NBS 4 Drought

D1.4 Sustainability Best Practices Manual

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1 PU = Public, fully open, e.g., web (Deliverables flagged as public will be automatically published in CORDIS project's page)
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Summary of Deliverable

The NBS4Drought project demonstrates a strong commitment to sustainability through the systematic application of the Do No Significant Harm (DNSH) principle, nature-based solutions (NBS), and responsible resource use. Sustainability is embedded as a cross-cutting value across all project activities, from planning and procurement to fieldwork, infrastructure development, and stakeholder engagement. This deliverable, “Sustainability Best Practices Manual” (D1.4), provides a structured framework for integrating environmental and social sustainability throughout the project lifecycle. It ensures alignment with the EU Green Deal, the EU Taxonomy Regulation, and Horizon Europe’s DNSH requirements, serving as a reference guide for all consortium partners to apply sustainable practices consistently and transparently. The manual sets out best practices for green procurement, low-carbon mobility, resource-efficient infrastructure, and inclusive participation. Together, these measures ensure that environmental integrity and social responsibility remain central to all NBS4Drought activities.

By adopting this proactive approach, the project aims to:

- Minimise its environmental footprint through circular economy and local sourcing.
- Enhance climate resilience by implementing adaptive wetland-based NBS that improve water retention, biodiversity, and carbon sequestration.
- Promote equity and inclusion through participatory and transparent processes.
- Facilitate long-term impact by sharing replicable sustainability practices across Europe.

As coordinator, Aarhus University oversees the implementation and continuous improvement of these practices, ensuring all partners adhere to the highest standards of environmental responsibility. Through collective effort and transparent reporting, NBS4Drought seeks to demonstrate how nature-based, science-driven solutions can effectively address drought and climate challenges while safeguarding ecosystems.

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1. Introduction

Across Europe, drought events are becoming more frequent and severe due to climate change, unsustainable land management, and water scarcity. These challenges threaten ecosystems, agricultural productivity, and the resilience of local communities. Wetlands play a crucial role in buffering drought impacts by retaining water, supporting biodiversity, and regulating microclimates. However, many European wetlands have been degraded or drained, reducing their ability to perform these vital functions. Restoring and managing wetlands as Nature-Based Solutions (NBS) is therefore a key strategy for enhancing resilience to drought and achieving the objectives of the European Green Deal, the European Blue Deal, the EU Biodiversity Strategy for 2030, and Horizon Europe's mission for a climate-neutral Europe.

The NBS4Drought project contributes directly to these goals by demonstrating how wetland-based NBS can strengthen climate resilience across multiple European bioclimatic regions. As the project involves fieldwork, infrastructure development, and stakeholder engagement in sensitive environments, it is essential that all activities are planned and implemented responsibly. Without clear sustainability guidance, even well-intentioned interventions could cause unintentional harm, such as resource waste, emissions, or disturbance to local ecosystems. To prevent such risks and to maximise positive outcomes, the project applies the Do No Significant Harm (DNSH) principle across all work packages and operational levels.

This Sustainability Best Practices Manual has been developed to ensure that sustainability is consistently integrated into all aspects of the project's lifecycle. It provides practical guidance for partners to reduce environmental impact, promote responsible resource use, and comply with EU sustainability requirements. The manual also establishes a shared framework for assessing and reporting sustainability performance, ensuring transparency and accountability throughout the consortium.

The importance of sustainability and the DNSH principle was introduced during the project kick-off meeting held in Denmark in September 2025, where partners agreed on a joint commitment to environmentally responsible research and innovation. Building on that foundation, this manual outlines the principles and best practices that will guide all project activities—from procurement and transport to field operations and data collection.

Aarhus University (AU), as project coordinator, holds the overall responsibility for ensuring that these practices are effectively implemented and continuously improved. AU will provide technical guidance, monitor compliance, and facilitate knowledge exchange among partners to promote alignment with the EU's sustainability goals. Each partner shares responsibility for applying the manual's recommendations in its area of work and for documenting actions taken to ensure compliance.

Ultimately, this manual aims not only to ensure compliance with the DNSH principle but also to foster a shared culture of sustainability within the consortium. By embedding responsible practices into daily operations, NBS4Drought will demonstrate how science-based, nature-driven solutions can address drought challenges while safeguarding ecosystems, supporting communities, and contributing to Europe's transition toward a climate-neutral and resilient future.

2. DNSH principle

The Do No Significant Harm (DNSH) principle is a fundamental requirement under the European Green Deal and the Horizon Europe framework. It ensures that all project activities, investments, and innovations contribute positively to sustainability goals without causing significant harm to the environment. DNSH serves as a safeguard to guarantee that efforts to promote climate resilience, innovation, or growth do not undermine the very environmental foundations they aim to protect.

Under the EU Taxonomy Regulation (Regulation EU 2020/852), the DNSH principle defines six environmental objectives that all EU-funded projects must respect:

1. Climate change mitigation
2. Climate change adaptation
3. Sustainable use and protection of water and marine resources
4. Transition to a circular economy
5. Pollution prevention and control
6. Protection and restoration of biodiversity and ecosystems

In the context of NBS4Drought, DNSH is particularly critical because the project's core activities focus on wetland-based Nature-Based Solutions (NBS) implemented across diverse European landscapes. Wetlands are highly sensitive ecosystems that deliver essential services such as water purification, groundwater recharge, carbon sequestration, and biodiversity support. Poorly managed interventions could unintentionally alter hydrological balances, release stored carbon, or disturb habitats. Therefore, every aspect of project design, procurement, and implementation must be guided by the DNSH principle to ensure that actions enhance—rather than degrade—these natural systems.

To uphold this principle, NBS4Drought applies a precautionary and preventive approach, ensuring that all decisions and actions consider their potential environmental and social consequences. Each partner must assess planned activities against the DNSH framework, and where risks are identified, mitigation strategies must be implemented and documented.

In practice, the project ensures DNSH compliance by:

- **Designing and implementing wetland-based NBS** that strengthen ecosystem services, improve hydrological stability, and increase biodiversity rather than causing disruption or degradation.
- **Selecting sustainable and non-toxic materials and equipment**, prioritising recyclable components and certified suppliers that comply with ISO 14001 or equivalent environmental standards.
- **Minimising emissions and resource consumption** during construction, fieldwork, and transport by adopting low-carbon mobility options, efficient logistics, and local sourcing.
- **Applying life-cycle analysis (LCA)** to evaluate the environmental impacts associated with the construction, operation, and maintenance of NBS at all seven showcase sites.
- **Monitoring environmental and social impacts continuously**, combining technical performance data (e.g., water quality, emissions) with social and governance indicators to ensure balanced sustainability outcomes.

DNSH compliance in NBS4Drought is not viewed as a static checklist but as a dynamic process of continuous learning and improvement. Environmental performance will be tracked throughout the project, and results will feed into adaptive management decisions at each site. This iterative approach ensures that potential negative impacts are identified early and corrected, while best practices are shared and replicated across the consortium.

By embedding DNSH at the core of its operational framework, NBS4Drought demonstrates how responsible research and innovation can deliver tangible environmental benefits while preventing unintended harm. It aligns the project with the broader EU vision of achieving climate neutrality, sustainable water management, and biodiversity restoration through science-based, nature-driven actions.

3. Sustainability Guidelines

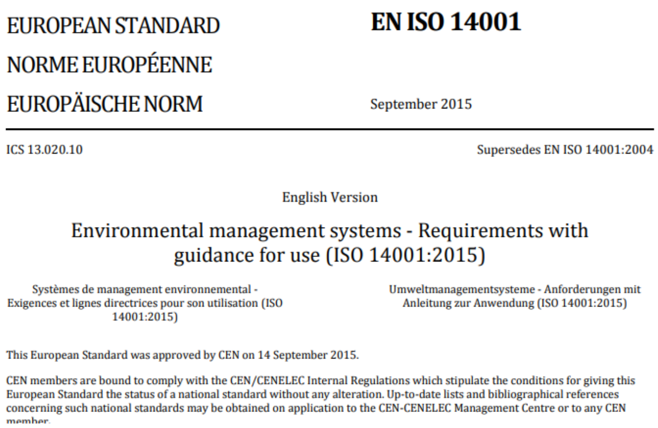
3.1. Equipment, product selection and waste management

To ensure the project's environmental integrity and alignment with the DNSH principle, all partners must carefully consider the sustainability of the equipment and products used throughout the project. This includes prioritising materials and technologies that minimise energy consumption, reduce waste, and avoid environmental harm.

Partners are encouraged to select **energy-efficient and recyclable materials** that support circular economy principles.

It is equally important to **avoid products containing hazardous substances**, such as chemicals that may leach into water systems or harm local biodiversity. Preference should be given to natural or low-impact alternatives.

Furthermore, all procurement should favor **suppliers with certified environmental standards**, such as **ISO 14001**. These certifications indicate that the supplier actively monitors and reduces their environmental footprint. When sourcing monitoring equipment, for instance, choosing a manufacturer



EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 14001

September 2015

ICS 13.020.10

Supersedes EN ISO 14001:2004

English Version

Environmental management systems - Requirements with guidance for use (ISO 14001:2015)

Systèmes de management environnemental - Exigences et lignes directrices pour son utilisation (ISO 14001:2015)

Umweltmanagementsysteme - Anforderungen mit Anleitung zur Anwendung (ISO 14001:2015)

This European Standard was approved by CEN on 14 September 2015.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

Figure 1 - The ISO 14001 standard.

with ISO 14001 certification ensures that the production process meets stringent environmental criteria.

Additionally, sourcing materials locally can significantly lower transportation emissions and support regional economies.

Effective waste management should be applied to minimise the environmental footprint. Partners should implement strategies to reduce waste generation by avoiding single-use items. For example, during fieldwork, reusable sampling containers and digital data collection tools can replace disposable kits and paper forms, reducing both physical waste and resource consumption.

3.2. Transport and logistics

To minimise the environmental footprint associated with transportation and logistics, all partners are encouraged to adopt low-emission and resource-efficient practices. This includes prioritising transport modes that produce fewer greenhouse gas emissions, such as rail and electric vehicles, whenever this is possible for meetings and showcase visits. This approach was successfully implemented during the project's kick-off meeting, where several partners from Germany chose to travel by train to Denmark, demonstrating a commitment to sustainable mobility.

To further reduce the need for physical travel, the project promotes the use of virtual collaboration tools such as Microsoft Teams, Zoom, and SharePoint. Online meetings should be the default option for regular coordination, technical discussions, and administrative updates. In-person attendance should be reserved for activities where physical presence is essential such as fieldwork, stakeholder engagement workshops, or annual consortium meetings that require hands-on collaboration or site inspections.

This digital-first approach not only reduces emissions but also enhances cost-efficiency, accessibility, and inclusivity, especially for partners located in remote regions or with limited travel budgets. For example, hosting a virtual stakeholder consultation allows broader participation from local communities, NGOs, and policymakers who might otherwise be unable to attend in person.

To reduce travel-related emissions and improve resource efficiency, the annual consortium meetings are intentionally planned to take place at locations hosted by local partners situated near one of the project's showcase sites. This approach allows meetings to be combined with on-site visits, eliminating the need for separate trips and thereby significantly lowering the project's overall transportation footprint.

By aligning meetings with showcase visits, partners can engage in meaningful field-based discussions while avoiding additional travel. This strategy was successfully implemented during the kick-off meeting in Denmark, where participants visited a nearby showcase site as part of the agenda. The visit also featured a symbolic tree-planting activity, underscoring the project's dedication to sustainability and long-term ecological responsibility.

This combined format not only supports the DNSH principle but also enhances collaboration, learning, and stakeholder engagement, while keeping environmental impact to a minimum. Future meetings will continue to follow this model, ensuring that travel is purposeful, consolidated, and aligned with the project's sustainability goals.

3.3. Infrastructure development

The NBS4Drought project focuses on creating and enhancing infrastructure in the showcases that supports sustainable water management through nature-based solutions (NBS). This infrastructure is designed to mitigate the impacts of extreme droughts while preserving biodiversity and promoting climate resilience.

The core infrastructure developed under the project consists of wetlands and associated systems tailored to different bioclimatic zones across Europe. Each site integrates ecological engineering principles to ensure minimal disruption to natural habitats and long-term functionality.

To guarantee effective operation and data collection, the project incorporates advanced monitoring infrastructure. This includes hydrological sensors, water quality measurements, and remote sensing technologies among others. These systems enable continuous assessment of wetland performance and environmental impact, ensuring compliance with sustainability standards.

Infrastructure also encompasses facilities that foster stakeholder engagement and education. Examples include visitor pathways, observation platforms, and information boards at selected sites. These elements are designed to balance accessibility with ecological protection, promoting awareness and community involvement in maintaining NBS.

All infrastructure components are developed following the DNSH principle. Materials should be sourced responsibly, construction methods should minimise soil disturbance, and renewable energy solutions should be integrated where feasible.

4. Sustainability compliance

Ensuring sustainability compliance is a core responsibility within the NBS4Drought project. All activities, from planning to implementation, must adhere to the principles outlined in the **Sustainability Best Practices Manual** and the DNSH framework. Compliance guarantees that project actions contribute positively to climate resilience and avoid significant harm to environmental objectives.

The Sustainability Best Practices Manual will be shared with the entire consortium to raise awareness and foster a shared commitment to environmentally responsible project implementation. Compliance will be monitored continuously through participation in project meetings, review of partner activities and deliverables.

If non-compliance is identified, AU as the coordinator will initiate corrective measures and provide additional guidance to partners. Continuous improvement is encouraged, and lessons learned will be incorporated into the manual continuously.

5. Conclusion

The NBS4Drought project is firmly committed to upholding environmental integrity through the consistent application of the DNSH principle and the implementation of robust sustainability practices across all activities. By integrating nature-based solutions, promoting responsible resource use, and ensuring continuous environmental monitoring, the project aims to strengthen climate resilience while safeguarding ecosystems and biodiversity.

This commitment is reflected in every aspect of the project from sustainable procurement and low-emission travel strategies to the design and implementation of wetland showcases. The project not only seeks to meet regulatory standards but also to set a benchmark for environmentally responsible innovation in drought resilience.

Aarhus University, as the coordinating institution, will play a central role in ensuring that all partners uphold these standards. Through regular communication, monitoring of deliverables, and active participation in consortium meetings, AU will foster a culture of accountability and shared responsibility. This includes encouraging transparent reporting, facilitating knowledge exchange, and supporting partners in identifying and applying best practices.

Ultimately, the NBS4Drought project strives to deliver long-term environmental and societal benefits by demonstrating how collaborative, science-based approaches can address complex climate challenges without compromising ecological integrity.

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