ARCADIA
Transformative climate resilience
by nature-based solutions in the
continental bio-geographical region

Ten insights and actions for Nature-based Solutions

Policy Brief - July 2025

Introduction

- This policy brief offers municipal and regional actors practical insights and actionable recommendations on how to leverage Nature-based Solutions (NbS) to achieve climate resilience, respond to biodiversity loss, and improve social well-being.

- The ARCADIA project examines transformative climate resilience through Nature-based Solutions (NbS). Its primary goal is to promote climate adaptation by utilizing NbS in five model regions, including:
  - Emilia-Romagna in Italy
  - Lower Austria
  - Zagreb and Krapina-Zagorje in Croatia
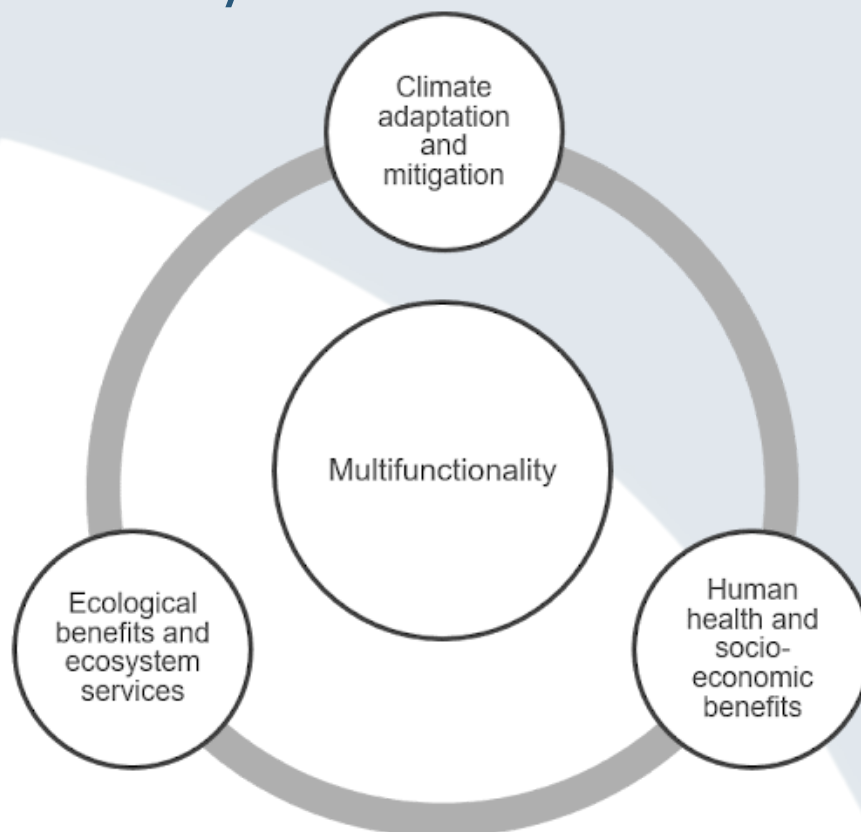 - Skåne in Sweden
  - Funen in Denmark

Key messages

- Co-creation, collaboration and a bottom-up approach to governance is essential for the long-term success of NbS, as well as integrating different kinds of knowledge and perspectives.

- The flexibility of the definition of the NbS concept is both a constraint on its implementation and an opportunity for creativity and innovation in the design and practice of NbS.

- Trade-offs and tensions are often inevitable between the benefits of NbS for biodiversity, humans, and climate adaptation and mitigation, however multiple co-benefits are possible.

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What are nature-based solutions?

Broadly speaking, NbS are inspired and supported by nature. They have the potential to limit the impacts of climate change, enhance biodiversity, and improve environmental quality while contributing to economic activities and social well-being (EC, 2015; Cohen-Shacham et al. 2016; UNEP, 2022). It is important to recognise that the concept of NbS is flexible and fluid. There are a multitude of definitions that attempt to capture the key elements of NbS.

Climate adaptation and mitigation

Multifunctionality

Ecological benefits and ecosystem services

Human health and socio-economic benefits

What are the benefits of nature-based solutions?

Ten insights and actions for nature-based solutions

Through a narrative review of the expanding literature on NbS, we identify a **diversity of benefits** that can be connected with NbS, as well as a **mix of enablers and barriers** and **key actors** for enabling NbS.

The following three insights focus on the **foundations for NbS.**

1.

The key benefits of NbS are multifunctionality, climate adaptation and mitigation, ecological benefits and ecosystem services, and human health and socio-economic benefits.

Action: prioritize NbS initiatives and projects that aim to simultaneously address pressing challenges and produce multiple co-benefits.

2.

Defining factors shaping both barriers and enablers for NbS are political and institutional issues, economic and market issues, socio-cultural and justice issues, and knowledge and contextual issues.

Action: map political, economic, socio-cultural, and knowledge related factors early in NbS planning to address barriers and leverage enabling conditions.

3.

Collaboration and connectivity are key for successful NbS. Actors and audiences that engage with or are impacted by NbS, need to be considered in the context of collaborations through partnerships, local engagement, enterprises, and risk factors.

Action: facilitate structured, multi-stakeholder platforms that integrate community voices, knowledge exchange, and local experience and knowledge

We highlight three frameworks on **governing** NbS from the literature that represent three different approaches for **transformative change** (Scoones et al. 2020) – **structural, systemic, and enabling** approaches.

The following three insights describe how these approaches apply to the **governance of NbS.**

4.

Structural approaches refer to fundamental changes in social systems, focusing on deep and systemic changes in the economy, politics, and society to reshape social systems. It is important to examine the narratives and emerging viewpoints of NbS, both supporting and critiquing the rise and potential of NbS.

Action: embed NbS within urban planning regulations and policies supporting fundamental shifts in norms and institutional practices.

5.

Systemic approaches refer to intentional changes in specific parts of a system, focusing on the connections and interactions between different features. Investing in Nature-based enterprises is a way to enable change within a system and create possibilities to deliver NbS.

Action: actively encourage and financially support nature-based enterprises and public-private partnerships to enhance the implementation of NbS.

6.

Enabling approaches refer to bringing capacity and agency changes, focusing on empowering communities and stakeholders to deal with uncertainties. Understanding the relationships and combination of actions that can potentially support the mainstreaming of NbS is important.

Action: invest in targeted capacity building programs and empower communities and stakeholders.

Based on the literature and inputs from five regions in Europe, we provide a set of key conclusions and reflections to guide NbS initiatives and projects through the **planning, implementing, managing, and monitoring stages**.

The following four insights concentrate on the **processes for NbS.**

7.

The narrative review of the rapidly growing literature on NbS and experiences from regions provide similar findings. There are a multitude of areas for expanded research, including the project lifecycle perspective for NbS, the hybrid approach of mixing green, blue, and grey infrastructure, and NbS implementation in practice.

Action: implement and rigorously evaluate NbS pilot projects combining green, blue, and grey infrastructure thereby generating local insights.

8.

Enhancing collaboration and co-creation processes around NbS projects and initiatives are imperative to scaling and mainstreaming NbS. Regions often hope to achieve several goals simultaneously and address goal conflicts, and they often emphasize multi-actor collaboration and transdisciplinary approaches as important pathways.

Action: institutionalize collaborative governance mechanisms including transdiciplinary working groups and co-creation workshops to scale and mainsteam NbS inititives.

9.

Regions are positioning NbS in the context of transformative change as is the literature. Central topics include the hybrid approach to NbS, missing and marginalised communities, addressing the path dependency of a "grey infrastructure culture", and people-centered planning, and innovation.

Action: incorporate NbS into urban transformation agendas, ensuring inclusive planning processes that engage marginalized communities and encourage innovative ways to embrace creativity and collaboration.

10.

A key challenge for NbS in this research and beyond is the diversity of definitions and understandings of NbS in the literature, as well as different interpretations of NbS in practice.

Action: regions need to adopt widely accepted but context-specific definitions as a starting point to streamline policy and implementation, as well as utilise the flexibility and possibilities provided by the NbS concept.

Research and methodology behind this policy brief

In this policy brief, we investigate NbS from a regional perspective in the context of Europe. It is widely argued that NbS have the potential to limit the impacts of climate change, enhance biodiversity, and improve environmental quality while contributing to economic activities and social well-being.

This policy brief is based on a combination of methods and sources of data collected through the ARCADIA project, including a narrative review of the (academic and grey) literature, regional reporting processes, and a short questionnaire of the five regions. This triangulation of both methods and data provides a robust foundation for understanding and exploring NbS.

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> Nature-based solutions (NbS) are championed as ways to address multiple challenges and produce a plethora of co-benefits for both nature and society. However, there are also tensions, trade-offs, risks, and critiques of NbS that need to be navigated, acknowledged, and addressed across the planning, implementing, managing, and monitoring stages of NbS projects and initiatives.
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References

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