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D5.2 Citizen and Stakeholder Engagement strategies and tools for NBS Implementation

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Executive Summary

The objective of D5.2 is to develop strategies towards inclusive planning and implementation processes of NBS. Mechanisms that foster participation and allow for the proper engagement of and communication with various stakeholders, including citizens, within different contexts.

The main research question structuring D5.2 has been the following: *How can the governance around NBS be organised in such a manner that the participation of stakeholders (including citizens) is guaranteed and attention is awarded to a distribution of diverse benefits and negative effects that is considered fair and equal by the participants to the process?* This question has been approached twofold. First chapter 2 – 5 offer a conceptual overview based on a 'state of the art' literature review. Chapter 1 addresses the urban challenges related to climate change in urban areas and explains how these challenges can be perceived as 'wicked problems' that can only be tackled by the active inclusion of a diverse group of (local) stakeholders. Chapter 3 describes different participation models in spatial planning, followed up by chapter 4 that introduces two place-based approaches that offer valuable insights on how participation processes around NBS interventions can be organized in local settings. Chapter 5 then presents some practical tools that can be used in the participation process. Building on this, the second part of the report offers a guide for practitioners to support them in the urban planning process of NBS interventions by presenting a Step-by-Step Guide. All the steps described in the Step-by-Step Guide are discussed according to their relevance, what they entail and on how a project lead/project organization can address the implementation process. The Guide furthermore identifies the tools and methods on the Nature4Cities platform that are useful for particular steps in the planning process. The guide can be used in a 'pick-and-mix' manner, with variations in the order and choice of steps in view of the particular local situation.

This report is inspired by practical experiences from the four municipalities who are partner in the Nature4Cities project. They provided case examples of participation strategies (some of which are based on their practical experiences with NBS projects). Furthermore, the task leader of task 5.2 (Duneworks) has conducted field work in 2017 in the four municipalities for subtask 8.1.1, eliciting citizens' needs and requirements with regards to NBS. Lastly, interviews with the municipalities to reflect on the content on the Step-by-Step Guide were conducted mid-February 2018.

The intention of this report is to offer guidance and support to practitioners responsible for NBS interventions, in an attempt to connect the conceptual, ideal concept of NBS with the institutionalised planning and decision-making structures of the real world.

These past years, research and publications on the development and implementation of NBS have increased significantly. However, the practical implementation of NBS is lagging behind this increasing body of literature. While definitions of (ideal) NBS become more and more ambitious, the gap with the messy nature of day-to-day efforts to realise these solutions in a participatory manner appears to be growing. Therefore, we developed a practical implementation guide that can decrease this gap by supporting the participatory development and evaluation of NBS in practice.

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As becomes clear in chapter 3 a participatory and inclusive process by no means provides a guarantee for successful implementation of NBS. After all, some participants might reject the solution, whilst others might find that other, unrelated, problems require more urgent attention. Moreover, participation does not necessarily rule out negative (side-) effects such as gentrification, reduction of costs and high risks. Ultimately, the question is how, for whom and under which conditions an NBS is the most desirable solution in a given context. For this reason, two place-based approach were introduced in chapter 4: Placemaking and Environmental Justice.

Placemaking proposes a method in which the ideas, values and needs of local communities become key input for shaping places and empowerment of local communities. Environmental Justice, like Placemaking, also offers invaluable insights on how these translation practices can be shaped, and how to involve communities in local planning in such a way that the local community benefits from it, preventing actual and potential inequities. Hence, these two approaches lie at the basis of the step-by-step guide for the co-creation and co-production of NBS projects (presented in chapter 6). The guide is user centric in that it aims to support practitioners by proposing participation mechanisms and communication strategies that will inform a socially inclusive approach to the development, planning, implementation and maintenance of NBS interventions. The guide furthermore offers building blocks for a tailored communication strategy and proposes practical hands-on tools and methods to be used during the planning, implementation and maintenance of NBS projects.

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.

The Step-by-Step Guide will be presented at the Nature4Cities platform and it effectively links the steps of planning process to the tools and methods that are offered on the Nature4Cities platform.

Despite the fact that NBS are considered as novel sustainable solutions to climate adaptation 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.

The fact that the actual implementation of NBS is not widespread (reported on) relates to the definition used here, which regards an inclusive approach as a crucial component. Including a diversity of stakeholders means that diverse types of knowledge (including very situated local and experiential knowledge) are recognized as valid in the process. In practice however, like with other spatial interventions, the planning and implementation of green solutions does not necessarily take place in a participatory and inclusive manner.

In many countries, formal rules require stakeholder participation which often entails some form of consultation based on ready-made plans, e.g. as part of the decision making on spatial development. Participation early in the process is usually not formally required nor institutionalized as a normal procedure. However, there are good reasons to recognise and value such timely participatory trajectories, especially in the early planning and implementation of NBS. One reason is

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that taking into account the ideas, perspectives and (tacit) knowledge of local residents can contribute to a better project design and will improve the outcomes. In addition, tailoring the project to the needs and requirements of the local community may lead to socially just outcomes, that are supported and socially accepted.

At the same time, there is the dilemma that while the involvement of citizens and stakeholders is regarded as a basic requirement, this provides room to participants that are not convinced that NBS is the preferred solution. For instance, if an NBS design provides a solution for an environmental problem, the environmental benefits may take precedence over the social and socio-economic benefits, in which case the solution may be rejected by certain stakeholders. To prevent this from happening, engaging stakeholders early in the process (in the early design phase) can help to ensure that not only environmental but also social and economic benefits are addressed in the design of the NBS. The ultimate consequence of allowing for participation of stakeholders is that this process may result in the conclusion that the NBS is not suited to the particular problem. (NBS are not the best solution for all problems).

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1 Introduction

1.1 Purpose

Nature-based Solutions (NBS) are adaptive solutions to the challenges that arise from climate change, such as heat, drought, heavy rainfall, and decreasing biodiversity. These challenges affect the quality of life of many people, especially in urban, densely populated areas. Climate change furthermore exacerbates disparities in the distribution of environmental impacts and the displacement of specific, already vulnerable and excluded, groups in society (e.g. minorities, migrants, women, poor and elderly people), in particularly in poor and deprived areas.

Urban decision-making processes are characterized by a high level of complexity, especially when they involve unstructured and multifaceted problems such as dealing with the negative impacts of climate change. NBS can offer a sustainable solution to climate change adaptation but require collaboration between multiple stakeholders with different backgrounds and from different (academic) disciplines and sectors bringing together technical, environmental, economic and social knowledge. In this task we focus on the governance aspect of NBS, and in particular on mechanisms that foster stakeholder participation. The main focus of task 5.2 is then to develop NBS implementation strategies that allow for the proper engagement of various stakeholders, including citizens, within different contexts.

These past years research and publications on the development and implementation of NBS have increased significantly, reflecting the attention that is currently paid to develop sustainable coping strategies for the negative impacts of climate change, especially in urban areas. The practical implementation of NBS is lagging behind on this increasing body of literature on NBS, which is due to several reasons. First of all, while definitions of (ideal) NBS become more and more ambitious, the gap with the messy nature of day-to-day efforts to realize plans appears to be growing. A practical implementation guidance can contribute to decrease this gap by supporting the development and evaluation of NBS, arriving at a definition of NBS that is grounded in practical experiences.

A second reason why the actual implementation of NBS is not widespread (reported on) relates to the definition used here, which regards an inclusive approach as a crucial component. In practice however, like with other spatial interventions, the planning and implementation of green solutions does not necessarily need to take place in a participatory and inclusive manner. Including a diversity of stakeholders means that diverse types of knowledge (including very situated local and experiential knowledge) are recognized as valid in the process.

At the same time, there is the dilemma that while the involvement of citizens and stakeholders is regarded as a basic requirement, this provides room to participants that are not convinced that NBS is the preferred solution. For instance, if an NBS design provides a solution for an environmental problem, the environmental benefits may take precedence over the social and socio-economic benefits, in which case the solution may be rejected by certain stakeholders. To prevent this from happening, engaging stakeholders early in the process (in the early design phase) can help to ensure that not only environmental but also social and economic benefits are addressed in the design of the NBS. The ultimate consequence of allowing for participation of stakeholders is that this process may

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result in the conclusion that the NBS is not suited to the particular problem. (NBS are not the best solution for all problems).

Given the challenges stated above, how can we arrive at implementation models for NBS that allow for a process that is considered fair by affected stakeholders and that allows for outcomes that are still relevant in terms of climate adaptation, while also bringing other benefits. In other words, *how can the governance around NBS be organized in such a manner that the participation of stakeholders (including citizens) is guaranteed and attention is awarded to a distribution of diverse benefits and negative effects that are considered fair and equal by the participants to the process?*

This main question has been approached twofold. Firstly, through compiling a 'state of the art' based on a literature review (chapter 1 – 5). In addition, a practical guide has been developed to offer assistance to practitioners who are responsible for the design, planning and implementation of NBS interventions (chapter 6). Both parts are of the report are inspired by practical experiences from the municipalities who are partner in the Nature4Cities project. The municipalities contributed in several ways. They provided case examples of participation strategies, some of the strategies are based on their own experiences with NBS projects. Furthermore, the task leader of task 5.2, Duneworks, has conducted field work in the four municipalities for task 8.1, eliciting citizens' needs and requirements with regards to NBS. Duneworks has interviewed local residents, experts and policymakers in the four municipalities to gain an insight in the day-to-day experiences of municipalities with NBS. Finally, Duneworks conducted skype interviews with the municipalities, mid-February 2018, to reflect on the content of this report and make sure that the ideas and suggestions (such as the step-by-step guide) are recognized as useful by practitioners.

While evaluations of NBS implementation may be scarce, there is an extensive body of (social scientific and grey) literature available on stakeholder and citizen engagement in processes to address complex (urban) sustainability problems. That knowledge, in combination with scarce literature on NBS implementation so far, provides the basis for this report on Citizen and Stakeholder Engagement for NBS implementation.

1.2 Report structure

This report is divided into two parts. The first part, chapter 1 – 5, contains a conceptual approach to the spatial planning process of Nature-based Solutions. Chapter 6 shifts the focus towards a more practice oriented and user centric approach, offering a step-by-step guide for the co-creation and co-production of NBS for practitioners.

The first part of the report starts with chapter 1 that describes the overall approach to this task, including the relation to other tasks in the Nature4Cities project and the targeted audiences. In chapter 2 the concept of NBS will be briefly explained. This is followed by chapter 3 in which current participatory mechanisms in spatial planning will be examined, including the various implementation models for citizen and stakeholder agency. Chapter 4 will then focus on describing the added value of the Placemaking method and Environmental Justice to the spatial planning process of NBS.

Chapter 5 focuses on participatory strategies and mechanisms, providing a brief overview of existing participation schemes in urban planning. In addition, a review of tools, strategies and

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mechanisms has been conducted, in particular tools that are considered to be beneficial for adopting socially inclusive strategies for the planning and implementation of NBS. Both the overview and the tool descriptions can be in Annex III and IV.

Chapter 6 of this reports presents a step-by-step guide for the co-production and co-creation of NBS, outlining a detailed strategy for NBS projects. This guide proposes participation mechanisms grounded on the Environmental Justice Framework and Placemaking method for a socially inclusive approach to the development, planning, implementation and maintenance of NBS. The guide will furthermore present practical tools than can be used in this process. The conclusions can be found in the final chapter.

1.3 Contribution of partners

Table 1 - Contribution of partners

Partner	Contribution
Tecnalia	Responsible for section 3.4.1, review participatory tools, identification governance model (Annex I) and contribution to executive summary
METU	Contributions to chapter 4 and 5. Contributions to literature review and reviewing of participatory tools
Ekodenge	Responsible for section 5.4, reviewing of participatory tools, responsible for overview of tools (Annex III) and responsible for compiling inventory of participatory tools (Annex IV)
Duneworks	Task leader, responsible for, and contributions to all sections in the report
MUTK	Contributions to review of participatory tools
CMM	Contributions from government experience
Çankaya	Contributions from municipality experience
Szeged	Contributions from municipality experience
Alcala de Henares	Contributions from municipality experience
LIST	Review of the Deliverable
IIL	Review of the Deliverable
UN	Review of the Deliverable

1.4 Target audience

The primary target audience of this report are practitioners, policy officers, experts and other actors and organisations working primarily at the local level, who are responsible for the design, planning and implementation of NBS.

The targeted audiences for first part of the report are experts, policy advisors and other professionals responsible for, and interested in the co-creation and co-production of NBS. The first

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part of the report is more conceptual and provides background information and offers theoretical insights on participation in relation to NBS. The second part of the report is more practical, in which a step-by-step guide for the co-creation and co-production of NBS is presented which serves as an inspiration for practitioners offering support for citizen and stakeholder engagement in the planning and implementation of NBS, and to reflect on and rethink their everyday practices. Furthermore, the guide can be used for training purposes as well.

Last but not least, the Nature4Cities consortium members, in particular the partner cities the municipality of Çankaya (TR), Alcalá de Henares (SP), Szeged (HU) and Citta Metropolitana di Milano (IT), are also considered as targeted audiences.

1.5 Relation to other task and activities in the Nature4Cities project

Task 5.2 is related to the following tasks of the Nature4Cities project:

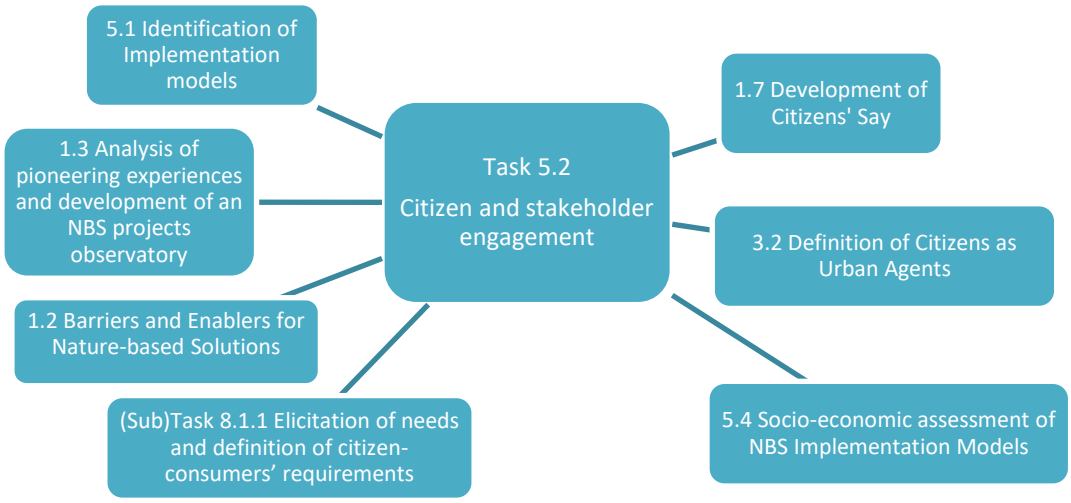

Figure 1 : Relation to other work packages

Task 1.2 Barriers and Enablers for Nature-based Solutions

In task 1.2, process barriers and enablers for the implementation of NBS in different implementation models have been identified. Figure 2 below shows how drivers and barriers identified in task 1.2 are considered in task 5.2, as these partly make up the existing context where an NBS is planned, namely various physical, infrastructural, institutional, social, economic, political and cultural conditions that affect the process and outcome.

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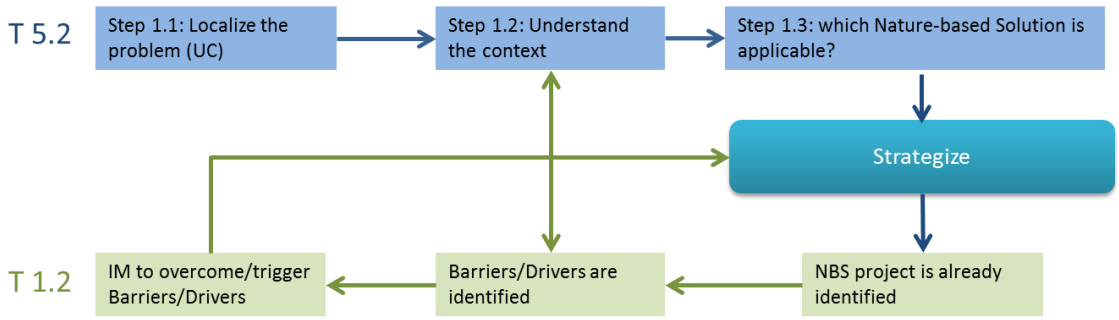

Figure 2 : Link between T1.2 and T5.2

Task 1.3 Analysis of pioneering experiences and development of an NBS projects observatory

In task 1.3 pioneering NBS projects have been identified. The participatory mechanisms/strategies and tools in these pioneering cases have been identified and reviewed for task 5.2.

Task 1.7 Developments of Citizens Say

In task 1.7 the digital tool Citizens' Say will be adapted to the Nature4Cities platform mainly to raise citizens' awareness on NBS and to integrate citizens' feedback on social and societal values of urban nature. Additional tools required for citizen and stakeholder engagement and communications strategies are presented in the step-by-step guide.

Task 3.2 Definition of Citizens as Urban Agents

Task 3.2 studies the behaviour of agents, citizens being one of them, in relation to changes in their environment via NBS. This provides input to a dynamic assessment methodology for the environmental impact of NBS. Citizen and stakeholder engagement studies carried in T5.2 provide input to T3.2 in understanding possible behaviours and paths agents take and the types of agents influenced by NBS.

Task 5.1 Identification of Implementation Models

In task 5.1 three types of implementation models have been identified: governance, finance and business models. Citizen and other stakeholders play various roles in these implementation models. In this task we've further identified these roles and reviewed participatory strategies and tools that have been described in the cases presented in the database for task 5.1.

Task 5.4 Socio-economic assessment of NBS Implementation Models

Task 5.4 is going to make the socio-economic assessment of a specific NBS project, assessing the social, institutional and cultural impacts. Task 5.2 provides basic knowledge inputs and the qualitative information on the relevance of various social, institutional and cultural conditions and thus provides a good starting point for task 5.4.

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(Sub)Task 8.1.1 Elicitation of needs and definition of citizen-consumers' requirements

The aim of (sub)task 8.1.1 was to study the citizen-user's needs and expectations with respect to NBS and provide recommendations regarding the requirements for NBS from a citizen-user's perspective. Field studies have been conducted by Duneworks (task leader for both task 8.1.1 and task 5.2) in each of the four partner cities in order to understand citizen's practices and routines and how they interact with Nature-based Solutions in their daily lives, mapping how citizens attribute meaning to these daily practices, and identifying the (potential) barriers that citizens encounter in fulfilling their needs related to these practices. The outcome of this research has provided important input for task 5.2 by providing an insight in the day-to-day experiences of citizens and municipalities with NBS.

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2 Nature Based Solutions: an open innovation

This section starts with a brief explanation of the NBS concept, a novel and distinctive approach to sustainable climate adaptation. NBS can be characterized as a holistic and integral approach that addresses environmental, social and economic challenges simultaneously, requires multi-stakeholder and cross-sectoral collaboration between government, experts, civil society actors and other professionals. The aim here is to explain the challenges and issues regarding participatory and collaborative processes characterized by diverse, overlapping and contradicting claims, ambitions, expectations and interests that can be identified in the urban context in which NBS is, or will be, implemented.

2.1 Nature-based Solutions, a holistic approach

Nature-based Solutions (NBS) are part of a dual strategy to deal with climate change. The first part of this strategy includes preventive measures to contain environmental damage reducing Greenhouse Gas Emissions (GHG). Secondly, adaptive measures deal with the current challenges that are a consequence of climate change. These challenges, such as heat, drought, heavy rainfall, decreasing biodiversity and the increase of storms, affect the quality of life of many people, especially in urban, densely populated areas. Climate change furthermore creates disparities in the distribution of environmental impacts and the displacement of specific, already vulnerable and excluded, groups in society (e.g. minorities, migrants, women, poor and elderly people), in particularly in poor and deprived areas.[1]

The European Commission endorses NBS as a novel strategy to move towards sustainable climate adaptation and mitigation. NBS "*are actions inspired by, supported by or copied from nature; both using and enhancing existing solutions to challenges, as well as exploring more novel solutions, for example, mimicking how non-human organisms and communities cope with environmental extremes. Nature-Based Solutions use the features and complex system processes of nature*" (European Commission 2015: 24). NBS seeks to go beyond existing concepts and approaches such as the Ecosystem approach and Ecosystem Services, in the sense that "*NBS are supposed to contribute positively to social inclusiveness even beyond their functions to increase social wellbeing, health and quality of life for urban residents*." (European Commission, 2015; Kabish et.al., 2016).

NBS are thus designed to both provide a solution for climate adaptation *as well as* delivering social and economic co-benefits. In doing so, "*NBS makes an explicit link to the pillars of sustainable development, putting social, environmental and economic dimensions, at least conceptually, at the*

[1] Source: OECD report, Poverty and Climate change, online accessible: http://www.oecd.org/env/cc/2502872.pdf accessed 07/02/2018, and: EEA Report No 1/2017, Climate change, impacts and vulnerability in Europe 2016, online accessible: https://www.eea.europa.eu//publications/climate-change-impacts-and-vulnerability-2016, accessed 07/02/2018

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same level of importance" (Nesshöver 2017; 1220). For a detailed and nuanced discussion on the concept of NBS we refer to Nesshöver et al. (2017).

2.2 Efforts to overcome the gap between theory and practice

Before discussing the complex governance contexts in urban contexts, it is useful to address the urban challenges that NBS seek to tackle. The deliverable report for task 2.1 'System of integrated multiscale and multi-thematic performance indicators for the assessment of urban challenges and NBS' identifies the urban challenges resulting from climate change, in order to be able to assess the (needed) performance of NBS in urban contexts. This has contributed to a further specification of social, environmental and economic dimensions of the NBS concept. The identification of the urban challenges for Nature4Cities is based on a comprehensive literature review and was done in coherence with similar initiatives, such as the EKLIPSE report[2], that have already been developed within the context of the European Union. The result of task 2.1 is a multi-thematic performance assessment of NBS projects identifying the highly complex and increasing urban challenges (UC) as depicted in see Figure 3.

TOPICS	URBAN CHALLENGES (UC)	URBAN SUB-CHALLENGES (USC)
CLIMATE	1 | Climate issues	1.1 | Climate mitigation
		1.2 | Climate adaption
	2 | Water management and quality	2.1 | Urban water management and quality
		2.2 | Flood management
ENVIRONMENT	3 | Air quality	3.1 | Air quality at district/city scale
		3.2 | Air quality locally
	4 | Biodiversity and urban space	4.1 | Biodiversity
		4.2 | Urban space development and regeneration
	5 | Soil management	5.1 | Soil management and quality
RESOURCE	6 | Resource efficiency	6.1 | Food, energy and water
		6.2 | Raw material
		6.3 | Waste
		6.4 | Recycling
SOCIAL	7 | Public health and well-being	7.1 | Acoustics
		7.2 | Quality of Life
		7.3 | Health
	8 | Environmental justice and social cohesion	8.1 | Environmental justice
		8.2 | Social cohesion
	9 | Urban planning and governance	9.1 | Urban form
	10 | People security	10.1 | Control of crime
		10.2 | Control of extraordinary events
ECONOMY	11 | Green economy	11.1 | Circular economy
		11.2 | Bioeconomy activities
		11.3 | Direct economic value of NBS

Figure 3 : Urban Challenges framework; topics, urban challenges (UC) and sub-challenges (USC)[3] Nature4Cities

[2] Raymond, C.M. et al. (2017), *An Impact Evaluation Framework to Support Planning and Evaluation of Nature-based Solutions Projects*, Report prepared by the EKLIPSE Expert Working Group on Nature-based Solutions to Promote Climate Resilience in Urban Areas, Centre for Ecology & Hydrology, Wallingford, United Kingdom.

[3] Source: Nature4Cities, *System of integrated multi-scale and multi-thematic performance indicators for the assessment of urban challenges and NBS*, December 2017

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The first three topics (climate, environment and resources) focus on the environmental urban challenges related to water, air, heat and biodiversity, with each a subset of urban challenges. The other two topics focus on social and economic aspects that need to be targeted simultaneously with environmental problems. This framework basically provides a checklist to ensure that the dimensions relevant to the tackling of climate change problems in urban contexts, are sufficiently taken into account, so that the interventions envisioned qualify as NBS.

Currently, researchers, practitioners, experts, citizens and (social) entrepreneurs are building a knowledge base for NBS that includes scientific and practical experiences. Their inquiries show that in most cases, assessments of environmental impacts of green solutions were "*restricted to single challenge areas (e.g., biodiversity, ecosystems) and rarely addressed cross-sectoral impacts (e.g., links between biodiversity, and the economy)*" (Raymond et al., 2017; 16). In addition, "*to date little empirical research has been directed to identify successful governance, business, finance and public participation schemes for the extended implementation of NBS*." (Sekulova and Anguelovski 2017; 2). In other words, there is no extensive experience nor research literature that demonstrates how an integral, systemic approach to climate adaptation of NBS works in practice. While an NBS project, by definition, is designed in such a way that it both delivers environmental benefits as well as socio-economic co-benefits, in practice, these authors observe that green infrastructural projects are mostly single-focused. In addition to the complexity of an integrated approach, another challenge concerns the taking into account of the diverse, overlapping and contradicting claims, interests and expectations that are part and parcel of planning processes in an urban context.

NBS is not a pre-fixed solution to climate adaptation but is characterized as an open innovation process. The successful performance of NBS is highly depended on the practical implementation of NBS (Raymond 2017; Haase 2017; Kabisch 2017; Nesshöver 2017) in which NBS will be aligned with and shaped by social relations. Hence, NBS must be understood as a composite entity resulting from the interaction between objects, e.g. humans, the physical environment, technologies, science, institutions, rules and regulations. These objects "*are mutually produced through enactment, interaction and translation*" (Cvetinovica, 2017: 82; Sovacool, 2017). In other words, NBS can only become meaningful in a specific urban context because only then trade-offs between ecological, economic and social dimensions will become apparent. In addition, scientific and empirical evidence is needed to prove the added value of NBS when compared to conventional or one-dimensional strategies (e.g. grey or high-tech solutions) in which performance is less dependent on such a wide range of uncertain and complex factors.

An additional difficulty is that the socio-ecological impact of NBS is difficult to prove on the short term. Longitudinal evidence-based studies are necessary to prove the benefits of NBS. In the meantime, scientists, policymakers, practitioners, experts and citizens are experimenting with NBS projects on a day-to-day basis. It is for these practices that this report offers guidance, so that we move towards a socio-technical concept of NBS based on a systemic understanding and practical experiences.

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2.3 Dealing with the complexity of NBS

As mentioned in the above, many researchers have stressed the fact that NBS are highly complex and its potential successes are uncertain Nesshöver (2017: 1221) stressed that "*in many cases NBS deal with complex socio-ecological systems whose responses to management and natural factors are often non-linear, heterogeneous and incompletely known*." Hence, the move towards sustainable solutions to climate adaptation is a contested issue bringing together multi-disciplinary and cross-sectoral discourses each having their own perspective on what the problem is and how it should be solved, which can be best described as a 'wicked problem'. A wicked problem can be defined as (Kolko 2012; Mourik et al; 2017):

- Problems that are defined by incomplete or contradictory knowledge;
- the involvement of a high number of stakeholders with a diversity of, often contradicting, needs, interests and perspectives, values and norms;
- the problem requires high economic investments that result in conflicting opinions on who carries the responsibility for these costs;
- the problem is interconnected with other problems that need to be dealt with simultaneously.

Michel Callon refers to this as 'a network of problems', that is, multiple problems that cannot be solved within a single policy domain because they are transcendent and related to problems in other domains which makes them interdependent (Callon 2009: 543). The concept of NBS is in line with this complexity by endorsing an integral approach to this 'network of problems' (i.e. urban challenges, figure 3) because it is not a fixed concept and thus allows room for flexibility with regards to the problem definition and the potential solutions. Inherently, NBS are developed in collaboration with multiple actors (e.g. academic disciplines, sectors, experts and stakeholders), incorporating knowledge from various sources. This is quite challenging, not just from a natural science and ecological perspective, but also with regards to the complex social dynamics of working with multiple disciplines, practitioners, experts and stakeholders. The ambition of NBS to target environmental, social and economic issues simultaneously is not just highly complex, but issues in these separate fields have been pre-dominantly dealt with in disciplinary settings, both in science and in policy planning. These disciplines bring in their own assumptions and ideas that will conflict with (knowledge) claims and proposed solutions from other disciplines.

Considering that the focus here is on the question how citizens and stakeholders can be engaged in the spatial planning process of NBS, it helps to perceive the urban challenges as a wicked problem because it identifies the practical difficulties regarding the translation of the socio-technical concept of NBS into practice. Firstly, it is difficult to arrive at a shared understanding of the problem definitions due to the fact that people have different perceptions, perspectives and opinions. Secondly, facts and values intermingle and contradict. Moreover, there is no clear 'problem-owner', hence, the responsibility to solve the problems should be spread across different domains. A participatory approach is then of added value because bringing in various stakeholders will make it (ideally) easier to create co-ownership and the sharing of responsibilities. However, bringing in these multiple stakeholders with different sets of values, norms and perspectives, backgrounds, expertise and 'stakes' will at the same time create its own challenges. Dialogue and communication aimed at reaching a shared understanding of the problems can be challenged by manifestations of power

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because, depending on the method being used, not all participants might be regarded as equal contributors. These power dynamics should be addressed, otherwise it will undermine both the legitimacy and the quality of the outcomes. Hence, participatory evaluation and monitoring should be mainstreamed throughout the planning and implementation process. In the next section, we will provide a characterization of collaborative spatial planning processes and explain various modes of governance and various problems that arise in dealing with a multitude of perspectives.

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3 Collaborative planning, implementation and evaluation of NBS

There is a widespread consensus that stakeholder involvement is a necessary requirement to address the problems that arise from climate change (Callon 2009; Wamsler 2017; Haase 2017; Nesshöver 2017; Raymond 2017 amongst others). In this chapter, we first address the value of stakeholder engagement, which can relate to substantive, instrumental or normative arguments. Next, we discuss different governance and participation models in which the roles of government, and stakeholders – including citizens – differ, with attention to how these models can be of relevance for NBS planning.

3.1 Recognizing the value of citizen and stakeholder involvement

In many countries, there are formal rules that require stakeholder participation which often entails some form of consultation based on ready-made plans, e.g. as part of the decision making on spatial development. Participation, early in the process, is usually not formally required nor institutionalised as a normal procedure. However, there are good reasons to recognise and value such timely participatory trajectories, especially in the early planning and implementation of NBS.

The added value of participation works at three levels. Firstly, it results in *substantive benefits*. Local knowledge can help to inform and improve the design and planning of NBS. Local residents may provide valuable knowledge as users of a specific place where the NBS intervention is planned, e.g. how they value the place or how they use it. This type of situated and tacit knowledge contributes to a better understanding of how an NBS can be best tailored to the local circumstances. Secondly, participation can contribute to *instrumental benefits* such as social acceptance of the NBS project, increase the support and perhaps encourage the sharing of responsibilities with regards to the implementation and maintenance of the NBS. Empowered local residents can bring about change and initiate action (Scholten & Keskitalo 2015), while engaging with local residents early on, answering questions and addressing concerns is critical to carrying out a successful project.

Lastly, Nesshöver mentions the *normative benefits*, which concern the legitimacy of the planned project. Respecting democratic values and creating a fair procedure for citizens and stakeholders to participate contributes to more socially just outcomes (Nesshöver et al; 2017: 1221, van den Hove; 2000, Mitchell;2005 and Schultz; 2010).

Besides these three benefits it can be argued that citizens are the main beneficiaries and users of the NBS. Through their use experiences, they actively create value for the NBS, either symbolic (the meaning of the NBS) or social (the value NBS brings to the social and individual well-being). Therefore, giving agency to citizens in the development and implementation of NBS with participatory processes will increase the value of NBS for the citizens in turn.

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3.2 Participation in Spatial Planning

Problems connected to climate change and global warming are the result of a complexity of diverse yet partially interrelated factors and are subjected to a high level of uncertainty concerning the socio-ecological issues. Climate change adaptation and mitigation rely on the support and input of a diverse group of actors from technical, environmental, economic and political disciplines and sectors. In order to enable constructive collaboration between actors from such diverse backgrounds, it is crucial to create "*a climate favourable to critical reflection, negotiation, ongoing evaluation, and learning by doing, using and interacting*." (Callon 2009: 537).

Broadly speaking, we can identify government, market and civil society (or as Figure 4 depicts, the 'community') as key actors. However, international bodies such as multinationals, international institutions, think tanks and NGO's, can play a major role in the uptake of climate policies through international treaties and regulations, the production of knowledge and lobby, advocacy and influence public opinion. While being aware of this international context, our main focus here is on the local uptake of NBS projects and how local actors, e.g. practitioners, professional, social entrepreneurs and neighbourhood communities, collaborate in spatial planning and decision making around NBS initiatives. It is however important to bear in mind that (often) that there is a broader context that can influence local scale projects.

Governments are responsible for public services and the creation of public value. There are no strict boundaries to the extent to which governments carry responsibility, and they are not the sole producer of public services and values. The extent to which governments intervene in society depends on various factors such as the institutionalised policy and decision-making frameworks in place (at national and sub-national levels), specific regulations with regard to decision making about spatial developments, formal consultation requirements, extent and manner in which decision making power is devolved or centralised, dominant political-ideological perspectives, or financial issues such as budgets restraints and austerity politics (in times of an economic recession). Irrespective of contingent factors, government's performance is largely determined by institutional procedures and culture (socio-cultural and organizational aspects) in which incremental changes can occur.

Currently, there is a tendency to shift governance responsibilities towards economic agents (the market) and civil society agents (the community), see also Figure 4 below.

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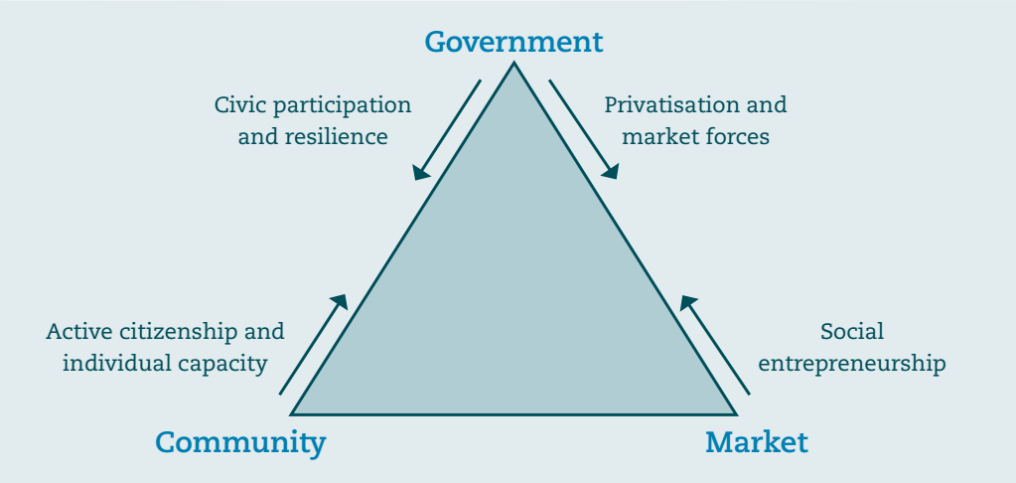

Figure 4 : Changing relationships between the government, market (business) and the community (citizens), 2013.[4]

There are various ways in which government, market and the civil society actors collaborate. Van der Steen et al (2015) identified four steering modes of governance in relation to green infrastructure management and spatial planning: New Public management (NPM), Public Administration (PA), Network Governance (NG) and Societal Resilience (SR) (as depicted in Figure 5). The steering modes of governance on the left quadrant (New Public Management and Public Administration) allocate an important role to governments, carrying the main responsibility for public services and the creation of public values. Whereas PA involves traditional state-based planning procedures, NPM is grounded on market principles such as efficiency, in which citizens are perceived as consumers.

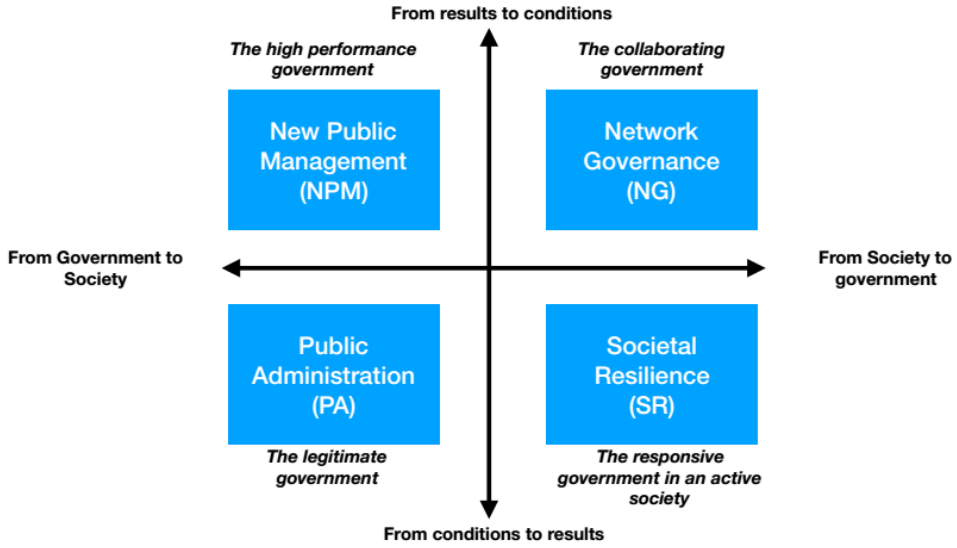

Figure 5 : Steering modes of governance, 2015.[5]

4 Retrieved from: http://www.pbl.nl/sites/default/files/cms/publicaties/pbl-2015-nsob-learning-by-doing-government-participation-in-an-energetic-society.pdf

[5] From: Van der Steen, et.al. *Sedimentatie in sturing. Systemen brengen in netwerkend werken door meervoudig organiseren*, NSBO uitgave, 2015.

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The Societal Resilience quadrant on the right is the reverse perspective; society carries the main responsibility for the production of public services and values and governments facilitates. SR can be seen as the social uptake of projects and initiatives by community-based organizations, neighbourhood initiatives, citizens and such. Lastly, Network Governance refers to collaborative efforts organized by diverse (usually well-organized) actors, e.g. (social) entrepreneurs, CBO's and NGO's, (semi-)public institutions, supported by government. These steering modes may vary from time-to-time and shift from project-to-project but are also influenced by political-cultural, organisational and economic rationalities. Some steering modes are predominant in a given local context, whereas in other contexts governments experiment with these roles within the boundaries that the formal institutional policy and decision-making frameworks offer.

Moving from general trends in governance for green spaces to the more (sparse) examples of NBS, Sekulova and Anguelovski (2017: 10) observe that very few NBS projects are initiated by public or private entities solely and pointed out that in Northern Europe it is widely recognized that "*the dominant visions on the governance of NBS rests upon the idea of sharing opportunity costs and economic risks between the private sector and the state*." (Sekulova and Anguelovski, 2017:10). We can identify a trend in which there is a shift from state-based approaches to greening strategies towards collaborative approaches with private actors (NG and SR as depicted in Figure 5). These initiatives are not just supported by state budgets but also by private sector investments; corporations, social entrepreneurs, citizens and community-based organizations.

3.3 Participatory models: towards co-production and co-creation

Section 3.2 presented four steering modes of governance in relation to spatial planning, with different roles for government and society, in order to illustrate how different governance arrangements, have different impacts on citizen and stakeholder participation. Below we introduce a different model that depicts the role of citizens and local communities in relation to the role of (local) government. This model, developed by Alterra/WUR (2014), introduces possible ways of citizen engagement with NBS depicting the distribution of authority and power (see below Figure 6). These levels are:

- **Community based model:** Citizens act as agents of social change. Grassroots greening[6] (e.g. eco villages, or community gardening are examples of such consumer-citizenry). This type of participatory mechanism eliminates the agency of other actors and therefore limited in its scope;
- **Government participation**: Government facilitates citizens initiatives;
- **Co-creation and co-production:** Government and citizen initiatives collaborate on equal footing;
- **Citizens' participation:** Citizens participate in the implementation of governmental policies;
- **Government:** Government uses steering modes.

6 Ferguson, S., A Brief History of Grassroots Greening in NYC, New Village, Building Sustainable Cultures, Issue 1: Community Revitalization, accessed online: http://www.newvillage.net/Journal/Issue1/1briefgreening.html

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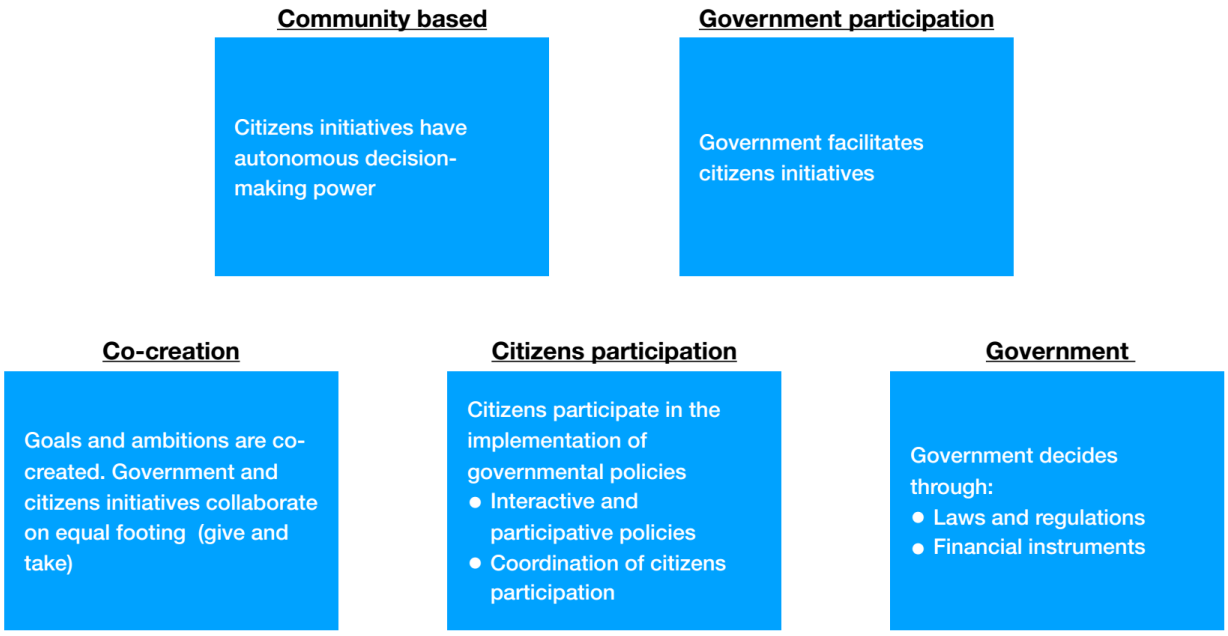

Figure 6 : Multiple Democracy Model developed by Alterra/WUR, 2014.[7]

A term introduced in this model is co-production, mostly used alternatively with co-creation, which can be defined as follows: "*In the context of climate change adaptation, co-production is an approach that assumes that both government and community participants contribute their knowledge and capacities and are involved in the planning and implementation of related service delivery and/or measures*" (Wamsler 2017, 149). A basic assumption for co-production is the shared responsibility by the government and the community about a social democratic change process. In Annex I an overview of these governance models can be found, identifying the organizational dynamics and indicating the stakeholders involved in these models.

3.4 Power manifestations in multi-stakeholder collaboration

The challenges of multi-stakeholder collaboration should not be underestimated. Academic disciplines, experts and social circles in civil society have their own discourses, which are shaped by contextual factors (e.g. cultural, social, organizational and political). For example, an urban landscape planner responsible for the implementation of NBS probably has a different, and perhaps better, technical understanding of NBS than an urban dweller or a local politician. In itself this is not a problem. There are various roles and levels of involvement between different stakeholders, and the various types of knowledge and experiences can be beneficial to the implementation of NBS into a specific context. But it is not just recognizing the added value of diverse contributions in itself, it takes more effort *to recognize these different voices equally* as contributors to the dialogue.

The need to involve a diversity of voices representing various (knowledge) claims, norms and values has been widely debated in the literature on Deliberative Democracy[8]. From a deliberative

[7] From: Salverda, I., Pleijte, M., van Dam, R., *Meervoudige Democratie. Meer ruimte voor burgerinitiatieven in het natuurdomein*, Alterra WageningenUR, 2014.

[8] See also: https://www.britannica.com/topic/deliberative-democracy, accessed 08/02/2018

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point of view, "*the basic principle is that the decision-making process must involve discussion of all the viewpoints, with none of them excluded a priori*" (Pellizoni 2001: 60). Pellizoni (2001) recognizes two power mechanisms that influence communication: internal and external power. External power comprises the "*power exercised over communication"* and the *"power exercised in communication*." (Pellizoni 2001: 6). The *power over communication* concerns the ability to participate, that is, to be included or excluded from the communication (or dialogue): who is perceived as having a 'stake' or as beneficiary and recognized as having a right to participate? The *power in communication* concerns the power mechanisms that can, intentionally or unintentionally, in- or exclude participants from conversations and negotiations because of *how* they speak, silencing the voices of some, whilst making others more present. This effect (silencing/ making more present) is due to differences in reputation, status and level of expertise of participants. As a consequence, some contributions and perspectives are taken less seriously and thereby excluded from the conversation. 'Power over' and 'power in' communication are interdependent.

A second mechanism recognized by Pellizoni is internal power, which "*consists in the ability of an argument to assert itself by virtue of its greater forcefulness. It is the power of the best argument, the force of the most persuasive idea – the one that analyses a problem most thoroughly and indicates the optimal solution in terms of technical excellence and moral rightness… It is, in short, the power to override other arguments merely by the force of what one says.*" (Pellizoni 2001: 6). In other words, certain ideas, solutions or arguments that are being coined are more acceptable than others; they speak for themselves. This could result in biased distinctions between relevant and irrelevant knowledge claims. Facts and scientific claims expressed by scientists or experts might become dominant in the planning and designing of NBS, whilst day-to-day experiences of local residents that concern tacit knowledge, emotional attachments, cultural values and sensory experiences move to the background and become neglected. This is troubling because even though ideas or arguments might seem more convincing, there are situations in which common sense, tacit and experiential knowledge may be more reasonable to consider than scientifically and technologically sound plans. This could, for instance, be the case when the social and economic needs and requirements of local residents conflict with the proposed solution. Furthermore, it is important to reconsider the day-to-day behaviours and experiences of local residents because technically designed solutions might be grounded on (implicit) assumptions with regards to human behaviour. These assumptions might not correspond with the actual behaviour of the local residents (e.g. creating green spaces in neighbourhoods will not necessarily active people to spend more time outdoors). Hence, one should be aware of assuming a pre-existing boundary between relevant and irrelevant knowledge claims (Mourik et al 2017:7). Socially inclusive decision-making procedures should not just involve facts and scientific knowledge claims, but should also be open to anecdotal information, stories, meanings and values, and tacit knowledge. This is in particularly important in the case of NBS where the actual trade-offs between environmental, economic and social benefits take place in and through the developing, planning and implementation process. In addition, Callon (2017) points out: "*The transformation of an issue into well-defined problems – which can be addressed by planning specific actions – is never completely consensual nor total.*'" (Callon 2009: 543). Being aware that these power mechanisms occur in planning processes, especially when a diverse group of stakeholders is involved, is an important step. In addition, acknowledging and addressing these power manifestations in dialogue and communication settings is an important step

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towards an open, transparent collaborative planning process in which a diverse group of participants are equally recognized and have an equal opportunity to participate.

3.5 Multi-stakeholder monitoring, evaluation and learning

At the beginning of the report we started with the research question: "*how can the governance around NBS be organized in such a manner that the participation of stakeholders is guaranteed and attention is awarded to a distribution of diverse benefits and negative effects that are considered fair by the participants to the process?"* The answer to this question does not lie in presenting a pre-fixed implementation guide in combination with off-the-shelf tools for participatory mechanisms. Ideally, an NBS project is the collaborative effort of multiple stakeholders coming from different background and disciplinary settings. However, including stakeholders will shape and perhaps change the *a priori* defined ambitions and objectives. The actual outcome is then the result of a negotiation between the stakeholders involved in the decision-making and of a reflective process in which the initiators go back and forth between the initial, conceptual plan and the practical reality. The scope of the NBS project is then shaped by the trade-offs between environmental, economic and social issues that are being negotiated and translated into practice. There is very few research on stakeholder participation in relation to the governance of NBS (Sekulova and Anguelovski 2017: 13). While the lack of knowledge could make it more difficult to initiate and develop new NBS projects, the experimental setting could, at the same time, create a working environment open for reflection, learning and adaptive responses, or in other words: "a learning culture".

The implementation of NBS is highly dependent on quite a number of foreseen and unforeseen contextual factors. Gaps can occur between the initial ambition and the actual outcome, shaping the scope of the intervention. Setting the ambitions for a project thus depends on contextual factors such as the spatial planning context, institutional factors (e.g. laws and policies) or other factors that lie outside the realm of the geographic and administrative scales of the project. Tools and methods can be used to improve the work-setting.

The challenge for a successful engagement with multiple stakeholders goes beyond the mere selection of tools and concerns with the design of a well-integrated work process capable of dealing with the identified 'network of problems'. A strong focus on pre-set project's objectives and problem-solving inhibits the ability to respond to unforeseen and unfair outcomes that might become apparent on the long-term, local circumstances and future developments. Rather, a flexible and adaptive approach leaves room to respond to what works and fails in a specific local context. In line with the adaptive management approach, it is important to adopt a monitoring and evaluation strategy that allows room for project changes (over time) and is not just problem-oriented. Double loop learning can be used to monitor and evaluate on NBS projects in a reflexive manner (see Figure 8).

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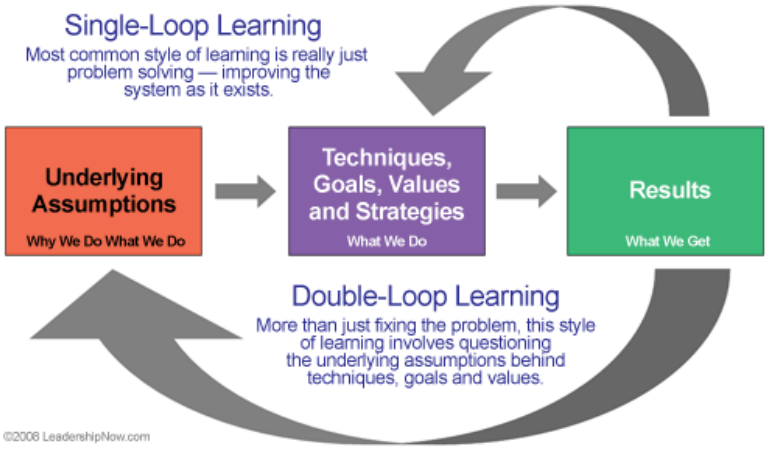

Figure 7 : Model of Double Loop Learning by Argyris, 2015.[9]

Besides the '*what we do*' and '*what we get*' that is central to the traditional approach to project monitoring and evaluation, double loop learning also emphasizes on '*why we do what we do*'. By doing so, double loop learning challenges the initiators to reflect on the projects scope, the underlying norms and values and the changes over time and the (quality and procedural aspects of the) collaborative process.

As explained in section 3.1, there are various steering modes that can be adopted for NBS projects, depending on the size, scope and objective of the project at hand (New Public management (NPM), Public Administration (PA), Network Governance (NG) and Societal Resilience (SR)). In addition, the levels of involvement, roles and responsibilities vary from project-to-project. It cannot be expected that, in all cases, the project coordinator is an expert in the economic, social as well as the environmental domain. In any case, the coordinator will depend on input and experiences from other stakeholders. In other words, an NBS project will be a joined effort and will therefore require joined learning. Involving stakeholders in the monitoring and evaluation process will create a setting for shared learning. Necessarily, the project coordinator should possess the right competencies to establish a learning community.

3.6 To conclude

Local democracies have their own historically evolved, identities and traditions, shaped by cultural, social, economic and political circumstances. Within the European Union or even at the national level, huge differences can be identified. Whereas some countries such as Iceland and the Netherlands are characterized by high levels of citizens participation, others countries have young democracies and/ or have less experience with participatory democracy.

Certain local governments prefer top down approaches towards the design, planning and implementation of NBS and limit the influence stakeholders have on the decision-making process. This can be explained by local planning traditions and institutions, a lack of competences, in

9 Retrieved from: https://www.leadershipnow.com/leadingblog/learning/

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combination with the perceived uncertainties and fear of additional costs. Furthermore, there is no guarantee that all participants will identify or support NBS as preferred solution. Some participants might reject the solution, whilst others might find that other, unrelated, issues should be prioritized. Cases studies have furthermore shown that participation does not necessarily rule out negative (side-)effects such as gentrification pressure (Anguelovski: 2016; Haase et al: 2017; Gulsrud et al: 2018), reduction of costs and high risks. However, ultimately, one should ask whether, how, for whom and under which conditions an NBS is the most desirable solution in a given context. Although a participatory trajectory might require additional time and budget, it is widely recognized that participation pays itself off (as described in section 3.1).

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4 A place-based approach to NBS governance

NBS shifts the focus from abstract, ideal notions of environmental governance towards a place-based articulation that requires community-based governance which highlights the active participation of citizens as stakeholders (Gulsrud: 2018). One of the biggest challenges concerns the translation of the concept of NBS into practice. Placemaking (PM) and Environmental Justice (EJ) are two significant approaches offering valuable insights with regards to the issue of gentrification pressure, integrating social and ecological issues, and enriching environmental governance with local knowledge. These two approaches are illustrated in the present section focusing on their translation into a practical guide (Part II) for co-production and co-creation of NBS (see section 5.4 for the steps for the co-creation and co-production of NBS as a practical guide).

4.1 Placemaking for Community empowerment

NBS offers a new perspective on dealing with climate adaptation and as an open innovation it provides room for local adaptation. Efforts to climate adaptation can be considered to address 'wicked problems' (i.e. urban challenges, as described in section 2.3). For solution finding, the involvement of a diverse group of stakeholders (including citizens), allowing to combine different types of knowledge (scientific, local and tacit knowledge, common sense, facts and values). The most challenging aspect of translating NBS into practices depends on whether it can move "*beyond a mere communication tool*" and "*whether these conceptual and practical challenges can be addressed when developing projects and linking them across scales, contexts and people*" (Nesshöver, 2017: 1225).

A place-based approach to urban environmental governance has received more attention recently, that is: "*moving from a scientific and technocratic "view from nowhere" to an enriched sociocultural view* (Buizer et al., 2016; Frantzeskaki and Kabisch, 2016; Haraway, 1992; Williams, 2014:74)." (Gulsruda et al 2018).

"As both an overarching idea and a hands-on approach for improving a neighborhood, city, or region, ***Placemaking*** *inspires people to collectively reimagine and reinvent public spaces as the heart of every community. Strengthening the connection between people and the places they share, Placemaking refers to a collaborative process by which we can shape our public realm in order to maximize shared value."* source: https://www.pps.org/article/what-is-placemaking

Placemaking

- Placemaking is concerned with the notion that people (citizens, residents, users) feel connected to the places that are part of their everyday lives. By changing these spaces, people will be affected
- Placemaking creates awareness for the physical, social and cultural identities of the people who use these spaces, and involve them in creating a collective vision
- Placemaking helps to re-imagine spaces, recognize their potential and create opportunities to re-define and change these spaces together
- Placemaking offers practical tools and methods for community empowerment

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In practice, Placemaking concerns itself with connecting people and places looking into everyday practices and see how local and reflexive knowledge can be used to improve and strengthen the community that surrounds the place. Communities form and develop around values. Therefore, understanding and finding different practices to shape communities are important for Placemaking and NBS.

Through individual and communal practices, interactions with the material environment and social environment, symbolic and social value is created around an NBS[10]. Symbolic values are shared and individual meanings created about the NBS, giving it a place in culture. Citizens can identify themselves through these meanings but also develop a community sense of belonging. This contributes to the improvement of social cohesion at the local level around the NBS[11].

The community of users of NBS can contain variety of groups within the community with various levels of hierarchies. Some of these groups form the core groups which are highly attached to the place and experience the NBS values, while others are loosely attached. Practices established in the community such as senior members helping others, members welcoming the newcomers, designing or utilizing material objects such as simple artefacts, logos etc or places. all help to reproduce the meanings (Schau et al 2009). Informal conversations, field walks, and simple mapping exercises yielded with some material can also help.

A mechanism for such a community culture development process applied in the UK is explained by Church et al (2014)[12]. Church et al (2014) uses the term “cultural ecosystem” which refers to the ways people interact with, relate to, and draw benefit from ecosystems (in our case an NBS) in cultural terms. This study demonstrates that “mapping” techniques are used for developing stakeholder and community participation by investigating personal and collective values associated with cultural ecosystem and helps resolution of clashes between values through social learning. “Mapping techniques can provide a platform for bringing together qualitative and quantitative data and exploring views and priorities, particularly through the use of creative, arts-based techniques.” These techniques can be used for surveying and engaging communities in a discussion Figure 9 delineates co-creation and a co-production process as a result of the interactions of community members in a cultural ecosystem. In order for this community to sustain itself and sustain the values attached with NBS, certain rituals reproducing the values of the NBS must be experienced. Policy makers and administrators can help to create circumstances for the community members to co-create these meanings periodically.

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[10] Hope Jensen Schau, Albert M. Muñiz, Jr., Eric J. Arnould (*2009*), *How Brand Community Practices Create Value*, Journal of Marketing, Vol. 73 (5), 30-51.

[11] Hidalgo, M. C., & Hernandez, B. (2001), *Place attachment: conceptual and empirical questions*, Journal of Environmental Psychology, 21, 273-281.

Williams, D. R., & Vaske, J. J. (2003), *The measurement of place attachment: Validity and generalizability of a psychometric approach*, Forest Science, 49, 830-840.

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Kyle, G. T., Graefe, A., & Manning, R. (2005), *Testing the dimensionality of place attachment in recreational settings*, Environment and Behavior, 37(2), 153-177.

[12] Church, A., Fish, R., Haines-Young, R., Mourato, S., Tratalos, J., Stapleton, L., Willis, C., Coates, P., Gibbons, S., Leyshon, C., Potschin, M., Ravenscroft, N., Sanchis-Guarner, R., Winter, M., & Kenter, J. (2014) *UK National Ecosystem Assessment Follow-on*, Work Package Report 5: Cultural ecosystem services and indicators. UNEP-WCMC, LWEC, UK.

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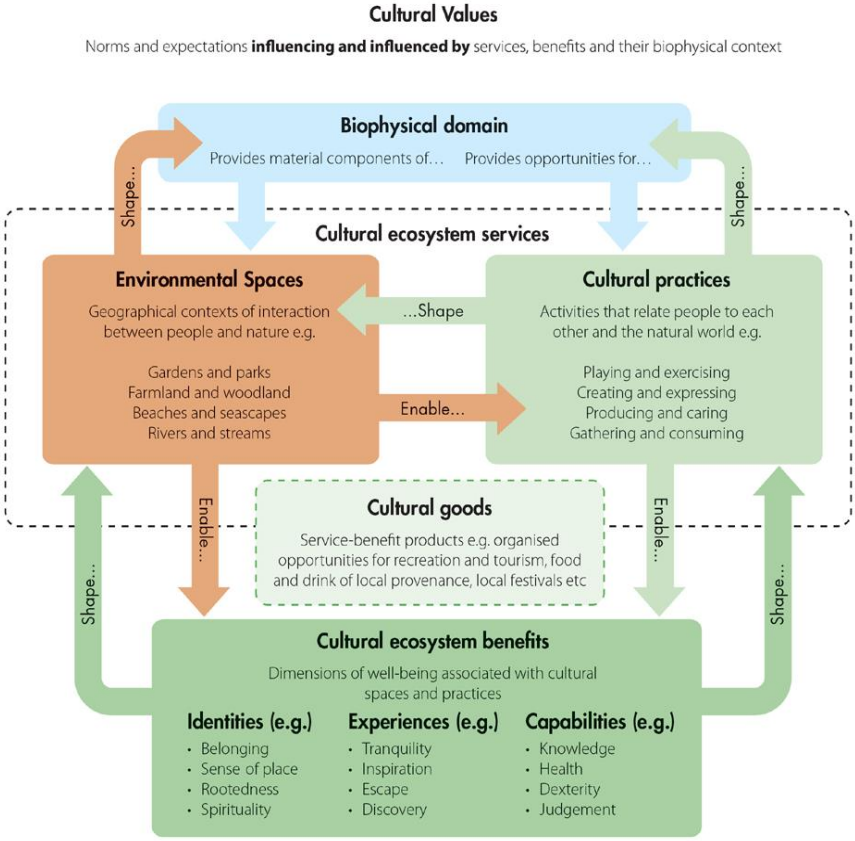

Figure 8 : Cultural Values from: Church et al, 2013[13]

A number of important analytical and empirical distinctions can help guide understanding of cultural ecosystem services. In particular, the framework (Figure 8) makes a distinction between:

- **Cultural values**: the collective norms and expectations that influence how ecosystems accumulate meaning and significance for people.
- **Environmental spaces:** the places, localities, landscapes and seascapes in which people interact with each other and the natural environment.
- **Cultural practices:** understood as the expressive, symbolic, embodied and interpretive interactions between people and the natural environment.
- **Cultural benefits:** the dimensions of human well-being that can be associated with and that derive from these interactions between people and the natural environment.

With regards to ecosystem services and urban environmental planning projects, researchers have shown that the policies either fail to deliver their benefits to local communities, or they show a strong bias towards a particular segment of people (often people with higher socio-economic backgrounds), and in some cases policies even have the explicit intention to gentrify neighbourhoods (Raymond et al. 2016; Haase, 2016; Gulsrud et al. 2018). A Placemaking approach proposes methods to identify ideas, values and needs of the local community that can become key input for plans to improve places and the empowerment of local communities. Additionally, Placemaking offers methods to

[13] Fish, R. and Church A. (2013) *A conceptual framework for cultural Ecosystem Services Working Paper*. (Center for Rural Policy Research: University of Exeter).

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deal with conflicting perspectives and mediate overlapping claims. Or, as Gulsrud et al. puts it: "*the act of placemaking can mediate contested social practices and institutional arrangements creating space for competing and diverse identity claims*." (Gulsrud et al. 2018: 159).

In a move towards community-based approaches to environmental governance, Placemaking as a community empowerment approach fits into the long tradition of Environmental Justice activism. Environmental Justice, like Placemaking, also offers invaluable insights on how these translation practices can be shaped, and how to involve communities in local planning in such a way that the local community benefits from it, preventing actual and potential inequities.

4.2 Environmental Justice

The concept of environmental justice unpacks the political nature of processes such as inequitable distribution of goods and bads (Checker 2011) around NBS. Environmental Justice is a complementary approach to Placemaking. While PM is more concerned with preventing longer-term consequences, having a EJ approach provides an awareness of negative distributive effects beforehand and can help in efforts to prevent such processes – even if only by placing it on the local political agenda and recognising it as a political concern that needs to be further addressed in democratic planning and decision-making processes.

Democratic and participatory decision-making procedures are both not only an element of, but also a condition for, social justice (Schlosberg 2004). Originally, the environmental justice literature concentrated on the notion of *distributive justice,* referring to equity in the distribution of environmental 'goods' and 'bads' (including environmental risks) across time, space and social groups. Over the past decade, several dimensions have been added as constitutive for an increasingly pluralistic concept of environmental justice (Schlosberg 2004;2014). The first addition is *recognition* of the diversity of the participants and their needs, ambitions and experiences. So rather than taking an idealist perspective that assumes recognition of diversity, emphasis is placed on the need to investigate this in real-life context, in order to be able to recognise and understand the diversity of those affected by a particular distribution of goods and bads (Schlossberg 2004). Equal recognition then is a pre-condition for fair distribution (Bell and Davoudi 2016). Second, *participation* in the political process has been added as a constitutive dimension. It is directly connected to *recognition,* for if someone is not recognised, (s)he will not be invited to participate. This pluralist perspective on environmental justice asks for attention to the process as a way of addressing both the conditions that affect social recognition and the resulting (in)equitable distribution (Schlosberg 2004). It focuses attention on context, including spatial and time dimensions, which is highly relevant when we address NBS in neighbourhoods in cities. When an NBS is planned for a particular neighbourhood, such an intervention does not take place in a void. Most cities in the world share one characteristic, namely large inequalities between their inhabitants (Bell and Davoudi 2016). Davoudi and Bell connect theories of environmental justice to discussions on justice and the city, pointing towards the city as a (…) "*social and political space that is actively reproducing (in)justices*" (Davoudi and Bell 2016:349).

To the three dimensions outlined above (distribution, recognition and participation), two more dimensions have been added: *capability* and *responsibility* (Davoudi and Brooks 2014). *Capability* refers to the abilities and capacities of people to function and fulfil their needs. In more concrete

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terms it is about the extent to which e.g. neighbourhood residents have the ability and resources to participate. Taking *responsibility* for other humans, society and non-human nature at individual and collective levels is affected by structural and institutional contexts, physical and mental conditions, social norms and cultural values (Davoudi and Brooks 2014). Davoudi and Brooks (2016) summarise this pluralistic environmental justice approach with five dimensions as follows: "*The focus is not only on who gets what, but also on who counts, who gets heard, what matters and who does what*".

The concept of environmental justice has developed from a theoretical construct towards a concept that has become increasingly grounded in practice. On the basis of these five dimensions, we are able to draw a framework in order to not only evaluate interventions ex-post, but also to help design the process ex ante (from the development of ideas for an NBS intervention (NBS), to the planning, decision-making, implementation and maintenance) (Davoudi and Brooks 2014; Breukers et al 2016).

The tables[14] below provide in further detail how these five dimensions are relevant to consider, and how they can be organised into the process of designing, planning, evaluating and maintaining NBS.

Table 2 : Details on Recognition of diversity

Recognition of diversity	
What is it?	Recognition of diversity refers to the acknowledgement of diverse needs and ambitions, attending in particular to vulnerable groups (e.g. migrants, women, children, elderly, people with disabilities, people suffering from deprivation). Recognition of diversity also entails attention to different types of knowledge (scientific; local; tacit; experiential), for instance residents that know (his)stories about the neighbourhood may have a distinct perspective on the sort of NBS that 'fit' in that neighbourhood. As such, *place attachment,* is part of this dimension, referring to a recognition of the (diverse) meanings (and emotions) related to a specific place where an NBS has been planned for/realised. Culture is also relevant here, as it colours how viable or valuable NBS are.
Why is it important?	A lack of recognition of diverse needs undermines the quality of the participatory process and undermines possibilities for a fair distribution.
How to organise this?	Organising the process in such a manner that diverse types of knowledge, disciplinary perspectives and diverse value orientations which are all relevant to the particular NBS that is going to be realised, are invited. • In the process of realising an NBS, having acknowledged and invited the diversity of perspectives, needs and social groups that affect and/or are affected by this process and its outcome, with particular attention to vulnerable groups (e.g. children, migrants, women, lowly educated groups, etc). • In assessing the impact of an NBS, addressing how it affects (caters for the needs of) these diverse groups of stakeholders and social groups or individuals. • With regard to further maintenance of the NBS: ensuring that diverse stakeholders' needs and interests are taken into account
Intended result:	An improved understanding of the diverse (co-)benefits that NBS can bring for different groups (e.g. recreational space; playgrounds; meeting points; safe routes; source of income; etc.).

[14] These tables show overlap with the tables developed that address Environmental Justice and related indicators for Deliverable 2.1 System of integrated multi-scale and multi thematic performance indicators for the assessment of urban challenges and NBS.

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	A larger diversity and number of people that benefit from the (co-)benefits of NBS.

Table 3 : Details on Participation (procedural justice)

Participation (procedural justice)	
What is it?	Procedural justice is about being able to participate effectively and meaningfully in political choices that govern one's life (and one's direct living and working environment). Attention is needed for: • The clarity and transparency of the procedures (rules of the game) and the extent to which stakeholders (including citizens) find these acceptable • The extent to which it is clear what the aim of the participation is (e.g. informing, consultation, co-production etc --- e.g. ladder of Arnstein (1968). • The extent to which it is clear to people how the input they provide during the participatory process will be used and that they will be provided with feedback on that.
Why is it important?	Procedural justice can enhance acceptance and commitment to an NBS and it can help ensure future good relationships between all stakeholders involved (as a result of perceived fairness in the process); furthermore, it can contribute to outcomes (NBS) that reflect the inclusion of local and situated knowledge in the design of the (NBS) solution (hence contributing to NBS solutions that are better tailored to their context).
How to organise this?	Organise a participatory process that starts with clarifying the rules that govern this participatory process, the extent and the goal of participation, and that clarifies what will be done with the inputs provided by the participants. • In the process of realising an NBS, having clarified (and made the information available and accessible) the procedures or rules of the game to all stakeholders and (potential) participants to process. • In assessing the impact of a realised NBS, assessing to what extent the process towards realising this NBS has been considered as 'fair' by relevant stakeholders • With regard to further maintenance of the NBS: ensuring clarity also with regard to the process of maintenance of the NBS
Intended result:	Creating, through transparency and accountability, legitimacy. Ensuring that the process is likely to be regarded as fair by stakeholders (which also contributes to the acceptance of the outcome – a particular NBS)

Table 4 : Details on Distribution of Goods and Bads

Distribution of Goods and Bads	
What is it?	Distributive justice refers to the distribution of *environmental goods* and - *bads* across time, space and social groups.
Why is it important?	Understanding how the planning, implementation and maintenance of this NBS affects existing inequalities is the first step to start addressing these.
How to organise this?	Start the process by mapping the existing unequal distributions that may be affected by the NBS that is going to be realised, in order to find ways to counter a further increase in inequalities as part of the process • In the process of realising an NBS: having ensured an equitable distribution of co-benefits and costs, and ensuring that existing unequal distributions are not exacerbated (e.g. through gentrification or increased feelings of unsafety for particular groups). Particular attention is to be paid to already existing distributions and to potential consequences of NBS interventions like e.g. gentrification • In assessing the impact of a realised NBS: assessing how this NBS and the (co-) benefits and costs that this NBS generates accrue to diverse (social) groups and stakeholders and assessing the impact in terms of changing existing unequal

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	distributions (e.g. with attention to gentrification or increased feelings of unsafety for particular groups) • With regard to further maintenance of the NBS: ensuring that distributional impacts are taken into account in and continue to be taken into account
Intended result:	Having, in the end, and NBS designed, delivered and monitored in ways that reflect the needs and interests of typically excluded social groups and through a process that redresses (or at least not exacerbates) existing inequalities.

Table 5 : Details on Capabilities

Capabilities	
What is it?	Availability of competences and resources among stakeholders to be able to participate, to voice concerns and needs. Being free of financial concerns (related to indebtedness), but also being able to access and understand the information provided (about the NBS, about the process), having/being able to acquire the skills to participate in discussion about the process or the NBS, distance to the venues where discussions take place (ability to travel), time and timing (e.g. not receiving information very late). Having access to resources (time, money, knowledge, means of transport, skills) and about knowing how to use these resources, which translates into certain abilities: • to voice concerns • to initiate actions • to collaborate • to participate in discussions/negotiations
Why is it important?	Some groups of participants need to be enabled and empowered before they can meaningfully participate. Not attending to that has the result of effectively excluding those groups from the process. In addition, building capacities can also help participants to recognise the value of an NBS and enable them to appreciate the NBS (e.g. through training; education; engagement).
How to organise this?	• In the process of realising an NBS: having ensured that all stakeholders and participants to the process have been enabled to fulfil this role (by providing understandable and accessible information in time; by ensuring that the discussions respect difference; by providing support, training and coaching if needed in order to enable those not used to these processed to participate; by using not only text and words, but also images and visualisations, stories etc; by choosing a venue that is inviting and accessible). • In assessing the impact of a realised NBS: assessing to what extent this NBS has any impact on existing capabilities in its direct environment, i.e. how this NBS supports people and communities to shape their own lives and flourish • With regard to further maintenance of the NBS: ensuring that those interested in maintenance receive sufficient support and coaching to fulfil this role
Intended result:	• Active engagement of formerly excluded (or neglected) social groups in the design, delivery and management of NBS • Capacity building: empowerment: more people are informed about NBS, gain new skills, build self-confidence and trust in others; building of respect between (social-cultural) groups • Institutional capacity building by learning how to do this capacity-building and making it part and parcel of the processes of co-production of NBS

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Table 6 : Details on Responsability

Responsibility	
What is it?	Responsibility refers to the role stakeholders can and want to adopt individually or collectively and this is affected by e.g. institutional context, physical and mental abilities, social norms and cultural values (Davoudi and Brooks 2014). In relation to the realisation and maintenance of NBS, we can ask how people have assumed responsibility and how they (and who) have allocated responsibilities to others. For instance, there can be expectations that people in a neighbourhood adopt responsibility to maintain an NBS, but this may not match with the ideas that those people have themselves (e.g. they may think that that is a task for the municipality).
Why is it important?	When people adopt responsibility for an NBS, this can improve the sense of ownership and stewardship. Addressing responsibility explicitly helps to get align expectations about roles and responsibilities.
How to organise this?	• In the process of realising an NBS: attempting to provide people the choice to take the responsibility that they see fit for themselves (enabling people to take responsibility rather than top-down allocation of responsibilities); ensuring that due attention is paid to the different responsibilities people can and are willing to take; and providing room to discuss and negotiate the distribution of responsibilities • In assessing the impact of an NBS: assessing what responsibilities people have adopted and how. • With regard to further maintenance of the NBS: ensuring that those involved in the further maintenance of the NBS have chosen to be involved (rather than being allocated this responsibility).
Intended result:	An increase in communities' and people's sense of ownership with regard to their direct (green) environment and with regard to the NBS in their surroundings A clarification in expectations about who is responsible for what, so that discussions can be held if there is disagreement.

The tables presented above offer a general strategic support tool or check-list that can be used for processes around NBS, in combination with several other approaches and instruments presented in the step-by-step guide provided in section 5.4.

Placed-based approaches highlights the significance of localness in implementing NBS and sustaining it in the long-run at the practical level. Placemaking and Environmental Justice are the two valuable approaches which helps co-production and co-creation NBS. Next section delivers the tools and strategies for the practical implementation of NBS.

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5 Participatory tools and strategies

In this last section we discuss that community-based governance and the active participation of the citizens as stakeholders are necessary in the translation of the concept of NBS into practice. This section focuses on relevant considerations that need to be made when developing participatory strategies and choosing tools at the level of practice.

5.1 Participation: Choosing the Actors and Levels of Participation Who participates how?

In conducting participatory methods, a practitioner must understand the potential and the limitations of the participatory forms (Fung 2006, 2015)[15]. These potentials and limitations must be addressed in order to reveal the value of the participatory process to the NBS project. Three main points need to be considered:

- *Who will be the participants?* The answer to this question differs from case to case. It can be a group of citizens, representative of the population or some people who are specifically interested and opinionated on the issue or paid representatives. Depending on the implementation process of an NBS, it is important to decide which actors will contribute to the process. Inclusion of relevant actors will ensure legitimacy of the decisions taken about NBS.
- *How do participants communicate and make decisions?* Sometimes participation is limited to a passive listener, other times it can be deliberation and negotiation of citizens with the administration, and sometimes no participant involvement at all.
- *How do the opinions and conclusions of participants connect to the public policy and action?* Several alternative situations are possible: participants' decisions can shape the policies; or public opinions may have some impact to the policies; alternatively, public officials get some feedback from the citizens while preserving their authority; rather, a cogoverning partnership with the policy makers can form, or citizens may occasionally exercise direct authority on public decisions.

The combinations of these three dimensions identify different participation levels. For example, Figure 9 shows a tool used to compare different mechanisms such as public agency and public hearings. In the public agency case, a citizen has very limited authority and power. Trained experts such as urban planners use their technical expertise to make decisions that they are authorized to implement. In contrast, public hearing is the opposite in terms of citizens' level of participation. It is open to anyone who would like to attend to the participatory process. However, the level of authority of citizens is low. Here citizens listen to educate themselves and express their opinions in order to be taken into consideration by the policy makers or administrators. So, in order to attain co-creation and co-production at the local level, placemaking approach suggests active involvement of the citizens as much as possible.

[15] Fung, Archon (2006) *Varieties of Participation in Complex Governance, Public Administration Review*, 66 (December), 66-75. And: Fung, Archon (2015) *Putting the Public Back into Governance: The Challenges of Citizen Participation and Its Future*, Public Administration Review, 75 (4), 513-522

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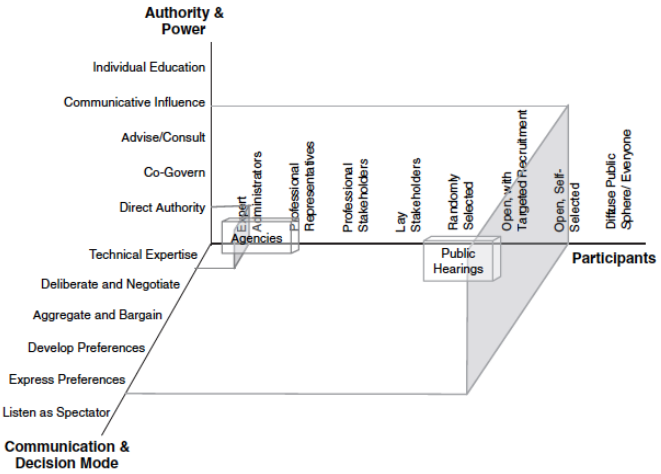

Figure 4 Democracy Cube

Figure 9 : Varieties of Participation in Complex Governance, 2006.16

In implementing NBS, decisions which are taken at these participatory processes are expected to be legitimate, just and effective. These three key democratic values must be attained for a project. Legitimacy is attained if citizens has a reason to support this decision. Justice is attained through political equality which we discussed above in environmental justice approach. Sometimes governing bodies cannot implement the decisions although they attain legitimacy and justice. So, effectiveness is the third important aspect which must be negotiated with the other two.

After the practitioner developed an understanding of the context, at the practical level the above mentioned three criteria: the participants and the type of representation, the level and range of communication, and legitimate, just and effective decisions for policy implementation. After delineating the participants and negotiating on the type of representation, two ways of communication is possible: physical and virtual.

5.1 Physical and virtual communication

How to best involve residents in public decision making and more specifically in urban planning and development issues is a key question with a wide variety of options. As mentioned by Münster et al (2017), participatory planning activities (tools and methods) can be delivered through physical or virtual communication channels, or a combination of both. See Figure 10 for an overview of possibilities, which can be divided into 1-way and 2-way communication.

16 From: Fung, Archon (2006), *Varieties of Participation in Complex Governance*, Public Administration Review, 66. P70

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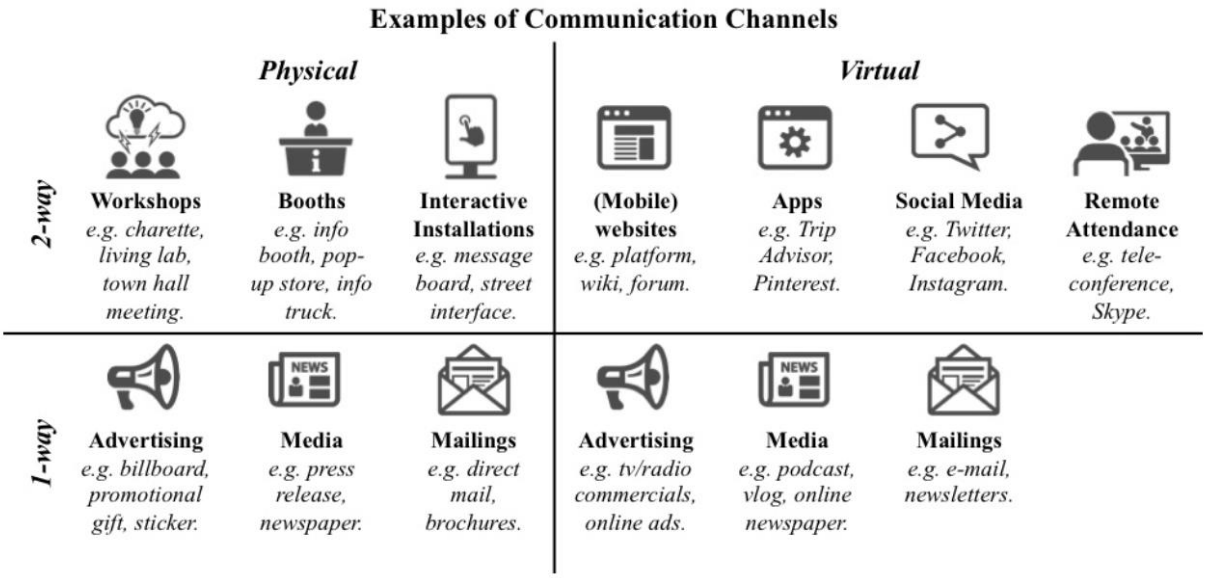

Figure 10 : Overview of communication channels: physical, virtual, 1-way and 2-ways, 2017.[17]

Each communication channel allows for a variety of possible tools. The key is not to differentiate among physical or virtual, but to focus on the aim of the process and the targeted audiences, understanding the complementarity of the different tools. An interesting example of this idea is a reference portal such as "participedia.net" that offer an overview of available methods and tools for participation, not only in the context of urban an environmental planning but also for general democratic participation.

For some relevant authors, such as Bryson and Quick (2013), a key prerequisite to start any participative process is to realistically diagnose and assess context and clarify purpose of the process. This includes the provision of dedicated website, social media and mobile apps for any planning process from small initiatives to large-scale projects. This tendency is particularly relevant in presence of citizen-initiated initiatives as well as citizens' mobilization against specific projects initiated by the government. Therefore, the employment of virtual communication and digital tools to enable participation planning processes is a constantly evolving reality. At the same time, the new digital tools available and the use of social media allow for the involvement of large number of participants in public participation, thus overcoming restrictions of physical presence and time constraints.

Digital participation cannot completely substitute physical interaction or more traditional ways of participation and involvement. Face-to-face participation allows people to interact directly, develop communities and sense of belonging, share opinions, ideas and point of view and build collective new projects and sometimes facilitates consensus. In section 4.1, the cultural ecosystem suggested by Church et al (2013) provides examples of physical communication through interactive practices such as playing exercising, creating, expressing, producing gathering and consuming in various places such as gardens, parks, farmlands, rivers, beaches etc. Both approaches are equally valid and not necessarily in conflict. This does not mean that more traditional, physical communication will

17 From: Munster, et al (2017), *How to involve inhabitants in urban design planning by using digital tools? An overview on a state of the art, key challenges and promising approaches*, Procedia Computer Science, Elsevier, 2017.

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be replaced by virtual tool, but it will complement it, and should therefore be used in all communication processes. In addition, understanding the complementarity of physical and digital tools is key to select adequate tools or develop new ones, and to ensure outreach of wider sections of society. For the practitioner, the participatory tools and strategies that help to attain legitimate, just and effective participation are crucial. A more detailed outline of how to tailor a communication strategy for NBS interventions towards diverse audiences can be found in Annex II as part of the step-by-step guide presented in chapter 6.

5.2 Inventory of participatory tools and strategies

There are several dedicated websites providing examples of general participation strategies, information on participatory tools, and open source software for eDemocracy. Estonia, known as a frontrunner on eDemocracy has a dedicated website that explains the basic principles of the Estonian eDemocracy and strategy for citizens participation. The Council of Europe has a website with tools on Good Governance. Another example is the D-Cent project (EU financed) that provides research, case descriptions and open source tools 'for direct democracy and economic empowerment'. The Urban Collective Design Environment (U-CODE) is a project financed under H2020- ICT 19, aimed at developing new forms of content and user engagement based on emerging technologies to produce a new kind of participatory platform that enables urban designers, architects, and developers to co-design and communicate their projects with the larger public. Or the Citizens Handbook. Lastly, in the Netherlands, the Ministry of the Interior and the International Cooperation Agency of the Association of Netherlands Municipalities have started a project to strengthen local democracy by creating a national platform connecting various stakeholders, organizing events and creating an online data collection on citizen and stakeholder engagements strategies (available in Dutch). There is plenty of information on participatory methods and tools. It is important to note that some of these tools that can be easily implemented in (and tailored to) various local contexts. But their effectiveness and impact will always depend on the institutional framework and contextual factors, e.g. organizational, political, financial or cultural. Often, a translation is needed to adapt the strategy or tools to a particular context.

We identified a number of tools that are particularly interesting for NBS projects. These tools were selected from case studies (pioneering cases from task 1.3 and database with implementation models from task 5.1), participatory experiences and tools used by our partners cities and complimentary desk research. As explained in section 3.2 and 3.3, citizens participation is a very generic concept, it can range from simple information sharing on the one side, to citizen's control, on the other. For each tool identified, we indicated the degree of citizens participation it allows for (in line with Figure 6 in section 3.3). Here we distinguish between the following:

1) **Strengthen (local) communities:** empowering and/or strengthening social cohesion (indirect effect)
2) **Support citizens initiatives:** facilitating or delegating tasks to self-organizing initiatives that create public value and/or offer public services
3) **Co-creation:** opening up governmental control for the collaborative creation of public services together with stakeholders, citizens and (local) communities
4) **Co-production:** utilizing collaborative approaches to knowledge production related to the implementation of NBS

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5) **Government participation:** allowing citizens to contribute to government policies, e.g. consultations, petitions

The tools and participatory strategies that are reviewed will be mentioned in the step-by-step guide where relevant. Annex III and IV offer the reader, respectively, an overview and an inventory of participations tools and strategies that they can access.

In the following chapter a step-by-step guide for the co-creation and co-production of NBS will be presented. This guide adopts a place-based approach considering placemaking and environmental justice as two important complementary approaches. The step-by-step guide highlights attaining the co-creation and co-production mechanisms at the practical level in the planning and implementation of NBS. In order to adopt this guide, the practitioner must develop an awareness on identification of participants, their representations, communication among the participants and attaining legitimate, just and effective decisions.

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6 Step-by-step guide for co-production and co-creation of NBS

This part of the report shifts the focus from a conceptual towards a more practice oriented and user centric approach. The underlying idea is that 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. Previous chapters of the report have made clear that the planning, implementation and maintenance of NBS is challenging and that widespread evidence on successful implementation of NBS is lacking. However, there is a lot of 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) and we use that work as a point of departure for the development of a step-by-step guidance to (improve) the planning and implementation process of NBS.[18] 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.

We work from 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.

[18] 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 (see also: http://mechanisms.energychange.info/home). In addition, the FP7 project ‘Create Acceptance’ and the resulting participation tool (ESTEEM: http://www.esteem-tool.eu/) 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” (http://www.duneworks.nl/wp-content/uploads/2016/04/The-Voicer_duneworks_2016.pdf , which is based on the concept of environmental justice.

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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 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.

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Figure 11: Steps for the co-creation and co-production of NBS

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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 the actors that initiate the NBS 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 might be done by the person or department responsible for the implementation of the NBS. 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	Check internal organisational competences:	The challenge is to actually reserve time and resources and speed up the internal alignment process. The initiator

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	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	• 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?	(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”) In a later phase these ideas can be further developed (adapted) based on external interactions with external stakeholders	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 An initial plan can be shared with internal project organisation through the digital management tool. The free form

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	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		text editor can be used to collaborate on the further develop the initial plan[19]

[19] To be developed in work package 1 and work package 6 (task 6.2). Available at the Nature4Cities platform December 2018.

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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 At the start an *initial* problem definition is needed (which can be adapted later	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. Allow for some flexibility to make adjustments regarding the problem	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)[20]

[20] To be developed in work package 1 and work package 6 (task 6.2) by Citizens' Say. Available from December 2018

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	on if needed) and clarity needs to be there as to *how* the NBS may address the identified problem	definition and potential solutions at a later stage	
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 (physical and virtual) and desk research Quick scan and mapping exercise with the Agent-based Modelling tool and the Colouree Tool[21]
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[22] Use the pre-selection tool to get advice on possible NBS that fit in the local context[23]

[21] To be developed in work package 1 and work package 6 (task 6.2). Available at the Nature4Cities platform December 2018.

[22] The observatory provides examples of pioneering NBS projects. Available at the Nature4Cities platform December 2018.

[23] 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 December 2018.

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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)

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		• 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[24] 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 II) 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

[24] Available at the Nature4Cities platform in 2019

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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 There will be different, sometimes conflicting opinions on the problem definitions and scope of the project which need to be managed Allowing stakeholders to have influence on the problem definition and the proposed solution can ultimately create shared ownership and enhances the legitimacy and support	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 Present the proposed plan and provide participants the opportunity to share their opinions, ideas and (additional or alternative) proposals The scope of their participation must be clear (room shall be left to negotiate the proposal and make changes) Make sure that a wide diversity of perspectives and stakeholders are invited	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 The Citizens' Say tool can be used to launch public consultations, share information and receive feedback[25] Paint surface and the Digital Mapping tool can be used as visual tools to discuss and negotiate plans[26]. 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 Allow for some flexibility regarding the proposed project plan and the initial mandate of participants

[25] To be developed in work package 1 and work package 6 (task 6.2) by Citizens' Say. Available from December 2018

[26] To be developed in work package 1 and work package 6 (task 6.2) by Citizens' Say. Available from December 2018

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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 regard, it can be useful to set up a (digital) project management tool. 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.

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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?	The project organisation needs to discuss this internally as part of the internal (re)alignment and learning processes

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		• How can the NBS be tailored to the needs and interests of the local community? Are additional or alternative solutions needed?	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[27].
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[28]

[27] To be developed in work package 1 and work package 6 (task 6.2) by Citizens' Say. Available from December 2018

[28] To be developed in work package 1 and work package 6 (task 6.2) by Citizens' Say. Available from December 2018

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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

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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[29]

[29] To be developed in work package 1 and work package 6 (task 6.2) by Citizens' Say. Available from December 2018.

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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[30] Use the Citizens' Say tool to exchange ideas and experiences with other (local) practitioners and experts who work on NBS projects[31]

[30] The Implementation Model Database contains examples of implementation models (governmental, financial and business) based on case examples. Available at the Nature4Cities platform December 2018.

[31] To be developed in work package 1 and work package 6 (task 6.2) by Citizens' Say. Available from December 2018

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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.

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			• Use Urban / Environmental / Socio-Economic Impact Assessment Tool from the Nature4Cities platform. • Use the Geocluster4NBS to identify geographical areas where you can replicate a 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	

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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.

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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) Seek opportunities to collaborate with existing initiatives, policy plans and/or projects	Get in touch with existing initiatives, activities and people in the local community and explore common ground
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

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7. Nature based solutions: moving from concepts towards practice

The overall aim of task 5.2 and this report is to map opportunities for citizen and stakeholder engagement in urban planning processes for the implementation of Nature-based Solutions. The particular focus here is to propose participatory strategies that are both considered fair by the affected stakeholders and are still relevant in terms of climate adaptation. The main question was to see *how the governance around NBS be organized in such a manner that the participation of stakeholders (including citizens) is guaranteed and attention is awarded to a distribution of diverse benefits and negative effects that is considered fair and equal by the participants to the process*.

The approach towards addressing our research question has been twofold, entailing a conceptual and a more practice-oriented take. The reason for this lies in the observation that the practical implementation of NBS is lagging behind an increasing body of literature on the (ecological and technical) conceptualisation of NBS. A practical implementation guidance can contribute to decrease this gap by supporting the development and evaluation of NBS, and thus also supporting the development of a definition of NBS that is more grounded in practical experience. Based on a literature review, previous field research in the four municipalities who are partners in the Nature4Cities project (subtask 8.1.1) and additional skype interviews, we have developed an improved conceptual understanding of the governance challenges in relation to NBS and used these insights to develop a practicable guidance for practitioners that attempt to design, plan and implement NBS.

As for the conceptual part, different aspects in the governance of NBS have been considered. This part is based on the scarce literature available on NBS implementation, in combination with an extensive body of (social scientific and grey) literature available on stakeholder and citizen engagement in processes to address complex (urban) sustainability problems. While an NBS project, by definition, is designed in such a way that it both delivers environmental benefits as well as socio-economic co-benefits, in practice, green infrastructural projects are mostly single-focused.

The successful performance of NBS is highly depended on the practical implementation in which NBS become aligned with and shaped by social relations. Hence, the performance of NBS must be understood of a composite entity resulting from the interaction between objects, e.g. humans, the physical environment, technologies, science, institutions, rules and regulations. NBS can only become meaningful in a specific urban context because only then trade-offs between ecological, economic and social dimensions will become apparent and can be addressed. In addition, scientific and empirical evidence is needed to prove the added value of NBS when compared to conventional approaches (e.g. grey or high-tech solutions).

NBS address so-called ‘wicked problems’: problem areas that are highly complex and characterised by uncertainty, characterised by incomplete and/or contradictory knowledge, the involvement of many (interdependent) stakeholders often with diverse needs, expectations and values. In addition,

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wicked problems ask for high investments that risk that conflicts occur about who is to bear what costs. Finally, these problems are wicked as they intersect with other problems that need to be addressed simultaneously.

Considering NBS as addressing wicked problems and considering that our focus here is on how citizens and stakeholders can be engaged in the spatial planning process of NBS, we can point out some of the more practical difficulties in translating the socio-technical concept of NBS into practice. Firstly, it is difficult to arrive at a shared understanding of the problem definitions due to the fact that people have different perceptions, perspectives and opinions. Secondly, facts and values intermingle and contradict. Moreover, there is no clear 'problem-owner', hence, the responsibility to solve the problems should be spread across different domains. A participatory approach is then of added value because bringing in various stakeholders will make it (ideally) easier to create co-ownership and the sharing of responsibilities. However, bringing in these multiple stakeholders with different sets of values, norms and perspectives, backgrounds, expertise and 'stakes' will at the same time create its own challenges. Dialogue and communication aimed at reaching a shared understanding of the problems can be challenged by manifestations of power because, which needs to be addressed, otherwise it will undermine both the legitimacy and the quality of the outcomes. In view of this, participatory evaluation and monitoring is important throughout the planning and implementation process.

Having set out how engagement and participatory governance are needed due to the characteristics of the problems that NBS addresses, chapter 3 goes more in-depth into the value of stakeholder engagement and different governance – and participation models that could be relevant for NBS planning.

In many countries, there are formal rules that require stakeholder participation which often entails some form of consultation based on ready-made plans, e.g. as part of the decision making on spatial development. Participation, early in the process, is usually not formally required nor institutionalised as a normal procedure. However, there are good reasons to recognise and value such timely participatory trajectories, especially in the early planning and implementation of NBS which is characterized as an unstructured problem.

The added value of participation works at three levels. First, participation can result in substantive benefits, when local (situated and tacit) knowledge informs the design and planning of NBS. Secondly, participation can have an instrumental benefit when it results in active stakeholder support or social acceptance of the NBS project. Third, participation can have benefits from a normative perspective, which concern the legitimacy of the planned project due to a process that is considered fair by citizens and stakeholders

When considering the need for more participatory approaches in NBS planning, such considerations also need to take notice of the specific historical and political-cultural characteristics of local democracies that differ in their experience with participatory democracy. Existing formal and informal institutional conditions affect the room for more inclusive governance.

Another thing to consider is that a participatory and inclusive process by no means provides a guarantee for successful implementation of NBS. There is no guarantee that all participants will identify or support NBS as preferred solution. Some participants might reject the solution, whilst others might find that other, unrelated, problems require more urgent attention. Cases studies have

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furthermore shown that participation does not necessarily rule out negative (side-) effects such as gentrification pressure, reduction of costs and high risks. Ultimately, the question is how, for whom and under which conditions an NBS is the most desirable solution in a given context. For this reason, two place-based approach were introduced in chapter 4, Placemaking and Environmental Justice.

Placemaking proposes a method in which the ideas, values and needs of local communities become key input for shaping places and empowerment of local communities. Environmental Justice, like Placemaking, also offers invaluable insights on how these translation practices can be shaped, and how to involve communities in local planning in such a way that the local community benefits from it, preventing actual and potential inequities. Hence, these two approaches lie at the basis of the step-by-step guide for the co-creation and co-production of NBS projects as presented in chapter 6. The guide is practice oriented and based on a user centric design for it aims to offer support to practitioners by proposing participation mechanisms and communication strategies that will inform a socially inclusive approach to the development, planning, implementation and maintenance of NBS interventions. The guide furthermore offers building blocks for a tailored communication strategy (Annex II) and proposes practical hands-on tools that can be used during the planning, implementation and maintenance of NBS projects (Annex III). The tool descriptions can be found in the inventory of tools, strategies and case examples of participatory mechanisms suitable for NBS projects, in Annex IV.

In sum, a participatory strategy for citizen and stakeholder should contribute at different levels of the urban planning process for NBS interventions, because taking into account the ideas, perspectives and (tacit) knowledge of local residents can contribute to a better project design and will improve the outcomes. In addition, tailoring the project to the needs and requirements of the local community which may lead to socially just outcomes, that are supported and socially accepted.

The intention of this report is to offer guidance and support to practitioners responsible for NBS interventions, in an attempt to connect the conceptual, ideal concept of NBS with the institutionalised planning and decision-making structures of the real world, showing how the diversity and messiness of the latter shapes and transforms the socio-technical concept of the former. More empirical work will be needed to provide evidence of successful examples of NBS implementation and to arrive towards a practicable yet integrated and sustainable NBS concept.

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Annex I Overview of Governance Models

Task 1.2 analysed different governance models from different perspectives: how they emerge, involved actors, the degree of government involvement, rules, contextual conditions and tools that can be used. These analyses were structured in tables in the deliverable D1.2 (NBS Implementation Models Typology). In the following sections these tables are adapted to the classification developed in task 5.2.

- **CLUSTER 1: Traditional public administration**
  - Hierarchical governance
  - Closed governance
  - Participatory planning & budgeting
- **CLUSTER 2: New Public Management**
  - Public–private partnership (PPP)
  - Business-led self-governance
- **CLUSTER 3: Private-private partnerships**
  - Non-State Market-driven governance (NSMD)
  - Business–NGO partnerships
  - Sustainable Local Enterprise Networks (SLEN)
- **CLUSTER 4: Societal Resilience**
  - Co-management
  - Civic ecology practices
  - Self-governance/grassroots initiatives
- **CLUSTER 5: Network Governance**
  - Collaborative governance
  - Adaptive governance
  - Adaptive co-management
  - Scale-crossing brokers

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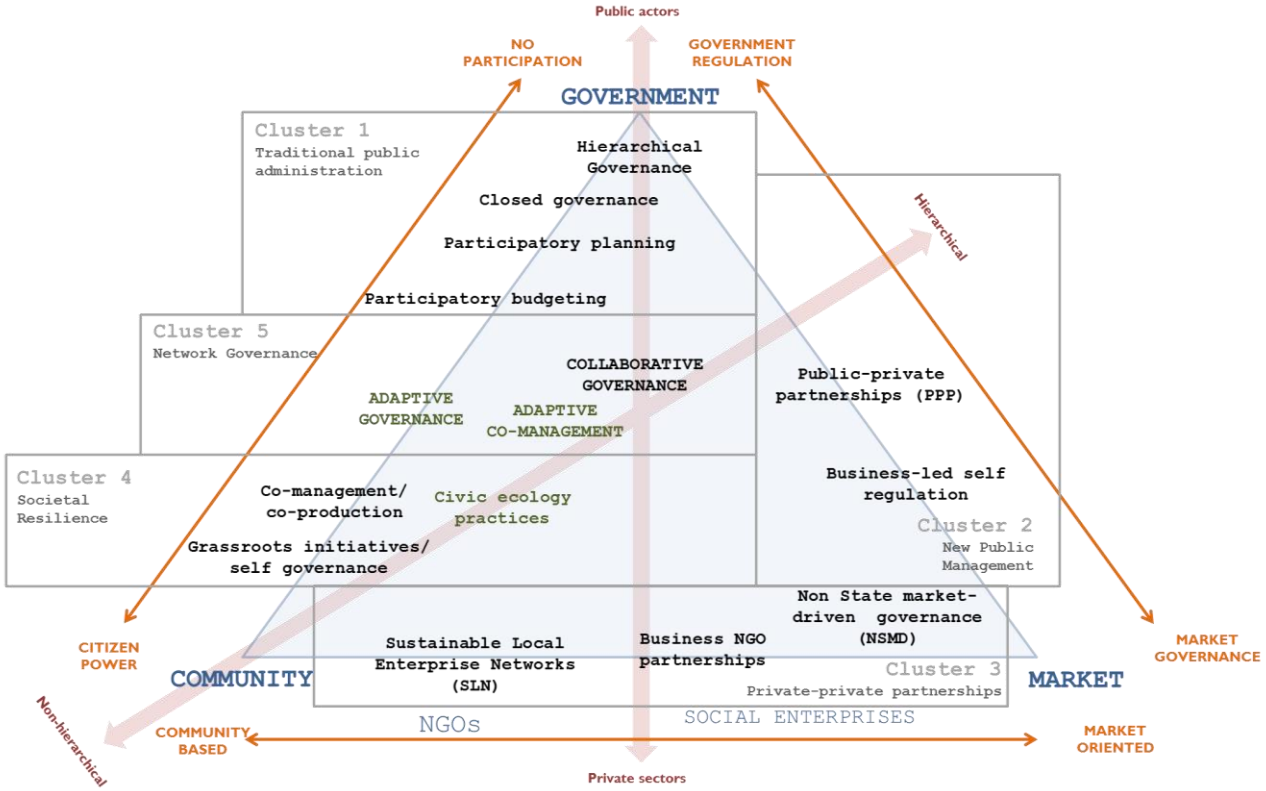

Figure 12: Analysed governance models

In the following sections, the different models are analysed from the stakeholder perspective.

CLUSTER 1: Traditional public administration

HIERARCHICAL GOVERNANCE				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Government. Citizens and community are always at the receiving end.		
GOVERNMENT INVOLVEMENT		Leading role. In an ideal-typical hierarchical governance arrangement, the government is superimposed above non-governmental actors and all the policies are top-down.		
KEY WORDS		Centralized, government led, top-down, hierarchical		

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HOW EMERGES	Default governance regime. State bureaucratic authority appeared to many policy makers and academic observers as the appropriate means to address the externalities associated with the use of environmental resources.
RULES	- Instrumental vision on policy - Administrations hierarchically controlled by electorally accountable governments - The interaction rules give government a leading role, whereas non-governmental actors follow - Coercion by the government is the predominant interaction type
CONTEXTUAL CONDITIONS	Often fails to provide effective solutions for highly contextualized situations
TOOLBOX	Top-down directives or command-and-control policies.
REFERENCES	(Arnouts et al. 2012) (M.C. Lemos & Agrawal 2006)

Table 7: Hierarchical governance

CLOSED GOVERNANCE				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		One strong coalition in which the involved governmental actors are organised and complemented with a few non-governmental selected actors. Access is restricted to those that forms the main coalition.		
GOVERNMENT INVOLVEMENT		Leading role		
KEY WORDS		Hierarchical, closed participation, top-down		
HOW EMERGES		A select group of participants is chosen by the government that also defines the problem		
RULES		- The government has the power because it controls the resources that can be mobilised - The non-governmental actors are able to influence as long as the government allows it - Access to governing processes is restricted to governmental actors and to those that government chooses to involve - The government and non-governmental actors cooperate but in a very restricted way - Government assigns certain tasks to the involved nongovernmental actors and then monitors them. - If the elite actors are provided with a privileged space for participation, they will have no incentive to exert their veto power or obstruct the decision-making process.		

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CONTEXTUAL CONDITIONS	In cases of environmental issues with potentially catastrophic impacts (e.g., global climate change), the predominance of "less than democratic" expert politics could be justified in the name of the urgency and severity of the problem.
TOOLBOX	Top-down directives or command-and-control policies.
REFERENCES	(Arnouts et al. 2012) (Maria Carmen Lemos & Agrawal 2006) (Kooiman 2003)

Table 8: Closed governance

PARTICIPATORY PLANNING & BUDGETING				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Government, citizens, NGOs		
GOVERNMENT INVOLVEMENT		Very high		
KEY WORDS		Hierarchical, open participation		
HOW EMERGES		Usually required by law. EU structural and cohesion funds create a requirement for transparency encouraging government to engage relevant stakeholders in planning		
RULES		- Hierarchically organized participation. - There is a need to formalise the rules of the game and provide well established supporting tools (like websites, guidelines) in order to rebalance the information asymmetry. - The stage when the stake holders are involved depends of the level of collaboration. Too early involvement or too late could be problematic		
CONTEXTUAL CONDITIONS		Some countries have adopted national level policies and instruments to promote different forms of public consultations at the local levels providing guidelines and tools.		
TOOLBOX		- Neighbourhood planning - Participatory budgeting - E-tools for citizen involvement and empowerment - Workshops, professional moderation of debates - Interactive mapping		
REFERENCES		(Krasny et al. 2014) (Buizer et al. 2015) (Buchecker et al. 2003) (Dougill et al. 2006)		

Table 9: Participatory planning & budgeting

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PUBLIC–PRIVATE PARTNERSHIP (PPP)				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Government + private sector		
GOVERNMENT INVOLVEMENT		Can range from high to low involvement.		
KEY WORDS		Marked-oriented, competitive, top-down		
HOW EMERGES		The most successful PP arrangements come from a flexible, opportunistic approach, drawing from experiences in other cases. In the beginning is not always the most evident solution. A widely acknowledged crisis can trigger the arrangement.		
RULES		- Under the joint venture PPP scenario, private sector involvement alters, but by no means eliminates public sector responsibilities. - Continued government involvement in certain services helps ensure the efficiency of economic markets by reducing capital risks, increasing access to information, and reducing monopoly power.		
CONTEXTUAL CONDITIONS		PPP are deeply context based.		
TOOLBOX		Outsourcing. Joint Venture Public-Private Partnerships		
REFERENCES		(Frantzeskaki et al. 2014) (Undp & Pppue 2000) [71]		

Table 10: Public–private partnership (PPP)

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BUSINESS-LED SELF-REGULATION				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Business sector. Efforts may be undertaken to include the broader community, but authority over what to do, and how to do it, rests with the companies.		
GOVERNMENT INVOLVEMENT		Announcers and commissioners		
KEY WORDS		Business-led, decentralized		
HOW EMERGES		When government is not perceived anymore as the only source of legitimacy and market forces are strong enough.		
RULES		- Utilization of market exchanges and incentives to encourage environmental compliance. - Do not attempt to institutionalize governing apparatuses nor create an adaptive arena in which stakeholders and organized interests deliberate to create policy. - Corporate self-regulation initiatives create their own (usually voluntary or discretionary) rules and procedures to guide corporate behavior.		
CONTEXTUAL CONDITIONS		In neo-liberal contexts		
TOOLBOX		Voluntary agreements, third-party certifications, eco-labelling, corporate social responsibility		
REFERENCES		(Bernstein & Cashore 2008; Bernstein & Cashore 2007)		

Table 11: Business-led self-regulation

CLUSTER 3: Private-private partnerships

NON-STATE MARKET-DRIVEN GOVERNANCE (NSMD)				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Environmental and social stakeholders participate with business interests		

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GOVERNMENT INVOLVEMENT	Do not necessarily have to be involved. When governments play important roles, they remain non-authoritative.
KEY WORDS	Market-oriented, decentralized
HOW EMERGES	NGOs develop their own sets of socially and environmentally responsible business practices due to the difficulty to influence the government. The idea is to reward companies providing recognition in the marketplace of their responsible business practices, with a corresponding promise of either market access and/or a price premium.
RULES	- Steering by market parties, regulation on basis of supply and demand. - The viability of NSMD is determined by whether it can achieve legitimacy to operate - Due to the absence of sovereign state authority governing systems are created: institutions designed to create and implement policy where actors and organizations participate in adaptive policy-making - Authority emanates from the market
CONTEXTUAL CONDITIONS	A general dissatisfaction with old policy instruments; neoliberal institutionalism and free trade agreements and a requirement for market innovations. Learning processes must be established that include forums for exchanges of expert information, the building of databases of experiences, and the development of best practices. Second, systems must be designed to create a learning environment in which stakeholders can ‘‘build community’’ that taps into shared understandings of legitimacy among participants.
TOOLBOX	Norm generation and community building
REFERENCES	(Maria Carmen Lemos & Agrawal 2006) (Cashore 2002) (Bernstein & Cashore 2008) (Bernstein & Cashore 2007) (Marx & Cuypers 2010) (Jordan et al. 2003) (Auld et al. 2009)

Table 12: Non-State Market-driven governance (NSMD)

BUSINESS–NGO PARTNERSHIPS				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Markets + NGO		
GOVERNMENT INVOLVEMENT		Medium-low		
KEY WORDS		Hybrid governance, decentralized, non-hierarchical		

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HOW EMERGES	The reactive approach usually is adopted by companies that are new to this kind of partnerships. Then partnerships could evolve by a "'reactive-turned-proactive' strategy, where pressures from NGO activists lead the company to go from resistance and mere compliance to strategic actions
RULES	- Philanthropy or sponsorship/Environmental impact assessment/Short-term problem-solving: threat-induced, compliance or charity-driven responses. - Sustained dyadic partnership/changes in supply chain/Eco-labelling: transactional partnerships where the primary motive for business is improving profitability or market share - Industry sustainability standards: businesses move beyond bottom-line considerations to consider how to balance those considerations with social and ecological concerns - Base-of-the-Pyramid strategies: other key stakeholders are involved in sustained interactions designed to agree on and enact - This partnership is often difficult for businesses so NGOs often serve as liaisons between businesses and communities
CONTEXTUAL CONDITIONS	Differences in organizational cultures between business and NGOs stem largely from their differing missions and accountability systems.
TOOLBOX	- Tools to construct shared visions - Consensus-based decision making - Accountability criteria for assessing progress against joint goals
REFERENCES	(Gray & Stites 2013) (Perez-Aleman & Sandilands 2008)

Table 13: Business–NGO partnerships

SLENs (SUSTAINABLE LOCAL ENTERPRISE NETWORKS)				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		NGOs + civil society members + companies. Businesses with an overt sustainable development mission are frequently an integral part of SLE Networks and they can be small or medium sized or, in some cases, may be multinational enterprises. Co-ops or profitable social enterprises spun off from NGOs can also perform the role of generating the economic value that ensures the financial sustainability of the SLE Network.		
GOVERNMENT INVOLVEMENT		Not mandatory.		
KEY WORDS		Self-organizing, complex adaptive systems		
HOW EMERGES		SLE Networks provide an integrating opportunity for businesses, communities, individuals, governments, development agencies and civil society actors to		

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	acknowledge a shared asset base and construct a virtuous cycle of asset growth and sustainable outcomes.
RULES	- Successful SLE Networks require at least one for-profit business to anchor the network and ensure that it is financially sustainable. - The four capitals are synergistic and are not traded-off. The outcomes are reinvested in the network, creating a self-reinforcing virtuous cycle and are often further enhanced with additional external exogenous investments in human, social, financial and ecological capital. - It is not necessary for all participants in the SLE Network to agree on the primary purpose of the network.
CONTEXTUAL CONDITIONS	Effective SLE Networks depend on mobilizing all four key assets: human capital, social capital, financial capital and ecological (natural) capital. The interconnectedness of these four capital assets requires a 'systems view' of assets, resources, and the flows between them and an understanding of how network phenomena and complex, adaptive systems work in social, ecological and economic terms.
TOOLBOX	Re-conceptualization of roles as: 1) Network Builders 2) Capacity Builders 3) SLE Network Incubators 4) Innovators, Leaders and Disseminators of Good Practice and Lessons Learned
REFERENCES	(Wheeler et al. 2005) (Wheeler et al. 2003)

Table 14: SLENs (Sustainable Local Enterprise Networks)

CLUSTER 4: Societal Resilience

CO-MANAGEMENT				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Local authorities, citizens, NGOs, researchers		
GOVERNMENT INVOLVEMENT		Medium		
KEY WORDS		Non- hierarchical, open participation, decentralized management, social learning		
HOW EMERGES		When it is initiated by non-government actors the government usually supports the implementation. Bottom-up initiatives mainly concern areas of public green spaces where the local inhabitants or other stakeholders (such as researchers or		

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	artist groups) intend to implement their own ideas, often heavily relying on public resources (e.g. sites, infrastructure). When initiated by the government non-governmental stakeholders are invited to share rights for democratic reasons (empowering people, integrating marginalised groups) or in need of more cost efficient ways of management and maintenance.
RULES	Local authorities have to take the responsibility for the urban environment which means that there is a limit for decentralization as far as public goods and services are concerned
CONTEXTUAL CONDITIONS	How co-operative management schemes are formulated and implemented depends on the task at hand (e.g. planning, financing, implementing, managing, maintaining, providing services to the public) and the responsibility shared (e.g. keeping the green space safe and orderly, providing self-finance, keeping it public).
TOOLBOX	
REFERENCES	(Buizer et al. 2015) (Colding & Barthel 2013; Colding et al. 2013) (Graham & Ernstson 2012) (Bendt et al. 2013) (Crowe et al. 2015)

Table 15: Co-management

CIVIC ECOLOGY PRACTICES				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		The involvement of scientists and NGOs helps to ensure larger impacts and longer-term sustainability but it is not mandatory. Sometimes adversarial relations with government and business.		
GOVERNMENT INVOLVEMENT		Not mandatory		
KEY WORDS		Small scale, local		
HOW EMERGES		Often are initiated by lay persons, generally as a community-based response to urban decline or sudden disturbances like hurricanes and war		
RULES		Local authorities have to take the responsibility for the urban environment which means that there is a limit for decentralization as far as public goods and services are concerned		
CONTEXTUAL CONDITIONS		They reflect local environments and cultural traditions.		
TOOLBOX				

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REFERENCES	(Krasny et al. 2014) (Krasny & Tidball 2012)

Table 16: Civic ecology practices

SELF-GOVERNANCE/GRASSROOTS INITIATIVES				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Local authorities, citizens, NGOs, researchers		
GOVERNMENT INVOLVEMENT		Traditionally, the nature of self-government is the absence of government, although some research trends explore practical ways to embed bottom-up initiatives within existing government structures. The government could have a semi-passive role that provides support, being flexible, having an eye for the local context and by stepping back in certain areas at the right time.		
KEY WORDS		Bottom-up, polycentric, self-organisation, self-management		
HOW EMERGES		Decision-making about societal development is no longer solely in the hands of government, but actors such as companies, scientists, the media, new social movements and the community.		
RULES		- Grassroots movement have their own dynamic and they are an inherently unpredictable. - Institutional diversity and multi-scalar		
CONTEXTUAL CONDITIONS		An active society is requirement.		
TOOLBOX				
REFERENCES		(Huitema et al. 2009) (Nunbogu et al. 2017) (Van der Steen et al. 2015)		

Table 17: Self-governance/grassroots initiatives

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COLLABORATIVE GOVERNANCE				
Government	Citizens' participation	Co-creation and co-production	Government participation	Community based model
INVOLVED ACTORS		Involves a large group of governmental and non-governmental actors that engage in competitive and/or stimulating governing activities.		
GOVERNMENT INVOLVEMENT		Medium. Government retains the formal authority for any decisions made (anyway non-government actors are expected to assume serious deliberative roles and often play a key role in implementing any decision taken)		
KEY WORDS		Collaborative, multi-level, polycentric		
HOW EMERGES		Usually the model is initiated by the government side trying to incorporate new resources, efficiency, knowledge and competences to solve complex problems.		
RULES		- The actors are only loosely bound to one another, either organised in several relatively small coalitions that exist beside each other or operating on a more individualistic basis. - The model is formally organized and meets collectively. - Participants are included in decision making process and not merely "consulted". The aim of the decision-making process is to seek the consensus (although not always is achieved). - "Transaction costs" (costs of consultations, reaching agreement, and enforcing such agreements) are high - The focus of the collaboration is public management issues. - For business sector positive outcomes increase when the collaboration is widely publicized within the firm and both top management and employees are engaged.		
CONTEXTUAL CONDITIONS		Theoretically the model can be implemented at local, regional, state, national and even global levels (although at global level the decisions are voluntary)		
TOOLBOX		- Analytical-deliberative approaches - Introduction of ranges of desired or accepted variability in the formulation of NBS goals - Selection of a set of easily measurable criteria for the ecological, social and economic effectiveness of the interventions (especially for NBS that are applied at large scales) - Participatory evaluation in order to respect the legitimacy of different views on quality (Delphi, group-model building and other expert or stakeholder opinion solicitation and deliberation methods) - Collaborative scenario-building exercises (construction of maps and narratives aiming to generate a holistic landscape view among actors to help coordinate collective action) - Urban Transition Labs		

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REFERENCES	(Nesshover et al. 2017) (Ernstson et al. 2010) (Arnouts et al. 2012) (Huitema et al. 2009) (Gray & Stites 2013) (Borrini-Feyerabend, G., Farvar, M.T., Nguinguiri, J.C., Ndangang 2000) (Ansell & Gash 2008) (Nevens et al. 2013)

Table 18: Collaborative governance

ADAPTIVE GOVERNANCE				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Theoretically, an adaptive governance system requires a structure of nested institutions (complex, redundant, and layered) and institutional diversity (a mixture of market, state, and community organizations) at the local, regional, and state levels, connected by formal and informal social networks		
GOVERNMENT INVOLVEMENT		Medium.		
KEY WORDS		Environmental governance, decentralized, polycentric, bottom-up		
HOW EMERGES		Usually triggered by a crisis. May require "windows of opportunity" that appear as significant boost in capital or legitimacy (e.g., a shift in policy, a disruptive political election, a significant increase in funding or autonomy, a biophysical perturbation such as a natural disaster, or the recognition of a previously informal network as a formal governance organization)		
RULES		Largely builds on human relationships and trust.		
CONTEXTUAL CONDITIONS		Normally "developed in democracies and high-income countries involved and in situations where policy tends to leave room for and support innovation and bottom-up initiatives for ecosystem management.		
TOOLBOX		- Assessment of multiple and non-monetary benefits from nature - Qualitative, multi-criteria, iterative and experimental approaches (better than exact calculus and utility maximization) - Practices of natural capital management such as protected areas, environmental subsidies, quotas, or regulations		
REFERENCES		(Dietz et al. 2008) (Chaffin et al. 2014)(Schultz et al. 2015) (Folke et al. 2005)		

Table 19: Adaptive governance

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ADAPTIVE CO-MANAGEMENT				
Government	**Citizens' participation**	**Co-creation and co-production**	**Government participation**	**Community based model**
INVOLVED ACTORS		Diverse set of stakeholders, operating at different levels, often through networks from local users to municipalities, to regional and national organizations, and also to international bodies. The sharing of management power and responsibility may involve multiple institutional linkages among user groups or communities, government agencies, and nongovernmental organizations (NGOs).		
GOVERNMENT INVOLVEMENT		Medium.		
KEY WORDS		Community-based, resource management, polycentric		
HOW EMERGES		Usually triggered by a crisis.		
RULES		- Leadership is essential in shaping change and reorganization by providing innovation in order to achieve the flexibility needed to deal with ecosystem dynamics. Leaders can provide key functions for adaptive governance, such as building trust, making sense, managing conflict, linking actors, initiating partnership among actor groups, compiling and generating knowledge, and mobilizing broad support for change. Key individuals also develop and communicate visions of ecosystem management that frame self-organizing processes - Social capital and trust - Governance system must continuously learn and generate experience about ecosystem dynamics - Iterative learning and action		
CONTEXTUAL CONDITIONS		Tailored to specific places and situations		
TOOLBOX		• Collaboration • Experimentation • Bioregional approach to resource management		
REFERENCES		(Richter et al. 2015) [41] (Plummer et al. 2012) (Folke et al. 2005) (Crowe et al. 2016)(Plummer et al. 2013)		

Table 20: Adaptive co-management

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Annex II 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)

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- **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

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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.

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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 21 What, who, how and when of communication

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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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……
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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?

……
……
……
……

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.

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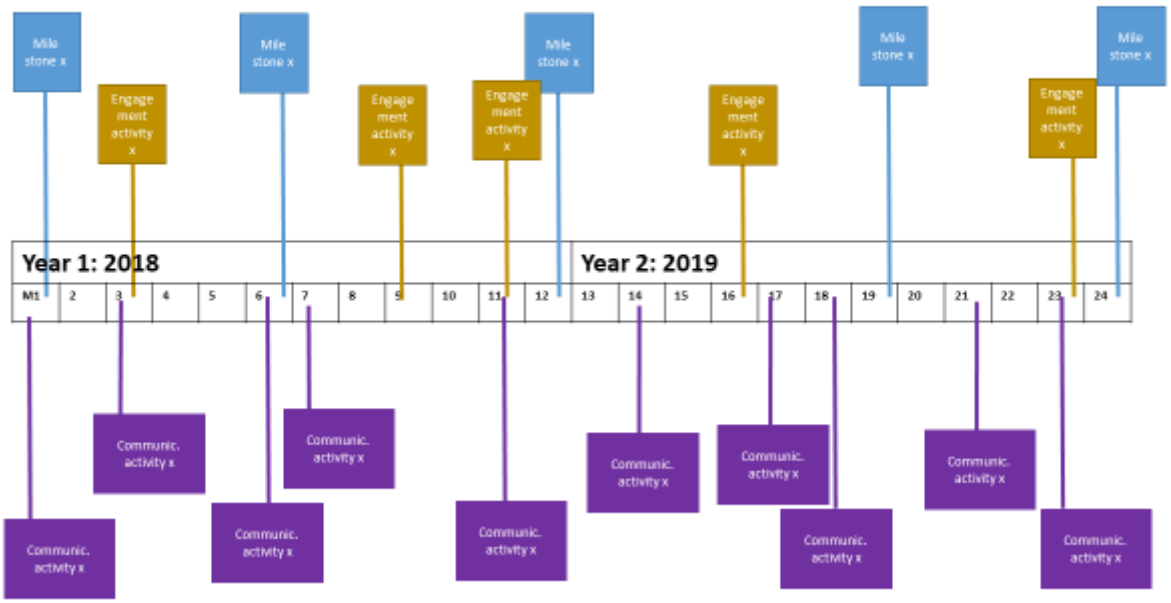

Figure 13 Example of a timeline including project milestones, engagement activities and communication activities

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Annex III Tools and Strategies for NBS

Tools/methods and explanation	Degree of Citizens and Stakeholder Participation	Useful for step
Strategic Environmental Assessment (Sea) for Design	Government participation	Step 2: Contextualise the problems, 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Environmental Mediation	Co-creation	Step 4: plan with local stakeholders
"'I Count, I Participate, I Decide" - Participatory Budget	Strengthen (local) communities	Step 2: Contextualise the problems and 4: plan with local stakeholders
Community Journalism	Strengthen (local) communities	Step 2: Contextualise the problems and 4: plan with local stakeholders
Local Currency	Strengthen (local) communities	Step 4: plan with local stakeholders
Neighbourhood Tender	Strengthen (local) communities, Government participation	Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Place evaluation workshop	Strengthen (local) communities, Co-creation	Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Storytelling	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 2: Contextualise the problems, Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
The Voicer	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 3: Strategize multi stakeholder approach
Strategic Involvement in Policy Making	Strengthen (local) communities, Support citizens initiatives, Government participation	Step 4: plan with local stakeholders

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Urban Transition Labs	Strengthen (local) communities, Co-creation, Co-production	Step 4: plan with local stakeholders, Step 5: Implement nature-based solution
Green Self-Governance	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 4: plan with local stakeholders
Focus Group	Strengthen (local) communities, Co-creation, Co-production	Step 4: plan with local stakeholders, Step 5: Implement nature-based solution
Neighbourhood Forum / Local citizens' Forum / Area Committees	Strengthen (local) communities, Support citizens initiatives, Co-creation	Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Public Hearing	Strengthen (local) communities, Support citizens initiatives, Co-creation	Step 2: Contextualise the problems and 4: plan with local stakeholders
Reconstruction of Gutenberg Street (Szeged)	Government participation	Step 3: Strategize multi stakeholder approach
Environmental planning of Klapka square (Szeged)	Strengthen (local) communities, Co-creation	Step 3: Strategize multi stakeholder approach
Green City project- Liget (Szeged)	Co-creation	Step 3: Strategize multi stakeholder approach
Green City project- Odessza quarter (Szeged)	Government participation, Co-creation	Step 3: Strategize multi stakeholder approach
Green City project- Tarján quarter (Szeged)	Government participation, Co-creation	Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Green City project- Vértó (Szeged)	Government participation, Co-creation	Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
World Café Method	Strengthen (local) communities, Support citizens initiatives, Co-creation	All

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Mind Mapping	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Interactive Back-casting	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation, Co-Production	Step 3: Strategize multi stakeholder approach, Step 4: plan with local stakeholders, Step 5: Implement nature-based solution
Affinity Diagram	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 3: Strategize multi stakeholder approach, Step 4: plan with local stakeholders
Finding Places. Driving change for better cities (Urbact)	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 4: plan with local stakeholders, Step 5: Implement nature-based solution, Step 6: Maintenance
Digital Platforms to enable participatory decision-making.	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 3: Strategize multi stakeholder approach, Step 4: plan with local stakeholders
Mobile Apps	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 2: Contextualise the problems, 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Social Media	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 2: Contextualise the problems, 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Climate Resilience through Rain Harvesting	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 4: plan with local stakeholders, Step 5: Implement nature-based solution

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Sustainable Energy Action Plan (SEAP)	Strengthen (local) communities, Support citizens initiatives	Step 3: Strategize multi stakeholder approach
Bademlidere Project	Strengthen (local) communities, Government participation,	Step 3: Strategize multi stakeholder approach
Public-Private partnership for a new flood-proof district in Bilbao	Government participation, Co-creation	Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Climate change adaptation through urban greening with support of the Ghent crowdfunding platform	Strengthen (local) communities, Support citizens initiatives, Government participation, Co-creation	Step 2: Contextualise the problems, 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Participatory Working Groups	Strengthen (local) communities, Support citizens initiatives	Step 2: Contextualise the problems, 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Thematic conferences	Strengthen (local) communities	Step 4: plan with local stakeholders
World Café Method	Strengthen (local) communities, Support citizens initiatives, Co-creation	Step 2: Contextualise the problems, 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders
Period of public consultation of projects and regulations	Support citizens initiatives, Government participation	Step 3: Strategize multi stakeholder approach, and 4: plan with local stakeholders

Table 22 : tools and participatory strategies

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Annex IV Review of innovative participatory mechanisms and communication strategies

Abbreviations:

(PA), top down decision-making

(NPM), managing public services

(NG), through net*working* with partners such as civil society

(SR), facilitating bottom-up initiatives

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1. Title / name	Strategic Environmental Assessment (Sea) in The Process for Design a New Quarry Plan for The Metropolitan City of Milan
2. Short description	The "Quarry Plan" is a territorial planning tool of the Metropolitan City of Milan. It is used for major transformations in urban and suburban areas through re-naturalization processes. The Quarry Plan defines the location of quarries, the extraction volumes, the environmental recovery criteria and the final fruition of the area. In the preparation of the new quarry plan the **Strategic Environmental Assessment** (SEA) is required by law. SEA applies to plans and programs related to several sectors including energy, transport, spatial planning and waste management. SEA must be carried out for each important planning procedure that is of relevance to the environment. It takes place contextually to the preparation of the plan/ program. SEA is a strategic framework instrument that helps to create a development context towards sustainability, by integrating environment and sustainability issues in decision-making, assessing strategic development options and issuing guidelines to assist implementation. The purpose of SEA is to help understand the development context of the strategy being assessed, to appropriately identify problems and potentials, address key trends, and to assess environmental and sustainable viable options (i.e. that act cautiously or prevent risks and stimulate opportunities) that will achieve strategic objectives. An important part of the SEA for the new quarry plan are the public meetings, where all relevant stakeholders are invited to participate and contribute to the development of the tool with suggestions and feedback. At least two meeting are required: • First, an introductory meeting to present the scoping document and obtain opinions from the stakeholders; • Second, a conclusive meeting to present the proposed project and take note of the opinions of the stakeholders.

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3. Government tier	Local				
4. Governance model	Classic unitary model				
5. Initiating actor	Local government (Metropolitan City of Milan)				
6. Stakeholders	134 Municipalities of the Metropolitan City of Milan, environmental responsible authorities, other public and private organizations, quarry owners, associations, citizens' committees, private citizens The SEA is a participatory process involving different parties: • **the competent authority**: the public administration that evaluates and concludes the procedure with a reasoned opinion on the plan/program (SEA) or a decision granting the environmental compatibility of the project (EIA), or coordinating all other environmental authorizations necessary for its construction and operation • **the developer**: a public or private entity preparing the plan, program or project and that submits it to the competent authority for its assessment in order to acquire the final opinion or decision • **the proceeding authority**: public administration transposing, adopting or approving the plan/program; the proceeding authority coincides with the developer if it also prepares the plan • **the environmental public authorities**: public administrations and public bodies which, by their specific expertise or environmental responsibilities, may be concerned by the environmental impacts resulting from the implementation of plans, programs or projects • **the public**: one or more natural or legal persons as well as their associations, organizations or groups • **the public involved**: the public which is affected or likely to be affected by environmental decision-making procedures, or having an interest in such procedures (non-governmental organizations promoting environmental protection and meeting any requirements set by national law in force, the most representative trade union organizations)" http://www.va.minambiente.it/en-GB/Comunicazione/Cittadino				
7. Level of citizens engagement	Community based ( )	Government participation ( )	Co-creation ( )	Citizens participation (X)	Government ( )
8. Steering mode (governance)	NPM (X)	NG ( )	PA ( )	SR ( )	

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9. Entry point implementation process. Provide short description of how	The entry point of the construction of the new quarry plan and the SEA is “Step1 – pinpoint your problem”. Before the participatory process started research was done to understand the context (the actual situation -opportunity and risks - and an assessment of future needs). SEA should take place in the early stages of the decision-making process, ideally with visioning and establishment of strategic objectives, before strategic options are identified, and long before proposals decided upon.
10. Describe innovative aspects (if applicable)	SEA has been used to help to conciliate different activities when multiple conflicting interests need to be made compatible (interest of the quarries to extract material; citizens that don’t want the environmental impact of the quarries). Providing stakeholders the opportunity to express their ideas and make suggestions during the design stage is a new approach adopted by the public authorities
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Knowledge Barriers: If NBS are foreseen in the project through the SEA process this solution can be better explained, the pros and cons can be presented If NBS are not foreseen interested stakeholders can propose it. Governance barriers: Goal of the SEA is to inform and to involve all relevant stakeholders to can better coordinate the future application of the project and to align long term goals with shirt term actions Economic barriers: The SEA can be used to better explain the economic benefits of the implementation of NBS and so improve the perception of NBS
12. How does this methodology deal with process enablers identified in the implementation of NBS	Knowledge drivers: The first public meeting of the SEA was used to inform the stakeholders about the possibilities to use NBS to recovery the quarries Governance drivers: The SEA involves different stakeholders (public and private) and its goal is to improve future collaboration and build common background. Network of engaged citizens have place to advocate for NBS However, it must be kept in mind that the stakeholders are more likely to be surveyed about their knowledge of places and general opinions, rather than being involved in the generation and evaluation of alternatives. Economic drivers:

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	The quarries are managed by private. Through the indication of the new quarry plan the public authority can recommend the use of NBS for the restoration of the quarries
13. Does it support localized engagement? How?	All stakeholders are invited to participate to the public meetings. This allows that locale engaged citizens organizations are recognized as important and can play a rule
14. Where is it being used? (country, city, municipality…)	The SEA is a compulsory requirement. It is used on different levels. Vast areas: Italy, one or more Regions, but also small areas such as a natural protected area, a hydrographical district, a port area. In this case it is used for the metropolitan territory
15. Why do you propose this example? Why do you think it is suitable for NBS?	As CMM we propose this example because it is the participatory process that CMM has developed to design the new quarry plan. We think, that if indication to use the NBS enter in the quarry plan it is an important tool to improve their use for quarry restorations

1. Title / name	Environmental Mediation
2. Short description	**Environmental mediation** is an **alternative dispute resolution tool (ADR)** that addresses all parties involved in environmental disputes (citizens, businesses, public administrations) both nationally and internationally. Because it usually takes long time to only set out who is right of wrong whether deciding how to repair the damage, ordinary justice does not fulfil the needs of environmental conflicts. It is necessary, instead, to quickly find creative and shared solutions that are effective and durable: situations of this kind, if properly managed, can become growth and development opportunities. **Environmental mediation** helps to manage properly critical situations and to transform them into opportunities through dialogue, exploration of interests, confrontation, and collaboration and, hopefully, it helps to find a solution that meets everyone's interests
3. Government tier	Local
4. Governance model	Classic unitary country
5. Initiating actor	All stakeholders involved

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6. Stakeholders	All parties involved in an environmental conflict (public authorities, private companies, citizens committees, associations, ……)				
7. Level of citizens engagement	Community based ( )	Government participation ( )	Co-creation (x)	Citizens participation ()	Government ( )
8. Steering mode (governance)	NPM ( )	NG (x)	PA ( )	SR ( )	
9. Entry point implementation process. Provide short description of how	Entry point: step 1 “Pin point your problem” Given the delicacy and complexity of environmental issues, which often involve public administrations and public entities, it is necessary to prepare the ground before the other parties are convened for a first meeting. Given the strong territorial nature and the plurality of actors that characterize environmental mediations, it is better to prepare the interlocutors before initiating a mediation procedure so that they will not impose feral oppositions that would make mediation sterile				
10. Describe innovative aspects (if applicable)	Environmental mediation helps to manage critical situations and to transform them into opportunities. Mediation provides a private forum where the key issues can be thoroughly examined and professionally debated by the disputants themselves, their colleagues and experts without having to conform to formal rules of evidence and can be resolved through voluntary and informed agreements specifically tailored to each case and not limited by pre-determined “court remedies”. It is a best practice to negotiate a comprehensive agreement, based on realistic future projections of the time and money required (e.g., costs and efficacies of remedial alternatives)				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Knowledge Barriers: NBS can be proposed as a solution for the conflict Governance barriers: The mediation tool put together all involved stakeholders. Conflict solutions are clear defined as well as the role and tasks of all the subjects Economic barriers: The environmental mediation can be used to better explain the economic benefits of the implementation of NBS and so improve the perception of NBS. In most cases mediation is cheaper				

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12. How does this methodology deal with process enablers identified in the implementation of NBS	Knowledge drivers: Environmental mediation can be used to inform the stakeholders about the opportunities to use NBS Governance drivers: Environmental mediation involves different stakeholders (public and private) and its goal is to find a shared solution. Economic drivers: The quarries are managed by a private company. The public authority can recommend the use of NBS for the restoration of the quarries
13. Does it support localized engagement? How?	Environmental mediation can be used to find solutions that are supported by all stakeholders involved. This allows that locale engaged citizens' organizations are recognized as important and can play an active rule in the implementation of the solution, too
14. Where is it being used? (country, city, municipality…)	The use of the environmental mediation is not very common. It can be used at all government levels
15. Why do you propose this example? Why do you think it is suitable for NBS?	The metropolitan City of Milan is working on guidelines for environmental mediation, together with the order of lawyers. We think the environmental mediation could be an opportunity to present and create support for NBS as a local solution

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1. Title / name	“I Count, I Participate, I Decide” - Participatory Budget
2. Short description	This participatory budgeting project started in 2015 in the city of Milan by the name of ‘I count, I participate, I decide’. It presents elements of e-democracy and of territorial division. With a total budget of € 9 ml for the project, the Municipality dedicated € 1 ml to each one of the 9 autonomous districts of the city, promoting the redistribution of resources. The purpose of the project was to enhance public decision-making, underpinned by a strong and institutionalized citizens’ participation and deliberation. The scope was not only to reach out to the general public, but also to the young population -from 14 to 25 years of age- and to the numerous minorities that a metropolitan city like Milan inevitably has. Four main phases: **PHASE 1 – ‘Listening: public meetings for the gathering of needs’** Public hearings were open to the general public. A broad range of online and offline invitations were spread into the city. During the events the participants tried to address the many issues they had experienced while living in the city. **PHASE 2 – ‘Co-design: workshops to design interventions’** During Phase 2 the participants were randomly selected from an initial total of 610 people who participated to Phase 1. The random selection was realized while still respecting a balance of gender, of geographical provenience and of age. The division of meetings during Phase 1 into 9 districts brought up numerous proposals to be advanced to the second Phase. Therefore, Phase 2 aimed at rearranging such projects and grouping up together as many of them as possible into bigger ones. At the end of Phase 2, the 40 final projects were rearranged with the help of two professional facilitators per district, with the addition of experts to give technical advices over the feasibility of projects and of the actual planned cost. The role of experts was to give advice over the costs and timings with the purpose to reorganize more projects together still trying to safeguard efficiency of results and total budget. **PHASE 3 - Voting: choosing the projects to be carried out**

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	Once reorganized, the totality of the projects was uploaded online and accessible to every citizen. During 17 days, citizens had the chance to vote online, or offline. 23835 citizens voted online and other 1700 voted with the so-called 'assisted vote' system. **PHASE 4 – Outcomes: projects updates and accountability** The outcome to the voting process was published online with a detailed description of all projects and number of votes attributed to each one of them. In addition to that, a document listing the winning projects and their description was published on the official web site. More importantly, the updated progress in realizing the projects are available on the website. Every citizen can access it and see district by district how far projects have developed. https://participedia.net/en/cases/i-count-i-participate-i-decide-participatory-budgeting-milan
3. Government tier	Local
4. Governance model	Classic unitary country
5. Initiating actor	City of Milan
6. Stakeholders	City of Milan, all citizens

7. Level of citizens engagement	Community based (x)	Government participation ( )	Co-creation ( )	Citizens participation ()	Government ( )

8. Steering mode (governance)	NPM (x)	NG ( )	PA ( )	SR (x)

9. Entry point implementation process. Provide short description of how	Entry point: Pinpoint your problem: in the first phase citizens are asked to express their needs and dreams
10. Describe innovative aspects (if applicable)	This PB project was seen by the Milan administration as an 'opportunity to strengthen a method of wide, democratic and active consultation. A lot of techniques are used (public meeting, e-voting, participatory planning…)

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11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Knowledge Barriers: Experts helped citizens to implement their ideas, they can propose NBS Governance barriers: Through participatory budgeting resources are allocated for the financed projects. Responsibilities, different rules are clear defined Economic barriers: Citizens that proposed and choose the financed project feel responsible, this condition should avoid vandalism. Citizens can be active part for maintain the NBS for the future
12. How does this methodology deal with process enablers identified in the implementation of NBS	Knowledge drivers: Successful implemented projects in one district could be a best practice for other future projects. The Participatory Budgeting involves different stakeholders and give so the opportunity to create new and unusual networks that can disseminate and produce innovative ideas. The financed projects and their implementation are published on the internet. Governance drivers: Participatory budgeting needs the active participation of different departments, stakeholders this promote collaboration, coordination and the emerging of new partnerships. The co-production process creates openness, transparency in governance processes. Economic drivers: Collaborative arrangements distribute responsibilities
13. Does it support localized engagement? How?	All citizens are invited to participate to the public meetings. The financed projects are proposed by citizens, this will promote a great engagement and an active participation in the implementation and maintenance phase of the projects
14. Where is it being used? (country, city, municipality…)	At municipality level
15. Why do you propose this example? Why do you think it is suitable for NBS?	We propose this example because it is a great participatory process, where citizens can effective decide where budget is allocated. If citizens see the NBS as an important solution, they can be financed and implemented. This method makes feel citizens responsible for the implemented project and it is supposed that citizens will take care off it and contribute in the maintenance phase

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1. Title / name	Community Journalism				
2. Short description	Engaging local communities to create and distribute their own news and set up local dialogues				
3. Government tier	Any				
4. Governance model	Any				
5. Initiating actor	Any. There are online courses but some professional support is helpful, and some funding as well (small funds). It could be used for agenda-setting but also as a communication tool throughout the whole project. The added value of this method becomes more apparent on the long-term				
6. Stakeholders	Local communities				
7. Level of citizens engagement	Community based (X)	Government participation ( )	Co-creation ( )	Citizens participation ( )	Government ( )
8. Steering mode (governance)	NPM ( )	NG ( )	PA ( )	SR (X)	
9. Entry point implementation process. Provide short description of how	You can initiate the method in step 2. It will take some time to develop but can be used throughout all project stages				
10. Describe innovative aspects (if applicable)	Local and regional newspapers do not attract enough paying customers and this approach brings innovation to address this problem. The ways in which people search, select and share news has changed through social media. It is an easy, accessible way to start creating local news and strengthen local dialogue				
11. How does this methodology deal with process barriers that have been	• Sharing local stories contributes to strengthening the local community and could support local democracy • Could be used as agenda-setting tools (issues connected to the NBS and the neighbourhood), especially on the long-term effects of the NBS become apparent				

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identified in the implementation of NBS	• By keeping the story running, local feel more connected to the project. Hence it could increase support and social acceptance of the NBS
12. How does this methodology deal with process enablers identified in the implementation of NBS	Positive effect for learning community Contributes positively to co-creation and co-production Might increase participation
13. Does it support localized engagement? How?	Offers opportunity to hear the voice, ideas and opinions of the local community
14. Where is it being used? (country, city, municipality…)	Local and hyperlocal
15. Why do you propose this example? Why do you think it is suitable for NBS?	Community Journalism creates the opportunities to make local stories visible. It also helps local citizens to raise their own voice and to decide which issues they want to put on the agenda
16. Additional information (URL, articles, etc…)	More information on Community Journalism: https://www.cardiff.ac.uk/about/our-profile/who-we-are/engagement/community-journalism Free course on how to use social and digital media to create your own news: https://www.futurelearn.com/courses/community-journalism#section-requirements

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1. Title / name	Local Currency				
2. Short description	Local and regional currencies are being used to support local businesses and (informal) trades by circulating “local money” in local communities. It can be used to develop a more sustainable local community, support local initiatives and strengthen social cohesion				
3. Government tier	Local, if involved at all				
4. Governance model	NA				
5. Initiating actor	Locals and or local municipality				
6. Stakeholders	Local community				
7. Level of citizens engagement	Community based (X)	Government participation ( )	Co-creation ( )	Citizens participation ( )	Government ( )
8. Steering mode (governance)	NPM ( )	NG ( )	PA ( )	SR (X)	
9. Entry point implementation process. Provide short description of how	Step 2 Explore roles and responsibilities. Local currency can function as an incentive for citizens and stakeholders to participate and contribute to the planned NBS project. If accepted it will be part of step 4 and 5 as well				
10. Describe innovative aspects (if applicable)	Local currencies are not new. Implementing them with the specific ambition to strengthen en empower local communities can be considered a novel				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	It could prevent gentrification and especially commercialization of the public space by supporting the existing local economy (especially small sized companies) It increases participation by establishing local networks A more active local community / economy could alter the perception of non-economic benefits				

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12. How does this methodology deal with process enablers identified in the implementation of NBS	It has a positive effect on grass-roots initiatives It could contribute to capacity building
13. Does it support localized engagement? How?	Yes. As mentioned in the above
14. Where is it being used? (country, city, municipality…)	Neighborhood, city and region
15. Why do you propose this example? Why do you think it is suitable for NBS?	The costs of NBS are high, both the implementation and maintenance. Moreover, there have been many cutbacks in financial investments in green infrastructure by governments. Governments increasingly rely and depend on volunteering citizens. A model that is unreliable and unsustainable. Local currencies could create better and fairer incentives for local citizens to contribute and additionally strengthen the local economy
16. Additional information (URL, articles, etc…)	http://www.centerforneweconomics.org/content/local-currencies http://www.paulglover.org/hourintro.html http://www.berkshares.org/why-berkshares https://www.theguardian.com/local-government-network/2013/jun/17/bristol-pound-local-currencies On open source blockchain: https://dcentproject.eu/resources/ and tools: http://tools.dcentproject.eu/

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1. Title / name	Neighbourhood Tender				
2. Short description	Neighbourhood Tender (Buurttender in Dutch) is a method to empower neighbourhoods by letting them decide how the neighbourhood budget is spend on local initiatives				
3. Government tier	Local				
4. Governance model	Any type with well-functioning local level				
5. Initiating actor	Municipality together with locals				
6. Stakeholders	Local citizens				
7. Level of citizens engagement	Community based (X)	Government participation (X)	Co-creation ( )	Citizens participation ( )	Government ( )
8. Steering mode (governance)	NPM ( )	NG ( )	PA ( )	SR (X)	
9. Entry point implementation process. Provide short description of how	Step 2 Strategize multi-stakeholder approach and all further steps				
10. Describe innovative aspects (if applicable)	Citizens decide themselves what is best for their neighbourhood				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Might lower the costs but there is risk that the outcome will not be an NBS				

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12. How does this methodology deal with process enablers identified in the implementation of NBS	Creates ownership and sharing of responsibilities Strengthens local network
13. Does it support localized engagement? How?	Yes as described in the above
14. Where is it being used? (country, city, municipality…)	Local, at the neighbourhood level
15. Why do you propose this example? Why do you think it is suitable for NBS?	It is experimental and provides locals the opportunity to come up with plans for their neighbourhood and additional budget to realize it
16. Additional information (URL, articles, etc…)	Information only in Dutch: http://buurttender.nl/hoewerkthet

1. Title / name	Place evaluation workshop
2. Short description	A place evaluation workshop is held to observe a place together with the stakeholders that make use of this place, or potential users. This assessment is particularly helpful to map the good and bad qualities of the site and understand the needs, interests and preferences of the users. Note that it is also a sensory experience, connecting with the space/location/site using common sense, intuition and tacit knowledge

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3. Government tier	None				
4. Governance model	Any government model that allows citizen participation				
5. Initiating actor	Anyone but it is recommended that community leaders take up a leading role				
6. Stakeholders	Anyone connected to the space/location/site (users, potential users, etc)				
7. Level of citizens engagement	Community based (X)	Government participation ( )	Co-creation ( )	Citizens participation ( )	Government ( )
8. Steering mode (governance)	NPM ( )	NG ( )	PA (X)	SR (X)	
9. Entry point implementation process. Provide short description of how	Step 2 Strategize multi-stakeholder approach. This tool could help to involve locals at address the issues connected to the particular place that are relevant for their daily lives. It is particularly helpful to understand how people use a specific place and what type(-s) of changes they prefer				
10. Describe innovative aspects (if applicable)	It works from a user centric design rather than designing a plan from behind a desk. It could generate more local support for future plans and contribute to social cohesion – if the needs, interests and preferences of locals are taken into account				
11. How does this methodology deal with process barriers that have been identified in the	The placemaking approach is, similarly to the Voicer, an overarching approach to implement NBS focused on identifying and shaping the various roles and responsibilities in the planning and implementation process – in particular of local users of a specific place It deals with multiple value creation. Goes beyond the mere alignment of perception, by acknowledging the diversity of needs, interests and preferences Could contribute to the prevention of gentrification (depending on the scope of the NBS) Increases participation of local stakeholders equally Increases the diversity of stakeholders				

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implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	Community learning and strengthening social cohesion is at the heart of the model Focus on co-creation and co-production Using local and tacit knowledge Capacity building through the identification of the capacity of the stakeholders involved (and supporting them if needed) Tool to build a shared vision for a specific place/community
13. Does it support localized engagement? How?	Yes. As described in the above
14. Where is it being used? (country, city, municipality …)	Its best to use it at a local level; street level, neighbourhood level
15. Why do you propose this example? Why do you think it is suitable for NBS?	Because it helps to identify local, tacit knowledge connected to specific places. Hence it contributes to mapping the needs and requirements for these specifics places from a user's perspective. By taking these needs into account, locals will feel more connected to the space and are more open to carry responsibilities. This could be important for the support and maintenance of NBS on the long-term
16. Additional information (URL, articles, etc…)	Example of a place evaluation workshop: http://www.placemakingchicago.com/cmsfiles/placemaking_ConductingAPlaceEvaluation.pdf Sample placemaking forms: http://www.placemakingchicago.com/downloads/

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1. Title / name	Storytelling				
2. Short description	Storytelling is an approach that can be used to establish an open, non-judgmental dialogue between experts and non-experts. The method is in particularly designed for cross-sectoral and interdisciplinary collaborations and allows for reflexive, shared and 'double loop' learning				
3. Government tier	Any				
4. Governance model	Any				
5. Initiating actor	Anyone but skilled moderators are required				
6. Stakeholders	Multi-stakeholder approach				
7. Level of citizens engagement	Community based (X)	Government participation (X)	Co-creation (X)	Citizens participation (X)	Government (X)
8. Steering mode (governance)	NPM ( )	NG ( )	PA (X)	SR (X)	
9. Entry point implementation process. Provide short description of how	The method can be used for shared agenda-setting purposes. Step 2 Strategize multi-stakeholder approach and Step 4 Plan with and for stakeholders				
10. Describe innovative aspects (if applicable)	The method has been specifically designed to deal with complex issue of moving towards a more sustainable energy system				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	The method is designed to prevent the silencing of voices and create equal opportunities for participants to contribute to the dialogue; or in other words, is seeks to create a common language				

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12. How does this methodology deal with process enablers identified in the implementation of NBS	Increases participation and a shared sense of responsibility
13. Does it support localized engagement? How?	Yes, by removing barriers to participate in conversations with people from diverse backgrounds (science, government, citizens and experts)
14. Where is it being used? (country, city, municipality…)	Currently it is used at the local level but the method can be used elsewhere
15. Why do you propose this example? Why do you think it is suitable for NBS?	The method is specifically designed to work on 'wicked problems'. Problems with a high level of complexity
16. Additional information (URL, articles, etc…)	https://shapeenergy.eu/wp-content/uploads/2017/08/SHAPE_ENERGY_Storytelling.pdf

1. Title / name	The Voicer
2. Short description	The Voicer is a practical, easy-to-use and hands-on model based on the Environmental Justice Framework, which is more theoretical. This approach is used as building blocks to sustainably improve a place with stakeholders. Model is based on the Environmental Justice Framework; distribution, recognition, participation, responsibility, capacity and learning
3. Government tier	Neighbourhood, city, region level. Assessment model to be used in specific context (case)

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4. Governance model	Any government model that allows citizen participation				
5. Initiating actor	Any but the EJ framework itself is more focused on governance issues				
6. Stakeholders	Everyone affected. Those who are affected by the environmental impact				
7. Level of citizens engagement	Community based (X)	Government participation (X)	Co-creation (X)	Citizens participation (X)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (X)	PA ( )	SR (X)	
9. Entry point implementation process. Provide short description of how	Step 2: identify relevant stakeholders and explore roles and responsibilities. The focus of this model is to put citizens at the centre stage. To develop a learning community in which citizens are recognized as stakeholders and contributors to change. In particular focusing on disparities in the distribution of environmental impact				
10. Describe innovative aspects (if applicable)	The Voicer is a practical, easy-to-use and hands-on model based on the Environmental Justice Framework, which is more theoretical				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	It is an overarching approach to implement NBS focused on identifying and shaping the various roles and responsibilities in the planning and implementation process. It deals with multiple value creation. Goes beyond the mere alignment of perception, by acknowledging the diversity of needs, interests and preferences Could contribute to the prevention of gentrification (depending on the scope of the NBS) Increases participation, especially citizens (whereas citizens interests are often neglected) Increases the diversity of stakeholders				
12. How does this methodology deal with process enablers identified in the	Community learning is at the heart of the model Focus on co-creation and co-production Using local and tacit knowledge Capacity building through the identification of the capacity of the stakeholders involved (and supporting them if needed) Tool to build a shared vision for a specific place/community				

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implementation of NBS	
13. Does it support localized engagement? How?	Yes. As described above
14. Where is it being used? (country, city, municipality…)	Neighbourhood, local, city, regional, …
15. Why do you propose this example? Why do you think it is suitable for NBS?	Because it is the most relevant tool to work on the issue of social and environmental justice

1. Title / name	Strategic Involvement in Policy Making
2. Short description	The aim of this approach is to delegate some of the decision making to the non-governmental actors including citizens. There are different ways of practicing “Strategic Involvement in Policy Making”: In England, Localism Act 2011 introduced Community Right to Build. The Act allow them to decide planning proposals for the development of the neighbourhood. In Utrecht, the Netherlands, citizens were invited to submit their ideas on one of the NBS plans related with their local area. Also some criteria are presented to the citizens such as fit with the policies, supported by certain number of people etc. Ideas that fit with the criteria included in the plan. In Lisbon, participatory budgeting at the city level used to incorporate non-governmental actors in decision making process. Non-governmental actors first invited to offer proposals for budgeting of

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	green spaces. After local government makes a selection among the proposals, the citizens were asked to vote for these proposals				
3. Government tier	Any				
4. Governance model	Any				
5. Initiating actor	Local Government or Communities				
6. Stakeholders	Multi-stakeholder				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (x)	PA ( )	SR (x)	
9. Entry point implementation process. Provide short description of how	Generally local government sets out a call for proposals. Proposals need to meet predefined criteria. Proposals are selected by vote or by grading (based on the extent the proposal meets the selection criteria)				
10. Describe innovative aspects (if applicable)					
11. How does this methodology deal with process barriers that have been identified in the	Eliminates participation and awareness barriers. Multiple stakeholders can contribute to the decision-making process				

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implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	Increases participation and shared sense of responsibility
13. Does it support localized engagement? How?	Yes, it does. Local authorities, non-governmental actors and citizens contribute to the decision-making process
14. Where is it being used? (country, city, municipality…)	City, municipality, neighbourhood levels
15. Why do you propose this example? Why do you think it is suitable for NBS?	It empowers the citizens in decision making stage
16. Additional information (URL, articles, etc…)	Van der Jagt, A. P.N., et.al. (2016) *Participatory governance of urban green spaces: trends and practices in the EU*, Nordic Journal of Architectural Research, Issue 3, 11-40

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1. Title / name	Urban Transition Labs				
2. Short description	Urban transition labs are used to implement NBS which introduces societal transition(s) towards sustainability such as change in culture, structure and practice. Specific settings where real life trajectories of sustainable development in cities are deployed and at the same time carefully observed; in a co-creative collaboration between actors and also researchers. It brings together innovative regime actors and frontrunners from niche contexts				
3. Government tier	Any				
4. Governance model	Any				
5. Initiating actor	Any actor in operation with researchers				
6. Stakeholders	Any actor connected to the specific setting				
7. Level of citizens engagement	Community based ( )	Government participation ( )	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM (x)	NG (x)	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	Stages of implementation are 1) analysing the system, 2) envisioning, exploring pathways, 3) experimenting and 4) assessing				
10. Describe innovative aspects (if applicable)	It operates at a specific territorial context where they integrate research and innovation processes through a systematic co-creation, exploration, experimentation and evaluation of innovative ideas, scenarios, and related technological artefacts in real life use cases. Such use cases involve user communities (i.e. citizen participation). These communities are observed as subjects, utilized as stakeholders that have a say in the matters, and a source of creation.				

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11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	
13. Does it support localized engagement? How?	Depends on the stage of implementation. Consultation and communication, brainstorming, actor mapping tools, semi-structured interviewing, arena meetings, brainstorming or scenario workshops, artistic conceptualization, participatory back-casting, model-based scenarios, facilitation of networking and such
14. Where is it being used? (country, city, municipality…)	City and lower
15. Why do you propose this example? Why do you think it is suitable for NBS?	It allows co-creation of the process in a small context (called lab) and expanded later to the whole society
16. Additional information (URL, articles, etc…)	Nevens, Frank, Niki Frantzeskaki, Leen Gorrissen and Derk Loorbach (2013) *Urban Transition Labs: co-creating transformative action for sustainable cities*, Journal of Cleaner Production, 50, 111-122

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1. Title / name	Green Self-Governance				
2. Short description	Green self-governance acknowledges that citizens play the major role in creating, protecting or managing NBS. These are diverse practices in order to pursue vast array of physical, economic, or social objectives, conduct physical and political activities, work with multiple stakeholders besides citizens. Although citizens are initiating and active in this mechanism, they always work with authorities as financial donor, regulatory authority or landowner. Mattijssen et al (2012) identified 264 examples in Netherlands				
3. Government tier	Mostly Local				
4. Governance model	Any				
5. Initiating actor	Citizen				
6. Stakeholders	Multiple stakeholders (governmental, NGO, business etc.)				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (x)	PA ( )	SR (x)	
9. Entry point implementation process. Provide short description of how	Citizens start the process				
10. Describe innovative aspects (if applicable)	Citizen/community initiated rather than governmental or non-governmental initiated. Bottom Up				
11. How does this methodology deal with process barriers that have been	This method is not strong in dealing with the conflicts between the objectives of the authorities and the community Eliminates participation and awareness barriers. Multiple stakeholders can contribute to the implementation process				

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identified in the implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	Empowers the citizen participation and sense of responsibility
13. Does it support localized engagement? How?	Yes, it does. Initiative is through citizens
14. Where is it being used? (country, city, municipality…)	Local and very small scale generally
15. Why do you propose this example? Why do you think it is suitable for NBS?	It seems to be a recent trend in Western countries where Democracy is established. Alternative to most of the institutionally initiated processes, green self-governance is voluntary and citizen-initiated
16. Additional information (URL, articles, etc…)	Mattijssen, T., et. al. (2018) *The 'green2 and 2self2 in green self-governance – a study of 264 green space initiatives by citizens*, Journal of Environmental Policy and Planning, 20 (1), 96-113.

1. Title / name	Focus Group
2. Short description	A qualitative research method that examines the opinions and attitudes of a group of citizens. May be used before, during or after the planning, intervention or implementation to check various aspects and to gain in-depth feedback from citizens. Number of participant is within 6 to 10 led by a moderator along a fixed but flexible draft. The topic of the meeting may cover a wide

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	span but has to be focused on one or two related topics. Participants may be of various origin but mixing highly different categories of people is not recommended. Uncovering attitudes and links between reactions through interaction among the participants and spontaneous responses is the major goal. Disadvantage of the method is that results may not be generalised and quantified. The group may turn out to be hard to manage, consisting only of introverted individuals reluctant to open up in presence of others. One or two members of strong opinion may derail the whole meeting				
3. Government tier	Municipality / Neighbourhood Council				
4. Governance model	Participatory governance				
5. Initiating actor	Mayor / Municipality Staff				
6. Stakeholders	Stakeholders may or may not be involved, depending on the scope and topic of the meeting. Different types of agents are not to be mixed.				
7. Level of citizens engagement	Community based (X)	Government participation ( )	Co-creation (X)	Citizens participation (X)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (X)	PA ( )	SR (X)	
9. Entry point implementation process. Provide short description of how	May be used before the action to delineate the attitudes of citizens and unearth their opinion from different aspects. May be used during implementation to check the outcome and handle the side effects. May be used after the action to find out the opinions and further steps needed				
10. Describe innovative aspects (if applicable)	This method offers ways to locate and acquire opinions otherwise unavailable that may impede, or interfere with, the project and offer hints to come to an appropriate agreement				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Planners and experts often move in professional circles where considerations often run on paths different from the citizens affected by the implementation of NBS thus it could offer remedies and aspects that help to find procedures and measures to solve the major obstacles, issues and compensate for effects undesired by some citizens				

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12. How does this methodology deal with process enablers identified in the implementation of NBS	Enablers may be involved in focus group meetings, if identified beforehand, and second it may give an occasion to check acceptance of their opinions among the locals / neighbourhood
13. Does it support localized engagement? How?	Focus group meetings may be used, if well composed and targeted, to spread information and considerations related to NBS in the local community
14. Where is it being used? (country, city, municipality…)	On all levels but on lower levels preferably
15. Why do you propose this example? Why do you think it is suitable for NBS?	Focus group meetings are an efficient and widely used method in social sciences with a well-founded methodology
16. Additional information (URL, articles, etc…)	Stewart. D.W. and Shamdasani, P.N., (2015) *Focus Groups – Theory and Practice.* 3rd ed., Los Angeles: Sage. Barbour, R. and Kitzinger, J. (eds.) (1999) *Developing Focus Group Research – Politics, Theory and Practice.* London: Sage Irvin, R.A. and Stansbury, A. (2004) *Citizen Participation in Decision Making: Is It Worth the Effort?* Public Administration Review, 64(1):55-65, DOI:10.1111/j.1540-6210.2004.00346.x

1. Title / name	Neighbourhood Forum / Local citizens' Forum / Area Committees
2. Short description	Although it seems like a smaller version of 'public hearing', neighbourhood forums attract a narrower public that are closely affected by the proposed developments. Its scope is more practical and targeted. Due to this nature, it appeals more to the locals in need for solid answers for down-to-earth matters. As such, it brings to light issues that are relevant on local level not necessarily known by the planners and municipality officials on one hand, and points that may affect the realisation of the project on the other. Its form is less formal

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	than that of the public hearing with stronger interactions if well organised.				
3. Government tier	Municipality / Neighbourhood Council / Local Community				
4. Governance model	Participatory governance / Feedback mechanism				
5. Initiating actor	Mayor / Local representatives / Key actors				
6. Stakeholders	Stakeholders may be involved, depending on the nature of the issue in question				
7. Level of citizens engagement	Community based (X)	Government participation ( )	Co-creation (X)	Citizens participation (X)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (X)	PA ( )	SR (X)	
9. Entry point implementation process. Provide short description of how	It is to be used before the action to delineate the attitudes of citizens and unearth their opinion from different aspects. May be used after the action to find out the side-effects, the opinions and further steps needed				
10. Describe innovative aspects (if applicable)	This method offers ways to locate and acquire opinions otherwise unavailable that may impede, or interfere with, the project and offer hints to come to an appropriate agreement				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Planners and experts often move in professional circles, and municipality decision-makers in more general levels where considerations differ from the aspects of the locals and knowledge is shallow in terms of the local affairs. It could offer remedies and aspects that help to find procedures and measures to solve the major obstacles, issues and compensate for effects undesired the locals				
12. How does this methodology deal with process enablers	Enablers may be involved in the forums thus enabling the process and disseminating their opinion for a wider public				

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identified in the implementation of NBS	
13. Does it support localized engagement? How?	It very effectively strengthens local ties and engagement
14. Where is it being used? (country, city, municipality…)	Neighbourhood level
15. Why do you propose this example? Why do you think it is suitable for NBS?	Such forums have gained significance especially lately and widely used everywhere. Neighbourhood forums forms a part of Town and Country Planning Act of England (1990) for a distinct use in planning
16. Additional information (URL, articles, etc…)	New Local Government Network (2000) *Local Solutions – A Practical Guide to Neighbourhood Forums and Area Committees* Newman, J. et. al. (2004) *Public Participation and Collaborative Governance*, Journal of Social Policy, 33(2):203-223; DOI: 10.1017/S0047279403007499 Somerville, P. and Haines, N., (2008) *Prospect for Local Co-Governance*, Local Government Studies, 34(1):61-79; DOI: 10.1080/03003930701770488

1. Title / name	Public Hearing
2. Short description	Public hearing is a widely used, often mandatory element of municipal practices. It is a basic form of interaction between the official, municipal actors and the locals. Its usage is many countries prescribed either periodically and / or in different phases of projects and planning. During public hearings, municipal or governmental decision-makers, experts of various professions and sides and locals – as well as individuals and civil society groups – interact in a formal way along a more or less strict agenda. Although widely used, it is often seen as a burden by both the locals and municipalities. To run it successfully, elaborate communication techniques are to be used as well as high level of proficiency and receptivity for the different

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	opinions and stances are prerequisite. Topics should clearly be defined and arguments should be easily comprehensible.				
3. Government tier	Governmental Body / Municipality				
4. Governance model	Participatory governance / Feedback mechanism				
5. Initiating actor	Mayor / Municipality Staff / Locals				
6. Stakeholders	Stakeholders have to be involved as well as experts related to the intervention				
7. Level of citizens engagement	Community based (X)	Government participation ( )	Co-creation (X)	Citizens participation (X)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (X)	PA ( )	SR (X)	
9. Entry point implementation process. Provide short description of how	It is to be used in the early phase of planning where the major issues are clearly set but nothing is decisive yet but the project alternatives are clear. Involving the key local players (individuals, civil organisations) as well as all interested parties is necessary. Comprehensible materials are to be prepared and given out in advance. Representatives of the municipality and / or governmental agencies should be open to new suggestions and problems of the locals				
10. Describe innovative aspects (if applicable)	Not applicable				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	When used more as a forum and a means to collect feedback, it is a useful tool to inform locals and collect their opinions on the proposed NBS thus identifying barriers presented by locals may be attained. Though the topics are too general or language too professional, quite a few people would feel like being involved thus representativeness of the events may be questioned thus a biased picture may be obtained				
12. How does this methodology deal with	It may be better used to deal with barriers than enablers that are to be found in less formal ways				

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process enablers identified in the implementation of NBS	
13. Does it support localized engagement? How?	If well carried out and considerations of the locals are well taken into account, it may fundamentally serve localised engagement
14. Where is it being used? (country, city, municipality…)	On all levels but on lower levels preferably
15. Why do you propose this example? Why do you think it is suitable for NBS?	It is a common, often mandatory technique that may be advantageously used if well targeted and professionally carried out
16. Additional information (URL, articles, etc…)	Cole, R.L., and Caputo, D.A. (1984) *The Public Hearing as an Effective Citizen Participation Mechanism: A Case Study of the General Revenue Sharing Program*, American Political Science Review 78(2):405-416; DOI: 10.2307/1963372 Palerma, J.R. (1999) *Public participation in EIA in Hungary: Analysis through three case studies*, Environmental Impact Assessment Review 19(2):201-220; DOI: 10.1016/S0195-9255(99)00002-5 Adams, B. (2004) *Public Meetings and the Democratic Process*, Public Administration Review 64(1):43-54; DOI: 10.1111/j.1540-6210.2004.00345.x

1. Title / name	Reconstruction of Gutenberg Street (Szeged)
2.Short description	The main goal of the project is to increase the liveability of the city centre of Szeged by reducing traffic and increasing the amount of green areas. Part of the plan was to cut down trees on Gutenberg Street. However, people started to protest against the plan which let to the organization

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	of a participatory process in which several participatory tools were being used (including online questionnaires and the organization of citizen forums)				
3. Government tier	Any				
4. Governance model	Any				
5. Initiating actor	Local government				
6. Stakeholders	Citizens, local government, private sector				
7. Level of citizens engagement	Community based ( )	Government participation (x)	Co-creation (x)	Citizens participation ( )	Government ( )
8. Steering mode (governance)	NPM ( )	NG ( )	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	Step 2 Strategize multi-stakeholder approach. Citizens and stakeholders can be involved in this project because they wanted to cut down trees, which caused indignation among citizens. Citizens and stakeholders can manifest their opinion so new trees have been planted in the place of old ones				
10. Describe innovative aspects (if applicable)					
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	In the development of public areas, a lot of complex requirements have to be met During the project, more and more needs from citizens would rise, which are cost-increasing factors. (Economy → Budget constraints) Limitation of tender conditions Lack of funding knowledge				
12. How does this methodology deal with process	Positive effect for awareness There was an opportunity to apply to an EU tender which contributed to the reconstruction of Gutenberg Street. Strengthens local network				

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enablers identified in the implementation of NBS	
13. Does it support localized engagement? How?	Yes, citizens could manifest their opinion. They became indignant at cutting down trees. They could tell their opinions in the community forums. Tools: questionnaires, online surveys, community forums However, there are layers of citizens who always want more and more
14. Where is it being used? (country, city, municipality…)	City, public domain, local
15. Why do you propose this example? Why do you think it is suitable for NBS?	The needs of the population are already recognized in the planning process, so development can be accomplished according to the needs. I think it is suitable for NBS because of the social acceptance. Citizens defended trees
16. Additional information (URL, articles, etc…)	https://www.youtube.com/watch?v=oZr9-gOVN2o http://szeged.hu/hirek/fejlesztesek/5610-gutenberg-utca-atepites-alatt.html https://www.szegedvaros.hu/projekt-bemutatasa/

1. Title / name	Environmental planning of Klapka square (Szeged)
2. Short description	In the framework of the investments recreational green areas, sport grounds, playgrounds are developed
3. Government tier	Local
4. Governance model	Any
5. Initiating actor	Regional representative (local government), citizens

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6. Stakeholders	Citizens, local government				
7. Level of citizens engagement	Community based (x)	Government participation ( )	Co-creation (x)	Citizens participation ( )	Government ( )
8. Steering mode (governance)	NPM ( )	NG ( )	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	Step 2 Strategize multi-stakeholder approach. In Green City project, citizens and stakeholders can be involved. Citizens and stakeholders can manifest their opinion. If accepted it will be part of step 4 and 5 as well. Now the project is in the process of step 5. The planning has already done and the implementation is taking place				
10. Describe innovative aspects (if applicable)	Learning about healthy lifestyle Opportunity for sports and playing				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	In the development of public areas, a lot of complex requirements have to be met During the project, there are more and more needs from citizens, which are cost-increasing factors. (Economy → Budget constraints) Limitation of tender conditions Lack of funding knowledge				
12. How does this methodology deal with process enablers identified in the implementation of NBS	Positive effect for awareness				
13. Does it support localized engagement? How?	Yes, citizens could manifest their opinion. Tools: questionnaires, surveys, etc. However, there are layers of citizens who always want more and more				

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14. Where is it being used? (country, city, municipality…)	City, public domain
15. Why do you propose this example? Why do you think it is suitable for NBS?	The needs of the population are already recognized in the planning process, so development can be accomplished according to the needs. I think it is suitable for NBS because of the social acceptance
16. Additional information (URL, articles, etc…)	http://szeged.hu/hirek/33651-hamarosan-indulhat-a-klapka-ter-felujitasa.html

1. Title / name	Green City project- Liget (Szeged)
2. Short description	Green space development is being implemented. The recreational functions of Liget will be expanded. The following works were carried: Setting up a trailer-covered runway. Playgrounds, barrier-free play equipment. Bird-friendly green space development. Fitness equipment
3. Government tier	Any (in this case EU)
4. Governance model	Any (City of County Rights)
5. Initiating actor	Local government
6. Stakeholders	Citizens, local government, NGO's groups

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7. Level of citizens engagement	Community based ( )	Government participation (x)	Co-creation (x)	Citizens participation ( )	Government (x)
8. Steering mode (governance)	NPM ( )	NG ( )	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	Step 2 Strategize multi-stakeholder approach. In Green City project, citizens and stakeholders can be involved. Citizens and stakeholders can manifest their opinion. If accepted it will be part of step 4 and 5 as well. Now the project is between the step 4 and 5. The planning has already done and the preparatory work of the implementation is taken place				
10. Describe innovative aspects (if applicable)	Not applicable				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Synchronization of nature conservation aspects and population needs Limitation of tender conditions				
12. How does this methodology deal with process enablers identified in the implementation of NBS	Positive effect for awareness A call for proposal, which gives opportunity to develop green areas				

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13. Does it support localized engagement? How?	Yes, citizens could manifest their opinion. Tools: questionnaires, surveys, etc.
14. Where is it being used? (country, city, municipality …)	City, public domain
15. Why do you propose this example? Why do you think it is suitable for NBS?	The needs of the population are already recognized in the planning process, so development can be accomplished according to the needs. I think it is suitable for NBS because of the social acceptance.
16. Additional information (URL, articles, etc…)	http://szeged.hu/hirek/28315-megujul-tarjan-odessza-varosresz-es-a-liget.html https://www.szegedvaros.hu/zold-varos-liget/ http://www.delmagyar.hu/szeged_hirek/megmarad_a_jellege_de_megujul_az_ujszegedi_liget/2472236/

1. Title / name	Green City project- Odessza quarter (Szeged)
2. Short description	In the framework of the investments green areas, sidewalks, and the necessary public works are renewed. Playgrounds are being developed. The scope is to build: Thematic, age-group playground Fitness tools Nature trail/ educational path

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3. Government tier	Any (in this case EU)				
4. Governance model	Any (City of County Rights)				
5. Initiating actor	Local government				
6. Stakeholders	Citizens, local government, NGO's groups				
7. Level of citizens engagement	Community based ( )	Government participation (x)	Co-creation (x)	Citizens participation ( )	Government (x)
8. Steering mode (governance)	NPM ( )	NG ( )	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	Step 2 Strategize multi-stakeholder approach. In Green City project, citizens and stakeholders can be involved. Citizens and stakeholders can manifest their opinion. If accepted it will be part of step 4 and 5 as well. Now the project is between the step 4 and 5. The planning is already done and the preparatory work of the implementation is taken place				
10. Describe innovative aspects (if applicable)	Not applicable				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	There are many public utilities (companies) in the green areas. Here the biggest barrier is the planting of trees. Designers encounter difficulties in implementing the planting. (Knowledge→Uncertainty→Performance unknown) During the project, there are more and more needs from citizens, which are cost-increasing factors. (Economy→Budget constraints) Limitation of tender conditions				
12. How does this methodology deal with process enablers identified in the	Positive effect for awareness A call for proposal, which gives opportunity to develop green areas				

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implementation of NBS	
13. Does it support localized engagement? How?	Yes, citizens could manifest their opinion. Tools: questionnaires, surveys, etc.
14. Where is it being used? (country, city, municipality…)	City, public domain
15. Why do you propose this example? Why do you think it is suitable for NBS?	The needs of the population are already recognized in the planning process, so development can be accomplished according to the needs leading to social acceptance
16. Additional information (URL, articles, etc…)	http://szeged.hu/hirek/28315-megujul-tarjan-odessza-varosresz-es-a-liget.html https://www.youtube.com/watch?v=Yd-K56KAOXE http://szeged.hu/hirek/30547-jovore-indul-az-odessza-varosresz-felujitasa.html

1. Title / name	Green City project- Tarján quarter (Szeged)
2. Short description	In the framework of the investments green areas, sidewalks, and the necessary public works are renewed. Playgrounds are being developed. Works carried are: Thematic, age-group playground Fitness equipment Community spaces
3. Government tier	Any (in this case EU)
4. Governance model	Any (City of County Rights)

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5. Initiating actor	Local government				
6. Stakeholders	Citizens, local government, NGO's groups				
7. Level of citizens engagement	Community based ( )	Government participation (x)	Co-creation (x)	Citizens participation ( )	Government (x)
8. Steering mode (governance)	NPM ( )	NG ( )	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	Step 2 Strategize multi-stakeholder approach. In Green City project, citizens and stakeholders can be involved. Citizens and stakeholders can manifest their opinion. If accepted it will be part of step 4 and 5 as well. Now the project is between the step 4 and 5. The planning has already done and the preparatory work of the implementation is taken place				
10. Describe innovative aspects (if applicable)	Not applicable				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	There are many public utilities (companies) in the green areas. Here the biggest barrier is the planting of trees. Designers encounter difficulties in implementing the planting. (Knowledge → Uncertainty → Performance unknown) During the project, there are more and more needs from citizens, which are cost-increasing factors. (Economy → Budget constraints) Limitation of tender conditions				
12. How does this methodology deal with process enablers identified in the implementation of NBS	Positive effect for awareness A call for proposal, which gives opportunity to develop green areas				

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13. Does it support localized engagement? How?	Yes, citizens could manifest their opinion. Tools: questionnaires, surveys, etc.
14. Where is it being used? (country, city, municipality…)	City, public domain
15. Why do you propose this example? Why do you think it is suitable for NBS?	The needs of the population are already recognized in the planning process, so development can be accomplished according to the needs leading to social acceptance.
16. Additional information (URL, articles, etc…)	http://szeged.hu/hirek/28315-megujul-tarjan-odessza-varosresz-es-a-liget.html https://szegedma.hu/2016/10/tarjan-es-a-zold-varos-jatszoterekre-kozossegi-reszekre-jut-forras-fotok http://szeged.hu/hirek/31656-masfel-ev-alatt-teljesen-megujulhat-tarjan.html

1. Title / name	Green City project- Vértó (Szeged)
2. Short description	In the framework of the investments green areas, sidewalks, and the necessary public works are renewed. Playgrounds are being developed, Community gardens are expanding. The following are built: Thematic, age-group playground Sport equipment Community garden Running track
3. Government tier	Any (in this case EU)
4. Governance model	Any (City of County Rights)

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5. Initiating actor	Local government				
6. Stakeholders	Citizens, local government, NGO's groups				
7. Level of citizens engagement	Community based ( )	Government participation (x)	Co-creation (x)	Citizens participation ( )	Government (x)
8. Steering mode (governance)	NPM ( )	NG ( )	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	Step 2 Strategize multi-stakeholder approach. In Green City project, citizens and stakeholders can be involved. Citizens and stakeholders can manifest their opinion. If accepted it will be part of step 4 and 5 as well. Now the project is between the step 4 and 5. The planning has already done and the preparatory work of the implementation is taken place				
10. Describe innovative aspects (if applicable)	Not applicable				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	During the project, there are more and more needs from citizens, which are cost-increasing factors. (Economy→Budget constraints) Limitation of tender conditions				
12. How does this methodology deal with process enablers identified in the implementation of NBS	Positive effect for awareness A call for proposal, which gives opportunity to develop green areas.				
13. Does it support localized	Yes, citizens could manifest their opinion. Tools: questionnaires, surveys, etc.				

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engagement? How?	Some citizens manifest their opinion and according to these opinions, the study was modified
14. Where is it being used? (country, city, municipality…)	City, public domain
15. Why do you propose this example? Why do you think it is suitable for NBS?	The needs of the population are already recognized in the planning process, so development can be accomplished according to the needs leading to social acceptance
16. Additional information (URL, articles, etc…)	

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1. Title / name	World Café Method				
2. Short description	It is a simple and flexible format for hosting large group dialogue. It is a structured conversational process for knowledge sharing in which groups of people discuss a topic at several tables, with individuals switching tables periodically and getting introduced to the previous discussion at their new table by a "table host". It is a physical communication channel, citizens, stakeholders and rest of the actors may be put in direct physical relation with the governor.				
3. Government tier	Any				
4. Governance model	Any				
5. Initiating actor	Anyone can have the capability but trained moderators are advisable				
6. Stakeholders	Multi-stakeholder approach is possible in function of the specific objectives, and beneficiaries may also be all type				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government (x)
8. Steering mode (governance)	NPM (x)	NG (x)	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	The method is quite flexible and adjustable in function of the needs. It can be used in all Steps of the implementation process				
10. Describe innovative aspects (if applicable)	It is a traditional participatory strategy.				
11. How does this methodology deal with process barriers	The method is especially valuable to deal with governance barriers. It helps to engage citizens and local stakeholders into the decision making to transform cities				

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that have been identified in the implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	It increases participation in governance processes, therefore it can help also solving economic difficulties due to a shared involvement
13. Does it support localized engagement? How?	Yes, by removing barriers to involve people from diverse backgrounds (science, government, citizens and experts)
14. Where is it being used? (country, city, municipality…)	It is used in all type of environments and for a lot of types of needs that may come from the moderator
15. Why do you propose this example? Why do you think it is suitable for NBS?	It is a well-known traditional participatory mechanism that is suitable for a lot of types of decision-making processes, including NBS implementation
16. Additional information (URL, articles, etc…)	http://www.theworldcafe.com/key-concepts-resources/world-cafe-method/

1. Title / name	Mind Mapping
2. Short description	It is a way of getting information in and out of the participants' brains. It starts with brainstorming and organizing important ideas, actors and concepts that are related to the issue being analyzed. Then the connections among the different components are made to show influence of one onto the other

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3. Government tier	Any				
4. Governance model	Any. Especially interesting for decentralized governance models				
5. Initiating actor	Anyone can have the capability but trained moderators are advisable				
6. Stakeholders	Multi-stakeholder approach is possible in function of the specific objectives, and beneficiaries may also be all type				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM (x)	NG (x)	PA ( )	SR (x)	
9. Entry point implementation process. Provide short description of how	As it serves understanding the connections and influences between stakeholders, citizen and governors; the method can be used for Pinpointing the problems (Step 1), Strategize multi-stakeholder approach (Step 2), Address timing (Step 3) and Plan with local stakeholders (Step 5). It is less usable for Implementation and evaluation				
10. Describe innovative aspects (if applicable)	It is a traditional participatory strategy that may also use new technologies. There are several software tools that enable its development (DropMind, Bubbl-us, iMindMap…)				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	The method is especially valuable to deal with knowledge and governance barriers				
12. How does this methodology deal with process enablers identified in the	It increases knowledge of governance processes; therefore, it can help also solving economic difficulties due to a shared involvement				

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implementation of NBS	
13. Does it support localized engagement? How?	Yes, by understanding the actual governance processes it enables improvement in engagement and functioning
14. Where is it being used? (country, city, municipality…)	It is used all type of environments and for a lot of types of needs from the government tier
15. Why do you propose this example? Why do you think it is suitable for NBS?	It is a well-known traditional participatory mechanism that is suitable for a lot of types of decision-making processes, including NBS implementation. It has been used in sustainable resource management and other cases exploring the context including government policies and priority issues
16. Additional information (URL, articles, etc…)	https://sites.duke.edu/participatorytechniques/participatory-techniques-and-methods/example-2-mind-mapping/

1. Title / name	Interactive Back casting
2. Short description	It is also described as 'backwards−looking−analysis', which is based on working backwards from a particular desirable future. The process starts with choosing one or several future visions as a starting point. Then the participants work backwards to present exploring different interventions that can help to attain the future vision. The following elements are identified: Milestones to be passed, Opportunities to be taken & Obstacles to be overcome 'along the way'
3. Government tier	Any
4. Governance model	Any, more advisable for non-unitary government models.
5. Initiating actor	Any that has been capacitated in the method
6. Stakeholders	Multi-stakeholder approach is possible in function of the specific objectives, and beneficiaries may also be all type

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7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government (x)
8. Steering mode (governance)	NPM (x)	NG (x)	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	Advisable for Plan and Implementation of NBS solutions, and, especially for Evaluation and improvement (Steps 4, 5 and 6)				
10. Describe innovative aspects (if applicable)	It is an innovative tool for governance / business improvement				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	The method is very usable to identify processes' barriers and helping to deal with them, from knowledge barriers, to economic barriers and also governance barriers				
12. How does this methodology deal with process enablers identified in the implementation of NBS	It improves the knowledge of the process to deal with the process enablers				
13. Does it support localized engagement? How?	Yes, by improving the knowledge of the process and definition of tasks to reach the objectives it enables a better engagement of citizens and stakeholders				

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14. Where is it being used? (country, city, municipality…)	Interactive back casting has been used in the environmental projects worldwide (mostly in country level decision-making)
15. Why do you propose this example? Why do you think it is suitable for NBS?	It was developed as an alternative to traditional forecasting and planning methods. It is a very useful tool for exploring sustainable policies, therefore it seems useful for NBS implementation
16. Additional information (URL, articles, etc…)	https://sites.duke.edu/participatorytechniques/participatory-techniques-and-methods/example-3-interactive-backcasting/

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1. Title / name	Affinity Diagram				
2. Short description	It is a participatory tool used to gather and organize a large number of ideas or issues in order to understand the essence of a problem and find possible solutions. It also helps the group to narrow the focus. It allows large numbers of ideas stemming from brainstorming to be sorted into groups, based on their natural relationships, for review and analysis.				
3. Government tier	Any				
4. Governance model	Any, more advisable for non-unitary government models				
5. Initiating actor	Any that has been capacitated in the method				
6. Stakeholders	Multi-stakeholder approach is possible in function of the specific objectives, and beneficiaries may also be all type				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government (x)
8. Steering mode (governance)	NPM (x)	NG (x)	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	The method is quite flexible and adjustable in function of the needs. It can be used in all Steps of the implementation process				
10. Describe innovative aspects (if applicable)	It is a traditional participatory strategy				
11. How does this methodology deal with process barriers that have been identified in the	The method is very usable after a brainstorming session or when analyzing the qualitative data or survey results. It enables identify processes' barriers and helping to deal with them, from knowledge barriers, to economic barriers and also governance barriers				

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implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	It improves the knowledge of the process to deal with the process enablers
13. Does it support localized engagement? How?	Yes, by improving the knowledge of the process and definition of tasks to reach the objectives it enables a better engagement of citizens and stakeholders
14. Where is it being used? (country, city, municipality…)	All levels of decision-making. It is a physical communication channel, citizens, stakeholders and rest of the actors are put in direct physical relation with the governor
15. Why do you propose this example? Why do you think it is suitable for NBS?	It is being used in environment issues therefore it seems applicable to NBS implementation. For example, in the US National Climate Change Adaptation Research Facility (Univ. of Queensland) and in the Decision Theatre in Decision Making and Urban Planning for sustainable urban planning, including organizing the ideas around creation of an adequate public transport services
16. Additional information (URL, articles, etc…)	https://sites.duke.edu/participatorytechniques/participatory-techniques-and-methods/activity-affinity-diagram/

1. Title / name	Finding Places. Driving change for better cities (Urbact)
2. Short description	Firstly, a methodological solution (workshop process) is being carried. After that a technological solution (CityScope tool) is used as a participatory tool. For a workshop concept, designed especially to enable the direct involvement of citizen groups in the decision-making

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	process (used in this case concerning the allocation of refugee accommodations)				
3. Government tier	Any, but especially usable for Local and Regional governments				
4. Governance model	Any				
5. Initiating actor	Preferably regional or local government				
6. Stakeholders	Regional or local government, social enterprises or entrepreneurs, and citizens				
7. Level of citizens engagement	Community based (x)	Government participation ( )	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (x)	PA ( )	SR (x)	
9. Entry point implementation process. Provide short description of how	It particularly helps when planning with local stakeholders and citizes is needed (Step 4). Also, it can be used to evaluate and improve the solutions (Step 6)				
10. Describe innovative aspects (if applicable)	The technological solutions consist of a novel tool for Human Machine Interaction (HMI): an interactive modelling table, based on the CityScope technology developed by the Changing Places Group of the MIT Media Lab, Boston. CityScopes are able to represent various urban data (e.g. cadaster plans, functional zoning, accessibility information) on large projection tables, which can be augmented by simple building blocks (e.g. Lego bricks) as carriers of design information, in this case, construction of refugee shelters. The visually coded blocks are scanned and digitized by cameras from beneath the table. Thus, the effectiveness and impact of the modelled solution on the cityscape can be computed and projected as a real-time response on the tables				
11. How does this methodology deal with process barriers that have been	It deals with governance barriers, particularly focusing on participation and when there is disconnection between short-term decisions and long-term goals				

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identified in the implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	It deals with process enablers by enhancing collaboration and co-creation
13. Does it support localized engagement? How?	Yes, by enabling direct participation in decision-making it eliminates barriers and facilitates people involving from diverse backgrounds (science, government, citizens and experts)
14. Where is it being used? (country, city, municipality…)	It has been used in district level but it can be adapted to all type of environments and different levels
15. Why do you propose this example? Why do you think it is suitable for NBS?	It is and adaptable tool that may be particularly interesting when looking for NBS appliance in district level
16. Additional information (URL, articles, etc…)	http://urbact.eu/finding-places

1. Title / name	Digital Platforms to enable participatory decision-making.
2. Short description	The digital platforms serve as a repository and participatory mechanism that enables residents providing feedback on different scenarios and propose their own to the governor/moderator.

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3. Government tier	Any				
4. Governance model	Any				
5. Initiating actor	Any				
6. Stakeholders	Any				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM (x)	NG (x)	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	It is a virtual communication channel that enables involving inhabitants in all the process of Nature-Based Solutions implementation				
10. Describe innovative aspects (if applicable)	It is a mix of old methods of participation and the use of new technologies for its development				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	It can be used to deal with all the process barriers identified, from knowledge barriers, to government barriers and also economic issues				
12. How does this methodology deal with process enablers identified in the	As it is a quite adaptive methodology/tool, it can be used to enable dealing with the process enablers				

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implementation of NBS	
13. Does it support localized engagement? How?	Yes, by removing barriers to participate with people from diverse backgrounds (science, government, citizens and experts), that can be classified or its participation can be requested in certain phases.
14. Where is it being used? (country, city, municipality…)	All levels of governance
15. Why do you propose this example? Why do you think it is suitable for NBS?	A very adaptive methodology to obtain participation (anonymous or not) that can be easily used for NBS
16. Additional information (URL, articles, etc…)	

1. Title / name	Mobile Apps
2. Short description	As with the Digital Platforms, the Mobile apps serve as a repository and participatory mechanism that enables residents providing feedback on different scenarios and propose their own to the governor/moderator. The mobile apps enable a more direct and real-time participation.
3. Government tier	Any
4. Governance model	Any
5. Initiating actor	Any
6. Stakeholders	Any

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7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM (x)	NG (x)	PA (x)	SR (x)	
9. Entry point implementation process. Provide short description of how	It is a virtual communication channel that enables involving inhabitants in all the process of Nature-Based Solutions implementation.				
10. Describe innovative aspects (if applicable)	The use of mobile apps, as a new technology, can have numerous possible uses for innovation				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	It can be used to deal with all the process barriers identified, from knowledge barriers, to government barriers and also economic issues				
12. How does this methodology deal with process enablers identified in the implementation of NBS	As it is a really adaptive technological tool, it can be used to enable dealing with the process enablers				
13. Does it support localized engagement? How?	Yes, by removing barriers to participate with people from diverse backgrounds (science, government, citizens and experts), that can be classified or its participation can be requested in certain phases				

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14. Where is it being used? (country, city, municipality…)	All levels of governance
15. Why do you propose this example? Why do you think it is suitable for NBS?	A very adaptive methodology to obtain participation (anonymous or not) that can be easily used for NBS
16. Additional information (URL, articles, etc…)	

1. Title / name	Social Media				
2. Short description	Social media are numerous (actually, uncountable) computer-mediated technologies that facilitate the creation and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks. In practice Mobile Apps can also operate as Social Media				
3. Government tier	Any				
4. Governance model	Any				
5. Initiating actor	Any				
6. Stakeholders	Any				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government (x)
8. Steering mode (governance)	NPM (x)	NG (x)	PA (x)	SR (x)	

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9. Entry point implementation process. Provide short description of how	It is (they are) a virtual communication channel that enables involving inhabitants in all the process of Nature-Based Solutions implementation
10. Describe innovative aspects (if applicable)	Social Media can have numerous possible uses (again, probably uncountable)
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	It can be used to deal with all the process barriers identified, from knowledge barriers, to government barriers and also economic issues
12. How does this methodology deal with process enablers identified in the implementation of NBS	As it is (they are) a really adaptive technological tool, it can be used to enable dealing with the process enablers
13. Does it support localized engagement? How?	Yes, by removing barriers to participate with people from diverse backgrounds (science, government, citizens and experts), that can be classified or its participation can be requested in certain phases
14. Where is it being used? (country, city, municipality…)	All levels of governance
15. Why do you propose this example? Why do you think it is	A very adaptive methodology to obtain participation (anonymous or not) that can be easily used for NBS

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suitable for NBS?	

1. Title / name	Climate Resilience through Rain Harvesting				
2. Short description	It as EU funded project between 15.02.2016- 15.02.2017. Çankaya Municipality was co-applicant with AMH (Association for Humanitarian World, Portugal) within the leadership of Landscape Research Society (PAD). The aim of the project is to promote civil society dialogue and cooperation between Turkey and the EU at local level by exchanging knowledge and experience on climate change adaptation. The specific objective of the project is 1. To increase the technical capacity of PAD and Çankaya Municipality for climate change adaptation at local level 2. To improve methods for effective water management by rain water harvesting 3. To disseminate the sustainable model for climate resilience to other municipalities and related institution				
3. Government tier	EU				
4. Governance model	Classic unitary country				
5. Initiating actor	EU bodies, local government and NGO's				
6. Stakeholders	10 Farmers from rural areas of Çankaya 12 Technical staff and expert from PAD and Çankaya Municipality 10 Steering committee members (From the management level of applicants) 150 Conference participants from Local Authorities, NGO's in Central Anatolian Region and Universities Inhabitants of Çankaya and Ankara Local Authorities and NGO's working on climate change				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (x)	PA ( )	SR (x)	

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9. Entry point implementation process. Provide short description of how	**1. A sustainable partnership and network for climate change adaptation of related organizations in Turkey and EU has been established.** 1.1 Building the Project team 1.2 Steering Committee meetings 1.3 Organizing a visit of AMH Team to Ankara 1.4 Launching of the Project 1.5 Establishment of a data base network of EU and Turkish organizations working in this field. **2. A study visit and training of trainer's program has been developed and implemented.** 2.1 Preparing training needs analysis 2.2 Definition of the participants 2.3 Development of a training program and a model training program 2.4 Study visit of the Steering committee to AMH 2.5 Training of the trainers in AMH. 2.6 ToT in Ankara. **3. The capacity to implement rain harvesting in Çankaya has been increased.** 3.1 Seminar by AMH team to target group 3.2 Finalizing the Model Training program 3.3 Implementation of the Model Training Program by the ToT team. **4. A practical guidebook on adaptation to climate change has been prepared.** 4.1 Collection of data and situation analyses in water management 4.2 Preparation and translation of fact sheets and infographics 4.3 Preparation of the guide book. **5. Awareness on climate change has been raised.** 5.1 Developing a communication strategy 5.2 Organizing awareness raising campaign for climate change: RAIN DAY.
10. Describe innovative aspects (if applicable)	The project establishes a strong cooperation between the civil society organization PAD and the local authority, Çankaya Municipality and AMH, which would demonstrate a model for other NGO's and local authorities as an efficient way of local governance and participation, creating a synergy not only on climate change adaptation but also for rain harvesting manual for local development. It aims at introducing an innovative model for water retention landscape- rain harvesting and at disseminating other best practices from the EU to other local authorities through the involvement of the Union of Municipalities of Turkey (UMT).

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11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Knowledge barriers Uncertainty - Performance unknown Technical inadequacy- Lack of ready-to-apply scientific results, concepts and technologies Governance barriers Disconnection between short-term actions and long term goals- Short-term action and decision-making cycles Lack of coordination between city departments Bureaucracy and unsupportive legal frameworks Role ambiguity Economic barriers Short term vision NBS not a priority Lack of funding knowledge
12. How does this methodology deal with process enablers identified in the implementation of NBS	<u>Knowledge drivers</u> Lesson learnt through implemented projects: During project study visit best and wrong implementations had been visited at the same time. It gives opportunities to fix the wrong implementation while adapting the model to Çankaya. Research on benefit: 25 persons have been trained about water retention. 10 farmers, 3 managers, 12 experts from municipality and NGO's. Research on cost effectiveness: EU funded project is based to cost effectiveness rules. Networks: Two NGO's (PAD and AMH) partner and one municipal partner established a cooperation network within the signed protocol. Knowledge platforms: Published materials can be access on the municipal website. Awareness: NBS ambassadors: The Embassy of the Portugal have been informed about the project with the formal letters and interviews. Climate Change and Ecological memory: All the activities held in the context of climate change adaptations methods. <u>Governance drivers</u> The cooperation process and capacity building bring openness, transparency and newness. Moreover, focus on a better use of existing spatial instruments and to coordinate biodiversity and climate change efforts in implementing strategies on NBS <u>Economic drivers</u> Collaborative arrangements distribute responsibilities.

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	The inclusion of public and NGO's in the implementation and management of NBS projects can help to overcome budget constraints and limitation of resources
13. Does it support localized engagement? How?	Yes, it supports localized engagement. Two NGO's (PAD and AMH) partner and one municipal partner established a cooperation network within the signed protocol. And continue to engagement after the project complementation. They come together and write a new EU project after this project ends
14. Where is it being used? (country, city, municipality…)	İt is used in the parks and gardens of Çankaya, The method is used on the villages of Çankaya from the farmers that have been trained in study visit program. The guide book has been disseminated to the other municipalities, Ngo's and other relevant institutions
15. Why do you propose this example? Why do you think it is suitable for NBS?	This example is unique; • Water retention landscapes sustain a clean environment for human beings and gave them a natural area with good water, good quality soil and good air. Remedy for water need and living in a pure environment are basics of human rights. So, with the project awareness about rain water harvesting have been increased from children to farmers • variety of stakeholders (farmers from the villages of Çankaya, local level managers, experts –designers, planners, implementers of the municipal staff were the target groups of the project By targeting the farmers, which is in a disadvantaged position regarding their socio-economic constraints, the action has been provided mobility and their involvement in participation channels of the municipality as well as increasing their capacity to implement new methods and demonstrate an alternative model on rain harvesting in the rural area placed in the periphery of a metropolitan area. The project has been a model for other municipalities and institutions spreading out the best practices on ecologic solutions nationwide. Moreover, local governments are directly responsible for the climate-perceptive planning process and with action we already succeed it and other municipalities have taken the action as a good example. And also, children were one other group added in the project. The children agenda have been designed and published in the project and had been distributed to 250 children rain harvesting training programs. The project had a positive contribution to the perception of the NGO and municipal cooperation as not only an important tool for promoting dialogue and mutual understanding among the different organization but also providing valuable contribution to the development of the institutional capacities and management strategies of the local authorities in line with the EU standards and implications

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1. Title / name	Sustainable Energy Action Plan (SEAP)				
2. Short description	Çankaya Municipality have become a party to the "Covenant of Mayors", which is supported by the European Commission and is a party to more than 6 thousand local governments in the world, and the municipality registered our 2020 commitment which is expected from local governments. Accordingly, with the Sustainable Energy Action Plan (SEAP) Çankaya Municipality will reduce carbon emissions 25% by 2020, described in the SEAP document there is the roadmap to achieve this goal. It is a document which has emerged as a result of the studies conducted by Çankaya municipality				
3. Government tier	EU				
4. Governance model	Classic unitary country				
5. Initiating actor	EU bodies, local government				
6. Stakeholders	Relevant institutions and technical directorates of municipality				
7. Level of citizens engagement	Community based (x)	Government participation ( )	Co-creation (x)	Citizens participation ( )	Government ( )
8. Steering mode (governance)	NPM ( )	NG ( )	PA (x)	SR ( )	
9. Entry point implementation process. Provide short description of how	Macro level carbon footprint analysis based on energy consumption elements and a sustainable energy action plan have been put forward, based on the 2015 carbon emissions within the geopolitical borders of Çankaya Municipality, depending on the criteria of the ICLEI - Local Governments for Sustainability (ICLEI-2009), the Intergovernmental Panel on Climate Change (IPCC-2006) and the Covenant of Mayors (CoM Sustainable Energy Action Plan Practice Guidance -2015). The GHG Protocol standards published by the Greenhouse Gas Protocol (GHGP), World Resources Institute (WRI), and the World Business Council for Sustainable Development (WBCSD) are used for the institutional greenhouse gas inventory				

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10. Describe innovative aspects (if applicable)	Greenhouse Gas Emissions Inventory have been calculated specific to Çankaya Municipality and according to the results energy efficiency program have been determined
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	Knowledge barriers Uncertainty - Operational unknown Technical inadequacy- Lack of ready-to-apply SEAP results, concepts and technologies Governance barriers Disconnection between short-term actions and long-term goals, short-term action and decision-making cycles Lack of coordination between city/municipality departments Bureaucracy and unsupportive legal frameworks Role ambiguity (between the metropolitan municipality borders and town municipality borders) Economic barriers Short term vision NBS not a priority Lack of funding knowledge Risk perception: Lack of incentives
12. How does this methodology deal with process enablers identified in the implementation of NBS	Knowledge drivers: Research on cost effectiveness: Çankaya Municipality use its own personal resources to prepare the SEAP instead of procurement. Networks: SEAP preparation process bring technical directorate of the Municipality and related institutions together. Knowledge platforms: Published materials can be access on the municipal website both in English and Turkish. Awareness: Climate Change and Ecological memory: All the activities in the SEAP can be held in the context of climate change and ecological memory. Governance drivers: Coordination role A specific role that can serve to improve the coordination between departments help to plan and implement transdisciplinary and multifaceted projects as NBS. Action- thinking approach To better use of existing finance instruments and to coordinate biodiversity and climate change efforts in implementing strategies on NBS. Economic drivers:

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	Removal of administrative barriers Encourage methods to transfer the benefits of common goods provided by NBS to the initiators of NBS (e.g. mitigation of energy consumption)
13. Does it support localized engagement? How?	The preparation process of the action plan was held with the core team and workshops are organized together with other NGO's
14. Where is it being used? (country, city, municipality…)	It is being used/referred in different kind of invention and activities of Çankaya Municipality. And other municipalities can be inspired to dissemination of the SEAP through whole ANKARA region
15. Why do you propose this example? Why do you think it is suitable for NBS?	Çankaya Municipality Sustainable Energy Action Plan has been conducted under four main headings; urban development (measures and strategies for buildings), transport, awareness raising campaigns, solid waste and wastewater management actions The outputs of the SEAP have the feature of a step taken towards in the direction of the physical orientation of urban development within the municipality as well as integrating the field of energy planning with this development and change. One of the key features of SEAP is the social and economic activities that define every aspect of the city and it covers many sectors Increasing Energy Efficiency in Municipal Buildings; reducing the amount of energy consumed in municipal buildings, contributing to the reduction of greenhouse gas emissions, reducing municipal expenses; achieving 40% energy savings Encouraging Eco-Friendly Energy Resources in Residential Buildings; reducing coal consumption by 50% compared to 2020 projections, which is still prevalent in homes Energy Efficiency in Residential Buildings; achieving savings from 25% heating, 5% cooling consumption by providing thermal insulation at 35% of existing homes

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	Energy Efficiency in Public Buildings; achieving savings from 25% heating, 5% cooling consumption by providing thermal insulation at 25% of existing public buildings Energy Efficiency in Commercial and Industrial Buildings; achieving savings from 25% heating, 5% cooling consumption by providing thermal insulation at 25% of existing commercial and industrial buildings Transforming Lighting and Electrical Equipment to Energy-efficient equipment in Residential, Public and Commercial Industrial Buildings; achieving 15% energy savings until 2020 with the measures to be applied to 30% of residential and to 60% of public buildings

1. Title / name	Bademlidere Project				
2. Short description	It is a nature park/garden project and all the steps of the project are founded on the idea of ecological and permaculture approaches which makes the park significant with its environmental values				
3. Government tier	Local				
4. Governance model	Classic unitary country				
5. Initiating actor	Local government				
6. Stakeholders	Citizens				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation ( )	Citizens participation ( )	Government (x)
8. Steering mode (governance)	NPM ( )	NG ( )	PA ( )	SR (x)	
9. Entry point implementation process. Provide short	The idea of the “Bademlidere concept design project” have been put forward as an output of the Rain Harvesting EU project. The project involves permaculture training and an educational centre, water retention, recreation area, and a nursery.				

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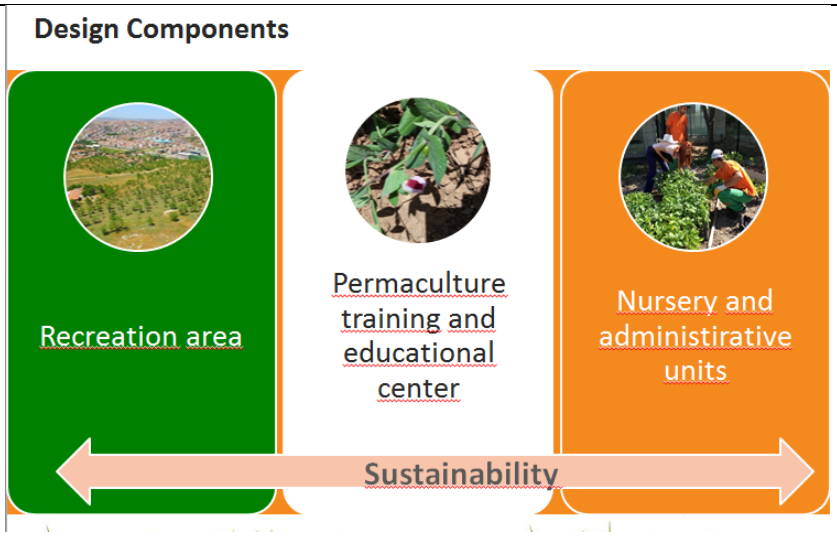
description of how	 Presentations about the project were given by the project team after developing the concept design project to the managers of the municipality and it is accepted by the management board. The implementation process will be start in 2019
10. Describe innovative aspects (if applicable)	The innovative aspect of the project is being designed through the Rain harvesting Methods for Çankaya
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	The concept design project has been completed and waiting to solve the problem about land ownership on legally with Ministry of Forest and Water Management
12. How does this methodology deal with process enablers identified in the implementation of NBS	Knowledge drivers: Research on cost effectiveness: Çankaya Municipality use its own personal resources to prepare the concept design project of Bademlidere instead of procurement. Awareness: Climate Change and Ecological memory: Decision making on concept design process are held in the context of climate change and ecological memory Governance drivers: Coordination role

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	A specific role that can serve to improve the coordination between departments help to plan and implement transdisciplinary and multifaceted projects as NBS Economic drivers: Removal of administrative barriers Encourage methods to transfer the benefits of common goods provided by NBS to the initiators of NBS
13. Does it support localized engagement? How?	Yes, it supports localized engagement on citizen and NGO level. The project involves all stakeholders in local level
14. Where is it being used? (country, city, municipality…)	It is in the borders of Çankaya Municipality besides it is allowed the usage of all Ankara citizens
15. Why do you propose this example? Why do you think it is suitable for NBS?	The main purpose of the project is creating a natural area for Ankara' citizens with using of natural materials and applying technics come from the nature. The project is a good example for Nature-based solutions approaches because it involves some specific feature which fits in a perfect way to the NBS: • Green and sustainable approach, planting native plants by using less water • Water retention approach • Eco-friendly parks approach • core design concepts are ecology, communication, education, connectivity with local residents • Natural water cycle management • New vegetation approach • Minimum use of water • Natural ground cover material usage • Solar and wind energy usage • Traffic free zones (it will be allowed just for the service) • Focus Pedestrian zones • Recycling units

1. Title / name	Public-Private partnership for a new flood-proof district in Bilbao
2. Short description	In 2012, Bilbao approved a plan for the redevelopment of the Zorrotzaurre area from industrial to residential use involving opening the water canal and providing green space, using NBS as a tool for urban regeneration. To finance and advance this urban regeneration

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	project, the main stakeholders of the redevelopment project, i.e. the land owners of Zorrotzaurre, created a public–private partnership, the Comisión Gestora de Zorrotzaurre. The current members of the commission own 65 % of the land in Zorrotzaurre				
3. Government tier	Local (Bilbao City Council) approved the project. For land owned by public authorities (Port, City and Province), the public sector joined the management commission				
4. Governance model	Land owners in the area forming a public private partnership and a management board. Regionalized Unitary Countries				
5. Initiating actor	Land owners (Private sector)				
6. Stakeholders	Public and private land owners (Local government and private sector)				
7. Level of citizens engagement	Community based ( )	Government participation ( )	Co-creation ( )	Citizens participation (x)	Government (x)
8. Steering mode (governance)	NPM ( )	NG (x)	PA ( )	SR ( )	
9. Entry point implementation process. Provide short description of how	The Comisión Gestora de Zorrotzaurre supervises the redevelopment plan and members contribute financially in proportion to the share of the land they own, also contributing as members of the management board. The city funds major infrastructure and new developments				
10. Describe innovative aspects (if applicable)	Public private partnership, common use of the system				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	It addresses economic barriers by a public private partnership				
12. How does this methodology	It builds a collaboration network. Has financial government support and creates conditions for new finance schemes				

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deal with process enablers identified in the implementation of NBS	
13. Does it support localized engagement? How?	Yes, it directly engages land owners
14. Where is it being used? (country, city, municipality…)	In the City of Bilbao
15. Why do you propose this example? Why do you think it is suitable for NBS?	It involves a large scale NBS project, which can be hard to implement both because of ownership issues and financial schemes and is thus a less common type of NBS. This project addresses both bottlenecks and produces a major example to urban regeneration through NBS
16. Additional information (URL, articles, etc…)	http://climate-adapt.eea.europa.eu/metadata/case-studies/public-private-partnership-for-a-new-flood-proof-district-in-bilbao/

1. Title / name	Climate change adaptation through urban greening with support of the Ghent crowdfunding platform
2. Short description	Crowdfunding.gent platform allows citizens to propose and finance their ideas for the city. Two projects addressing climate adaptation have been successfully realized with it: one project encouraging urban farming and the other realising edible street
3. Government tier	The city of Ghent (Part of a Federal System)
4. Governance model	Crowdfunding involving citizens as idea providers and funders, thus allowing governance giving citizens control of urban space

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	collectively. Initiators can also apply for a municipal subsidy in addition to crowdfunded sources				
5. Initiating actor	Local government -City of Ghent started the platform with the support of an existing crowdfunding platform developer. Use stage: The citizens of Ghent and private investors are considered end-users of the platform. They can participate as either initiator of a project or end-user				
6. Stakeholders	Private sector Social enterprises/social entrepreneurs Citizens Private foundations The development of the platform did not involve stakeholders other than the City and the platform developer. The use of the platform has citizens of Ghent and private investors are considered end-users of the platform. They can participate as either initiator of a project or end-user				
7. Level of citizens engagement	Community based (x)	Government participation (x)	Co-creation (x)	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM ( )	NG ( )	PA ( )	SR (x)	
9. Entry point implementation process. Provide short description of how	City of Ghent started the platform with the support of an existing crowdfunding platform developer without involving other stakeholders. The platform itself was a straightforward project, the involvement of citizens with the end product facilitates governance				
10. Describe innovative aspects (if applicable)	Online, direct governance tool which also allows funding from citizens				
11. How does this methodology deal with process barriers that have been identified in the	Very direct governance and open information deals with social acceptance, which also leads to maintenance and use efficiency benefits. Financial barriers are supported by crowdfunding				

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implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	It directly promotes collaboration and information accessibility is a strong point as it is online and open. Process efficiency is addressed with a coordination role by the local government and capacity building of the community by continuous development of the platform. Self-governance is the focal point, it emerges partnerships from end users who are either initiators or financers. Co creation applies as in collaboration. Financially it creates conditions for new finance schemes
13. Does it support localized engagement? How?	Yes. People can directly initiate actions for their locality based on needs they observe
14. Where is it being used? (country, city, municipality…)	Belgium, Ghent
15. Why do you propose this example? Why do you think it is suitable for NBS?	It is an innovative method that addresses both effective decision making and financing of NBS through a participative approach. This has benefits for the social acceptance and awareness raising of NBS as well. Altogether, it has found a comprehensive tool through a simple interface, assuming the base requirement of an active community
16. Additional information (URL, articles, etc…)	http://climate-adapt.eea.europa.eu/metadata/case-studies/ghent-crowdfunding-platform-realising-climate-change-adaptation-through-urban-greening

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1. Title / name	Participatory Working Groups				
2. Short description	Participatory Working Groups aims to be the plural and participatory instrument for resolving different aspects the city. Solve different aspects (mobility, environment, health), related to the municipality including the participation of citizens				
3. Government tier	Local				
4. Governance model					
5. Initiating actor	Local government				
6. Stakeholders	Public and private organizations, environmental associations, neighbourhood associations, political parties, unions, citizen				
7. Level of citizens engagement	Community based ( )	Government participation ( )	Co-creation ( )	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (x)	PA ( )	SR ( )	
9. Entry point implementation process. Provide short description of how	The method is quite flexible and adjustable in function of the needs and the points to be treated. It can be used in all Steps of the implementation process. It is open to any suggestions from neighbours				
10. Describe innovative aspects (if applicable)	It is a participatory strategy to involve citizens which access is free and the call is public				
11. How does this methodology deal with process barriers that have been identified in the	It allows to involve the citizens and the parties involved in decision-making, thus facilitating certain governance barriers. Citizens feel the project is theirs and therefore they value it positively				

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implementation of NBS	
12. How does this methodology deal with process enablers identified in the implementation of NBS	Facilitates the connection of the parties involved, makes them participate in decision making, which favours the contribution to obtain economic resources
13. Does it support localized engagement? How?	This tool allows to involve all the stakeholders. This allows to eliminate barriers that may arise in the future
14. Where is it being used? (country, city, municipality…)	It is used in all type of participatory processes in different areas (mobility, environmental, health…)
15. Why do you propose this example? Why do you think it is suitable for NbS?	The city council uses this method to involve citizens and the agents involved (political parties, associations, etc.), which makes the projects viable
16. Additional information (URL, articles, etc…)	http://www.ayto-alcaladehenares.es/portalAlcala/contenedor1.jsp?seccion=s_fdes_d4_v1.jsp&codbusqueda=815&language=es&codResi=1&codMenuPN=3&codMenuSN=37&codMenu=843&layout=contenedor1.jsp

1. Title / name	Thematic conferences
2. Short description	Thematic conferences is a mechanism that enables citizens to participate in the content of the journals, attend them. Likewise, participative seminars are held to collect suggestions, requests regarding the topics of the conference. This favours an application in addition to a training of all citizens

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3. Government tier	Local				
4. Governance model	Any				
5. Initiating actor	Local government				
6. Stakeholders	Any				
7. Level of citizens engagement	Community based ( )	Government participation ( )	Co-creation (x)	Citizens participation ( )	Government ( )
8. Steering mode (governance)	NPM (x)	NG ( )	PA ( )	SR ( )	
9. Entry point implementation process. Provide short description of how	It can be used in all Steps of the implementation process but is better star with step 1. It is open to suggestions from neighbours				
10. Describe innovative aspects (if applicable)	Not applicable				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	It can be used to deal with all the process barriers identified, from knowledge barriers, to government barriers and also economic issues				
12. How does this methodology deal with process enablers identified in the implementation of NBS	As it is a quite adaptive methodology, it can be used to collect information and to train those interested. In addition, to being thematic conference the information is specific and focused on the needs previously detected				

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13. Does it support localized engagement? How?	Yes, by removing barriers to participate with people from diverse backgrounds (science, government, citizens and experts), that can be participate since the first step or its participation can be requested in certain phases
14. Where is it being used? (country, city, municipality…)	All levels of governance
15. Why do you propose this example? Why do you think it is suitable for NbS?	A very adaptive methodology to obtain participation. In addition, with it you can spread the use of the NBS
16. Additional information (URL, articles, etc…)	http://www.ayto-alcaladehenares.es/portalAlcala/contenedor1.jsp?seccion=s_fnot_d4_v1.jsp&contenido=22357&tipo=8&nivel=1400&layout=contenedor1.jsp&codResi=1

1. Title / name	Period of public consultation of projects and regulations
2. Short description	The period of public consultation is used when a new regulation is going to be drawn up or a project is going to be carried out. This period allows to collect suggestions, needs, etc. from all interested parties
3. Government tier	Any
4. Governance model	Any
5. Initiating actor	Any
6. Stakeholders	Public and private organizations, environmental associations, neighbourhood associations, political parties, unions, citizen

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7. Level of citizens engagement	Community based ( )	Government participation ( )	Co-creation ( )	Citizens participation (x)	Government ( )
8. Steering mode (governance)	NPM ( )	NG (x)	PA ( )	SR ( )	
9. Entry point implementation process. Provide short description of how	It can be used in Step 1 of the implementation process. It allows to detect the needs of all the interested parties. The procedure includes a period in which it is possible to collect information, needs, etc.				
10. Describe innovative aspects (if applicable)	Not applicable				
11. How does this methodology deal with process barriers that have been identified in the implementation of NBS	It allows to involve the citizens and the parties involved in projects or a new regulation, thus facilitating certain governance barriers. Citizens feel the project is theirs and therefore they value it positively				
12. How does this methodology deal with process enablers identified in the implementation of NBS	Facilitates the connection of the parties involved, makes them participate in decision making				
13. Does it support localized engagement? How?	This tool allows to involve all the stakeholders. This allows to eliminate barriers that may arise in the future				

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14. Where is it being used? (country, city, municipality…)	It is used in all type of participatory processes in different areas (mobility, environmental, health…)
15. Why do you propose this example? Why do you think it is suitable for NbS?	The period of public consultation allows to involve all the interested parties and thus detect the needs and improve the processes
16. Additional information (URL, articles, etc…)	https://sede.ayto-alcaladehenares.es/portalAlcala/sede/se_contenedor1.jsp?seccion=s_fdoc_d4_v1.jsp&contenido=23821&tipo=5&nivel=1400&layout=se_contenedor1.jsp&codResi=1&language=es&codMenu=714&codMenuPN=284

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