



Guidelines for Nature-based Solutions (Pre) Standardisation

A practical approach for
R&I and Procurement

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The Evolution of NbS Standardisation

Nature-based Solutions (NbS) are increasingly moving from pilot projects and research initiatives into mainstream practice. Cities are investing in green and blue infrastructure to address climate risks, businesses are exploring nature-based approaches to strengthen resilience, and public authorities are looking for effective ways to deliver environmental and social benefits. Yet, despite this growing momentum, many actors still face a common challenge: how can they determine whether an NbS is well designed, how its benefits should be measured, or how good practice can be replicated across different contexts?

This is where standardisation becomes important. Standards provide a shared reference point that helps different actors speak the same language, apply comparable methodologies, and build confidence in results. For practitioners, they offer practical guidance. For public authorities and procurers, they support more robust decision-making. For investors and insurers, they can improve transparency and trust. For researchers, they provide a pathway through which project results can continue creating value long after a project has ended.

Over the last few years, the European NbS community has taken important steps towards building this common foundation. A growing set of standards and pre-standards is beginning to provide the terminology, frameworks, and methodologies needed to support the wider deployment of NbS across Europe.

This progress builds on a longer journey. Early initiatives, including the CLEVER Cities project, helped bring standardisation onto the NbS agenda by identifying gaps between emerging NbS practices and existing standardisation frameworks. The CLEVER Cities NbS Standardisation Roadmap was among the first efforts to explore how standards could support areas such as planning, design, implementation, and governance, while also strengthening connections between the NbS research community and European standardisation bodies.

Building on these foundations, **NetworkNature continued the effort to embed standardisation within the NbS community, helping strengthen collaboration between researchers, practitioners, policymakers, and standardisation bodies.** Through its work on standardisation, the project helped transform what was once a largely conceptual discussion into a set of tangible resources that practitioners, cities, researchers, financiers, and policymakers can use today.

One of the most significant outcomes of this work was the publication of **EN 18140:2026, the first European Standard on Nature-based Solutions terminology and classification.** For the first time, the NbS community has a common European vocabulary and classification framework. This helps reduce ambiguity, improve communication between stakeholders, and create a stronger basis for future guidance, procurement specifications, monitoring frameworks, and investment decisions.

Following its publication, EN 18140:2026 is being implemented by CEN National Standardisation Bodies as an identical national standard across CEN member countries, embedding the common NbS terminology and classification framework within national standardisation systems. This process goes beyond linguistic accessibility: national implementation means that the European Standard is formally adopted at country level, for example as UNI EN 18140 in Italy or DIN EN 18140 in Germany, while conflicting national standards must be withdrawn. The availability of national-language versions, including Italian, German and French, is therefore a visible expression of this broader implementation process and supports the accessibility and uptake of the standard by national practitioner, policy and standardisation communities. This represents an important step in translating European standardisation work into concrete institutional uptake across countries.

Throughout the drafting and consensus-building process, NetworkNature ensured that knowledge and innovation generated by EU-funded NbS projects informed the development of the standard, strengthening its relevance for research, policy and practice. Particular attention was also given to ensuring consistency between EN 18140 and the IUCN Global Standard for NbS, facilitating dialogue between the respective expert communities and contributing to greater coherence between European and international NbS frameworks. The work also considered alignment with relevant international standardisation initiatives, including ISO/TC 331 Biodiversity, further strengthening coherence between European and international NbS standardisation efforts.

Through a collaboration with HSBooster.eu, NetworkNature also helped demonstrate how research and innovation results can be translated into practical reference documents through the development of pre-standards. This

work contributed to the wider uptake of the CWA mechanism within the NbS community and highlighted its value as a pathway for knowledge valorisation and impact creation. Two important examples presented in this guideline are:

- *CWA 18237:2025 (VARCITIES), which provides guidance on designing, implementing, and assessing nature-based actions that contribute to health, well-being, and resilience in cities;*
- *CWA 18349:2026 (NATURANCE), which introduces a framework for assessing nature-based insurance and investment solutions through design principles, performance metrics, and evaluation approaches.*

Together, these documents show how standardisation can support real-world implementation challenges, from urban well-being to climate resilience and sustainable finance.

NetworkNature has also helped identify where NbS standardisation can deliver the greatest value in the future. Through its work on standardisable themes and knowledge gaps, the initiative highlighted areas where a lack of common methodologies continues to limit wider uptake. Monitoring and verification, biodiversity assessment, climate resilience, public procurement, health and well-being, and finance have emerged as promising areas for the next generation of NbS standards and pre-standards.

Perhaps most importantly, NetworkNature has helped demonstrate that standardisation is not only relevant for standards experts. It is **increasingly recognised as a practical tool for knowledge valorisation, market uptake, and long-term project legacy.** Rather than ending their lives as reports, deliverables, or scientific publications, project results can be translated into shared frameworks that support implementation across sectors and countries.

As interest in NbS grows internationally, the experiences generated through NetworkNature and related initiatives are also informing discussions beyond Europe. Exchanges with international standardisation initiatives, including activities within ISO and the development of national frameworks in countries such as Brazil, demonstrate the potential for greater global coherence while recognising the need for local adaptation.

This guide builds on these experiences. It is designed for researchers, innovators, practitioners, public authorities, and procurers who want to understand how standards and pre-standards can support the wider adoption of NbS. Whether the objective is to develop a new CWA, strengthen the legacy of a research project, improve procurement practices, or support market uptake, the following chapters provide practical guidance drawn from some of the most significant NbS standardisation initiatives developed to date.

How to Use This Guide

Unlike traditional industrial components, standardizing nature is uniquely complex. NbS are living, dynamic systems that change over time and interact directly with localised social-ecological environments. Whether you are measuring the carbon uptake of a restored wetland, the stormwater retention of a bioswale, or the cooling effect of a green facade, you cannot apply a rigid, one-size-fits-all manufacturing standard.

This guide acts as an operational manual to help you navigate this complexity. It bridges the gap between scientific observation and market-ready specifications, helping you translate the performance of living systems into trusted technical agreements.

Who is this guide for?

Although different sections may be of particular interest to different stakeholder groups, the guide is intended to provide a common understanding of the role of pre-standardisation across the NbS ecosystem.

- **R&I Project Coordinators & Consortia:** To understand how to turn research on ecosystem services, soil health, or hydrological performance into an official CEN/ CENELEC Workshop Agreement (CWA) without getting lost in administrative complexity.
- **NbS Practitioners, Designers & Early-Adopter Industries:** To learn how to anchor diverse NbS (e.g., wetlands, coastal restoration, marine eco-engineering, or urban green-blue corridors) into recognised technical frameworks that investors can trust.
- **Municipal Officers & Public Procurers:** To understand how to demand and utilise standards to de-risk municipal green-blue infrastructure tenders, moving away from lowest-price bidding towards best price-quality ratio, incorporating measurable performance criteria.
- **Policy Makers & Urban Planners:** To leverage standardisable metrics for regional resilience strategies, urban health corridors, and alignment with European environmental directives.

What You Will Learn from This Guide?

This guide provides a practical introduction to how standards and pre-standards can support the design, implementation, procurement and scaling of NbS. It explains how standardisation can help translate research and innovation into practical frameworks that support public decision-making, improve comparability and

transparency, and strengthen the long-term impact of NbS investments.

By the end of this guide, you will be able to:

- **Navigate the world of NbS standardisation,** understanding the different types of standards and pre-standards and the role they play in supporting implementation and decision-making.
- **Recognise opportunities for pre-standardisation,** identifying when a methodology, framework, monitoring approach, or project result could benefit from a shared reference framework.
- **Understand the process of developing a CWA,** from defining the scope and engaging stakeholders to drafting and publication.
- **Use pre-standardisation as a pathway for research valorisation,** helping project results create value beyond the lifetime of individual initiatives.
- **Apply standards and pre-standards in public procurement,** using common methodologies and performance frameworks to support more transparent and robust procurement processes.
- **Understand how standardisation can support market development,** creating the conditions for new services, expertise, financing mechanisms, and business opportunities to emerge around NbS.
- **Identify future opportunities for NbS standardisation,** particularly in areas where common methodologies and assessment approaches are still lacking.

Ready to get started? The following chapters will guide you through the fundamentals of standardisation, the development of NbS pre-standards, and practical examples of how standards and pre-standards are already being used in research, procurement and market development.

1. Guidelines for Pre-Standards

1.1 Introduction to Standardisation

Standardisation is often perceived as an administrative, industrial process suited primarily for manufacturing nuts, bolts, or software protocols. However, in the context of NbS, standardisation is the critical bridge that translates complex ecological systems into structured, predictable, and market-ready specifications.

What is standardisation?

Standardisation is a voluntary, consensus-driven process of establishing common technical or quality specifications, guidelines, nomenclatures, and testing methods. It is not about restricting creativity or forcing artificial monocultures. Instead, standardisation provides a “common language” that allows different stakeholders to collaborate predictably.

While research papers model the *theoretical* performance of a restored floodplain under climate change, a standard codifies the practical, *minimum requirements* for soil permeability, vegetative density, and runoff calculations that an engineer can use on-site. It shifts NbS from one-off, bespoke experimental pilots into highly replicable structural assets.

Why are standards important in the NbS field?

Historically, standardisation has been an important mechanism supporting the transition of many innovative fields from fragmented experimentation towards broader market adoption. By establishing clear, consensus-driven specifications, they convert scientific complexity into structured predictability, lower transaction costs, guarantee safety, and build immediate trust among bidders, buyers, and regulators.

Applying this approach to NbS, however, responds to this complex, multi-dimensional translation gap. Traditional infrastructure development, commercial underwriting, and urban governance depend on predictability and performance consistency. Living ecosystems, by contrast, are dynamic, site-specific, and adaptive.

NbS standardisation focuses on harmonising methodologies, terminology, risk assessment approaches, and monitoring practices,

standardising the “how” rather than the “what”. This provides a shared framework for assessing and communicating performance while preserving the flexibility needed to respond to local ecological and social contexts. In doing so, standardisation can help build greater transparency, comparability, and confidence across the NbS value chain, particularly across three key pillars of the NbS value chain:

- **The Supply Side (Designers, Ecologists, and Civil Engineers):** Standards provide common reference points for planning, assessment, and monitoring. By establishing shared methodologies and terminology, they can help practitioners compare approaches, communicate results more consistently, and support the design of NbS that are both technically robust and responsive to local ecological conditions.
- **The Demand Side (Municipalities and Public Procurers):** Standards provide widely recognised reference frameworks that can be used when defining technical requirements and evaluation criteria. Rather than developing specifications from scratch, procurement officers can refer to established standards or equivalent approaches, helping ensure that all bidders are assessed against consistent quality and performance expectations.¹
- **The Investment Side (Private Investors, Insurers, and Early-Adopters):** NbS are often perceived as high-risk due to their organic, dynamic nature. Standards translate complex environmental benefits into familiar,

¹ In accordance with the provisions on technical specifications and standards in Directive 2014/24/EU, contracting authorities should also accept equivalent solutions where appropriate.

Foundational resources for NbS Standardisation



- Clever Cities Project: [Guidance on NbS Standardisation](#), and [Standardisation Roadmap for NbS](#)
- NetworkNature Project: [The NetworkNature Semester on Nature-based solutions and Standards - Final Output Report](#)

reliable metrics of performance consistency and physical risk reduction. This is a critical prerequisite for underwriting commercial insurance products, securing ESG financing, and unlocking institutional capital.

Who develops standards?

Standardisation occurs at three distinct operational levels, all of which are increasingly adapting to incorporate NbS:

1. National Standardisation Bodies (NSBs):

Each European country has its own recognised body (e.g., DIN in Germany, AFNOR in France, UNE in Spain, BSI in the UK, EVS in Estonia). NSBs adapt international and European standards for local contexts and address region-specific climatic, soil, and legal realities.

2. European Standardisation Organisations

(ESOs): The most relevant for the European NbS market is **CEN** (European Committee for Standardisation) and **CENELEC** (European Committee for Electrotechnical Standardisation). When CEN/CENELEC publishes a European Standard (EN), CEN and CENELEC national members are required to adopt it as a national standard and withdraw any conflicting national standards. This creates a single, unified European market.

3. International Standardisation Organisations:

Operating globally, organisations like **ISO** (International Organisation for Standardisation) coordinate international technical consensus, facilitating cross-continental trade, vocabulary alignment, and global sustainability reporting.

Types and Classification of Standards

In the European standardisation system, there is no single type of standard. Instead, standardisation bodies offer different “grades” of documents depending on the level of consensus required and how fast the technology is changing. This classification includes:

- **European Standards (EN):** The highest level of standardisation. They require full consensus among all national standardisation

bodies, undergo a formal public enquiry, and must be adopted as national standards in all Member States (with any conflicting national standards withdrawn).

- **Technical Specifications (TS):** Used when a subject is still under technical development or when there is insufficient consensus for an EN. They serve as an intermediate step.

Landmark Standards in the NbS Field



To navigate the standardisation ecosystem, practitioners should be familiar with three foundational pillars that define the current state-of-the-art:

- **EN 18140:2026** (*Sustainable and smart cities and communities — Nature-based solutions (NbS) — Terminology and classification*): The definitive European standard. It establishes a legally robust, universally accepted vocabulary and classification scheme for NbS across Europe, preventing “greenwashing” and aligning public tenders.
- **ISO/TC 268 & ISO 371XX Series:** Led by the International Organisation for Standardisation’s Technical Committee on *Sustainable Cities and Communities*, these standards govern indicators for city services, quality of life, and resilience, outlining how green infrastructure supports urban sustainability.
- **IUCN Global Standard for Nature-based Solutions (Second Edition, 2026):** The qualitative framework developed by the International Union for Conservation of Nature. While not a formal standard, it provides the global benchmark for high-integrity, sustainable NbS design, structuring how projects address societal challenges while safeguarding biodiversity.

Figure 01

NbS Standardisation: Turning Ambition into Action



Why Standardisation matters - Trust, consistency, scaling.

NbS are increasingly recognised in policies and strategies related to climate adaptation, biodiversity, resilience, and sustainable development. However, translating these ambitions into practical implementation can be challenging because NbS are highly diverse and context-specific.

Standardisation helps bridge this gap by providing a common language, shared methodologies, performance frameworks, and monitoring approaches.

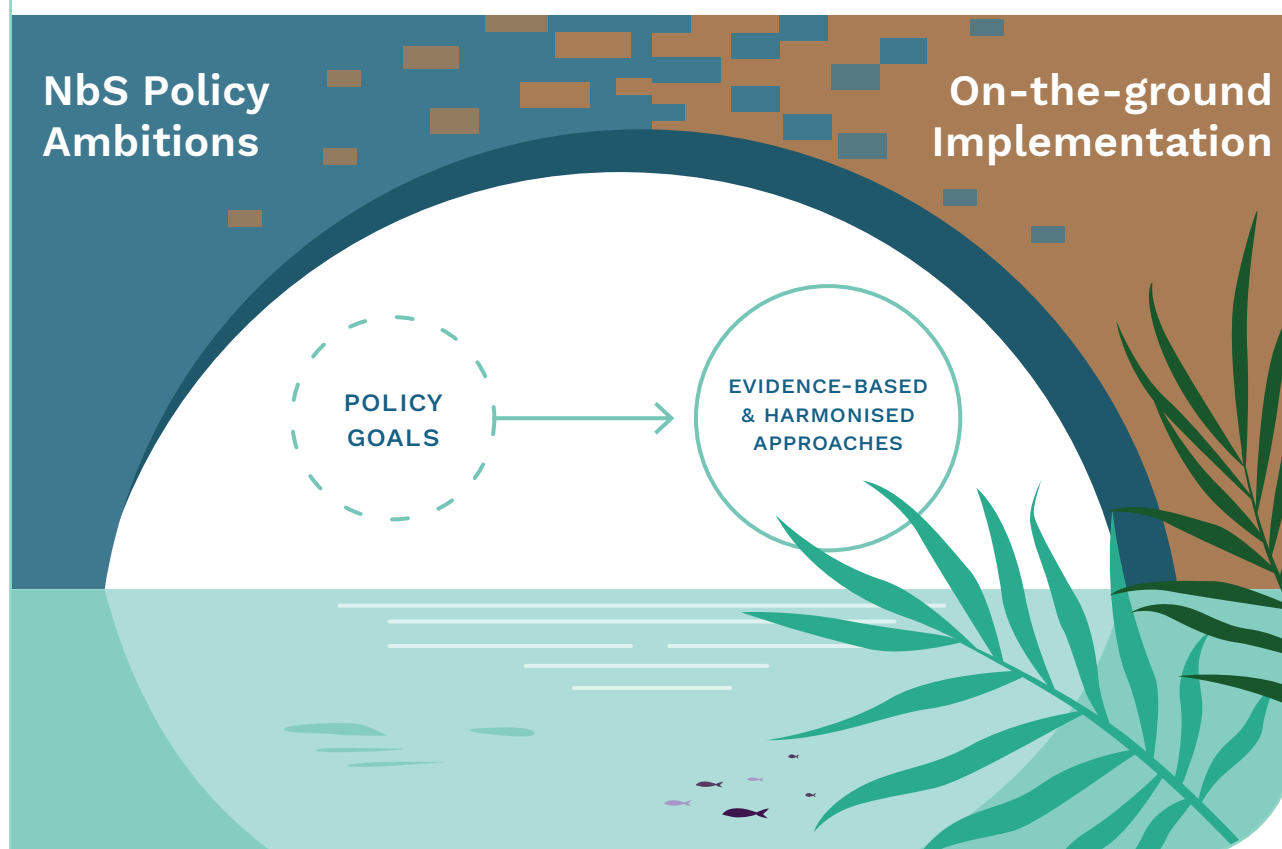


Illustration: Silvia Robertelli

- **Technical Reports (TR):** Purely informative documents containing data, surveys, or state-of-the-art reviews. They do not contain requirements or specifications.
- **Workshop Agreements (CWA):** Fast-track, flexible documents developed by a specific group of stakeholders (a “Workshop”) rather than a full technical committee. They are ideal for rapid technological environments or R&I projects.

European Standardisation Systems and EU Law

In the European Union, standardisation can play an important co-regulatory role. Under the New Approach and subsequent New Legislative Framework, EU legislation may establish essential requirements, while harmonised European standards developed in response to European Commission standardisation requests provide technical specifications that can support compliance with those requirements.

This relationship is increasingly relevant for the NbS sector. European legislation and policy frameworks, such as the EU Nature Restoration Regulation, the EU Biodiversity Strategy for 2030, and the EU Strategy on Adaptation to

Climate Change, are driving the restoration of ecosystems and wider deployment of green-blue infrastructure. However, translating these ambitions into practice requires common ways to describe, measure and assess NbS performance. Technical standardisation supports the development of these shared methodologies, turning policy ambitions into practical approaches that can support implementation, monitoring and market uptake.



Deep Dive: Want to deepen your knowledge on European Standardisation?

If you are ready to explore the technicalities, governance structures, and strategic nuances of European standardisation, check out the [**HSBooster Training Academy**](#). It offers bite-sized courses designed to help researchers and innovators navigate the European standardisation system with ease

Legal Insight – The Co-Regulatory “New Approach” & Presumption of Conformity



In European environmental law, policy and standards work together like a GPS:

- **Setting the Destination:** EU legislation sets mandatory objectives and requirements. In the case of nature restoration, for example, the Nature Restoration Regulation establishes legally binding restoration targets and obligations.
- **The GPS (The Standards):** Standards can provide practical terminology, methodologies, measurement approaches and technical guidance that help actors translate policy objectives into implementation.
- **The Legal Safety Net (Presumption of Conformity):** In certain areas of EU law, harmonised standards can provide a legal “safety net”. If an NbS-related harmonised standard were developed to support specific EU legislation, a municipality or developer applying it could benefit from a presumption of conformity with the legal requirements covered by that standard. This does not apply automatically to all NbS standards or CWAs, but shows how standardisation could increasingly support the regulatory uptake of NbS.

1.2 Pre-Standards (CEN/CENELEC Workshop Agreements)

While full ENs represent the gold standard of technical consensus, developing them is a rigorous, multi-year process. At the same time, European R&I projects have become an important driver of standardisation in the NbS field. Much of the foundational research, methodology development, and standardisation debate in Europe is driven directly by these EU-funded initiatives, notably within Horizon 2020 and Horizon Europe projects.

However, because these research initiatives operate on fixed 3-to-5-year lifecycles, they cannot support or follow through the long-term, multi-year timelines required to build

full European Standards (ENs). To bridge this structural gap, the standardisation system offers a fast-track, project-aligned alternative: **Pre-Standards**, specifically known as **CEN/CENELEC Workshop Agreements (CWAs)**.

What is a Pre-Standard?

CWA is a flexible consensus document developed not by formal national technical committees, but by an open “Workshop” comprising interested direct stakeholders. Unlike ENs, which involve national standardisation bodies in the formal consensus and voting process, a CWA is developed and approved directly by the individuals and organisations participating in the Workshop.

This makes CWAs exceptionally agile, market-driven, and perfectly aligned with the timeframe of European Research & Innovation (R&I) projects.

Feature	European Standard	CEN/CENELEC Workshop Agreement 
Development Time	Typically, 2 to 4 years	Fast-track: 6 to 12 months
Consensus Level	Formal consensus among national delegations	Direct agreement among Workshop participants
Public Inquiry	Mandatory national public inquiry phase	Highly recommended, but flexible in scope
National Adoption	Mandatory (conflicting national standards must be withdrawn)	Voluntary (co-exists alongside existing standards)
Typical Lifespan	Indefinite (reviewed every 5 years)	3 years + max 3 years extension upon review



Why are Pre-Standards important?

CWAs serve as crucial stepping stones in the standardisation and market-uptake pathway of NbS, resolving three major hurdles faced by R&I projects:

- **Policy Alignment and Legacy Security:** EU policy frameworks, funding priorities, and environmental regulations shift rapidly. A formal EN Standard takes several years to develop, risking political obsolescence before publication. A CWA allows R&I consortia to rapidly anchor their findings into a recognised technical document while the project is active. This secures a concrete, long-term legacy, transforming temporary project outputs into stepping stones for future, robust standardisation.
- **Agile Consensus-Building:** Developing an EN Standard requires a formal consensus-building process involving National Standardisation Bodies across Europe. A CWA offers a more flexible route, allowing a specific group of interested stakeholders and experts (e.g., European project partners, municipal engineers, and specialised green-tech firms) to establish shared technical criteria more quickly.
- **A Stepping Stone to Full Standardisation:** CWAs are not dead-ends; they are active “incubators” for future standardisation. They provide a testing ground where a technical methodology can be applied and refined in practice. Once a CWA achieves widespread market traction, it can provide a valuable basis for the subsequent development of a full EN.

Users and Impact: Who benefits from a NbS related CWA?

- **R&I Projects and Researchers:** A CWA serves as a strategic tool to safeguard and institutionalise research findings beyond the project’s funding cycle. Instead of allowing valuable data, methodologies, and guidance to remain confined to project outputs, a CWA establishes a referenceable building block within the European standardisation landscape. This helps create a longer-term legacy that future initiatives and formal standardisation activities can build upon.
- **NbS Practitioners, Designers & Early-Adopter Industries:** A CWA provides a rapid, consensus-based reference framework for emerging methodologies and approaches. Sectors such as green roofs, environmental monitoring technologies, ecological restoration, and nature-based finance can use CWAs to define shared performance metrics and monitoring methodologies, helping build confidence in innovative solutions and supporting wider market uptake. This can help start-ups, designers, and commercial buyers demonstrate how their approaches align with recognised reference frameworks before formal standards become available.
- **Municipal Officers & Public Procurers:** CCWAs can serve as transitional market benchmarks, informing market consultations and helping develop procurement requirements, evaluation criteria, and monitoring frameworks for urban greening and innovative NbS projects before formal standards become available.



Image: Dreamstime / Viesinh

1.3 How to Develop NbS Pre-Standards

A CWA provides a practical route when you need a fast, consensus-based European reference document for an emerging NbS topic that is not yet ready for a full EN or ISO standard. The approach presented in this document builds on existing European standardisation practices for CWAs and draws on lessons from the NATURANCE and VARCITIES experiences.

Design and scope of a CWA in the NbS field

Suitable applications

For NbS, a CWA works well for defining shared terminology, design principles, performance metrics, or good-practice guidance across sectors such as adaptation, biodiversity, water management, insurance, and finance. It is important to keep the topic within the CWA scope and avoid safety-related issues, which CEN says a Workshop cannot address.

When to develop a CWA

Use a CWA when the NbS topic is innovative, cross-sectoral, and requires rapid harmonisation among practitioners, policymakers, researchers, and market participants. Typical focus areas include urban climate resilience, coastal protection, large-scale ecosystem restoration, climate adaptation co-benefits, monitoring frameworks, investable NbS, and standardised indicators for risk reduction. The primary goal is to establish a shared reference framework that increases data comparability, minimises greenwashing risks, and supports public procurement or commercial market uptake.

Defining the scope

A well-structured NbS CWA should be specific enough to be immediately actionable, yet broad enough to remain applicable across diverse geographical contexts. Effective candidates focus on shared methodologies and operating principles—such as ecological integrity guidelines, social valuation methods, governance

standards, long-term monitoring protocols, and adaptive maintenance frameworks, mirroring the multi-dimensional structure seen in benchmarks like the NATURANCE CWA. For many NbS topics, framing the document around *how to evaluate, specify, or finance a class of interventions* is far more effective than trying to dictate a universal physical blueprint for construction. Topics that are overly site-specific are usually better suited for project handbooks rather than formal pre-standards.

Stakeholder setup and engagement

NbS CWAs can strengthen their credibility and impact when developed by a balanced coalition of stakeholders, including ecological experts, field practitioners, public authorities, financial institutions, insurers, developers, community representatives, and end-users. Furthermore, organising workshops in coordination with relevant CEN/CENELEC Technical Committees can help avoid duplication of effort and facilitate future maintenance or progression towards a full European Standard. For NbS, engaging specialists in ecosystem integrity, land tenure dynamics, social governance, and equitable benefit-sharing is essential.

Drafting principles and structure

A robust NbS CWA typically revolves around four core structural elements: scope definition, precise terminology and definitions, guiding principles, and shared performance criteria or metrics. Successful frameworks avoid treating NbS purely as standard civil engineering assets, integrating ecological, social, and economic governance dimensions concurrently. The drafting process should make performance evidence requirements transparent, define clear thresholds for success or materiality, and outline how long-term monitoring and verification must take place. Whenever appropriate, draft texts should align with established global frameworks such as the IUCN Global Standard for NbS and EU Taxonomy principles.

A 5-Phase Roadmap

Developing a CWA is an active exercise in consensus-building. While highly agile compared to standard EN processes, it requires close coordination with an administrative partner and adherence to a clear formal timeline. The timeline for developing a CWA spans roughly **6 to 12 months** and is structured into five distinct phases:

Phase 1: Preparation (Months 1–2)

The objective of this phase is to define the technical gap. The proposing consortium must confirm that no conflicting European Standards (EN) already exist.

- **Key Action:** Identify and partner with an NSB (such as DIN, UNE, AFNOR, or EVS) to act as the **Workshop Secretariat**. The Secretariat will guide the project through the CEN/CENELEC administrative system.
- **Deliverable:** A draft **Project Plan** defining the scope, work program, funding, and estimated timeline.

 **Tip:** Make sure your project has a dedicated, pre-allocated budget for hiring the NSB's secretariat services. These administrative fees typically range from **€15,000 to €45,000** (excluding VAT), depending on the complexity of the CWA, the number of meetings, and the chosen NSB. For EU-funded consortia, this should be explicitly written into the grant proposal under “Subcontracting” or “Other direct costs” early on.

Phase 2: Proposal, Announcement, and Kick-off (Months 3–4)

The Project Plan is formally submitted to CEN/CENELEC.

- **Key Action:** The proposal is announced publicly on the CEN/CENELEC website for a mandatory **30-day commenting period**. This allows any European stakeholder to express interest in participating or submit feedback on the scope.

- **Deliverable:** The official **Kick-off Meeting**, where registered stakeholders formally approve the Project Plan and select the **Workshop Chair** (typically the scientific lead or project coordinator).

 **Tip:** Do not rely solely on the public announcement to attract participants. Actively mobilise your existing networks, reach out directly to key scientific experts, industry competitors, and municipal networks to secure a balanced and representative group for the process.

Phase 3: Drafting and Consensus Iterations (Months 5–8)

With the workshop group established, drafting begins in earnest.

- **Key Action:** Under the coordination of the Chair and Secretariat, the technical experts draft the text. Since living ecosystems are highly context-dependent, setting rigid physical performance targets can create systemic failure risks across different climatic, geographical, or regulatory and governance contexts. The workshop can address this challenge by standardising the **methodological “how”**—such as reusable monitoring protocols, calculation methodologies, risk-modelling steps, and adaptive management workflows. This provides markets with reliable, upscalable evaluation frameworks while preserving essential ecological design flexibility.
- **Consensus Principle:** Decisions are reached via “direct consensus” among the workshop participants, meaning no major, unresolved objections remain.

 **Tip:** Align your workshop methodology with **IUCN NbS Global Standard Criteria 2 (Design at scale/context) and 7 (Adaptive Management)**. Criterion 2 provides a robust template for socio-ecological mapping and boundary setting, while Criterion 7 anchors your monitoring protocols in the iterative, long-term feedback loops essential for resilient NbS performance.

Figure 02

CWA - From NbS Innovation to Shared Practice

Why CWA matters - Bridging R&I and Standardisation

While NbS methodologies and frameworks are often developed in 3- to 5-year EU R&I projects, developing a full European Standard takes years of formal consensus-building.

CWAs bridge this divide, enabling project consortia to formalize NbS metrics, terminology, and best practices within a timeframe that matches project active innovation.

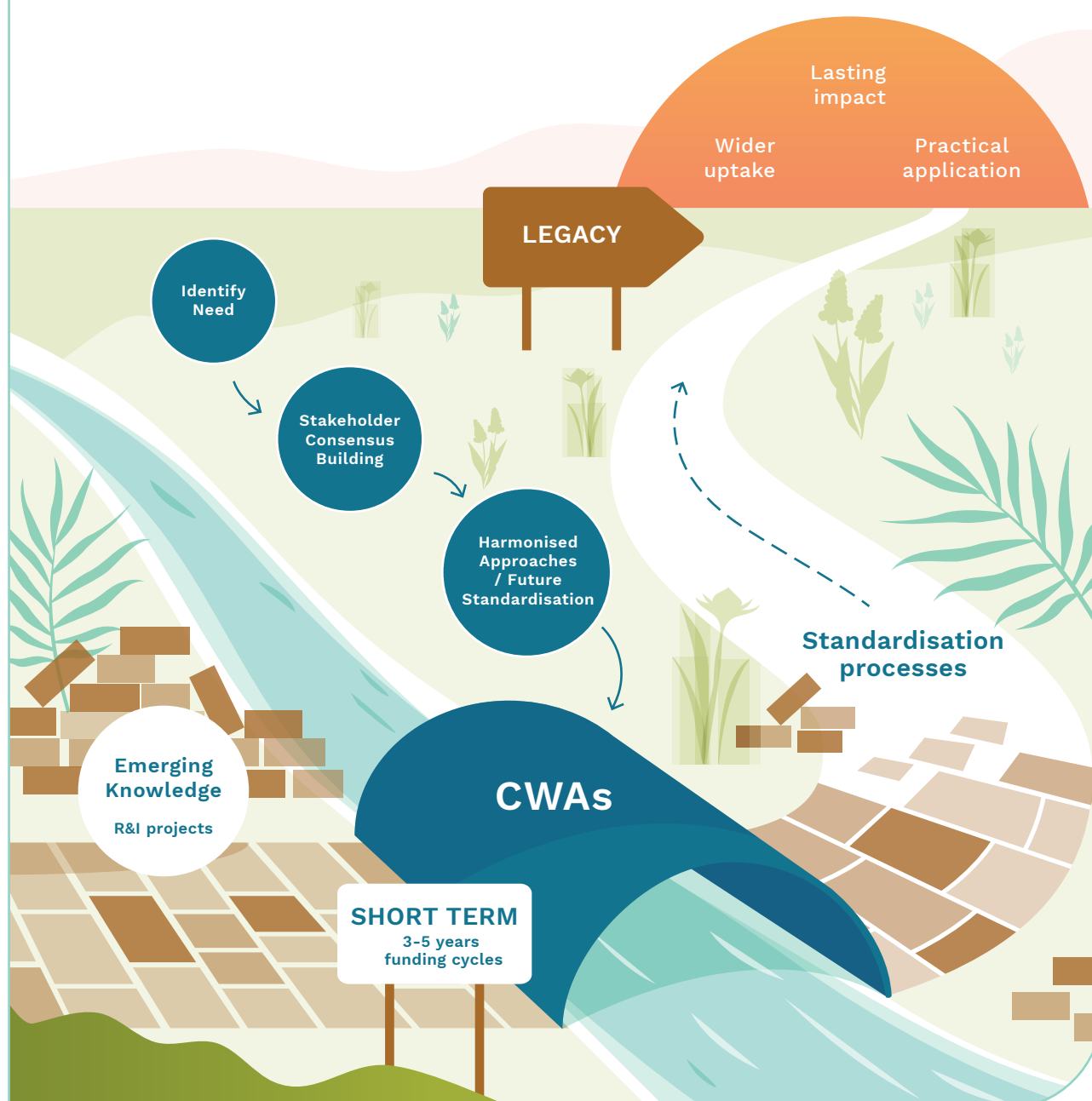


Illustration: Silvia Robertelli

Phase 4: Public Consultation & Review (Months 9–10)

While not strictly mandatory for all CWAs, a public comment phase is **highly recommended** for NbS to ensure ecological, local, and academic credibility.

- **Key Action:** The draft CWA is made available publicly for 30 to 60 days. The Secretariat compiles all incoming technical critiques. The Workshop must meet to review and resolve every piece of feedback.

Phase 5: Finalisation and Publication (Months 11–12)

- **Key Action:** The final text is approved by the Workshop participants and formally processed by the CEN-CENELEC Management Centre (CCMC).
- **Deliverable:** The CWA is published in English (and optionally translated) and added to the official European standardisation catalogue, ready to be purchased or accessed via national bodies.

Key Roles in the CWA Process

To successfully navigate this workflow, it is vital to understand the administrative mandates:

- **The Proposer:** The R&I project, consortium, or industry group that identifies the technical gap, drafts the initial scope, and secures

the funding needed to cover the NSB administrative costs.

- **The Workshop Secretariat (NSB Partner):**

A dedicated officer from a National Standardisation Body. They do not write the technical text. Instead, they act as the neutral guide, managing the CEN/CENELEC registration, coordinating public notices, hosting meetings, and ensuring the final document complies with formal CEN/CENELEC writing rules.

- **The Workshop Chair:** Selected during the Kick-off meeting. This is a technical leader (e.g., from the proposing consortium) who actively drives the drafting work, facilitates the scientific debates, and manages consensus-building when technical viewpoints diverge.
- **The Workshop Participants:** Any interested stakeholder (academic, public officer, NGO representative, or industry competitor) who registers before or during the kick-off to actively write, review, and contribute to consensus on the drafts.

Developing a CWA is only the beginning of the standardisation journey. The true value of standards and pre-standards emerges when they are applied in practice, helping researchers extend project legacy, supporting market uptake, informing public procurement, and creating common reference frameworks that can shape future standards. The following chapter illustrates how standards and pre-standards are already being used across the NbS field and what lessons can be drawn for future initiatives.

Is Your Project a Good Candidate for Pre-Standardisation?

Pre-standardisation is most valuable when a project has produced approaches that would benefit from broader alignment, comparability, or consensus across organisations, sectors, or geographical contexts.

Consider a CWA if your project has developed:

- ✓ A monitoring or verification methodology that would benefit from consistent application across multiple projects
- ✓ An assessment framework that could support comparable decision-making across cities, regions, or sectors
- ✓ Indicators, metrics, or performance criteria that could help create a common basis for evaluation
- ✓ A governance, planning, or implementation approach that requires a shared understanding among different stakeholder groups
- ✓ An emerging practice where a lack of common terminology, methodologies, or expectations is limiting wider adoption

A CWA may be less appropriate where the main outputs are:

- ✗ Site-specific designs or engineering solutions
- ✗ Local implementation manuals tailored to a particular context
- ✗ Project-specific tools that are not intended for broader application
- ✗ Research findings that still require substantial validation before wider use

A useful rule of thumb is to ask: Would wider adoption of this approach benefit from a common language, shared methodology, or agreed evaluation framework? If the answer is yes, pre-standardisation may be worth considering.

Additional Resources & Learning Materials



- **CEN/CENELEC Guide 29** – specifically designed to bridge the gap between technology, research, and standardisation, it outlines the mechanisms for developing CWAs.
- **How to Develop a CEN Workshop Agreement with NetworkNature** – provides support for Biodiversity & Nature-based Solutions Horizon projects for setting a CWA.



Considering Pre-Standardisation?

Has your project developed an approach that others could adopt, compare, evaluate, or build upon? If so, pre-standardisation may help extend its impact beyond the project itself. The CWA Proposal Template in the Annex provides a practical starting point for exploring this pathway.

2. Standards and Pre-Standards in Action

Standards and pre-standards can play different roles across the NbS lifecycle, from supporting research and innovation to informing procurement decisions and enabling market development. Their application will vary depending on the needs of different users and the maturity of the topic being addressed.

This chapter explores how these instruments have been used in practice and the lessons that can be drawn from early experiences in the NbS field. Their applications extend across the NbS lifecycle, from research and innovation to procurement, implementation and market development. The table below provides a simplified overview of some of the functions that standards and pre-standards can support.

Standards in Practice



Application Area	Contribution
Research	Transform project methodologies and results into reference frameworks
Knowledge transfer and collaboration	Create shared terminology, methodologies and assessment approaches across organisations
Public procurement	Inform technical requirements, evaluation criteria and performance monitoring
Implementation	Support the testing, assessment and continuous improvement of NbS approaches
Market development	Enable new services, expertise, financing mechanisms and business opportunities



2.1 Deploying Pre-Standardisation in R&I: Lessons from Pioneer CWAs

For many research and innovation projects, standardisation remains an unfamiliar pathway to impact. Yet the experiences of recent NbS initiatives demonstrate that pre-standardisation can provide a practical mechanism for translating project knowledge into resources that remain useful beyond the lifetime of a consortium. Rather than producing outputs that are primarily designed for dissemination or for the scientific community, the CWA process helps convert

methodologies, assessment approaches, monitoring frameworks, and good practices into reference documents that can be used and further developed by a wider community.

The NATURANCE and VARCITIES CWAs illustrate how pre-standardisation can be applied to very different challenges. While one focuses on nature-based insurance and investment solutions and the other on health and well-being outcomes in cities, both show how project results can be transformed into shared frameworks that support implementation, comparability, and future uptake. Below you will find a short summary of those two CWA initiatives.



NATURANCE CWA (CWA 18349:2026)



- **Publication Date:** February 2026
- **Goal:** Bridge the gap between ecosystem restoration and risk financing/insurance.
- **Approach:** This CWA establishes a common reference framework for nature-based insurance and investment solutions, integrating ecosystem protection and restoration with financial instruments for climate risk management. It sets minimum requirements for economic and financial soundness, environmental integrity, social value, and inclusive governance.
- **Structure:** The document provides guiding principles, shared metrics for consistent evaluation, and application examples.
- **Applications for end-users:**
 - **Insurance Underwriters & Financial Investors:** Can be used to support standardised risk modelling and the assessment of investments in NbS as Disaster Risk Reduction (DRR) assets.
 - **Climate Adaptation Policymakers:** Serves as a technical reference for designing regional resilience strategies that integrate natural capital into financial protection schemes.
 - **Municipal Officers & Public Procurers:** Provides a framework to integrate NbS into municipal risk management strategies, enabling procurers to specify risk-resilient projects that adhere to standardised criteria of financial soundness and environmental integrity.

“ The NATURANCE CEN Workshop Agreement (CWA 18349:2026) grew from an ambition to help turn a growing body of knowledge on Nature-based Insurance and Investment Solutions (NBIS) into practical action. The consensus-based process helped spell out what it is that makes NBIS credible, effective, impactful and measurable. By bringing together researchers, insurers, investors, public authorities, and other stakeholders, it aimed to translate the NATURANCE project insights and a wider set of knowledge into a set of design principles and performance metrics.

The resulting pre-standardisation document, published in early 2026 and available to the public for download, provides a bridge from knowledge to application. It gives those working on the ground a practical reference for designing, assessing, financing, and scaling solutions that can reduce climate risks while delivering measurable benefits for nature and society. More than just an outcome of the project, the CWA is a foundation for what comes next for NBIS: helping ideas move beyond research, strengthening confidence and comparability, supporting market uptake, and opening a pathway towards wider adoption and future standardisation. ”

Dr Jaroslav Mysiak

Principal Scientist – Centro Euro-Mediterraneo sui Cambiamenti Climatici, Director of the Risk Assessment & Adaptation Strategies Division – Institute for Climate Resilience



VARCITIES CWA (CWA 18237:2025)



- **Publication Date:** July 2025
- **Goal:** Establish a unified, process-oriented monitoring and assessment framework to quantify the health and well-being outcomes of urban NbS.
- **Approach:** This CWA provides the technical methodologies needed to link urban design interventions with health-related performance indicators, allowing cities to treat “well-being” as a measurable infrastructure output.
- **Structure:** The document provides guiding principles, shared metrics for consistent evaluation, and application examples.
- **End-Users & Application:**
 - **Urban Planners & Health Professionals:** Can be used to design “healthy” urban corridors where health outcomes are measurable components of the project design.
 - **Municipal Officers:** Provides a methodology for assessing the outcomes of Urban NbS in health and well-being. It provides a framework for specifying measurable health-impact requirements in public tenders, allowing procurers to weight health and well-being outcomes as technical performance criteria when comparing the offers or monitoring contract implementation.

“ As Coordinator of VARCITIES, I consider the CEN Workshop Agreement we built together to be one of our major accomplishments. Too often, the knowledge we generate stays locked inside our own projects. The CWA process opened that door. It gave us a way to take what we learned across our seven pilot sites, including what worked, what did not and what we would do differently, and set it down in a structured, transparent and replicable form that anyone can use.

Working with CEN/CENELEC also changed how we think. It pushed us to be precise, to justify every choice and to write for people we will never meet. CWA 18237:2025 is the result: not a report about VARCITIES, but a practical framework for any city that wants to design, implement and evaluate solutions for the health and well-being of its citizens. That is VARCITIES’ most important legacy: knowledge that does not stop when the funding ends but continues creating value in cities long after the project has closed. ”

Prof. Dr Dionysia Kolokotsa

Head of Sustainable Built Environment
Lab, Chemical and Environmental
Engineering School



Additional Resources



- **NATURANCE CEN Workshop Agreement** - Nature-based insurance and investments – Guidance on performance and design criteria (**CWA 18349:2026**).
- **VARCITIES CEN Workshop Agreement** - Visionary nature-based actions for health, wellbeing & resilience in cities (**CWA 18237:2025**).
- **European Standardisation Panel Survey – Final Report, 2024** - Identifies the demand from industry and other stakeholders for standards as potential results of research and innovation (R&I).

What Can R&I Projects Learn from these Experiences?

Building a Common Evidence Base

Many NbS projects develop their own methodologies, indicators, and assessment approaches. While this flexibility supports innovation, it can also make it difficult to compare results, build on previous work, or generate evidence across multiple projects.

Pre-standardisation can help create a common foundation by establishing shared terminology, methodologies, and evaluation approaches. This makes it easier for researchers, practitioners, and policymakers to interpret results, compare experiences, and build on existing knowledge rather than starting from scratch.

When developing a new methodology or monitoring framework, consider whether greater alignment with existing approaches could strengthen its usefulness beyond the lifetime of your project.

Opening Research to New Communities

Research projects often aim to engage external stakeholders, but interaction with end-users is frequently concentrated in pilot activities or dissemination events. The CWA process creates a different type of engagement by bringing researchers together with practitioners, public authorities, investors, standardisation experts, and potential users. This can provide valuable feedback on how methodologies perform outside research environments and reveal needs or constraints that may not be visible from within a project consortium.

Think of pre-standardisation not only as a standardisation exercise, but also as an opportunity to test whether your project's outputs are understandable, relevant, and usable for the communities you hope to reach.

From Project Outputs to Shared Reference Frameworks

Every project produces outputs. The challenge is deciding which outputs should remain project-specific and which have the potential to become resources for a wider community. The NATURANCE and VARCITIES experiences show how project knowledge can be organised into reference frameworks that support future decision-making, implementation, and innovation. By doing so, they create a foundation that others can continue to use and improve.

A useful question to ask is: are we simply reporting what we learned, or are we creating something that others can systematically apply?

Supporting the Transition from Innovation to Application

Many promising approaches work well within a project but struggle to gain traction afterwards. Potential users may not know how to assess them, compare them, or integrate them into decision-making processes.

Pre-standardisation can help bridge this gap by creating a recognised and transparent framework around emerging approaches. It provides a route for moving knowledge from pilots and demonstrations into wider practice.

For projects looking beyond dissemination, pre-standardisation can be considered as one of several pathways for extending the influence of project results and supporting their use in future research, policy, implementation, and market development.

The NATURANCE and VARCITIES experiences also highlight an important lesson: generating knowledge is only one part of the innovation process. For new approaches to achieve wider impact, they must be understood, trusted, and adopted by organisations beyond the original project consortium. Pre-standards can help facilitate this transition by translating research outputs into shared methodologies, performance frameworks, and common reference points that are accessible to a broader community of users.

In practice, the value of these shared reference frameworks depends on how they are used beyond the research environment. Public authorities, practitioners, businesses, and other end-users all play a role in transforming project results into wider application. The following sections explore how standards and pre-standards can support this process through public procurement and market development.

2.2 Standards and Pre-Standards in NbS Public Procurement

Public procurement is one of the most important pathways through which research and innovation can create real-world impact.

As cities and public authorities increasingly invest in NbS, they often face challenges in defining requirements, comparing proposals, assessing performance, and managing innovative solutions over time.

Formal standards and pre-standardisation outputs can help address these challenges by providing shared terminology, common methodologies, performance frameworks, and monitoring approaches. While neither standards nor pre-standardisation outputs are procurement tools in themselves, they can provide valuable technical references that support the design of procurement strategies, technical requirements, evaluation criteria, and monitoring frameworks.

Formal standards (such as European Standards or international ISO standards) provide established and broadly recognised frameworks that can be referenced in public procurement, depending on their scope and relevance to the subject matter of the contract. For example, relevant standards may be used in technical specifications or, where appropriate and proportionate, as evidence supporting selection criteria relating to the tenderer's technical and professional ability or quality and environmental management arrangements (e.g. ISO 9001 or ISO 14001, or equivalent). Where certificates or other specific evidence are required to demonstrate compliance, equivalent certificates or other appropriate means of proof may also need to be accepted.²

Pre-standardisation outputs such as CWAs can provide an important bridge between emerging

² Where certificates or other specific evidence are required to demonstrate compliance, equivalent certificates or other appropriate means of proof may also need to be accepted.



Image: Dreamstime / Ondrej Prosky

NbS knowledge, market development and practical implementation by cities. While they do not have the same formal status as EN or ISO standards, they can offer early technical guidance, shared terminology, methodologies, performance frameworks, and monitoring approaches in areas where formal standards are still under development. Public authorities may draw on these outputs when developing procurement requirements, engaging with the market, assessing innovative solutions, and generating comparable evidence from implementation.

Where CWAs or other pre-standardisation outputs inform procurement documents, contracting authorities may translate relevant elements into clear, proportionate, and outcome-oriented requirements linked to the subject matter of the contract. This can preserve space for equivalent, innovative, and locally appropriate approaches while benefiting from the shared technical basis provided by the CWA.

Integrating Standards and Pre-Standards into Procurement Processes

Market Consultation and Early Market Engagement

Before launching a procurement procedure, contracting authorities can use relevant standards and pre-standards to better understand the market and identify available approaches.

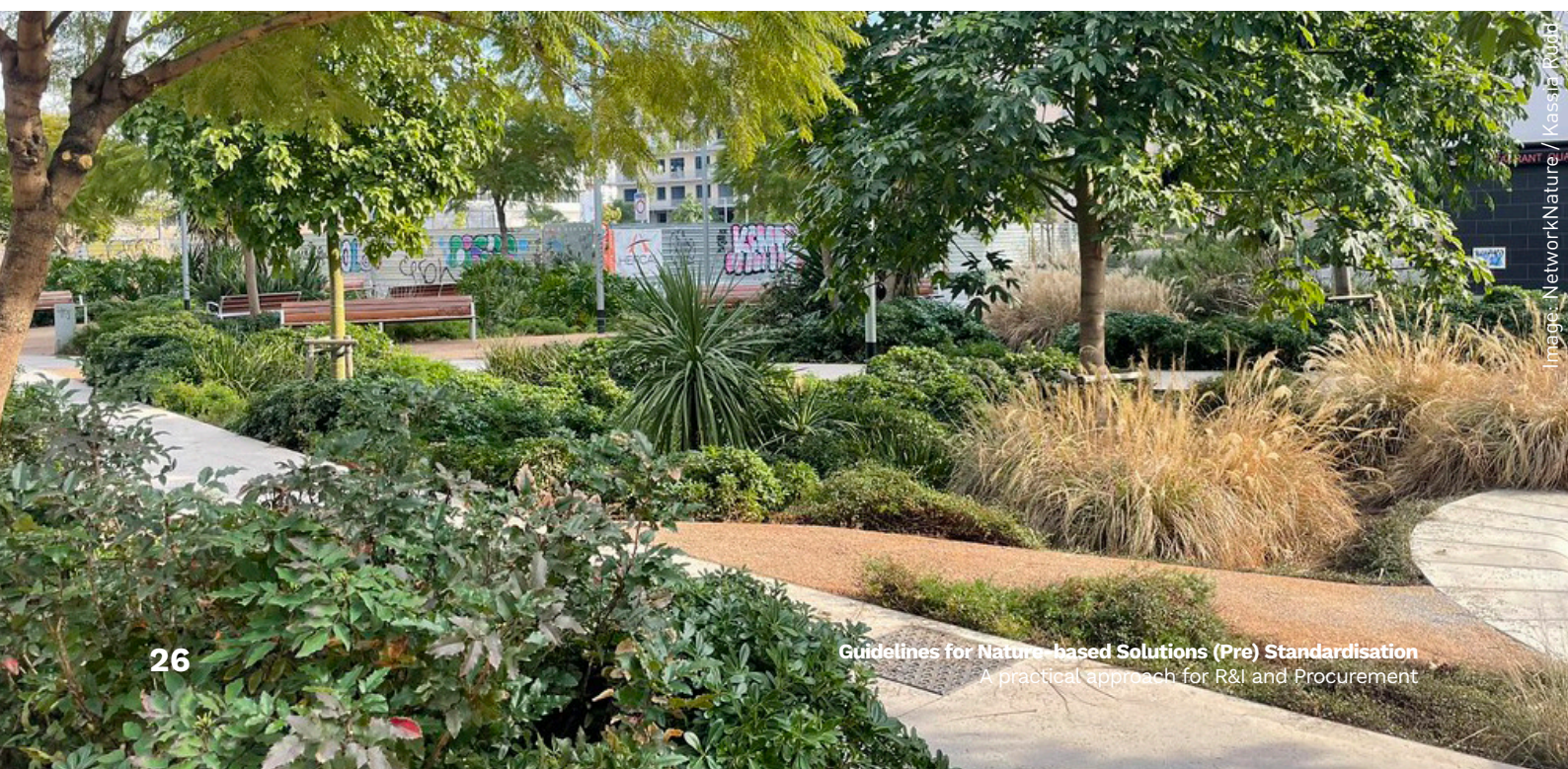
Reviewing existing reference frameworks can help authorities understand common methodologies, performance indicators, monitoring approaches, and emerging good practices.

Formal standards and CWAs can provide useful technical reference points for preliminary market consultations, helping contracting authorities communicate and test proposed methodologies, performance expectations and technical approaches. Market consultation itself remains essential for assessing market readiness and determining whether suppliers are able to meet the proposed requirements. Where appropriate, standards and pre-standardisation outputs may also inform Prior Information Notices (PINs) and other market engagement activities by providing a common basis for communicating anticipated requirements and expected outcomes.

For emerging NbS markets, CWAs can be particularly useful in creating a common language between cities, suppliers, and research actors before requirements are finalised.

Developing Technical and Functional Requirements

Pre-standardisation outputs can serve as valuable and practice-oriented sources of technical information when preparing procurement documents, particularly for innovative NbS where formal standards are not yet available or fully



developed. As mentioned previously, contracting authorities can use relevant methodologies, indicators, monitoring approaches, or performance frameworks to develop functional and performance-based requirements linked to the subject matter of the contract.

This approach can be particularly useful for innovative NbS, where the desired outcomes may be known, but the most effective technical solution may vary according to local conditions and supplier expertise.

Where formal standards are referenced in technical specifications, contracting authorities should allow equivalent solutions in accordance with applicable procurement rules. When using CWAs, authorities may instead draw on their methodologies, indicators, or performance frameworks to formulate functional or performance-based requirements that describe the intended outcome while allowing suppliers to propose appropriate technical solutions.

For long-term contracts, authorities may also consider including clearly defined review clauses that allow performance metrics or benchmarks to be revisited if updated standards, pre-standards, or guidance become available during contract implementation. Such clauses should clearly define from the outset the scope, conditions, and process for possible adaptations.

Awarding Contracts Based on Quality and Performance

Formal standards, and where relevant pre-standards outputs, can provide useful reference points for translating technical knowledge into criteria that are easier to specify and assess within procurement processes. Relevant methodologies, indicators, or performance frameworks can help contracting authorities define what aspects of quality or performance will be evaluated and how these will be assessed, provided that the criteria are linked to the subject matter of the contract.

Therefore, the focus of the evaluation should remain on the quality, credibility, and expected

performance of the proposed solution. Standards and pre-standardisation outputs may provide useful reference points for defining and assessing these aspects, but evaluation should not depend solely on whether a bidder cites a particular document. Moreover, award criteria shall be linked to the subject matter of the contract and formulated so that tenders can be objectively compared and verified.

Depending on the project, relevant criteria may include:

- The robustness of monitoring and evaluation methodologies;
- The credibility of resilience or risk-assessment approaches;
- The quality of operation, maintenance, and adaptive management plans;
- The ability to demonstrate expected environmental, social, or economic outcomes;
- The relevance and transparency of proposed performance indicators.

In this context, both formal standards and pre-standardisation outputs can help public authorities define clear expectations and assess proposals against more transparent and consistent performance frameworks.

Contract Management and Performance Monitoring

Formal standards and pre-standardisation outputs may also support contract management by informing monitoring frameworks, indicators, reporting requirements, and performance assessment approaches. Where methodologies or metrics derived from a standard or a CWA have been incorporated into tender and contract documents, they can provide a useful basis for monitoring progress and assessing delivery against agreed performance requirements and commitments.

To ensure that these approaches are operational and enforceable, contracts should clearly identify the relevant indicators, baseline conditions, data sources, reporting frequency, responsibilities, and

review arrangements. For long-term NbS projects, monitoring frameworks should distinguish between commitments within the contractor's control—such as establishment, maintenance, reporting, and adaptive-management actions—and wider outcomes affected by environmental conditions or other external factors.³

In such cases, periodic review mechanisms can help ensure that monitoring approaches and performance expectations remain appropriate as evidence, standards, technologies, and local conditions evolve.⁴ Review clauses should clearly define from the outset the scope, conditions, and process for possible adaptations. They should not be used as an open-ended mechanism to introduce new obligations or fundamentally alter the agreed nature or risk allocation of the contract.

Supporting Innovation and Pilot Projects

Pre-standardisation outputs can be particularly valuable in pilot projects, demonstration projects, and innovative procurement initiatives where formal standards have not yet been developed. In these contexts, CWAs can help cities translate emerging NbS knowledge into more structured procurement and implementation approaches.

CWAs can provide agreed terminology, methodologies, monitoring approaches, and reporting frameworks that help authorities communicate expectations to the market, generate more comparable evidence, and assess results more consistently. They can therefore support the transition of promising NbS approaches from research and demonstration into wider public-sector uptake.

At the same time, experiences generated through pilot projects can provide valuable evidence for the refinement of existing CWAs, the development

of new pre-standardisation initiatives, and, where appropriate, future formal standards.



Putting Standards into Procurement Understand

Use relevant formal standards and pre-standardisation outputs to understand available methodologies, performance frameworks, monitoring approaches, and emerging market practices before preparing procurement documents.

Translate

Convert relevant elements into clear, measurable, and proportionate technical, functional, or performance requirements linked to the subject matter of the contract. Where formal standards are used in technical specifications, allow equivalent solutions. CWAs can inform outcome-oriented requirements while leaving flexibility for innovative and locally appropriate approaches.

Evaluate

Use award criteria that recognise the quality, credibility, and expected performance of proposed solutions. Standards and pre-standards can help inform these criteria by providing reference methodologies, indicators, and performance frameworks relevant to the subject matter of the contract.

Monitor

Where appropriate, use methodologies, indicators, and monitoring approaches informed by standards and pre-standards to support contract management and performance assessment throughout implementation. Incorporate the relevant requirements clearly into tender and contract documents.

³ Contract-performance conditions are fixed obligations that apply after award and do not form part of the comparative assessment of tenders.

⁴ For long-term contracts, review clauses should clearly define the scope and conditions of possible adaptations from the outset.

How each Type of Reference Framework Can Support Procurement?



Type	Example	Typical role
European Standards (EN)	EN 18140:2026	Common terminology and classification framework for NbS; may be referenced in procurement documents where relevant, subject to applicable rules on equivalent solutions.
ISO Standards	ISO 37151, ISO 37153*	Urban sustainability, performance and community-level assessment frameworks.
CWAs	NATURANCE, VARCITIES	Emerging methodologies, sector-specific guidance, terminology, performance frameworks, and monitoring approaches that can inform innovative and outcome-oriented procurement.
Technical Specifications / Reports	Various	Supporting technical information and implementation guidance.

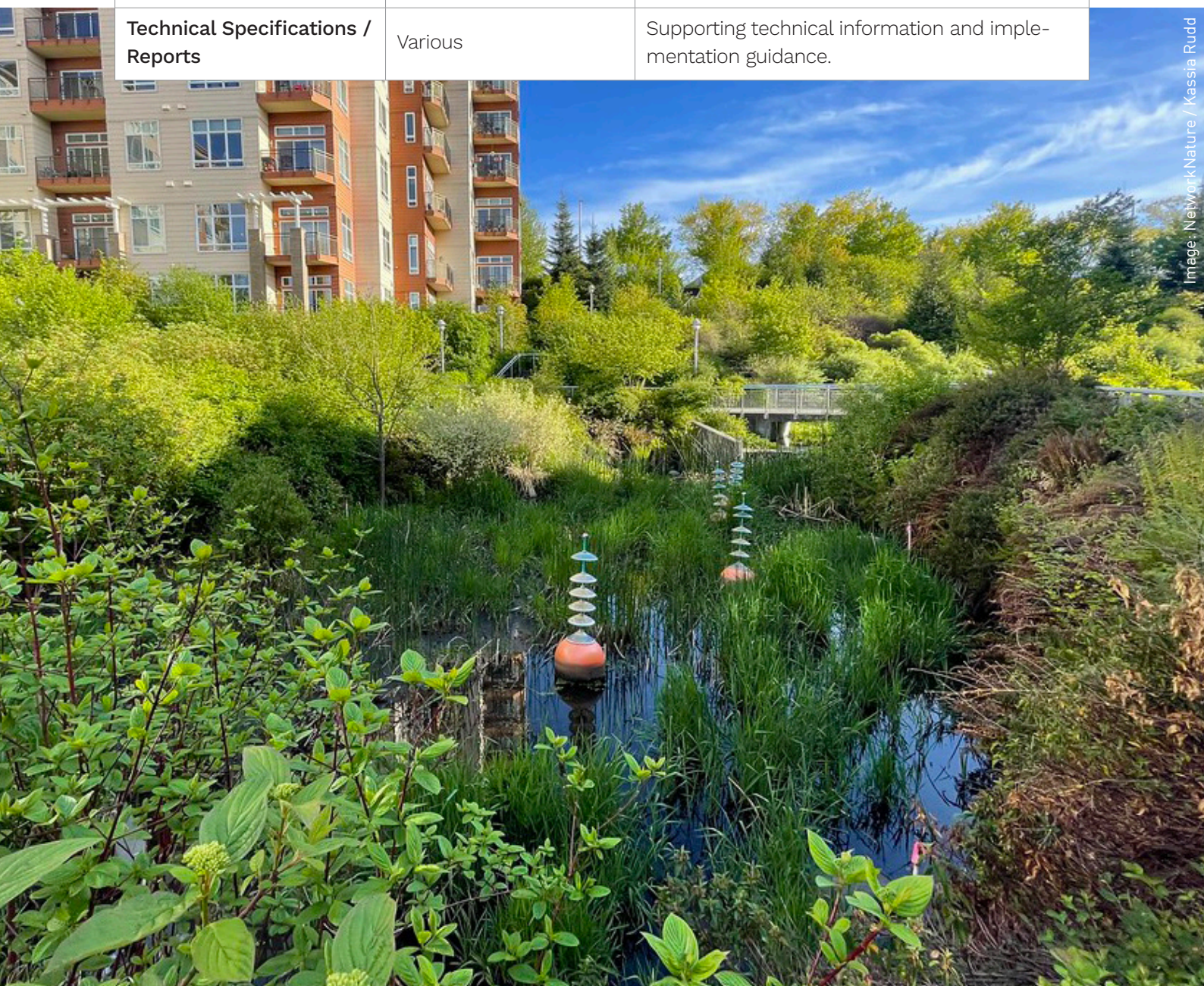


Figure 03

Standards and Pre-Standards in Public Procurement

How can standards and pre-standards support each stage of a procurement process?

Public authorities often face challenges when procuring NbS. Outcomes can be difficult to specify, compare, monitor, and evaluate. Standards and pre-standards can support procurement by providing common terminology, performance frameworks, methodologies, indicators, and monitoring approaches. They can help authorities communicate requirements more clearly, evaluate proposals more consistently, and monitor performance over time.

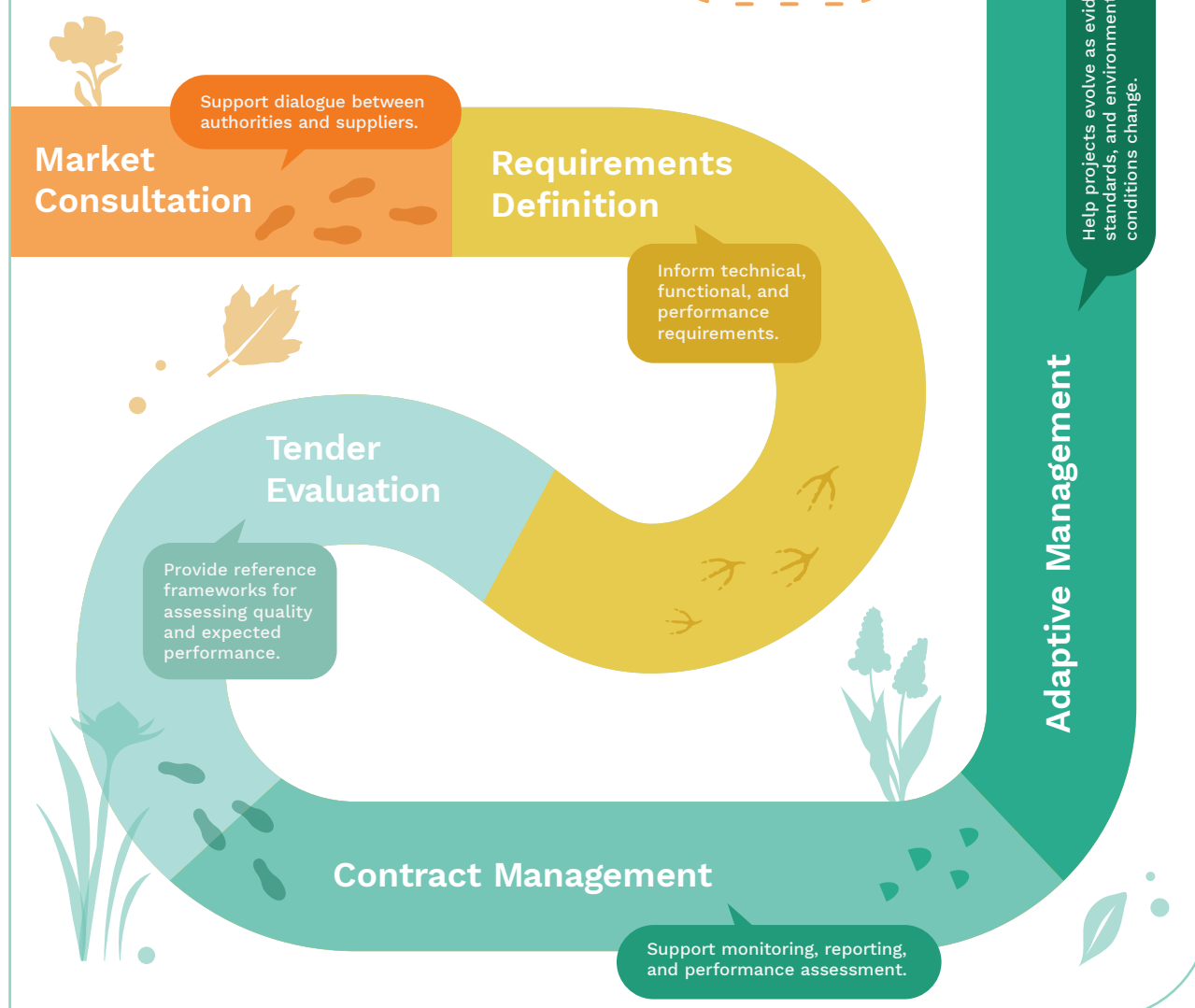


Illustration: Silvia Robertelli

The following hypothetical example illustrates one way in which standards and pre-standards may inform procurement requirements, evaluation criteria, and monitoring approaches for innovative NbS projects.

Illustrative Procurement Scenario: Urban Resilience Tender⁵

To illustrate how standards and pre-standards can inform procurement processes in practice, the following example shows how procurement requirements, evaluation criteria, and monitoring approaches can draw on relevant standards and CWAs in the context of a long-term NbS contract.

Context: The City of River-Park is launching a 20-year Design-Build-Operate-Maintain (DBOM) tender for a “Green Climate Corridor” aimed at reducing local flood risks and improving public health. Because living ecosystems evolve and relevant technical knowledge, guidance and standardisation outputs may evolve over the contract lifecycle, the municipality requires a procurement structure that ensures both initial technical rigor and long-term regulatory adaptability. In this sense, the municipality intends to use a combination of recognised standards and pre-standards to support a common understanding of NbS terminology, performance expectations, monitoring approaches, and long-term evaluation frameworks.



Image: Dreamstime / Sjors

⁵ This scenario is illustrative only. The specific use of standards or pre-standards in procurement documents should always be proportionate, linked to the subject matter of the contract, and adapted to the legal and operational context of the contracting authority.

Illustrative Tender and Contract-Clause Example:

1. Design & Technical Baseline:

Bidders shall propose nature-based interventions that contribute to climate resilience and disaster risk reduction. Proposed solutions should use terminology and classifications consistent with EN 18140:2026 (Nature-based Solutions – Terminology and Classification) or provide an equally clear and interoperable terminology and classification approach. Proposed solutions should also explain how they address economic, environmental, social, and governance considerations, drawing where relevant on recognised methodologies and assessment frameworks, including the methodologies and assessment frameworks described in CWA 18349:2026 (NATURANCE), where relevant, or comparable approaches that demonstrate an equivalent level of technical robustness. Proposed solutions should also explain how health, well-being, and resilience objectives have been incorporated, taking account of the assessment and good-practice framework provided by CWA 18237:2025 (VARCITIES) where relevant, or a comparable approach suited to the local context.

European standards will mature over a 20-year life cycle monitoring and evaluation plans demonstrating clear, credible, and proportionate performance-assessment approaches will be considered as part of the technical evaluation. These plans should identify relevant baseline conditions, indicators, data-collection methods, reporting arrangements, and proposed adaptive-management measures.

2. Review Clauses & Future Standards:

For long-term contracts, performance metrics, monitoring approaches, or benchmarks referenced in the contract may be reviewed where relevant European or international standards, including future EN or ISO standards, subsequently become available. The conditions, scope, and process for any such review should

be defined within the contract's review and modification mechanisms from the outset. Any review must remain within the scope and limits defined in the original contract and must not alter its overall nature or agreed risk allocation.

3. Periodic Review & Adaptive Maintenance:

The operator shall participate in a joint technical review every three years to assess ecological and functional performance against the monitoring framework established in the contract. The review may identify opportunities for adaptive-management measures, maintenance adjustments, or revisions to monitoring approaches where justified by evolving environmental conditions or emerging evidence.

Where performance deviates materially from agreed milestones or thresholds, the operator shall prepare an adaptive-management proposal for approval by the contracting authority. The contract should define the associated responsibilities, timetable, decision-making process, and cost allocation.

While procurement decisions are ultimately made contract by contract, their influence often extends beyond individual projects. Over time, the repeated use of common terminology, methodologies, performance frameworks, and monitoring approaches can contribute to greater consistency across the NbS sector. As these reference frameworks become more familiar to suppliers, investors, practitioners, and public authorities, they can help create a more predictable environment for innovation and adoption. The next section explores how standards and pre-standards can contribute to this broader process of market development and uptake.

2.3 Standards and Pre-Standards in NbS Market Development

Experience from sectors such as environmental management, climate adaptation, water services, construction, and remediation shows that standards can contribute to market development in several ways. They can improve transparency, strengthen confidence in how performance is

assessed, reduce transaction costs associated with coordination and reporting, support the emergence of specialised services and expertise, and provide a more structured basis for procurement and investment decisions.

The table below illustrates how different standards have contributed to market development across a range of sectors and the potential lessons they may offer for the future development of NbS markets.

Sector	Market Challenge	Reference Standards / Frameworks	Market Development Effect
Climate Adaptation	Inconsistent climate-risk assessment	ISO 14090, ISO 14091	Growth of climate-risk, resilience, and adaptation services
Environmental Management	Need for credible environmental management practices	ISO 14001	Expansion of auditing, certification, consulting, training, and software markets
Water Management	Fragmented performance assessment approaches	ISO 24510, ISO 24511, ISO 24512	Growth of benchmarking, monitoring, and water-performance services
Environmental Remediation & Brownfields	Uncertainty around contamination risks and remediation performance	ISO 18504, ISO 14015, ISO 18400 series	Development of remediation, environmental engineering, laboratory, and risk-assessment markets
Construction & Infrastructure	Need for consistent design and information management	Eurocodes (EN 1990-1999), ISO 19650	Growth of engineering, BIM, software, and construction services markets

Image: Dreamstime / Shutterstock Ireland

Figure 04

From Research to Market Impact Across the NbS Value Chain

Where standards create value

Standards and pre-standards support a wide range of activities across the NbS value chain, extending far beyond technical standardisation. They can help capture knowledge generated through research, support collaboration between organisations, inform procurement processes, guide implementation and monitoring, and contribute to market development.

By providing shared reference frameworks, they help different actors collaborate, compare experiences, build on existing knowledge, and support the broader adoption of NbS.

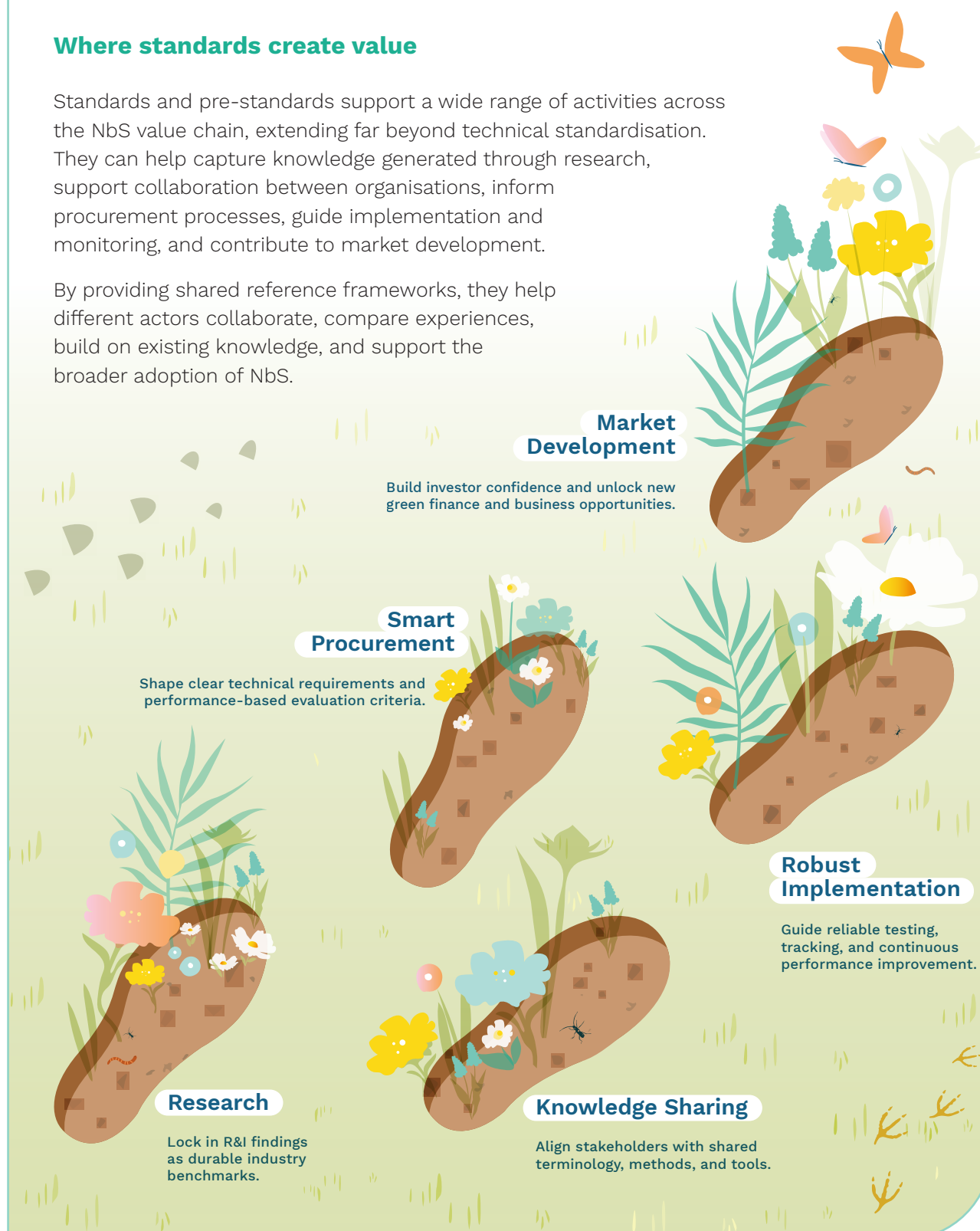


Illustration: Silvia Robertelli

From Emerging Practice to NbS Market Maturity

The examples above suggest several ways in which standardisation could influence the future development of NbS markets.

For example, a commonly recognised framework for assessing biodiversity outcomes could support the emergence of specialised biodiversity-monitoring services, ecological auditing providers, and digital tools for measuring ecosystem performance. Similarly, shared methodologies for evaluating climate resilience benefits could stimulate the growth of climate-risk assessment services tailored to NbS.

In the financing space, common approaches for assessing environmental, social, and economic performance could make it easier for investors, insurers, and project developers to discuss risks and benefits using a shared evidence base. This is particularly relevant for emerging areas such as nature-based insurance and investment solutions.

In procurement, recognised methodologies could reduce the need for contracting authorities to develop project-specific assessment approaches for every tender. Over time, this could encourage suppliers and consultants to develop services, tools, and expertise aligned with commonly recognised frameworks.

More broadly, experience from other sectors suggests that market development often extends beyond the uptake of a solution itself. As approaches become more widely recognised, ecosystems of specialised service providers, technical experts, software developers, financiers, training providers, and professional networks frequently emerge around them.

Standards rarely create markets on their own, rather they provide a common foundation that reduces uncertainty, strengthens credibility, facilitates collaboration, and supports procurement and investment decisions.

For NbS, similar developments may emerge around biodiversity assessment and conservation, climate-risk evaluation, ecosystem monitoring, environmental auditing, restoration planning and delivery, nature-based insurance and investment solutions, hybrid green-grey and blue-grey infrastructure design, and digital decision-support tools.

The contribution of (pre) standardisation is therefore not only technical. It can help create the conditions for specialised services, professional expertise, financing mechanisms, implementation practices, and business opportunities to develop around NbS, supporting a gradual shift from project-based experimentation towards a more established field of practice and helping translate investments in research and innovation into tangible societal and economic value.

Additional Resources



- [ISO \(2022\), Standards and Innovation: What Does the Research Say?](#)
- [Menon Economics \(2023\), The Macroeconomic Benefits of Standardisation](#)
- [ISO Adaptation Standards Programme \(ISO 14090 and ISO 14091\)](#)
- [ISO Water Services Standards \(ISO 24510 family\)](#)
- [ISO 18504:2017 Soil quality — Sustainable remediation](#)

3. Ways Forward

The NbS community has come a long way over the past decade. Through research projects, pilot initiatives, municipal programmes and on-the-ground implementation, a wealth of knowledge, methodologies and practical experience has been developed. While important knowledge gaps remain, many areas are already reaching a level of maturity where the challenge is not only generating additional evidence but also creating common approaches for applying existing knowledge consistently across projects, sectors and regions.

The experiences presented throughout this guide show that standards and pre-standards can help address this challenge. Rather than prescribing how NbS should be designed, they can provide common frameworks for assessing, monitoring, evaluating and communicating their performance. In doing so, they help turn isolated experiences into resources that others can understand, use and build upon.

Building on the standardisation experiences and knowledge-gap analyses developed by NetworkNature and related initiatives, this chapter highlights a number of areas where pre-standardisation could deliver significant value in the coming years. These opportunities are not about standardising nature itself. They are about creating greater consistency in the ways NbS are assessed, financed, procured and implemented, while preserving the flexibility needed to respond to local ecological and social realities.

3.1 Building the next generation of NbS (Pre) Standards

The experience gained through recent standardisation initiatives suggests that the greatest opportunities for future CWAs lie not in prescribing specific NbS designs, but in establishing common approaches for assessing, planning, managing, and evaluating interventions.

Monitoring, Evaluation and Verification

One of the most frequently cited challenges in the NbS community is the lack of consistency in monitoring and performance evaluation. Different projects often apply different indicators, measurement methods, baseline assumptions, and reporting formats. While these approaches may be appropriate within individual projects, they make it difficult to compare results, aggregate evidence, or demonstrate impact at larger scales.

Future CWAs could help establish common monitoring principles, verification methodologies, reporting approaches, and minimum evidence requirements. Such guidance would not seek to standardise ecological outcomes themselves, as these will always be influenced by local environmental conditions. Instead, the focus should be on ensuring that outcomes are measured and documented in ways that are transparent, credible, and comparable.

This area directly responds to several Knowledge Gaps identified by NetworkNature, particularly those related to long-term monitoring, data comparability, and the generation of robust evidence for decision-making.

Climate Adaptation and Resilience Assessment

As climate risks intensify across Europe, public authorities and infrastructure operators increasingly need reliable methods for assessing the resilience benefits of NbS. Although many

projects demonstrate positive impacts in areas such as flood management, drought reduction, urban cooling, and coastal protection, assessment methods often vary considerably.

Pre-standardisation can play an important role in creating a common language for resilience assessment. Future CWAs could support common approaches for climate-risk assessment, performance evaluation, adaptation monitoring, and the comparison of NbS and conventional infrastructure options.

Providing greater consistency in these methodologies would strengthen confidence among practitioners, public administrations, and financial actors while supporting the integration of NbS into adaptation planning processes.

Financing, Insurance and Investment Readiness

The NATURANCE CWA demonstrated the growing interest in connecting NbS performance with financial decision-making. As demand increases for investable adaptation and resilience solutions, there is a clear need for frameworks that help financial actors better understand risks, benefits, and performance expectations.

Future standardisation activities could focus on investment-readiness assessments, benefit valuation methodologies, insurance-related performance criteria, and risk evaluation approaches. Such initiatives would not replace financial due diligence but could provide common reference points that improve transparency and comparability across projects.

The continued development of these frameworks could help strengthen the business case for NbS and create greater confidence among investors, insurers, and infrastructure owners.

Biodiversity and Ecological Integrity

Biodiversity enhancement is an integral component of NbS, yet approaches for assessing ecological outcomes remain highly diverse.

Projects frequently use different ecological indicators, monitoring methods, and assessment frameworks, making it difficult to communicate ecological performance consistently.

Future CWAs could support more coherent approaches to biodiversity assessment, ecological integrity monitoring, habitat restoration quality, and long-term ecosystem condition evaluation. The objective should not be to impose a single ecological model, but rather to improve consistency in how ecological outcomes are described, measured, and communicated.

This represents a clear opportunity to translate existing scientific knowledge into practical frameworks that can support project implementation, procurement, financing, and policy reporting.

Public Procurement and Delivery Models

Public procurement is an important mechanism for scaling NbS across Europe. However, many contracting authorities still face challenges when preparing technical specifications, evaluating proposals, and verifying performance after implementation.

Future CWAs could provide guidance on functional specifications, performance-based procurement approaches, monitoring requirements, contract management frameworks, and evaluation methodologies based on Best Price-Quality Ratio principles.

By creating a common reference framework for procurers and suppliers, pre-standardisation can help reduce uncertainty, improve transparency, and stimulate market development while maintaining sufficient flexibility for local adaptation.

Health, Well-being and Social Outcomes

The growing recognition of the social benefits of NbS has created new opportunities for standardisation. Experiences from projects

such as VARCITIES have highlighted demand for methodologies that can assess health outcomes, social value, and community benefits in a structured way.

Future CWAs could address approaches for measuring well-being impacts, assessing social co-benefits, supporting community engagement processes, and integrating equity considerations into NbS planning and evaluation.

As cities increasingly invest in NbS to improve quality of life, greater consistency in the assessment of social outcomes will become an important complement to environmental and climate-related performance metrics.

From Knowledge Gaps to Standardisation Opportunities

Taken together, these themes illustrate an important shift in how the NbS community can view the Knowledge Gaps agenda. While some questions will require further scientific investigation, many of the identified challenges already contain sufficient practical experience to support the development of common approaches and guidance.

Pre-standardisation should therefore be seen as a mechanism for capturing emerging knowledge and transforming it into shared practice. Rather than requiring complete scientific certainty before developing shared approaches, CWAs can help establish common methodologies that evolve as evidence grows and experience accumulates.

In this way, standardisation becomes an enabler of learning and uptake, helping the NbS community move from isolated project experiences towards a more coherent and transferable body of practice.

Figure 05

The Next Generation of NbS Pre-Standards

Future opportunities

Over the past decade, the NbS community has generated a large body of knowledge, methodologies, and practical experience. The challenge is creating more consistent approaches for assessing, monitoring, financing, procuring, and implementing NbS.

Future pre-standardisation efforts should focus on developing common methodologies, assessment approaches, and performance frameworks that help make NbS more transparent, comparable, and scalable while preserving flexibility for local adaptation.



Illustration: Silvia Robertelli

3.2 Recommendations for the NbS R&I Community

The future success of NbS standardisation will depend on active engagement from researchers, practitioners, cities, businesses, and civil society organisations. Standardisation should not be viewed as an activity that begins once a project is finished. Instead, it should be considered part of the broader pathway through which knowledge is translated into long-term impact.

A first priority is to integrate standardisation thinking at an early stage. Projects that have the potential to influence future practice should consider from the outset how their methodologies, datasets, monitoring approaches, or governance models could contribute to wider market adoption. Early planning makes it easier to generate evidence that is suitable for future standardisation activities and to engage stakeholders throughout the project lifecycle.

The community should also place greater emphasis on producing reusable knowledge. Many project outputs are designed primarily for reporting purposes and remain difficult to transfer beyond the original consortium.

Greater attention should be given to documenting methodologies, decision-making processes, monitoring approaches, and evaluation frameworks in ways that can be applied by others. The more transferable the knowledge generated, the greater its potential contribution to future CWAs and standards.

Engagement with standardisation bodies should occur earlier and more systematically. Too often, projects only begin exploring standardisation opportunities towards the end of their funding period. Early dialogue with National Standardisation Bodies and relevant Technical Committees can help identify opportunities, avoid duplication of effort, and create more realistic pathways towards standardisation outcomes.

Finally, successful standardisation depends on collaboration. Future CWAs should continue

bringing together researchers, practitioners, public authorities, procurers, investors, insurers, civil society organisations, and community representatives. The diversity of perspectives involved in the process is a key strength of the CWA model and is essential for developing guidance that is both credible and widely applicable.

3.3 Recommendations for Public Authorities and Procurers

Public authorities are uniquely positioned to accelerate the uptake of NbS through the choices they make as planners, asset owners, and procurers.

One immediate opportunity is to use CWAs as market-signalling tools. Referencing recognised methodologies during market consultations, stakeholder dialogues, and preparatory procurement activities can help communicate expectations and stimulate the adoption of good practices before formal requirements are introduced.

Contracting authorities should also continue moving towards performance-based procurement approaches. NbS are highly diverse and often require local adaptation. Rather than prescribing detailed designs, procurement processes should focus on desired outcomes supported by transparent monitoring and evaluation frameworks. Standards and pre-standards can provide the common reference points needed to support this shift.

Public authorities can further support market maturity by promoting transparency and comparability in project delivery. Encouraging the use of recognised indicators, monitoring approaches, and evaluation frameworks helps create a more predictable environment for suppliers while strengthening confidence in project outcomes.

Finally, procurement should be viewed as a driver of innovation. By creating demand for

robust methodologies and evidence-based approaches, public authorities can help transform emerging practices into mainstream solutions and accelerate the adoption of future standards.

3.4 Recommendations for the European Commission

The European Commission has played a central role in supporting the growth of the NbS community through successive research and innovation programmes. The next challenge is to ensure that the knowledge generated through these investments can be translated into durable market practices and long-term implementation frameworks.

To support this transition, five priority actions should be considered:

Recognise standardisation as a strategic exploitation pathway. Standardisation should be considered alongside scientific publications, policy recommendations, and other forms of project legacy as a legitimate mechanism for delivering long-term impact.

Strengthen support for pre-standardisation activities. Future funding programmes should continue to recognise the resources required for CWA development, including stakeholder engagement, consensus-building processes, and collaboration with National Standardisation Bodies.

Promote early consideration of standardisation opportunities. Projects with strong replication potential should be encouraged to assess possible links to standardisation activities during project design and implementation.

Support post-project standardisation pathways. Many projects only achieve technical maturity during their final stages. Dedicated

Figure 06

Building the Future NbS Ecosystem



Who needs to contribute?	How?
 Researchers and innovation projects	Considering standardisation early and generating reusable knowledge.
 Practitioners	Helping test, validate, and refine methodologies in real-world conditions.
 Public authorities and procurers	Creating demand for robust and comparable approaches.
 Investors and insurers	Supporting the development of credible assessment and financing frameworks.
 Policymakers and funding programmes	Helping create the conditions for long-term uptake and scaling.

Illustration: Silvia Robertelli

follow-up support could help transform mature methodologies into CWAs and other standardisation outputs once implementation evidence is available.

Facilitate progression from CWAs to formal standards. As the NbS market continues to mature, successful CWAs may provide the foundation for future European or international

standards. Supporting these pathways could contribute to a more coherent and stable standardisation landscape.

Collectively, these recommendations highlight how standardisation can help bridge the gap between research, implementation, procurement, and market uptake. The key messages emerging from this guide are summarised below.

Key Takeaways: From Knowledge to Practice



NbS are entering a phase where the challenge is no longer only to demonstrate their potential, but to enable their consistent adoption and implementation at scale. Standardisation can help bridge this gap by transforming knowledge, experience, and emerging practices into shared frameworks that build confidence and support wider uptake.

The experiences of initiatives such as NetworkNature, NATURANCE, VARCITIES, and the development of EN 18140 demonstrate how standardisation can help move NbS beyond individual projects and into mainstream policy, planning, investment, and procurement. At the same time, the Knowledge Gaps identified across the NbS community highlight a clear pipeline of opportunities for future pre-standardisation activities and CWAs.

The strength of NbS lies in their ability to respond to local ecological and social realities. The role of standardisation is to provide a shared foundation of principles, methodologies, and performance frameworks that supports this diversity, enabling NbS to be understood, implemented, evaluated, financed, and procured more consistently while remaining adaptable to place-specific needs.

As the NbS field continues to mature, the opportunity lies in turning individual experiences into collective knowledge and collective knowledge into common practice. This will require active participation from researchers, who generate evidence and methodologies; practitioners, who test and refine approaches in real-world settings; public authorities and procurers, who create demand through planning and procurement; investors, who help establish credible frameworks for financing and risk assessment; and policymakers, who create the regulatory and funding conditions needed for scaling.

Engage with standardisation, share lessons learned, contribute to consensus-building processes, and help shape the common frameworks that will support the next generation of NbS standards across Europe.

ANNEX: CEN/CENELEC Workshop Agreement (CWA) Proposal Template

Use this template to structure your initial pitch for a CWA.

1. Title of the Proposed Workshop

[Suggested Format: [Target NbS Domain] — [Methodology Name] — Guidelines/Assessment Framework]

2. Proposer and Secretarial Support

- **Proposing Organisation:**
[Name of R&I Project/Consortium]
- **Proposed Workshop Secretariat:**
[National Standardisation Body, e.g. DIN, AFNOR]

3. Scope and Context-Dependency Statement

- **Scope Definition:**
[Describe the technical methodology or process boundary.]
- **The “How vs. What” Principle:**
[Explain how this proposal avoids rigid design thresholds and protects localised ecological context.]

4. Market Need and Strategic Relevance

- **The Gap:**
[Why is this needed right now?]
- **Target Users:**
[Who will apply this CWA?]

5. Stakeholders to be Invited

- *[List relevant networks, academic experts, industry competitors, and CEN/TCs.]*

6. Work Program and Timeline

- **Kick-off Date:**
[Month/Year]
- **Final Publication Target:**
[Month/Year - max 12 months]



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NetworkNature is a resource for the Nature-based Solutions (NbS) community, creating opportunities for local, regional and international cooperation to maximise the impact and spread of Nature-based Solutions. It maintains and expands a diverse, science-based repository of evidence on NbS, strengthens partnerships and fosters new relationships around a clear, strategic framework for action.

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