergence and growth of NBEs and within what timeframe.

The co-production approaches identified in other sections of this framework report should inform engagement with ecosystem actors.

Specific quarterly calls will be organized by TCD with the responsible person(s) on each team to follow up on progress on implementation of this planning.

Please complete the following Financing & Business Model Implementation Plan:

Name of NBS exemplar	Action to be undertaken relating to NBE	Responsible person	Timeframe for implementation

Step 5: Reflection: opportunities and barriers

List and describe the main lessons learned and learning outcomes related to NBE which have emerged in relation to the exemplar and its implementation. Think of main opportunities and barriers.

7. Co-Production of nature-based solution exemplar

Objectives of this section:

Co-production is a participatory mode of governance, in which diverse types of actors are part of a joint process to develop and implement nature-based solutions. Co-production promotes collaborations and partnerships among diverse actors – including civil servants, citizens, planners, entrepreneurs, architects, scientists and engineers – in the design, implementation and eventually stewarding of NBS. This supports the generation of new and more integrated knowledge for the design of multifunctional and fit-to-context NBS (pertaining not only to their mere technical design but also to their financing, business models and social innovations), as well as the mobilization and empowerment of local actors to actively participate in NBS implementation, stewarding and scaling. In this way, co-production underpins collaborative governance modes: it embodies the approaches, processes and activities by which multiple actors co-define problems, priorities, values, solutions and interventions.

The challenge is to design co-production processes in a way that they effectively bring together multiple actors to exchange knowledge and ideas. This section guides and takes stock of how cities design the co-production processes for the implementation of their NBS exemplar.

7.1   The general picture: co-production objectives and settings

In this section, present the reasons for co-production in your city for the nature-based solution exemplar, as well as who are different actors and what are the different settings in which co-production processes (needs to) take place:

- *Objectives* refer to the key aims for co-production in the cities, as well as how they relate to the cities' policy needs and organizational barriers. For example, co-production might relate to the need to overcome departmental siloes and connect NBS to multiple city agendas, to the need to generate new knowledge, or to the need to involve diverse actors and address local needs.
- *Target audiences and actors involved:* it is important to identify who will be involved in the co-production process in relation to the different activities for the NBS implementation. This can be linked to the identification of actors according to the Quintuple Helix model described in the introduction.
- *Settings* refer closely to the objective for co-production and the actors that are/need to be involved to pursue the objective. For example, strategic objectives are in all cities mainly pursued within the city government and with the support of public-private partnerships to generate knowledge, while at tactical and operational levels much broader forms of partnerships also with citizens and businesses are established.

### a)   *Objectives and corresponding settings for co-production can be:*
- *Strategic:* to develop the strategic overarching goals for NBS implementation and scaling, linking NBS to city policies
- *Tactical:* develop action programmes for implementing strategic goals and selecting concrete projects, building partnerships for interventions and knowledge generation
- *Operational:* developing concrete initiatives and projects, building partnerships for NBS design, implementation and stewarding, mobilizing and empowering actors to take up own roles
- *Reflexive:* bringing together actors for on-going monitoring and learning (links to how reflexive monitoring is set-up)

b)   *Target audiences are identified based on the Quintuple Helix model:*
The Quintuple Helix approach identifies five key audiences to be targeted as part of the co-production process: 1) Academic; 2) Industry, firms, economic system; 3) State, government, local political system; 4) Media based and culture based public – local communities, community groups, NGO's – mainstream and local media, environmental media; 5) Natural environments of society – NGO's, policy makers, political bodies, experts and opinion leaders on NBS.

Figure 7. Quintuple Helix Model

Quintuple Helix
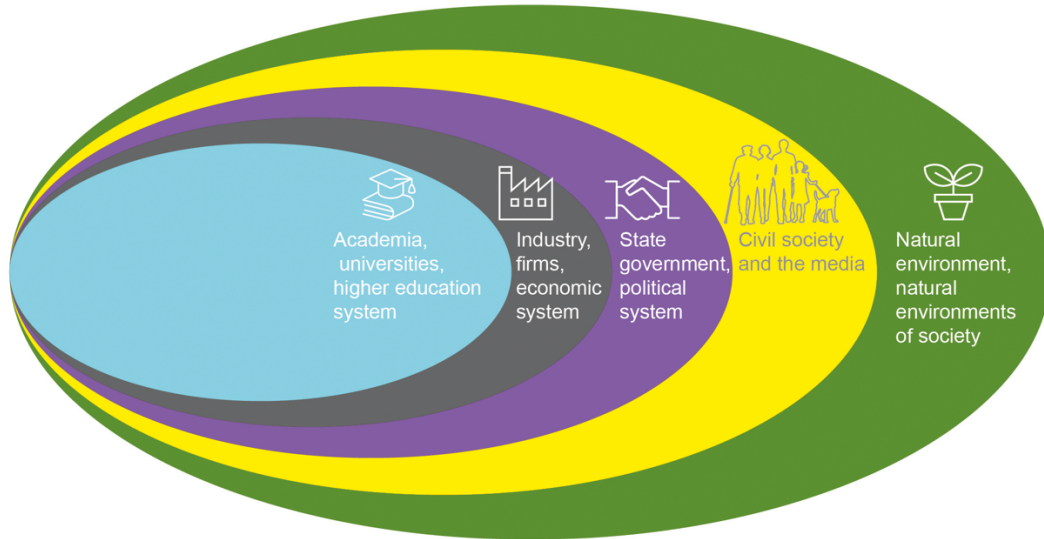
It is important that cities identify early on stakeholders in each of these categories and how they might/will engage with them, and to which ends.

It is not just the knowledge these audiences could provide expertise in, but also how and when we engage with these audiences we build their knowledge; build confidence among some of the more vulnerable stakeholders (e.g. local communities who may have a limited understanding of NBS until it is properly explained); involving these audiences in co-production has a knock on effect then in terms of implementation, governance, scaling out, influencing policy etc.

Guiding questions for cities to reflect on in order to complete this step:

- What were the (different) objectives for co-production? (Think for example of: adapting plans to local needs, mobilizing and empowering local actors, legitimacy)
- Who do you involve in your co-production activities? (Think of the Quintuple Helix model: five key audiences to be targeted as part of the co-production process: 1)Academic; 2)Industry, firms, economic system; 3)State, government, local political system; 4)Media based and culture based public – local communities, community groups, NGO's – mainstream and local media, environmental media; 5)Natural environments of society – NGO's, policy makers, political bodies, experts and opinion leaders on NBS
- What are the settings for co-production? (Think for example of strategic settings within the city government to align strategic agendas, operational settings with public-private partnerships to develop concrete solutions)

7.2 The design of the co-production process: translation of co-production principles

This section is about how the city thinks about and designs the co-production process. The co-production principles from below provide a guiding orientation for thinking about co-production processes.

First present how you approach these principles in your co-production projects and how you intend to address them in the co-production of the nature-based solution exemplar. For example, how do you ensure that co-production processes are inclusive? What types of knowledge do you want to generate?

Secondly, present how you ensure the principles – i.e. how to you ensure that the quality criteria for the principles are being met.

What are the co-production principles and quality criteria?

Design principles		Quality criteria
Process principles		
Inclusivity	Bringing together multiple types of knowledge at equal basis	- Process is inclusive to diverse actors and knowledges - Process is attentive to different actors' needs in terms of their time and availability profiles - Process builds on an open and safe setting that nurtures trust and learning
Openness	Process is open to new knowledge, information and actors throughout Process openly shares generated knowledge	- Process is open to new types of knowledge and actors throughout - Process is reflexive and adaptive to integrate new types of knowledge and actors - Process results are openly shared and disseminated
Legitimacy	Process includes legitimate and trustworthy knowledge	- Reliability of sources entering the process and generated results are checked - Process is facilitated in a just way to give equal voice to diverse actors and knowledges
Output principles		
Actionable knowledge for policy and planning	Knowledge co-produced is immediately relevant and translated to planning and policy	- Knowledge outputs shape new practices of planning (e.g. engaging citizens/stakeholders) - Knowledge outputs (are actively) link(ed) to strategic goals, agendas and processes - Knowledge enriches (new) solutions and strategies, agendas and processes
Usable knowledge and empowerment	Knowledge co-produced is valuable to, and 'owned' by multiple participating actors Knowledge co-produced sparks new role definitions and actions	- Knowledge outputs are contextually relevant and value-tied to inform real-life problems and solutions - Knowledge outputs trigger new and deeper relationships and a shared (re-)definition of roles and responsibilities - Knowledge outputs become institutionalised and capitalised in practices and routines of societal actors
Extending institutions for synergies	Knowledge co-produced connects to multiple planning strategies/agendas	- Knowledge outputs are mediated to and aligned with other city strategies, programmes and goals - Knowledge outputs adapt or stretch the institutional space given for co-production to enable cross-cutting collaboration, learning and integration

7.3 Moving into co-production action: activities and tools

In this section, include a timeline including the multiple co-production activities from the start of the project and highlighting the different co-production settings.

In this section it would be nice if you could include pictures from your co-production activities (also at later stages as the document evolves). Please include dates that the pictures are taken and acknowledge sources or copyrights when applicable.

7.3.1   Co-production steps and activities

Give an overview of the key co-production activities you did or plan to do in relation to the different settings for developing your NBS exemplar.

Present for every activity:

- When did/will it take place
- Short description: what is done and who is involved
- Main objectives and main outcomes (e.g. actionable and usable knowledge, strategic outputs such as relations to urban agendas, networks and ideas for the NBS exemplar)

7.3.2   Co-production tools and methods

Describe for each activity and step the tools and methods you have used by filling in the table below.

Tools and methods are highly diverse, and depend on the goals of the co-production process, and a specific co-production activity or step (for example the framing of a problem), as well as the specific types of actors involved. For example, visioning exercises serve to generate inspiring future images and ideas; they are particularly useful at the beginning of a longer co-production journey to align diverse actors and to create long-term, systemic and normative aspirations that guide the development of concrete innovative solutions like NBS.

We distinguish between tools and methods in different clusters in relation to different purposes, objectives or stages of co-production processes:

- *Exploring local dynamics to deepening understanding of the context and challenge:* Rather than starting from pre-defined problem definitions and solution approaches, tools and methods to examine local dynamics suggest a stepping back to first systematically question assumptions, problem perceptions and dominant solutions.
- *Mapping actors networks to explore the actor landscape and identify collaborators:* Mapping actors and networks helps to become more aware of the actor landscape in the city and concerning a specific challenge or area.
- *Visioning and strategizing for sustainable futures and solution pathways:* Visioning and strategizing tools and methods focus on the exchange of perspectives on possible futures and the creation of a shared future perspective.
- *Ideation and prototyping solutions:* Tools and methods for ideating and prototyping serve to identify concrete and innovative solutions like concrete NBS interventions in an open-ended way.
- *Building team spirit and collaboration:* Successful co-production rests on the built-up of team spirit and collaboration by diverse actors to pool their skills, knowledge and resources and engage in joint idea generation and implementation.
- *Mobilising actors and networks:* Co-production processes can gain more visibility, support and traction when they are actively reaching out to new actors to engage and inform about the generated knowledge.

Method used	Objective (in relation to the objectives and activities/step above)	How was method used (what was the method about, with whom was it applied)	Results
Example **Envisioning**	Visioning and strategizing for sustainable futures and solution pathways	Envisioning follows four steps: 1) Collecting multiple ideas for the future of the city (option to use inputs such as presentations, movies, collages); 2) Formulating guiding sustainability principles by	New images and stories about a desired future in the long-term (e.g., "where would we want to be in 2050?") that guide and motivate mid- and short-term action.

		reflecting on ideas for the future (e.g. "local companies deliver societal return to the city and its citizens"); 3) Creating visionary images to enrich principles (e.g. "what does closing material loops mean for our city?"); 4) Elaborating and reflecting on the vision (e.g. "Is this a future we want to attain?", "Who would (not) profit from this development?") and discussing synergies between the ideas.	
…			
…			
…			

7.4   Reflection: opportunities and barriers

List and describe the main lessons learned from the co-production process in relation to the exemplar and its implementation. Think of main opportunities and barriers.

8. Reflexive monitoring: systematic and real-time learning about and for effectively implementing nature-based solutions

Objective of this section:
We have come to recognise that we are facing complex sustainability problems with no straightforward solutions. In the co-production and scaling of nature-based solutions cities face this complexity and have to explore new forms of problem-solving. Reflexive monitoring includes strategies, methods and tools to facilitate collective learning–by-doing and doing-by-learning: it aims to prompt critical reflection about whether solution-finding efforts indeed contribute to the intended sustainability objectives and to thus enhance reflexivity and adaptability. In short: Reflexive monitoring helps to bring clarity in complexity and helps to navigate this complexity.

This section has two main objectives: Firstly, to offer a practical approach and tool-box for setting-up and applying reflexive monitoring: it helps those wanting to employ learning-based and adaptive policy, planning and more general project management practice. Secondly, to describe the lessons that are harvested in the cities throughout the monitoring and evaluation process: lessons for the co-production and scaling of nature-based solutions and lessons about the practical application of this action-oriented monitoring and evaluation methodology.

8.1 Set-up and positioning of reflexive monitoring for the co-production and scaling of NBS

In this section, present how you have adapted and applied the reflexive monitoring method for the co-production and scaling of your NBS exemplar. Also describe the goals of the reflexive monitoring method and how it was different from your 'usual' approaches.

Guiding questions for cities to describe how they have set up and positioned reflexive monitoring:

- What were the (different) key objectives for the application of reflexive monitoring? How does this method help you in the process of co-producing and scaling NBS?
- How is reflexive monitoring new/different from your usual way of working? How did you integrate reflexive monitoring into your regular practice?
- How did you set up the reflexive monitoring team? Who is involved in the team? How did you decide on who is the reflexive monitor?
- How have you applied reflexive monitoring? Include the different activities you have undertaken, how often you have undertaken them, who was involved etc. Present for every reflexive monitoring activity (timelines of events, critical turning points, dynamic learning agenda, eye-opener workshops, learning history narratives) a short description.
- Who do you involve in your reflexive monitoring activities? (Think of the Quintuple Helix model, see Introduction)

Overview and explanation of the reflexive monitoring tools used in Connecting Nature (to be adapted by cities to peer-to-peer language)

Method	Description
Timeline of events	A monthly overview of main events that influenced the exemplar (e.g. via bullet journaling).
Critical turning points	Important moments in time (e.g. challenges, positive outcomes, negative experiences) for the FRC-team because at these moments something changed in the process that helped or hindered to achieve the exemplar goals. Critical turning points can be external and/or internal changes, as well as small incremental steps, or, huge radical changes.
Timeline workshop	A tool to facilitate the monthly meetings of the FRC-teams to analyse the timeline of events and abstract challenges, successes and learning experiences and agree on critical turning points.
Dynamic learning agenda (DLA)	A brief document to encourage participants to continue working on change. It contains the challenges that the project is facing at that moment summarised in learning

	questions. It is used as a tool for commencing and supporting the dialogue about the challenges faced by the project. The agenda is dynamic because it is modified over the course of the project.
Eye-opener workshop	The eye-opener workshop is an additional tool for turning outsiders into project insiders. The experiences and results of the project are shared and participants then reflect on the events, each from their own perspective to extract the lessons from the project experiences that are significant for their own situations.
Learning History Narratives	Narratives written by the FRC-team members that summarises the learning journeys in a short story. This captures the 'personal' history of the project which most of the times is lost, because it is not captured in scientific publications or management reports.

8.2 Lessons learned from applying reflexive monitoring

The objective of this section is to describe what lessons you took away from using the method for the planning and implementation of the NBS exemplar and your experiences of using the reflexive monitoring method and its different tools.

Include the learning history narrative in a textbox in the introduction to this section.

8.2.1   Policy and social learning outcomes

In this section, present the learning outcomes you have gained by employing the reflexive monitoring methodology. Through reflexive monitoring existing policy actions and problem-handling is re-evaluated and lessons related to policy and social learning can be harvested. Consider the following types of learning:

- Policy learning refers to the ways in which knowledge is generated and used by policy actors in the process of analysis, design, operation and evaluation of policies.
- Social learning occurs when there is collective knowledge exchange between a varied set of actors in an interactive process of learning-by-doing and doing-by-learning.

We suggest to look back at the dynamic learning agendas of the past months, and look back if, how and when through reflexive monitoring certain learning outcomes translated in actions that would otherwise not have been taken. Please explain these lessons. Also draw lessons of the overall reflexive monitoring process for the planning and implementation of the NBS exemplar and for the internal organisation for the NBS exemplar.

Guiding questions for cities to describe policy and social learning outcomes:

- What are the main lessons learned for the NBS exemplar implementation for every theme of the framework (indicators, technical solutions, financing…)?
- What actions did you take that you would otherwise not have taken?
- How did you innovate established policy procedures?
- How did you change existing relations, rules, social practices and discourses for the co-production and scaling of NBS?
- What are the main lessons learned for the internal organisation of the exemplar?

8.2.2   Lessons on applying reflexive monitoring

Describe your main experiences of using the reflexive monitoring methodology.
Also include reflections about what the general benefits of reflexive monitoring were/why you suggest it as a useful process method.

Guiding questions for cities to reflect on their experience with the reflexive monitoring methodology:

- What are your experiences with the reflexive monitoring process, as developed within Connecting Nature?
- How did the applied reflexive monitoring tools help with observing what is happening in the project and how that relates to what occurs in the current or intended system?

- How did the applied reflexive monitoring tools help you with the analysis of key barriers and opportunities for the co-production and scaling of NBS?
- How did the applied reflexive monitoring tools help with adjusting project activities based on the reflection of past activities?
- How did the applied reflexive monitoring tools help with enabling third party learning, i.e. transferring the lessons learned in the project to project outsiders?