EviBAN initial Governance Assessment Tool

1. INTRODUCTION

The governance assessment tool in EviBAN is intended for initial mapping of the governance context and drivers and barriers for NBS in specific cases. In the following section, we describe the objective of the tool. Next, in section 3, we present our approach to governance and the various sources it builds on, including pre-existing governance assessment frameworks and perspectives on NBS, water governance, innovation uptake and sustainability transitions.

In the fourth section, we move on to discuss the various dimensions covered by the tool and present a set of descriptive assessment charts relating to each of the dimensions. The following section (5) presents the evaluative criteria and method applied. Section 6 explains step by step how the initial governance assessment should be carried out, and section 7, finally, consists of some concluding remarks.

2. OBJECTIVE

NBS aim to protect, sustainably manage, and restore natural or modified ecosystems, while simultaneously providing human well-being.[1] Thus, they tend to have multiple and wide-ranging benefits. However, to become widely accepted, they must also be measurable, verifiable, and replicable, and respect communities' rights over natural resources. Among the remaining barriers to wider uptake of NBS, the following have been highlighted:[2]

- Silo mentality
- Lack of design standards and guidance for maintenance and monitoring
- Lack of political will and long-term commitment
- Lack of sense of urgency among policymakers
- Functionality and performance uncertainties
- Risk aversion and resistance to change
- Lack of skilled knowledge brokers and training programs
- Lack of public awareness and support
- Misalignments between short-term plans and long-term goals
- Lack of available financial resources
- Lack of supportive policy and legal frameworks
- Perceived high cost
- Lack of financial incentives
- Space constraints
- Property ownership complexities

As can be noted, many of these relate to governance. A governance assessment for initial mapping of the social ecological context and scope for NBS has therefore been developed. While there are common, overriding drivers and barriers, diverse water governance regimes have evolved in different countries and regions. Our objective is to

[1] IUCN, 2018. Nature-based Solutions to address global societal challenges. https://portals.iucn.org/library/sites/library/files/documents/2016-036.pdf

[2] Sarabi et al., 2020. Uptake and implementation of Nature-Based Solutions: An analysis of barriers using Interpretive Structural Modeling. Journal of Environmental Management Volume 270, 15 September 2020, 110749

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Provide a tool for systematic assessment of the conditions, drivers, and barriers to NBS for water management in different governance contexts.

The tool is largely qualitative, consisting of this explanatory text and an Excel-file to structure data collection and assessment according to a set of dimensions and topic areas identified in previous research.

The assessment is based on analysis of key stakeholder perspectives and available documentation of pre-existing knowledge, regulations and policies regarding NBS in the studied context/s. It addresses the interplay between processes at different levels and scales, relevant policy instruments, the roles and functioning of relevant actor networks, their motivations, goals and ambitions, and the distribution of responsibilities and resources. Special attention is paid to the interaction between institutional, ecological, and technological factors. Synergies and trade-offs between different sector policies and stakeholder interests are also taken into account.

The tool is intended as a simple aid for assessment, for researchers and consultants, as well as public and private decision-makers who want to get an overview of the governance context, possible barriers, and potential for implementing NBS for water management in a specific case or area.

3. CONCEPTUAL BACKGROUND

There is a wide variety of perspectives on water governance and how it best may be assessed for different purposes. "New governance" models tend to shift away from a perspective centred on the functional exercise of water management, towards a society-centric, multilevel, collaborative, and market-based view.[3]

The EviBAN governance assessment tool draws on previous frameworks developed in the EU projects DROP[4] and DESSIN.[5] These build on a "new governance" perspective, Contextual Interaction Theory (CIT), where governance is defined as *"… the combination of the relevant multiplicity of scales, actor-networks, goals, strategies, responsibilities and resources that forms a context that, to some degree, restricts and, to some degree, enables actions and interactions in the uptake of innovations [in urban water management]."* (Bressers et al. 2013:6).[15]

CIT sees governance as a multi-actor process where many factors are of influence, but only in so far as they affect the motivations, cognitions and/or resources of the actors. These three main actor characteristics are not only influenced by social interaction, but also by many external factors forming a multi-layered context with three levels:

1. **Specific context**, including factors like the geographical place the project or initiative in focus of the assessment, and its case history, consisting of previous decision-making and framing.
2. **Structural context**, encompassing the specific context, which includes the established governance regime and the relevant property and use rights.
3. **Wider contexts**, a layer consisting of exogenous societal developments and trends.

We apply the same set of distinctions, but since our focus is on NBS we also draw on socio-ecological system (SES) perspectives, which focus especially on the interaction between actors, governance, and resource systems.[6][7] Here, water governance tends to be seen as a *"[…] social function that regulates*

[3] Jimenez et al., 2020. Unpacking Water Governance: A Framework for Practitioners. Water 2020, 12(3), 827
[4] Bressers et al., 2013. Water Governance Assessment Tool. With an Elaboration for Drought Resilience. DROP Deliverable, June 2013. Downloadable from https://research.utwente.nl
[5] Rouillard et al., 2016. Governance Regime Factors Conducive to Innovation Uptake in Urban Water Management: Experiences from Europe. Water 8: 477
[6] McGinnis and Ostrom, 2014. Social-ecological system framework: Initial changes and continuing challenges. Ecology and Society 19(2): 30.
[7] Partelow, 2018. A review of the social-ecological systems framework: Applications, methods, modifications, and challenges. ECOLOGY AND SOCIETY 23(4)

development and management of water resources and provisions of water services at different levels of society and guides the resource towards a desirable state and away from an undesirable state" (Pahl-Wostl 2015:25).[8]

Pahl-Wostl et al. (2020) developed an assessment framework for implementation processes at regional and local scales and their embedding in a multi-level water governance system, as well as an environmental and societal context.[9] This framework, named STEER, makes a distinction between a) context, b) the 'water governance and management system' (including institutions, actors, and their interactions), and c) its 'functional performance' measured by outcomes and impacts. Three main categories of processes are considered; planning, implementation, and ecosystem services interactions, referring to operational activities that are linked to ecosystems and/or result in tangible changes in ecosystem services and/or physical objects (e.g., building technical or green infrastructure, livestock production, drinking water supply).

Different governance functions are associated with different action situations (AS), defined as "*a structured context of social interactions that lead to identifiable products*" (Pahl-Wostl et al. 2020:25).[20] These comprise institutions, knowledge, operational factors (e.g., infrastructure, processing, change in public opinion) and impacts on ecosystem services. This concept provides a more finely grained analyses of the interaction between actors, governance, and resource systems than in most water governance perspectives, and it is therefore incorporated into the conceptual framework for governance assessment in EviBAN, illustrated in Figure 1.

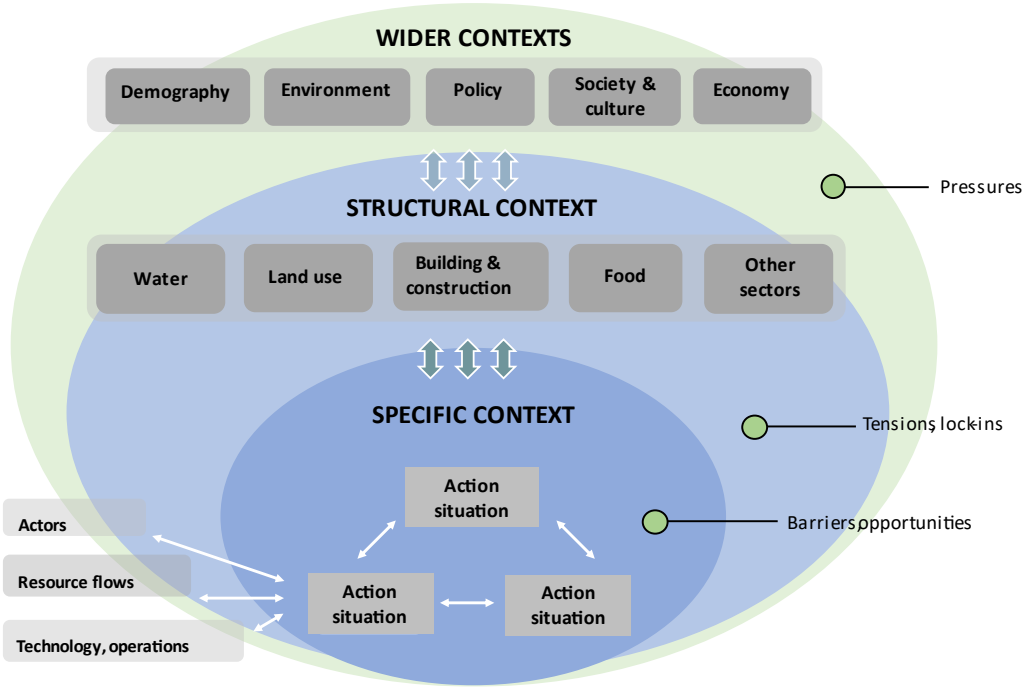

Figure 1: Conceptual framework for governance assessment in EviBAN.

As NBS tend to have multiple objectives and benefits, we are concerned with interactions across sectors. Different governance regimes – not only that of water, but also food, energy, building &

[8] Pahl-Wostl et al., 2015. Water governance in the face of global change: from understanding to transformation. Springer, Cham, Switzerland

[9] Pahl-Wostl et al., 2020. Enhancing the capacity of water governance to deal with complex management challenges: A framework of analysis. Environmental Science & Policy 107: 23-35

construction, and possibly others – may form parts of the structural context, depending on the solution in question. Therefore, we draw inspiration from the WEF nexus[10] and other approaches arguing for a less sector-centric and more systemic view with special focus on relationships and feedback between sectors.

The latter is also in line with existing frameworks for planning and evaluation of NBS. The EKLIPSE working group (2017) emphasized the benefits and co-benefits of NBS and combined grey-green solutions in urban water management, while pointing to synergies and trade-offs in terms of space, conveying pollutants, and incongruent management and assessment scales.[11]

Whereas EKLIPSE focused mainly on physical and economic indicators, the Green Surge project on governance of urban green infrastructure highlighted social and institutional challenges, including how to find good approaches to engage with non-state stakeholders, how to integrate formal governance and non-state decision-making, finding non-state actors with the capacity and competence to engage, and avoiding dominance by narrow interests.[12] More especially the report notes that trade-offs between local site-specific views vs. city and regional strategies, and traditional services vs. new green economy, and handling uncertainty are pertinent issues. Nesshöver et al (2017) list several aspects of the NBS design process that can help define what makes NBS sustainable, and why.[13] The topics raised may also be used to assess different aspects of the governance context, which may be conducive or unconducive to uptake and successful management of NBS, and we will get back to some of these below.

Oral et al. (2020) emphasizes that as a result of increasing urban areas, the interaction of demographic, economic, political, environmental, cultural, and social factors create new challenges related to the use and management of water resources.[14] Wide application of NBS therefore requires a systemic change, from wanting to do things separately with various technologies towards learning to let nature take care of them in an integrated way.

The conditions for systemic change are addressed in socio-technical research on sustainability transitions. Here, several studies suggest that urban water regimes dominated by a hydraulic logic increasingly are challenged by a market logic and a water sensitive logic, oriented towards environmentalism, sustainability, adaptation, resilience, and enhanced liveability.[15][16][17] Special attention is paid to how established regimes may create path dependence and hinder the uptake of sustainable innovations, how changing alignments, and external events (such as extreme weather events, market shocks, war, etc.) may open "windows of opportunities" for novel solutions, and how such processes may be actively supported by governance. Thus, we also draw on this strand of research

[10] Simpson and Jewitt, 2019. The Development of the Water-Energy-Food Nexus as a Framework for Achieving Resource Security: A Review. Frontiers in Environmental Science, 08 February 2019, sec. Freshwater Science, volume 7.
[11] Raymond 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. http://www.eklipse-mechanism.eu/apps/Eklipse_data/website/EKLIPSE_Report1-NBS_FINAL_Complete-08022017_LowRes_4Web.pdf
[12] Ambrose-Oji, B., et al. (2017) Innovative Governance for Urban Green Infrastructure: A Guide for Practitioners, GREEN SURGE project Deliverable 6.3, University of Copenhagen, Copenhagen.
[13] Nesshöver et al., 2017. The science, policy and practice of nature-based solutions: An interdisciplinary perspective. Science of The Total Environment, 579, 1215-1227.
[14] Oral, 2020. A review of nature-based solutions for urban water management in European circular cities: a critical assessment based on case studies and literature. Blue-Green Systems (2020) 2 (1): 112–136.
[15] Fuenfschilling and Truffer, 2016. The interplay of institutions, actors and technologies in socio-technical systems — An analysis of transformations in the Australian urban water sector. Technological Forecasting and Social Change 103:298-312.
[16] Ampe et al., 2020. A transition in the Dutch wastewater system? The struggle between discourses and with lock-ins. Journal of Environmental Policy & Planning, 22(2), 155-169.
[17] Franco-Torres et al., 2020. A framework to explain the role of boundary objects in sustainability transitions. Environmental Innovation and Societal Transitions 36, 34-48.

in defining the dimensions, questions, and evaluative criteria for initial governance assessment in EviBAN.

Following initial case definition, the assessment has two main steps, first a descriptive assessment of key aspects of the different context layers identified above, and secondly an evaluative part, based on the descriptive assessments that have been made. The different steps are described in detail below.

4. CASE DEFINITION

Before proceeding with the governance assessment, it is crucial to define the focus and boundaries of the case in question. This starts with identification of the focal action situation, or the main activities and interactions considered in the given case. Action situations are spaces where actors make decisions and take actions, choosing among available options in light of information about the likely actions of others and the benefits and costs of potential outcomes. This may for example relate to water supply or surface water management. Action situations can be formal and quite strictly regulated, or more informal, such as a group of farmers making joint decisions about irrigation.

Action situations comprise institutions and knowledge, as well as operational factors and impacts on ecosystem services. However, our aim in the initial step of the assessment is simply to identify their basic elements, in terms of possible solution/s or operations, resources and key challenges addressed, as well as the implicated governance systems and geographical locus of the case.

By resources we mean the physical resources (such as water) as well as the broader resource systems, e.g., catchment, farming area, township, or other which is relevant in the given case.

Governance systems are the prevailing sets of processes or institutions through which the rules shaping the behaviour of the users are set and revised. These may be mainly the systems for management of water resources, environment, and agriculture, and/or climate and energy, but also include urban planning, industry and/or building and construction, tourism, and others.

Actors, or the organizations and/or individuals that routinely extract and (re)use resource units, are essential, but we assess questions pertaining to their roles, relations, and perspectives in subsequent steps. Here, we rather include specification of the timeframe of the assessment, which in most cases will be medium to long-term, towards 2030 or 2050. Table 1 provides an overview of the dimensions and key questions considered for the initial case definition.

Table 1 Dimensions and core questions for initial case definition.

Initial case definition, action situation	
Solution	What is the type of NBS in question?
Scope	What is or are the key challenge/s it is hoped that the NBS may solve?
Governance systems	What governance systems will be implicated?
Locus	What is the geographical focus area in question?
Time	What is the timeframe of the assessment?

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5. DESCRIPTIVE ASSESSMENT

5.1 Wider Contexts

The wider contexts level refers to the broader social, economic, and political settings the studied action situation/s and governance regimes are situated in, including the effects of market dynamics, environmental and cultural change, etc. Wider contexts thus refer to wider trends and developments that the actors in a specific case have limited or no influence on. These trends and developments may, however, exert considerable influence on the uptake of new solutions, for instance by creating new demands for water cycle services.

While some developments serve to maintain existing systems, other developments work as pressures for change. We distinguish between different wider contexts, but when carrying out the assessment it is necessary to view contexts in relation to each other. Although there may be common tendencies, their impact may vary from case to case, depending on their alignment and interaction with the structural and specific context in question.

The wider contexts level is assessed mainly via desk study, using official statistics, well recognized indexes, and reports from national and international bodies of relevance (e.g., international, and national environment agencies, UN organizations, World Bank, etc.). Thus, the information collected may relate mostly to the national level. However, catchments and water management challenges may also cut across national borders, and in some cases more recent, relevant, or reliable data may exist for a wider region, which then should be included.

5.1.1 Problem context

The problem context is mentioned in CIT, but not specifically defined. In EviBAN, we see this as encompassing the overarching drivers and pressures for socio-ecological change, forming the backdrop of the more specific challenges in the studied governance context. This includes changes in the natural environment and society's ability to cope with these, including e.g., climate change and the possibility of more frequent floods and droughts, status and projections concerning quantity and quality of water resources, demography, and biodiversity/degradation of ecosystems.

5.1.2 Political context

The scope for NBS is also influenced by overarching political developments. Issues and priorities on the global agenda, such as the sustainable development goals (SDGs) and the Paris Agreement, are included here. We consider to what extent and how these are implemented in the studied country/ies. Moreover, the level of political stability, general form of government, and opportunity for individuals and organizations to partake in decision- and policymaking are included in this dimension.

5.1.3 Economic context

The state of the economy is covered through indicators such as gross domestic product (GDP) per capita, GDP growth rate, and the human development index (HDI). Distribution and growth of industries and available statistics on water and sanitation services provide important information. Low coverage may lead to prioritization of known, least cost solutions. However, where substantial new investments are expected, there can also be a high potential for novel solutions.

5.1.4 Cultural context

This includes the level of environmental awareness and how water is constructed in public discourse. Which ecosystem services are most in focus (e.g., regulating, in terms of hazards, erosion, etc., provisioning, such as for food production, and/or cultural, for example linked to recreation and tourism). Another aspect is whether we are dealing with a culturally homogeneous society or a context where different languages and cultural assumptions pose barriers to the dissemination of information and co-production of knowledge. Power distance and degree of trust in public authorities, based on historical experience, are other relevant influences. The key topics for each of the wider contexts are listed below (Table 2).

Table 2 Key topics considered for the wider contexts.

Wider contexts	
Problem context	What is the current state and projected development concerning quantity and quality of water resources in the wider region or country considered?
	What are the expected impacts of climate change and key challenges associated with them?
	What is the current population, and how is it expected to develop in the coming years?
	What are the status and future prospects as regards biodiversity?
Political context	How is the country (or wider region) rated when it comes to peace and stability?
	To what extent and how are the UN Sustainable Development Goals (SDGs) officially recognized and implemented?
	How is the country (or wider region) rated when it comes to citizen participation and involvement?
Economic context	What is the status with regards to economic development in the relevant country (or countries)? (GDP per capita and GDP growth)
	How is the status when it comes to human development? (Human Development Index)
	How is economic contribution and activity distributed across industries and expected to develop in the coming years?
	How is the current level and rate of urbanisation, and how are they projected to develop?
	What is the coverage of water cycle services?
Cultural context	What is the level of awareness of the given water management challenge, in the population?
	How is water mostly constructed (scarce commodity, common good, problem/cause of damage, etc)?
	Are specific functions/benefits in focus?
	Is water management a socially contested area (why/why not)?

5.2 Structural context

The structural context pertains to governance structures, property and use rights, and prevailing practices that tend to hold for most similar cases in a region or country. Unlike the wider contexts, the structural context may be influenced by individual transition cases or projects, but to a lesser degree than the specific context. In our case, the assessment considers both institutional and material aspects, such as existing infrastructure and resource systems, and we pay special attention to the interaction and interface between sectors.

The structural context may be assessed via a combination of desk study and stakeholder interviews. Initial desk study will help identify legal-administrative frameworks, relevant stakeholders, and policy documents, whereas stakeholder interviews providing insight on how the various dimensions interact and are perceived in practice is essential for their assessment. Where relevant, recent research reports or articles may be a useful supplement.

5.2.1 Levels and scales

Governance spans across various levels and scales, e.g., jurisdictional, spatial, temporal, etc. Scale is an important issue, since human institutions do not map coherently on to the biogeophysical scale of the resource, either in space or time. This step in the assessment addresses the administrative levels (EU/regional, national, subnational, municipal) implicated in the studied sectors, and their interaction. Institutional interplay in cross-scale and cross-level contexts can be relatively balanced or highly asymmetric, and this can strongly impact the scope for NBS.

5.2.2 Policies

Policies are rules made by governments and organizations, to achieve their aims and goals. This dimension covers the existing policies and plans that may facilitate or hinder uptake of NBS. How strategies and plans at EU level are transposed and implemented at the national level, and how the priorities in one sector, such as water, interact with the priorities and concerns in another sector, such as urban planning or agriculture, are important questions. We distinguish between economic instruments (e.g., subsidies, taxes, loans), cooperative (e.g., public-private partnerships), communicative and regulative instruments (e.g., requirements), and have singled out the latter as a separate dimension, to allow more detailed investigation of the legal-administrative conditions that may hinder or facilitate NBS implementation.

5.2.3 Regulations

Regulations are rules made to actors comply and behave in a certain manner. A regulation has the effect of a law and is considered as a restriction imposed by authorities, to make people follow the desired code of conduct. Here, we map which legal-administrative frameworks the solutions fall under, as well as the more specific procedures and requirements for their implementation. Is there a uniform process, and what do the requirements imply, in terms of time, costs, and competence? We also map the presence or absence of norms and standards for design and implementation of NBS.

5.2.4 Actors and networks

Since NBS may involve actors and stakeholders from multiple sectors and levels, mapping of relevant stakeholder categories, their networks, and what roles they take is particularly important. Both formal and informal network relations are considered. To what extent and how decision-makers from the involved sectors interact and how networks are distributed geographically, and to what extent

stakeholders engage in advocacy, lobbying, strategic networking, and other forms of institutional work to promote NBS are other central topics.

5.2.5 Perspectives and goal ambitions

While objectives may be different, stakeholders may also share similar objectives, but relate them to different goals and ambitions. What visions, goals and perspectives that prevail among the key stakeholders in the implicated sectors is therefore important. To what extent are these conflicting or aligned? What arguments are put forward by utilities and business actors? Different institutional logics may impede or facilitate the introduction of water-smart solutions. Likewise, the social acceptance among users and the general public may be variable. Have the angles or framing of the given water challenge/s remained stable over time, or have they changed and/or are likely to change in the foreseeable future?

5.2.6 Responsibilities and resources

This dimension focuses on the distribution of responsibilities, rights, and other resources among the key stakeholders. Sector organization and ownership are important aspects. Utility services are currently delivered and managed by a broad network of public agencies, private corporations, and third sector agencies, which may be associated with responsibility shifts. Moreover, not only formal responsibilities, but also those based on tacit norms should be considered (e.g., water conservation may be deeply embedded in some communities and cultures, but not in others).

Property and user rights define how actors may control, use, and dispose of resources. The access to and distribution of financial resources is a central aspect. Moreover, human capital, in terms of organization size, number of management and employees, their education and skills, influence the scope for innovation in and between enterprises. Social capital refers to the benefits associated with close relationships, in the form of shared values, trust, cooperation, and reciprocity. This, as well as cultural capital, including knowledge, ideas, habits, common language, and identities are important elements.

5.2.7 Prevailing technologies and procedures

Pre-existing technologies and solutions may influence, and potentially hinder, the adoption of new solutions. Therefore, it is necessary to consider the existing solutions related to the water challenges in question. To what extent existing technologies are interrelated and depend on each other and whether NBS may be added and developed incrementally within existing systems or represent a radical break from the existing ways of doing things, are important questions. The dimensions and key topics considered under the structural context level are summarised below (Table 3).

Table 3 Dimensions and key topics considered as part of the structural context.

Structural context	
Levels and scales	Which legal-administrative levels are implicated in decision-making concerning the water challenge and NBS considered?
	Which level dominates policy and the debate on policy concerning NBS?
	How is the interaction between the various administrative levels arranged?

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Policies	What are the relevant policies at EU/transnational level?
	What are the relevant policies at the national level?
	What are the relevant policies at county/region level?
	What economic instruments (support mechanisms, tax incentives, etc.) are available to support development and implementation of water NBS?
	What informational instruments are available to support development and implementation of water NBS?
Regulations	Which legal-administrative framework/s do water NBS fall under?
	Which legal-administrative procedures apply for installing and operating water NBS (of the type considered for the specific assessment)?
	What are the main requirements for these procedures?
	Is there a uniform process, interpretation, or does this vary across the country?
	What are the time and cost implications of the relevant procedures?
	What, if any, are there specific norms and standards of influence?
Actors and networks	Who may be considered as the main actors, in decision-making and management of water NBS?
	What are the other stakeholders involved (and implicated)?
	How can the relationships (degree of contact and collaboration) between the actors and key stakeholders be characterized?
	Are there any joint forums, programs, initatives to support implementation of NBS?
	Are there any identified power asymmetries, any stakeholders excluded?
Perspectives and goal ambitions	How high on the agenda is the studied challenge?
	What are the main goals and strategies of the key actors and stakeholders?
	Why are NBS considered relevant, what are the main advantages highlighted?
	What is the perceived maturity of water NBS?
	What are the main challenges associated with NBS?
Responsibilities and resources	To what extent are the roles and responsibilities related to planning, i implementation and maintenance clearly defined?
	How is the actors' access to financial capital?

	How is their institutional capacity (personnel available, competence level, data & equipment, e.g., for monitoring)?
	What is their social capital (in terms of trust, public image/reputation, networks, etc.)?
	What type of sanctioning systems/practices are involved (e.g., how is non-compliance handled?
	What property-rights systems (e.g., public, private, common) are involved?
Prevailing technologies and practices	What are the conventional solutions and procedures for the studied water management issue/challenge?
	Could NBS be added incrementally, or will it require substantial change in existing water management solutions?

5.3 Specific context

The specific context refers to the case or specific setting where implementation of NBS is considered. The particular geographical conditions and case history, agency of actors, including previous decisions-making and framing, are important aspects.

A combination of desk study and stakeholder interviews is recommended. At this level, less information may be formally documented, and the experiences and perspectives of local stakeholders will be all the more important.

5.3.1 Previous decisions

The case history and previous decisions may exert a considerable influence on the scope for water-smart solutions. Some of these decisions may relate to aspects such as land use planning, management and organizational changes, community response to environmental challenges, or knowledge development and participation in R&D projects, etc. Strategic decisions, for example whether one aims to be a frontrunner in innovation or has adopted ambitious sustainability goals, could also be of relevance.

Of particular relevance are previous decisions regarding infrastructure, given that water infrastructure is complexly intertwined with other infrastructures, often represents large investments, and tends to have very long lifetimes. Pre-existing systems and practices, for example with regards to irrigation in farming, user preferences and requirements in spatial planning may also influence the scope for NBS. Past decisions as regards stakeholder dialogue and information to the public may influence the level of engagement and acceptance among citizens.

5.3.2 Case-specific circumstances

The geographical location of the activities will be associated with specific resource systems and local climate conditions influencing the availability of water as well as the feasibility, performance, and benefits of NBS. Possible alternative uses of the space in question and its location relative to other infrastructure, e.g., pipes, electricity grids, roads, etc. will also matter.

In a longer-term perspective, future scenarios with respect to local/regional population growth, densification, industry, and urban development are also important. Local/regional policy agendas and sustainability visions can provide incentives and sanctions promoting NBS. For example, there may be specific policies on green public procurement or support schemes to promote green business development. Innovation capacity and local/regional market environment, including the specific socio-economic, political, and cultural settings are other dimensions.

5.3.3 Process

Among the factors that were identified as critical to innovation uptake in the DESSIN project, were commitment to compromise, the necessity to build political support, and the role of "entrepreneurs" and coalitions. Partnership design and communicative strategies, especially as to how the challenges and solutions are framed and linked to other issues (for example, urban liveability or poverty reduction) can exert considerable influence on innovation uptake. The key topics identified for each of the three dimensions are summarised in Table 4.

Table 4 Key topics for each dimension at the specific context level.

Specific context	
Previous decisions	Since when has environmental management, ecosystems and biological diversity been a focus area for local authorities?
	What are the main pressures on water resources in the case area, as perceived by local stakeholders?
	Are there any land use decisions of the past that significantly influence the space and scope for NBS?
	What characterizes the existing infrastructure (in terms of age, centrality, risk and safety, flexibility)?
	Are any past organisational decisions seen to be of influence (organisation structure, leadership, joint forums or collaboration initiatives, specific policies, or projects on NBS)?
Case-specific circumstances	What is the perceived state of aquatic ecosystems in the studied case (in terms of resilience, biodiversity, pollution, etc.)?
	What ecosystem services (ESS) are most in focus, and how are they expected to develop in the coming years?
	What are the capacities and types of existing systems for water storage/retention in the area?
	What is the value of existing resource units (water and water-related resources) in the area?
	Are the NBS in question associated with possible co-benefits?
	What is the level of awareness and community engagement in water and environmental management?
	Are there any local controversies or conflicts of interests that may impact negatively on the implementation of NBS?

Process	Who are or have been the main advocates for NBS (e.g., utility, technology provider, consultants, research institution, public agency)?
	How is the communication and history of collaboration between the actors (degree, formal/informal, etc.)?
	To what extent do they share a common vision?
	How is their interaction organized (formal/informal, type of agreements, contracts)?
	What KPIs and planning horizons are applied?
	To what extent and how are other stakeholders included/addressed?

6. EVALUATIVE ASSESSMENT

The governance assessment framework developed in DROP emphasizes four evaluative criteria: Extent and coherence, flexibility, and intensity. Extent is a quality of the regime that refers to its completeness, while coherence expresses the degree to which the various elements of the regime are strengthening rather than weakening each other.[18] Extent and coherence are considered as important qualities in more or less steady state situations.

In a more dynamic context, such as under the increasing pressure to adapt to and mitigate climate change impacts and other anthropogenic pressures on water and related resource systems, flexibility and intensity are more important. Flexibility may be defined as *"the degree to which regime elements support and facilitate adaptive actions and strategies in as far as the integrated (among others multi-sectoral) ambitions are served by this adaptiveness"* (de Boer and Bressers 2011:92).[30] This quality thus relates to the degree to which the regime allows variation and adaptative change in the face of changing circumstances.

Intensity, on the other hand, is considered as *"the degree to which the regime elements urge changes in the status quo or in current developments"* (de Boer and Bressers 2011:93).[19] In other words, this refers to the push for change, to what extent the elements together encourage a movement away from 'business as usual' and strive towards novel practices and solutions.

In EviBAN, all of these criteria can be helpful to consider since they influence the scope for new solutions. In terms of extent, there may for example be regulatory gaps, and in terms of coherence we could find rules and practices that work against each other, posing barriers to new solutions. Limited flexibility may be a hindrance, as NBS tend to require integrated action and for a large part must be tailored to specific contexts. Most importantly, the intensity or strength of change-orientation will influence the readiness to adopt novel solutions.

However, the governance contexts in EviBAN are also seen to include factors (e.g., exogenous developments, existing infrastructure, ecological state) that cannot meaningfully be assessed in terms of the noted criteria. Since our focus is on drivers and barriers to NBS and the tool should be relatively

[18] Bressers and de Boer, 2013. Contextual interaction theory for assessing water governance, policy and knowledge transfer. In: de Boer, C.L:, Vinke-de Kruijf, J., Özerol, G., Bressers, H.: Water Governance, Policy and Knowledge Transfer. Routledge.

[19] de Boer, C. and Bressers, H. (2011) Complex and Dynamic Implementation Processes: the renaturalization of the Dutch Regge River. University of Twente with the Dutch Water Governance Centre, Enschede.

easy to use, the Excel-file distinguishes only between conducive and unconducive factors, which are ranked normatively (-3 to +3), and the extent to which they have been and are expected to decrease or increase over time (-3 to +3).

As the final step of the evaluative assessment, the conducive and unconducive factors and their development trend over time may be summarised in a simple scorecard, as illustrated below (Table 6). Since some dimensions may harbour both conducive and unconducive factors, the scorecard has one column for each. The final column is to show the identified trend in development over time, which is if there is a tendency that conditions are becoming more conducive, less conducive, or remain stable.

The scorecard can be used as a basis for discussion of the level of alignment across context levels and dimensions and illustrate the ongoing degree of system change. Furthermore, it may facilitate comparison across cases, and ease the communication of key findings.

Table 5 Summary scorecard template.

Context level	Dimension	Conducive factors (1-3)	Unconducive factors (1-3)	Development trend
Wider ontexts	Problem context			
	Political context			⬆
	Economic context			
	Cultural context			⬇
Structural context	Levels and scales			
	Policies			
	Regulations			
	Actors and networks			
	Perspectives and goal ambitions			
	Responsibilities and resources			
	Prevailing technologies and practices			
Specific context	Synergies, strategic fit			
	Location and existing infrastructure			
	Resource values			
	Collaboration and involvement			

APPENDIX 1 : Governance Assessment – Text Manual

7. MANUAL FOR APPLICATION

This section explains the procedure for initial governance assessment step by step. To enable a systematic overview, we recommend that data collection and assessment are carried out using the simple Excel tool developed for this purpose (Annex X). This Excel file includes five sheets: One for initial case definition, three containing the dimensions and key topics for each context level, with space for entering data and assessing them according to the evaluative criteria identified above, and finally, the summary scorecard.

The assessment has four main steps, as outlined below.

i. Case definition

Delineate the case for the assessment, starting by identification of the focal action situation, with reference to the dimensions and core questions provided in Table 1. This may well be done using the first sheet of the Excel tool (Annex X).

ii. Desk study

Conduct a desk study to assess the Wider Contexts (see section 2.5.1). This entails collection of updated information on political, socio-economic, and cultural factors that may influence the scope for NBS. The four contexts and key topics listed in Table 2 should be addressed. Sheet 2 of Annex X is dedicated to this step and contains examples of relevant data sources. This part of the assessment should not take more than 0.5-1 working day.

As a third step, go through the dimensions and key topics for the Structural Context and Specific Context, as discussed above and laid out in sheet 3 in Annex X. Address this via further desk study, using official web resources and/or printed reports from the relevant authorities, national environment agency, sector associations, relevant NGOs and/or key actors as information sources.

For analysts who work mainly with NBS or otherwise are engaged in the studied case already, this may not take much time. Parts of the information may be known. Still, the exercise may prove fruitful, to get a systematic overview and identify information gaps. For analysts who are less familiar with the studied context, the initial desk study could require 3-4 working days. Besides shedding light on the listed topics, this step will help identify relevant stakeholders and ways to broach the different topics in interviews with some of them.

iii. Stakeholder interviews

Following the desk study, the next step is to prepare for stakeholder interviews. The interviews are to collect more in-depth knowledge of the structural and case-specific context levels. This requires the development of an interview guide, tailored to the case and NBS in question. The questions must be open-ended, with room for adaptation and follow-up questions depending on the role of the respective interviewee. Annex Y provides an example interview guide, as well as links to some more general information on how to design guides for semi-structured interviews.

When a draft interview guide is in place, conduct an initial interview with the utility or main contact for the case to be assessed. Besides collecting relevant information from a key stakeholder, this interview serves to test the interview guide and identify a final sample of other actors and stakeholders, to be consulted via interviews.

Based on the outcome of the initial interview, identify and recruit interviewees. As far as possible, these should represent different categories of stakeholders, e.g., policy makers, producers, users, and NGOs. Depending on the action situation in each case, 5-10 interviews can suffice. For some stakeholder categories, group interviews may be suitable. Otherwise, individual interviews with ample

time for discussion and reflection are preferable. To allow for this, around 1,5 hours should be set aside for each interview.

Next, conduct the interviews with stakeholders. The interviewees must be informed about their rights and data management according to the requirements of the EU General Data Protection Regulation (GDPR). Use voice/video recording if the interviewees agree, or make detailed notes regarding all statements, not just those you find most relevant in the moment. During subsequent interviews new topics and perspectives may come up, that suddenly make seemingly less interesting information quite relevant, as supporting, contradictive or alternative points of view.

Write summaries or transcribe the interviews if the assessment is intended for research. If it is mainly for practical purposes and time is limited, it is possible to move directly to the next step.

iv. Data analysis

Analyse the data using the Excel sheets for the structural and specific context levels shown in Annex X. Here, you enter key points from each interview and the desk study into the designated rows and columns.

Assess each context level and its dimensions with reference to the evaluative criteria described in section 6 and provide a normative ranking of conducive and unconducive factors on this basis.

Summarise the findings in the Summary scorecard, provided as sheet 5 in Annex X. The scorecard provides an overview of the alignment across context and dimensions. It may be useful for further stakeholder dialogue on the drivers and barriers and how to address them. It may also be a starting point for comparison across cases.

Where resources allow, a validation workshop with the interviewed stakeholders is recommended. This could be virtual or face-to-face, depending on the circumstances.