Step-by-step guide for co-production and co-creation of Nature-based Solutions

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Introduction

This step-by-step guide is developed for practitioners responsible for the implementation of Nature-based Solutions (NbS). The implementation of NbS is considered a collaborative effort in which scientists, experts, policy makers, practitioners, citizen and other stakeholder work together on the planning and implementation of NbS. The settings and the local circumstances in which this collaboration takes place are highly contingent. The planning, implementation and maintenance of NbS is novel and challenging. Empirical work and experience in other areas of interventions that are planned toward more sustainable systems of provision (e.g. in the area of energy) is therefore used as a point of departure for the development of a step-by-step guidance to support the planning and implementation process of NbS.[1] These existing guides all are developed from a perspective which regards interventions and their outcomes (e.g. NbS) as the result of interactions between contextual conditions (infrastructural, physical, organizational and socio-economic and socio-cultural) and the project planners and stakeholders (including end users and citizens) involved in the planning and implementation of NbS.

The guide follows a user centric approach based on the assumption that citizen and stakeholder engagement is not just one step to be taken, but a necessary transversal aspect of the planning process. Through explaining the NbS planning process step-by-step we try to offer support and inspiration for those who are responsible for the implementation of NbS projects and hope to improve the outcomes. Furthermore, the planning and implementation is an iterative process. Despite NbS are considered as novel sustainable solutions to climate adaptation and mitigation, amongst others, their actual capacity to address urban challenges must be proven in operational environments. Therefore, due to the complexity of NbS as a holistic, cross-sectoral approach, learning, monitoring and evaluation should not be done ex-post and external from the planning process but are a core element of the process, allowing for adjustments and adaptations.

An NbS project can be initiated by various public and private actors, such as companies, social entrepreneurs, NGOs, local communities, citizens, (local) governments and semi-governmental organizations, or by a consortium including different actors. The dynamics of the planning and implementation process depends highly on the initiating actors that form the project organisation. The step-by-step guide outlined below focuses on projects in the public domain which are often initiated by the (local) government, but these steps apply to projects initiated by other actors as well (e.g. NGO's, citizens' initiatives or neighbourhood communities). The process steps are not compulsory, nor is their order, but are best understood as tools that offer assistance to assess the local circumstances and requirements for the planning and implementation of NBS. For practical

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[1] This guide is inspired by MECHanisms (co-developed by Duneworks in FP7 project "Changing Behaviour"), which offers a step-by-step Guide to improve energy demand side management through behavioural change. In addition, the FP7 project 'Create Acceptance' and the resulting participation tool (ESTEEM) as well as additions to this tool in later projects, has been used. Finally, the guide is informed by a tool aimed at improving the quality of local participative trajectories aimed at neighbourhood improvements, "The Voicer", which is based on the concept of environmental justice.

reasons we assume that the 'project lead' or 'project organisation' is one and the same organisation (or consortium) responsible for the whole planning and implementation process throughout the project duration. However, responsibilities might shift over time.

The success of NbS as an innovative type of intervention depends largely on how well it becomes embedded in a particular local geographical and social context. To achieve this, not only local stakeholders and the host communities should learn and adapt some of their expectations and views as part of the process. The project organisation in many cases will also need to adapt some of its initial expectations in response to learning about the particular local contextual conditions and needs. Articulating views about how the intervention 'fits' in the local context offers a starting point to discuss or negotiate the conditions under which the NbS intervention is/ becomes acceptable. Such negotiations include discussions about costs, benefits and their distribution. Different visions and expectations can be articulated and confronted and this may give rise to conflict.

A "vision" is understood as a longer-term future view that reflects what is both desirable and realistic. It can point towards the climate-adaptive goals of an NbS, but also address social challenges such as bringing diverse groups in contact with each other (e.g. in a park that offers recreational and cultural services to various socio-demographic groups) or generate local employment opportunities. It may well be that there are alternative visions about the particular local constraints, e.g. a vision in which attention is given to more stringent protective measures, or a vision in which the current unequal access to high-quality green spaces in a city is brought forward as a reason to consider the NbS on a different location.

Within the initial discussion period, a common ground is sought between these visions that aims to align the different expectations of the actors involved in the NbS implementation process. When efforts are made to explore common grounds, confrontation and negotiations are likely to become part of the process. If the project organisation adopts a purely instrumental approach aimed at persuasion, this is unlikely to increase the probability of success as it is blind for the conditions that matter to others (who have different views about how a project 'fits' in the local context). The steps proposed intend to help creating a framework for dialogue, negotiation and learning in which diverse perspectives and types of knowledge are acknowledged and recognised, where there is room to discuss the distribution of costs (including risks) and (co)benefits, and whereby an effort is done to enable and support all participants in the process to express their views. All the steps depicted in Figure 1 are discussed according to their relevance, what it entails and on how the project lead/ project organisation can address the implementation process. Examples are offered about potential methods and tools that can be used along each step, although the list is not exhaustive.

Figure 1: Steps for the co-creation and co-production of NbS

Step 1: Internal alignment

This 'step' remains important throughout the process. It is about establishing a learning culture within the project organisation (the initiating actor). The NbS might be initiated by a single actor or by a consortium, by public and/or private actors, by actors with relevant experience, skills, competences and resources or by actors for whom the topic is still new. In any case, it is important that within the organization a process of initial reflection, alignment of expectations and ideas, and learning is established. Organisational learning addresses the type of project organization in terms of its background, available skills, knowledge, resources and culture(s). It helps to become aware of the internal (potential differences) in ideas about the actual goals, success definitions, how to achieve success and how to evaluate it. As part of this initial goal definition, the process itself is discussed as well. Right at the outset it is furthermore necessary to start the discussion about 'the rules of the game': next to the formal procedures that stipulate how stakeholder and citizen participation must take place, there might be a wish and room for more (timely) participation. Ideas with regard to the aim (e.g. instrumental, qualitative, democratic or a combination of these three) and scope of stakeholder participation need to be internally discussed and agreed upon, so that this can be clearly communicated within the project organization as well as externally. As for the scope of the engagement, these entail questions like: how much power will be shared, and with which stakeholders? What will be done with the input and feedback from participants during and after the process and how will this be communicated? Finally, it helps to demarcate the role and mandate for those tasked with participation/engagement and communication.

The initial steps taken here can be used by the person or department responsible for the implementation of the NbS to reflect on the planning process. It is important to note that responsibilities and roles may shift over time. During this first stage of the project it is important on the one hand to achieve clarity on the focus and the scope of the projects needs to be clear. Otherwise it will be difficult to mobilize other actors and stakeholders. On the other hand, however, the initial plans might evolve throughout the project's duration it is therefore important to maintain flexibility to adapt the project (goals) in response to changing circumstance and/or based on needs of other stakeholders.

Step 1: Internal alignment			
Process steps	**Why is this important/why do we need to address this?**	**What does it entail?**	**How is it best addressed and by whom?**

1.1 Alignment of expectations and ideas (about the goals)	Depending on the type of actor(s) initiating the project, it is important that everybody achieves a shared understanding of the initial aims, goals, needs. In addition, it is important to find out whether the available resources and competences (skills, experience, expertise) fit with what is regarded necessary for a successful project These internal interactions within the project organisation are needed to achieve a shared understanding of the goals and expectations at recurring moments throughout the process	Check internal organisational competences: • Why is the project organisation involved in this project? • What role does the project organisation have? • Does the project organisation have the right skills and capacities to lead the project or is additional expertise necessary?	The challenge is to actually reserve time and resources and speed up the internal alignment process. The initiator (usually a project officer from the local municipality) is to take the lead and can be supported by an external advisor or consultant who is not part of the organisational culture and internal dependencies A Digital Mind Map could be used to facilitate the exploration of common goals and ideas
1.2 Internal discussion and agreement about the aim and scope of stakeholder participation and the resulting mandates for those organising the participation and communication	If there is no clarity about the aim and scope of participation, conflicts can occur within the project organisation as well as between the project organisation and stakeholders. The goal and scope of participation are not self-evident	This entails an internal discussion and agreement about this issue, resulting in clear ideas for internal mandates and for external stakeholders (to whom the scope of the participation can be clearly communicated) It can result in an initial engagement and collaboration plan. Regular updates are necessary as roles and responsibilities may shift over time	The project organisation (initiator) is to organise this process and can be supported in this by an external advisor or consultant (if needed) Internal discussion/dialogue sessions resulting in an initial draft plan for engagement and collaboration A Digital Project management tool could be useful to create a project track record
1.3. Initial ideas about what success means and how to evaluate it	Aligning ideas about the goal and the participation process for the NBS implementations, focusing on measures of success. By making these objectives explicit the project organisation sets clear expectations which can be (clearly) communicated to external project participants. It furthermore creates a learning environment both within the project organisation, and in relation to the project participants	This entails an internal discussion and agreement about this issue, resulting in initial ideas about how to measure success throughout the process (in connection to step 6 on "maintenance")	The project organisation (initiator) is to organise this process but can be supported in this by an external advisor or consultant Internal dialogue sessions and initial draft monitoring and evaluation plan

	If there is a shared understanding of success, then a first discussion on how to monitor and evaluate can take place. In a later phase these ideas can be evaluated and adapted based on practical experiences gained in the project	In a later phase these ideas can be further developed (adapted) based on external interactions with external stakeholders	An initial plan can be shared with internal project organisation through the digital management tool. The free form text editor can be used to collaborate on the further develop the initial plan[2]

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[2] Available at the Nature4Cities platform.

Step 2 Contextualise your problem(-s)

This step aims to address the context of the interventions, which can be of the social-economic, political, institutional, cultural, physical (e.g. infrastructural, technological) or ecological nature. with explicit attention to challenges that relate to climate change like e.g. drought, heat islands, water flooding and with attention to how things have become the way they are today (legacies; path dependencies). Relevant information shall be collected and documented about these issues, but also about stakeholders (past, present, future) that are relevant in relation to the initial problems identified (and, if possible, in relation to their expectations and ambitions). This step results in an assessment of the starting situation, that is, an understanding of the local circumstances in which the environmental impacts occur and how they are coupled to social and economic issues. In this regard, the starting situation in terms of the distribution of environmental, social and economic impacts shall be assessed, which can contribute to the subsequent development of a socially inclusive strategy that aims to positively affect this distribution.

In case project preparations have already started, an assessment of crucial moments in the process (e.g. decisive moments in which path dependencies are created) is useful so that on the basis of this and additional information collected (e.g. external to the project), the initiators reflect on the potential challenges and opportunities ahead.

Step 2: Contextualise the problem(-s)			
Process steps	**Why is this important/why do we need to address this?**	**What does it entail?**	**How is it best addressed and by whom?**
2.1 Localize the problem(-s)	The NbS is considered a solution, so clarity is needed about what the problem(s) is (are) and how the environmental, social and economic problems are connected	This step entails an exploration of the problem(-s) to be addressed in this project to make sure that an integral approach to these problems will be effective.	The project organisation (initiator) can organize internal dialogue sessions. These could be organized (or followed up) online as well with the Citizens' Say tool (consultation and management tool that includes i.e. voting modules)[3]
	At the start an *initial* problem definition is needed (which can be adapted later on if needed) and clarity needs to be there as to	Allow for some flexibility to make adjustments regarding the problem definition and potential solutions at a later stage	

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[3] Available at the Nature4Cities platform.

	how the NbS may address the identified problem		
2.2 Understand the context	In order to design an intervention that becomes embedded and accepted locally, it needs to be tailored to the local needs and conditions Understanding the starting situation in which the NbS is to be developed is necessary to tailor the NbS to the local circumstances	A quick scan to understand the local context (physical, infrastructural, organisational, institutional, socio-economic, political, cultural) with attention to those conditions that seem most relevant as well as mapping relevant stakeholders and the financial resources available	The project organisation (initiator) takes the lead Conduct surveys with Citizens' Say (physical and virtual) and desk research[4] Quick scan and mapping exercise with the Agent-based Modelling tool and the Colouree Tool[5]
2.3 Which NBS solution is applicable?	There is a need to develop *initial* ideas on the type of NbS applicable (*initial* because throughout the next process steps other project partners and stakeholders may have different perspectives on the problem and potential solutions)	Identify the NbS that appears most suitable and make sure that the proposed NBS adequately addresses the problem(-s) identified in step 2.1	Use the *NbS Projects Observatory* and/ or the NbS database with pioneering cases for inspiration[6] Use the pre-selection tool to get advice on possible NbS that fit in the local context[7]

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[4] Available at the Nature4Cities platform.
[5] Available at the Nature4Cities platform.
[6] The observatory provides examples of pioneering NbS projects. Available at the Nature4Cities platform.
[7] The pre-selection tool offers advice on possible NbS and implementation models based on your urban context, objectives and constraints. Available at the Nature4Cities platform.

Step 3 Strategize multi-stakeholder approach

Apart from very concrete ideas about the specific NbS, ideas about how the NbS is part of an envisioned future may be developed. The project initiator sketches how the expectations related to NbS are part of a broader and longer-term future view, reflecting what is desirable and realistic. Emphasis can be placed on how the NbS proposes ecological solutions, on how it provides various co-benefits, on how it is part of a larger-scope strategy (e.g. city-wide or larger). A vision is different from a plan (step 4), as the latter sets out how to achieve that future vision. A vision can be more or less detailed, it can be drawn out using imagery and storytelling. It can be confronted with expectations (and visions) of other (local) stakeholders and this is helpful to identify points of agreement and disagreement, clarifying potential conflicting expectations, interests and/or values, so that these may be further discussed and investigated. Conflicting issues can relate to diverging expectations about the NbS itself and/or the process, or they may have a connection to other conflicts that only indirectly relate to this particular NbS initiative (e.g. past experiences).

When initial ideas have been well defined, it is time to start inviting other stakeholders (e.g. from other departments or organizations, experts or scientist communities, companies and social entrepreneurship, civil society) to share ideas and start a dialogue. Such a dialogue can help to identify a common ground, and what elements of the initial ideas may need to be adapted or changed.

When inviting others to contribute to the project, it is important to discuss the 'rules of the game' and the roles and responsibilities of all stakeholders involved (in line with Step 1 which aims at clarifying the goal and scope of the participation within the project organization).

Step 3: Strategize multi-stakeholder approach			
Process steps	**Why is this important/why do we need to address this?**	**What does it entail?**	**How to best address it? (including: who is to take action/who has a role here?)**
3.1 Identify relevant local stakeholders	Identifying the relevant stakeholders is needed to recognize those who will be affected by the project and take action to make sure that they can participate in the process	At this stage the initial map created in step 2.2 can be further developed by adding information regarding the expected or foreseen roles and responsibilities of project participants and stakeholders:	Project organisation (initiator) can organize explorative sessions with the project team (online and physical)

		• Who is affected by the impacts of climate change in the area where the NbS will be implemented? • Who will be affected by the NbS? Who else could contribute to (or hinder) the planning and implementation of the NBS? Identify 'gate-keepers' both internal and external	A network mapping tool can be used to create an overview of project's network (including participants, stakeholders, beneficiaries, etc.) The Agent-based Modelling tool can be used to simulate the behaviour of NbS users[8] Use Implementation Model Database to find relevant details on the implementation of NbS projects
3.2 Create a communication plan	As part of the collaboration with various stakeholders, communication is crucial and a plan helps to structure and organise the communication efforts	Set up a communication strategy for internal and external communication: • Internal: tailored to the various (groups of) people you want to involve in the project. • External: for general and/or targeted audiences (using the stakeholder maps developed in step 2.2), identifying suitable participation and communication channels (physical and online), messages and frequency	Use *Building blocks for communication* (see annex) The Citizens' Say consultation and management tool can be used for create a database with project participants. It has communication modules (e.g. to send invitations, reminders and follow-ups) At a later stage: Invite locals to become project ambassadors

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[8] Available at the Nature4Cities platform.

3.3 Create a shared understanding of the proposed project	At this stage a vision shall be shared and others are invited to present their ideas, as part of a dialogue process that would result in a shared understanding and common ground. As part of this process, a coalition of stakeholders in support of the NbS initiative can start to be built	This step is aimed at internal and external alignment of the project goals, objectives and needs by inviting participants to share their ideas and visions	The project organisation can use various tools to create a dialogue, such as a storytelling workshop or other tools that help to explore shared values and ideas
	There will be different, sometimes conflicting opinions on the problem definitions and scope of the project which need to be managed	Present the proposed plan and provide participants the opportunity to share their opinions, ideas and (additional or alternative) proposals	The Citizens' Say tool can be used to launch public consultations, share information and receive feedback[9]
	Allowing stakeholders to have influence on the problem definition and the proposed solution can ultimately create shared ownership and enhances the legitimacy and support	The scope of their participation must be clear (room shall be left to negotiate the proposal and make changes)	Paint surface and the Digital Mapping tool can be used as visual tools to discuss and negotiate plans[10]. This tool is particularly useful for an inclusive participation because it addresses how people look at a place and helps them to re-visualize and re-invent it
		Make sure that a wide diversity of perspectives and stakeholders are invited	Allow for some flexibility regarding the proposed project plan and the initial mandate of participants

[9] Available at the Nature4Cities platform.
[10] Available at the Nature4Cities platform.

Step 4 Plan with Local Stakeholders

As suggested in the previous steps it is important to identify existing local networks and to make use of these when building a new network of people who are connected to the planned NbS project. The levels of involvement are multiple, as well as the stages in which project participants play a role (so as part of the iterative step 1, it can be a good idea to discuss the goal and scope of participation for different phases).
There is a wide range of opportunities to involve stakeholders. Engaging citizen and stakeholder has to be more than a symbolic effort. While at some stages one-way communication merely informing citizens may be suitable. More interactive communication is more suitable at a later stage when the needs of citizens and stakeholders need to be taken into account.

At this stage of the project it is important to map the roles and responsibilities of the stakeholders and learn about their needs and capabilities to contribute to the project, bearing in mind that people (local residents, citizens, users) may be attached to the place where the NbS is planned. Hence, during the planning process, you need to pay attention to the diverse meanings, values and emotions related to the place. Addressing these can help to better understand how the new project could be tailored to the local situation, using situated, tacit and experiential knowledge and building on existing imaginaries to re-define and shape the NbS.

Having identified (in previous steps) which (groups of) people are affected by the NbS, it has become clear who is willing or would like to contribute to the planned NbS, as well as the people that are not able or willing to participate. Some may lack the capabilities to participate; others may have other reasons such as a lack of trust in the project organization or other responsibilities that consume their spear time. These problems need to be identified and possibly addressed carefully.

In this step, when starting a planning process with local stakeholders, it becomes more and more important to use a planning tool because the complexity levels will increase once the stakeholder engagement has started. In this regard, it can be useful to use the digital project management tool in Citizens' Say which is developed in line with this guide.

Step 4: Plan with (local) stakeholders. Design and plan implementation of NbS. Translate ideas into action plan			
Process steps	**Why is this important/why do we need to address this?**	**What does it entail?**	**How is it best addressed and by whom?**

4.1 Engage stakeholders	The next step after creating a shared vision on the project goals and objectives is to build a common understanding of the distribution of roles and responsibility: • the capacity and capabilities of participants to participate • to use the knowledge of local stakeholders to adapt the NbS to local circumstances • to create acceptance	Discuss, explore and shape roles and responsibilities: • What are the different expectations with regards to roles and responsibilities among the diverse stakeholders (including citizens/local residents)? • What do stakeholders need to participate meaningfully? • What responsibilities are the residents willing to take and under which conditions? • What responsibilities are other stakeholders willing to take and under which conditions? • To what extent are participants willing to hand over responsibilities? Make sure that a wide diversity of perspectives and stakeholders are invited	Based on what is internally discussed during step 1 (internal alignment), the project lead/project organisation can adopt several strategies to engage citizens and stakeholders depending on who needs to be engaged (when and why) and on the capacity and willingness to participate The map created in step 2.2 and 3.1 can be finalized. Note that socio-cultural, organizational, financial resources and contingent circumstances influence the opportunities for citizen and stakeholder participation Use strategies or tools to address negative perceptions and resolve conflicts (e.g. a storytelling workshop or other dialogue sessions)
4.2 Review and adapt planned NBS	Based on the input from project participants the initial project plans might need some adjustments. It can be useful to review the project goals and objectives once more and adapt where needed	Reflect on initial plan: • Does the proposed NbS address the problems adequately and effectively? • How can the NbS be tailored to the needs and interests of the local community? Are additional or alternative solutions needed?	The project organisation needs to discuss this internally as part of the internal (re)alignment and learning processes In addition, during stakeholder interactions this also needs to be addressed/ discussed

4.3 Plan with and for stakeholders	Distribution of tasks, and process rules (including the scope of participation) needs to be clear to all participants Making the project plan explicit and transparent allows for holding each other accountable for actions, roles and responsibilities Not all stakeholders are equally able to participate on an equal basis. They might need support or their interests need to be represented	Create an action plan that addresses the roles, mandate and responsibilities of those involved in the implementation of the NbS Make an inventory of the capacities that are necessary to improve participation: • Resources: time, money, sufficient people, meeting space, self-efficacy, etc. • Knowledge: access to easily understandable and trustworthy information, etc. • Skills: negotiation skills, organizational power, etc.	Project organisation can organise this in iterative rounds, partially together with stakeholders. Share action plan The Citizens' Say consultation and management tool can be used[11].
4.4 Test your ideas	Testing the NbS on a small scale can reduce risks and uncertainties (e.g. at prototype scale)	Find a way to test plans before implementation Adapt the initial project plans if timing, misalignment, or other contingent circumstances require adjustments	The project organisation can implement short term actions and collect feedback (e.g. workshop, focus groups, etc) Online questionnaires can be used and/or an online session from the Citizens' Say module can be organized to follow up the dialogue with project participants[12]

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[11] Available at the Nature4Cities platform.
[12] Available at the Nature4Cities platform.

Step 5 Implementation of Nature-based Solutions

At this stage actions to implement the NbS can be undertaken. This step requires flexibility and adaptive coordination and management.

Step 5: Implement Nature-based Solution			
Process steps	**Why is this important/why do we need to address this?**	**What does it entail?**	**How is it best addressed and by whom?**
5.1 Coordination and facilitation	Working cross-sectoral and multidisciplinary can be challenging. Stakeholders have different skills and capacities to participate in collaborative efforts Facilitation and support is needed to prevent inequalities that might occur throughout the project duration	Activate stakeholders Prevent conflicts and unequal participation of stakeholders by addressing them when they occur Facilitate and provide help when and where needed Monitor resources, knowledge and skills	Invite citizens and stakeholders to take up responsibilities Work with trust, equality and reciprocity

Step 6 Maintenance

The planning and implementation process does not end with the actual implementation. To support an NBS project, maintenance and aftercare are just as important, especially on the long-term.

Step 6: Maintenance			
Process steps	**Why is this important/why do we need to address this?**	**What does it entail?**	**How is it best addressed and by whom?**
6.1 Plan	Maintenance needs to be planned for as well in order to ensure the continued quality of the NbS and to prevent degradation and decrease in the services it provides	It entails ongoing monitoring and explicit clarity on roles and responsibilities of actors towards the continued care of the NbS Try to distribute and share responsibilities amongst several project participants but be aware of their capability and capacity to carry this responsibility Set up a contingency plan if the initial planning fails	This is best addressed by the project leader Already in the first plans for the NbS, initial ideas will need to be discussed with stakeholders and adapted in the course of time where needed
6.2 Continue to engage with stakeholders	Since stakeholders are either affected by and/or involved in (have an impact on) the NbS, it is important to (continue to) engage them to	As part of an ongoing monitoring process, who is responsible for what needs to be addressed, and how that is working out in practice as well	The Citizens' Say communication tool can be used to communicate with partners on a regular basis. Interactive

			tools that allow for participants to share feedback are preferable[13]
6.3 Offer support and / or assistance	In order to ensure that the NbS continues to provide all the (co-)benefits originally planned, it needs to be maintained properly. For that, resources need to be planned and reserved. In case part of this stewardship lies with the local community (residents), support and continued assistance may be needed as well	Make financial reservations for the maintenance or find new business models to organise and finance maintenance	The project organisation needs to address this already at the outset, together with relevant stakeholders who have knowledge, ideas and expertise The Implementation Model Database can be used to learn which business and financial models are suitable for the NbS project[14] Use the Citizens' Say tool to exchange ideas and experiences with other (local) practitioners and experts who work on NbS projects[15]

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[13] Available at the Nature4Cities platform.

[14] The Implementation Model Database contains examples of implementation models (governmental, financial and business) based on case examples. Available at the Nature4Cities platform.

[15] Available at the Nature4Cities platform.

Overarching: Monitor, Evaluate and Improve

A diversity of opinions, expectations, perspectives, values and norms will recur throughout the planning and implementation process. Using open, transparent and non-judgemental dialogue settings to address this diversity of meanings and interests is crucial to negotiate and consolidate the outcome of the planning process. Several reflexive moments have already been built in the preceding steps. It is highly recommended to adopt a participatory monitoring and evaluation strategy (starting in step 1) focussing both on the process and the outcomes.

Regarding process evaluations, it is important to learn how to understand the mechanisms that inhibit or enable cross-sectoral and trans-disciplinary collaboration(-s). Do the participants agree on the procedures? And do they embrace the proposed project plans?

The evaluation of outcomes needs to address how the NbS improves and strengthens both the meaningfulness of the place where the NbS has been implemented for diverse groups in positive manners and how the trade-offs that have been negotiated in the planning process turn out. An unfair distribution can damage the mutual trust.

Monitor, Evaluate and Improve			
Process steps	**Why is this important/why do we need to address this?**	**What does it entail?**	**How is this best addressed and by whom?**
Monitor and Evaluate	Monitoring and evaluating support learning and helps to improve the process and outcomes. This can help to replicate the NBS elsewhere. The monitoring and evaluation phase should be mainstreamed throughout the planning and implementation process	A monitoring and evaluation strategy can be set up, whereby it has to be decided what is going to be evaluated, when, how and by whom, as well as the methods and indicators to be used	The project organisation is to take the lead here and should start a first discussion about monitoring and evaluation stages this as part of step 1. However, input from other project partners and stakeholders is remains important throughout the duration of the project Recommendations:

			• Use Citizens' Say tool to receive feedback from participants. • Use Urban / Environmental / Socio-Economic Impact Assessment Tool from the Nature4Cities platform. • Use the Geocluster4NBS to identify geographical areas where you can replicate an NbS
Improve	The long-term socio-ecological effects of NbS are uncertain. Therefore, dedicate a sufficient amount of time to consider possible adaptation because it is crucial to tailor and improve the NbS to local circumstances	Leave room to adjust or adapt the initial plans, especially in response to changing circumstances, unforeseen socio-ecological effects and novel ideas and insights	Use the Citizens Say tool at the Nature4Cities platform to exchange ideas and experiences with other (local) practitioners and experts who work on NbS projects
Develop a learning culture	Since learning is important, it needs to become an inherent part of the organisational institutional setting. Step 1 is explicitly targeting the development of a learning culture, which means that time and resources are invested at recurring moments to enable this learning	Use each NbS project as a learning opportunity that helps to improve NbS projects in the future. A learning culture implies that ways to encourage and improve learning become embedded in the organisation (see also step 1). Reflecting on how this learning is organised and what works well (and what does not) is important. In addition, how to involve stakeholders in this learning and how to improve processes and procedures towards that aim	

Overarching: Timing

NbS projects are implemented in neighbourhoods, areas and cities in which diverse (local) communities live, work, go to school, commute and recreate. These people, being citizens, residents, users may feel strongly connected to these places and there might be ongoing activities in which they participate. Moreover, the municipality, (semi-governmental) organisations and entrepreneurs may also have ongoing activities. Therefore, it is important to establish a connection between NbS projects and these activities because they are the backbone of the local community and could play a significant role in sustaining the possible NbS intervention; the more a project is embedded in the local community, the more sustainable it will be(-come).

In this regard, opportunities to collaborate depend on timing and capacity building, getting to know these local networks and create room to understand the physical, social and cultural identities existing in the local community. Note that during this step again new (groups of) people might come on board, or interesting opportunities to collaborate may become apparent, shifting the focus or the scope of the project. Some flexibility and possibly new adaptation regarding the project plans will be necessary in this case. Although the explanation of these steps is linear, the planning and implementation process of NbS is iterative, going back and forth between the various stages identified in this guide as depicted in Figure 1.

Address timing			
Process steps	**Why is this important/why do we need to address this?**	**What does it entail?**	**How is it best addressed and by whom?**
Align with ongoing processes and initiatives	Alignment of (internal) project plans with existing initiatives can help to embed the project in the local community and gain local support and create social acceptance	Ensure to align the current project proposal with local projects and/or initiatives that already exist in the community (e.g. community initiatives, municipal projects, entrepreneurial activities) Internal and external organizational alignment (see also step 1)	Get in touch with existing initiatives, activities and people in the local community and explore common ground

		Seek opportunities to collaborate with existing initiatives, policy plans and/or projects	
Use window-of-opportunity	Organizational processes, local traditions and rituals and other occasional events can offer opportunities (or create barriers) to start with the NbS project Participation in outdoor events related to the project will depend on seasonal circumstances (participants may be less inclined to participate when in adverse weather conditions)	Identify (potential) opportunities and risks and use them or try to prevent them Be aware of seasons while making project plans that involve outdoor activity Celebrate intermediate achievements (keep up the good spirit)	Raise awareness: improve communication about the project through various communication channels and diverse audiences on a regular basis Keep in touch with existing initiatives, activities and people in the local community on a regular basis

Building Blocks for developing a tailored communication strategy

A communication strategy is not the same as an engagement strategy because engagement usually entails more than communication. Hence, the building blocks are to be understood as part of the overall step-by-step approach. As the line between communication and engagement is not always that clear, there will be overlaps in suggestions that have relevance when communicating with your target group and when engaging them otherwise in the design, planning, implementation and maintenance of the NBS.

The drafting of a communication strategy takes place alongside the drafting of an engagement strategy and the overall project management planning. It is assumed that the project organization takes the lead, and parts of the implementation of the communication may be delegated to e.g. the communications department of the municipality, or a subcontracted communication consultant. In any case, it is important to keep all relevant actors involved in the drafting (and revisions) of the communication strategy.

The building blocks provided below are necessarily generic in nature, because each project as well as the process context differs. We start with considerations to keep in mind when developing a communication approach. Next, we address more specified questions that need to be answered when developing a communications strategy. Finally, we offer a template to get you started with developing a communications strategy, concluding with a timeline specifying the level of detail around communication needs in alignment with the overall project planning timeline.

Considerations to keep in mind

- **Know your target group(s)**: get to know them in order to learn what type of messages, what frequency (communication moments), channels etc. they appreciate and how this differs between different groups within your target group
- **Know whom you will work with:** who is doing the actual communication (most of the time)? Are you responsible, or someone/some department elsewhere? Ensure that the communication strategy fits with their needs and competences (optional: develop it together)
- **Timing:** are there any other interventions, projects, programmes, campaigns ongoing or planned? Try to find synergies in communication (e.g. if there is a tree-planting day)
- **Information overload:** be aware of how much information people are able and willing to digest

- **Do not assume that NBS is considered desirable or interesting to most people**: consider how you frame your information to make it more meaningful and interesting and locally relevant
- **Identify the diverse motivations in support of the project that people might have:** e.g. environmental motivations; local social cohesion-related motivations; health; recreation; aesthetics
- **Identify the reasons they may have against the planned NBS** (e.g. when parking space needs to disappear)
- **Learning-by-doing:** check with your target group(s) how they appreciate the process around the NBS as well as the communication about it
- **People change:** be aware that information needs may change over time. But their motivation may change over time as well (including the motivation to actively contribute to e.g. the maintenance of the NBS)
- **Trust:** in the organization that communicates the information about the NBS is key to the perceived credibility of the information (if trust is lacking, it can be good to get another organization that has very different stakes to confirm the information provided)
- **Use feedback and be transparent:** if you collect feedback from citizens and other local stakeholders, ensure that you do something with this feedback and inform them about that
- Consider the **resources** and **competences needed** for the communication approach envisaged and adapt the approach accordingly
- **Open about mistakes:** consider how to communicate about things that go wrong
- **Consider training needs:** of staff to ensure a good communication (and engagement) approach throughout the process

Communication: why, what, who, how and when?

Communication about both the process and the NBS itself can serve various aims and purposes. Aims can relate to information provision, awareness building and engagement of those that need to take a more active role or those whose acceptance of the NBS is sought for. This can take several forms which may vary according to the phase of the project, making use of different media or communication channels (virtual and physical), targeting diverse motivations that stakeholders (may) have and using tailored messages and information in formats that appeal to the diverse groups targeted.

In addition, the targeted groups can be asked for feedback. Feedback can be solicited about the communication itself (e.g. about the extent to which the communication so far has been useful, understandable, inviting, sufficient in terms of frequency, and tailored to the media preferred). In response to such feedback the communication can be adapted and further tailored to stakeholder (including citizen) needs. The targeted groups can also be asked to provide feedback or input to the process (how, how often and to what aims are the local stakeholders to be involved; or how satisfied are the stakeholders with the process so far) or the actual design of the NBS (addressing the various envisaged (co-)benefits as well as worries about dis-benefits). In response to such feedback, the design, planning and

implementation of the NBS could be adapted e.g. to better address the worries about (dis-)benefits.

Finally, once the NBS is implemented, the project organisation can also give feedback to the stakeholders about how their role has affected the process and outcome.

As for the targeted stakeholders, while the communication targets all relevant local stakeholders, it can differentiate in accordance to the roles of these stakeholders and their information needs. Different stakeholders may call for a different approach, depending on the extent to which they are engaged, their information needs and depending on the motivations that are being targeted. Next to citizens, other local stakeholders may include e.g. SMEs, public organisations/buildings; companies; civil society organisations.

While the NBS project organization is likely to start the development of a communication strategy, other actors may play a role in this too. For instance, a dedicated communication department or subcontracted consultant may be responsible for part of the communication. During the implementation, practitioners involved in this may also have a role in communication with stakeholders.

When considering how the communication is to take place, a distinction can be made between one-way (info provision) communication or two-way communication whereby more interaction and feedback plays a role. Depending on the phase of the process, different levels of interactions are more or less useful. When the level of interaction is clear, and the messages are so too, diverse channels or media can be selected. The project organization responsible for communication develops a communication strategy that sets out the type of messages, frequencies, channels and media to be used, and how to translate information to different target groups. Important to consider is how the communication approach fits with the current communication approach of the organization. Diverse (combinations of) different types of media can be considered: face-to-face conversations, informal meetings; various paper media (targeted or general); digital means (mail, website, social media, the Citizens' Say tool).

As for ways to collect feedback (e.g. before and during the NBS process) different forms can be used: surveys, interviews, focus groups, informal talks etc. (depending on the intensity and size of targeted groups that are engaged).

Timing and frequencies in communication depend on the phase of the process and may differ for different targeted stakeholders and according to the aim of the communication. Once a project timeline can be drafted, communication moments, messages, targeted stakeholders, synergies with other projects can be drawn on this timeline – keeping in mind that changes are likely to occur in response to changing circumstances and learning.

Annex Communication strategy

What are the aims of the communication?	With whom to communicate?	Who is supposed to do the communication?	How will the communication take place?	When is communication to take place?
The aims can include: - informing - awareness building - engagement - collecting feedback - giving feedback To what extent do the affected stakeholders need to be informed, made aware and engaged? Is it a good idea to also collect their feedback and if so, feedback about what is to be collected (e.g. the communication, the process, the NBS ideas)? Are you going to provide the stakeholders feedback about the results of their engagement in the project?	Who is involved in or affected by the interventions and in what manner in relation to the design, planning, decision making, implementation and maintenance of the NBS?	Who is tasked with communicating at different moments with/to (diverse) stakeholders (including citizens)? Are different people and different organisations or departments involved in this? If so, who is responsible for what parts of the communication at what moments? Do these people all have the needed skills and competences? Do they have sufficient resources and time to organize and realise the communication throughout the process?	How is the communication to take place in the different phases from planning, decision making, implementation and maintenance of the NBS? Which messages, channels and media to use during each phase?	How does the communication change over time? Distinguish important moments and milestones around which communication is to take place. Differentiate between - communication about process and content; - communication with different types of stakeholders.

Table 1 What, who, how and when of communication

A template to get started drafting your communication strategy

This template can help to get the project organization started with discussing a communication strategy, addressing the initial ideas about what to communicate, to whom, how, by whom, in what ways etc. This template ends with drafting a timeline to enable you to get an overview of how different planning activities fit within the overall NBS project planning.

What is/are the overarching message(s)?

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Start of the project:

What will be emphasised in the presentation of the process towards the realisation of the NBS?

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What will be emphasised in the presentation of the NBS as a solution and improvement? (e.g. which ecological, social, economic (co-)benefits)

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Will you differentiate between different target groups?

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How will you describe the expected efforts and the benefits?

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What channels and media will you use and how will they complement one another?

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How and when will you collect feedback from stakeholders (and with what purpose)?

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How will you report on the progress and towards whom? How can you use the provision of feedback as a way to keep people engaged? (providing feedback that is constructive, non-intrusive, personal, ….)

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How will you collect feedback?

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How will you manage all the information that you collect from stakeholders when you solicit feedback?

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Consideration of resources and competences that you need for a successful communication approach: do you see any problems or challenges? (e.g. limited resources; not the right skills and competences within the project organization) How to deal with these?

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Timeline: Doing what when

Using the project management timeline (or make one when it does not exist yet), draw the communications timeline on top of that one:

- note down all communication related activities, starting from the moment that you first discussed the NBS with stakeholders (including citizens) until the realization and maintenance.
- The level of detail is up to your preferences (include things like e.g. agreeing with communications department on e.g. task division, requirements, possibilities to use social media, use of existing newsletters; designing the communication (e.g. brochure, newsletter-item, central display messages etc) for particular moments in time: feedback provision moments; moments to collect feedback from users and occupants; etc.)
- You can decide to revisit the timeline at several moments during the project to see where adaptations are needed.
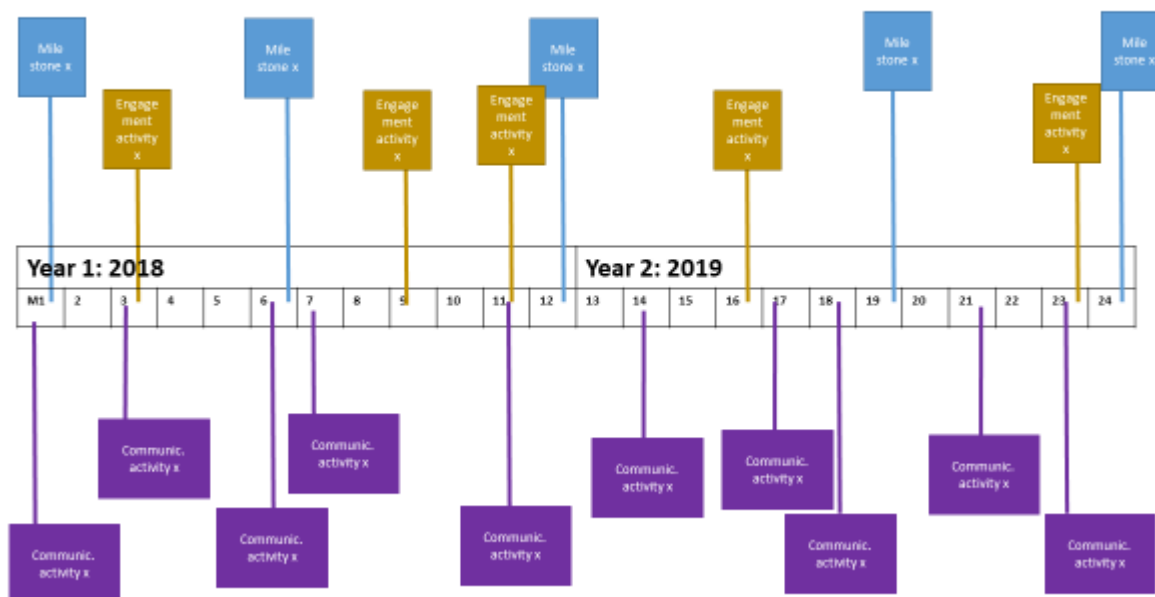

Figure 2: Example of a timeline including project milestones, engagement activities and communication activities