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From Nature-based Solutions to Investable Practice

Evidence, financing pathways and
lessons from Invest4Nature

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Authors: Agnieszka Dziubała (City of Poznań), Andrea Staccione (CMCC), Barbara Coelho (Cascais Ambiente), Caterina Guidi (CMCC), Chiara Bidoli (CMCC), Isobel Fletcher (Horizon Nua), Lydia Lienhart (Joanneum Research), Linda Romanovska (Melomys Advisory), Lone Telling (Aarhus Municipality), Małgorzata Bronikowska (City of Poznań), Marianne Zandersen (Aarhus University), Martina Brophy (Horizon Nua), Mette Holm (Aarhus Municipality), Nicola Leonardi (Engineering Ingegneria Informatica), Vanessa Weiß (Joanneum Research), Sigrid Mourits-Andersen (Klima-Bundnis Tirol), Paul Mahony (Oppla), Simone Taddeo (CMCC), Wenting Chen (NIVA).

Editing and review: Canesia Amarysti (Steinbeis Europa Zentrum), Ingrid Kaltenegger (Joanneum Research)

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Editorial

If nature-based solutions (NbS) deliver clear environmental, social and economic benefits, what is preventing their wider uptake? This booklet explores the evidence, financing pathways, tools and real-world experiences needed to answer that question.

One of the key barriers lies in the gap between awareness and action: between recognising the value of NbS and integrating them into concrete investment and policy decisions.

Invest4Nature was launched to address this gap. By strengthening the evidence base on the economic and financial performance of NbS, and by engaging stakeholders across public and private sectors, the project has focused on making NbS more credible, visible and actionable. Crucially, the work is grounded in real-life Living Labs across Europe where NbS cases are evaluated and solutions are tested.

This booklet brings together the key insights from this work. It offers a structured overview of research from Invest4Nature: how NbS functions within market ecosystems, the current state of financing and its limitations, the role of public actors and how private capital can be unlocked to enable implementations. Most importantly, it highlights lessons learned from local experiences and translates them into practical considerations for policymakers, cities, investors and practitioners.

As Europe advances towards climate resilience, the question is no longer whether NbS are relevant, but how they can be deployed at scale. We hope this booklet contributes to that transition, supporting informed choices on NbS and fostering the conditions for their wider uptake.

About Invest4Nature

Invest4Nature at a glance

- European research and innovation project focused on making nature-based solutions (NbS) investable
- **Duration:** July 2022 – September 2026
- **Consortium:** 15 partners across 11 European countries
- **5 Living Labs:** real-world NbS implementation cases in Austria, Denmark, Norway, Poland and Portugal
- **Focus:** building evidence, tools and practical insights to support policy and investment decisions on NbS



Challenge

While nature-based solutions offer cost-effective responses to growing climate risks, their wider uptake is constrained by limited evidence on economic value and insufficient financial data for robust investment and business cases.



Benefits

Policy makers gain a stronger understanding of the role of NbS in climate-resilience and policy development

NbS providers and nature-based enterprises (NbEs) are better equipped to develop viable business models and explore innovative financing approaches

Public and private investors gain access to financial data on costs, benefits, and risk reduction, enabling more confident investment decisions.



Mission

Invest4Nature aims to strengthen the role of NbS as a credible and investable solution to address climate and biodiversity risks by focusing on the following objectives:

- **Improve understanding of NbS economics**
- **Support informed decision-making**
- **Strengthen NbS market conditions**
- **Promote uptake and scaling**

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NbS and why they matter

Evidence behind NbS and the value generated

01

Authors: Andrea Staccione (CMCC), Chiara Bidoli (CMCC),
Marianne Zandersen (Aarhus University)

NbS work with ecosystems to reduce climate and disaster risks while delivering multiple benefits for people, biodiversity and environment. Investing in NbS often pays back: one investment can reduce damages, lower costs, support livelihoods and create wider social and environmental value.



Understanding nature-based solutions

Nature-based solutions (NbS) are widely recognised in science and policy as practical ways to address social, economic and environmental challenges. They are defined as actions to protect, conserve, restore, sustainably use and manage [...] ecosystems, which address social, economic and environmental challenges, while simultaneously providing human well-being, ecosystem services, and resilience and biodiversity benefits (UNEA, 2022). In simple terms, **NbS mean working with ecological processes to reduce risks and deliver benefits for people, the economy, and the environment.**

NbS can be grouped into three broad types:

Type 1 - protecting or conserving existing ecosystems,
such as forests, wetlands, rivers, dunes, or grasslands

Type 2 - sustainably managing ecosystems and landscapes,
such as through sustainable agriculture, urban greening, river restoration, or improved forest management

Type 3 - creating or heavily modifying ecosystems,
including green roofs, constructed wetlands, restored floodplains, or hybrid green-grey systems

NbS can be adapted to different landscapes, risks and policy goals. Examples include restored floodplains that reduce flood risk, cover crops that improve drought resilience, urban vegetation that lowers heat stress and improves air quality, coastal dunes that reduce erosion, and forests, wetlands and soils that store carbon and support biodiversity.

For public decision-making, NbS matter because one investment can deliver multiple benefits, supporting more resilient, cost-effective and integrated responses to climate, environmental and socio-economic risks.



NbS categories
and approaches
to assess financial
performance



Poznan's natural playgrounds are an urban NbS with socio-economic benefits and fall under a Type 3 NbS: modified ecosystem with a hybrid of natural and built infrastructures © City of Poznań



The economic case for NbS

Evidence shows that investing in NbS is often more cost-effective than grey, engineered solutions. When assessing the multiple benefits that NbS provide people, the economy and the environment, NbS tend to provide net economic benefits, regardless of landscape and context. See report: The economic and financial performance of nature-based solutions DOI: [10.5281/zenodo.15692241](https://doi.org/10.5281/zenodo.15692241)

Our society is dependent on well-functioning ecosystems. NbS can provide direct economic or welfare gains benefits to government, businesses and to households. These can range from higher property values, job creation, and improved health and liveability, to reduced pollution, more resilient value chains, insurance-based gains and lower disaster-related costs.



Average benefit-cost ratios identified through systematic literature reviews

The economic performance of NbS have been particularly well studied in urban landscapes that address flooding, heat, pollution and public health. Systematic review findings suggest that **for every euro invested in urban NbS, society gains 3€ in societal benefits.**

1€ → 3.3€

Urban NbS:

Green roofs, parks, wetlands, swales, urban drainage and buffer systems that address flooding, heat, pollution and public health



1€ → 4.59€

Urban Water NbS:

Wetlands, swales, urban drainage systems and buffer zones deliver the highest observed returns



1€ → 3.86€

Forest NbS:

Measures supporting biodiversity, carbon storage, water regulation and wellbeing show strong economic performance



1€ → 1.8€

Agricultural NbS:

Agroforestry and regenerative land management generate positive returns while restoring ecosystem functions



The challenge for financing NbS at scale is that many benefits have public good characteristics¹ that require collective/public or novel blended financing structures.

¹ Public good characteristics means that benefits are available to all in vicinity of a given NbS and that benefits arising from NbS cannot reduce the availability of the benefit to others.

Learn more:
The Economic &
Financial Performance
of Nature-Based
Solutions



NbS market landscape

Who shapes, finances, supplies and enables NbS in practice?

02

Authors: Lydia Lienhart (Joanneum Research), Vanessa Weiß (Joanneum Research), Martina Brophy (Horizon Nua), Isobel Fletcher (Horizon Nua)

Different actors contribute to implementing, replicating or scaling NbS, where the public sector has the strongest role on both the demand and supply side. The main suppliers of NbS in the private sector are Nature-based Enterprises (NbE) where NbS forms the core of their product or service offering.



Actors and roles in the NbS ecosystem

Different actors help implement, replicate and scale NbS, but the public sector remains central on both the demand and supply side. Local governments typically plan, contract and supervise projects, with funding often coming from local, regional, national and EU levels.

On the supply side, NGOs, academia, and professional and technical services offer expertise, research, and monitoring. Local communities are involved in co-design and sometimes maintenance, acting as both contributors and beneficiaries. However, the strong role of the public sector can also create bottlenecks, as many decisions and processes depend on public authorities.

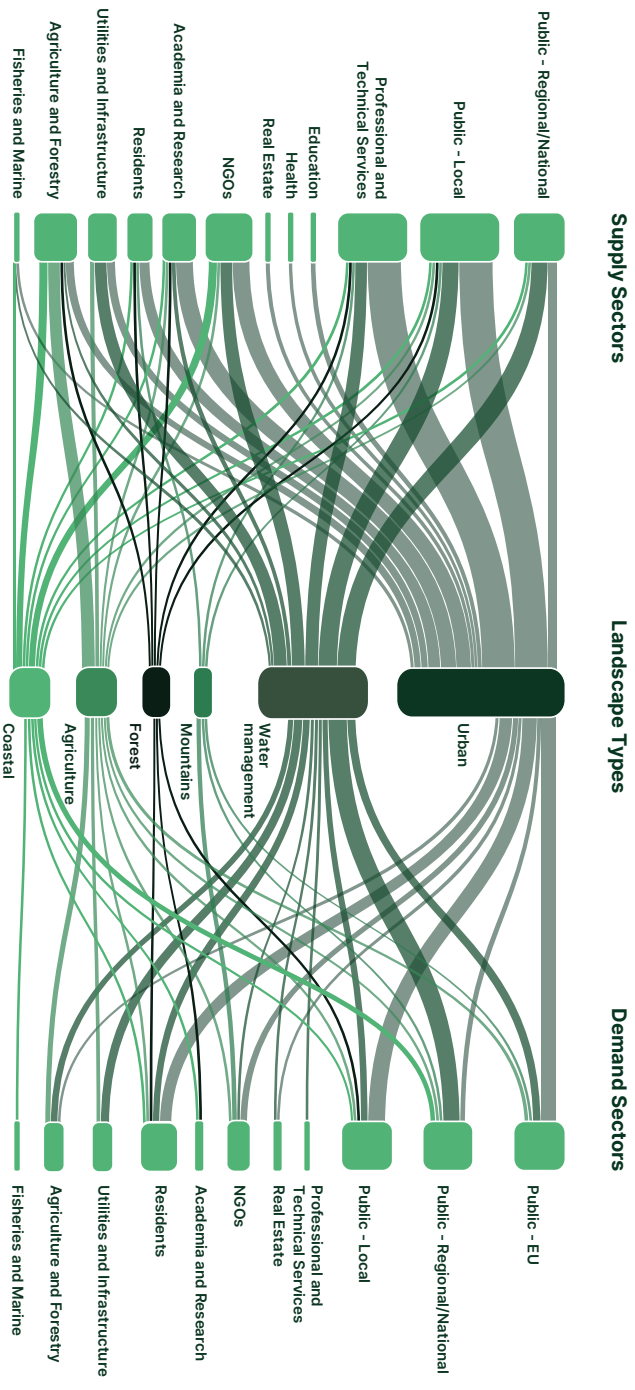
In Aarhus Municipality, the project aiming to transform 300 hectares of former farmland into natural landscapes involved the city council, local community councils, and the municipality team in a lively local resident engagement campaign featuring „The Green Caravan“ and the support of some professional nature-positive initiatives.





Supply and demand interactions of Nbs across six landscape types.

Supply and demand interactions across six primary landscape types identified in the systematic literature review. The analysis highlights the strong role of the public sector in both supply and demand of Nbs. On the supply side, mostly local public entities play a role, whereas on the demand side several different levels of public governance, including the EU, national, regional and local levels, are involved.



Learn more:
Demand and
supply chains
in Nbs





Barriers and drivers across the NbS lifecycle

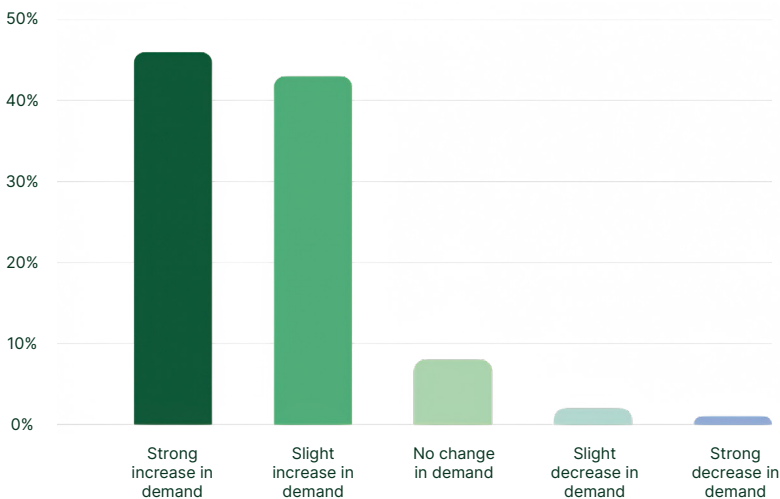
Barriers and drivers occur throughout the whole project lifecycle and influence the effectiveness and feasibility of NbS. Common barriers include limited skills, fragmented responsibilities, slow funding and approvals, unclear regulations, land ownership issues, low awareness and weak public engagement.

At the same time, **active coordination, stakeholder cooperation and clear communication** help move projects forward. Pilot projects, shared knowledge, and long-term political and financial commitment can support implementation and build confidence in NbS. Visible local benefits, such as recreation from NbS linked to urban green spaces, can increase public awareness and build support for future NbS projects.



Market development and the role of nature-based enterprises

Nature-based Enterprises (NbEs) are private-sector suppliers whose products or services are built around nature or NbS. Their market opportunities depend on NbS demand and financing. Survey evidence shows rising interest: 46% of 124 NbEs reported a strong increase in demand.

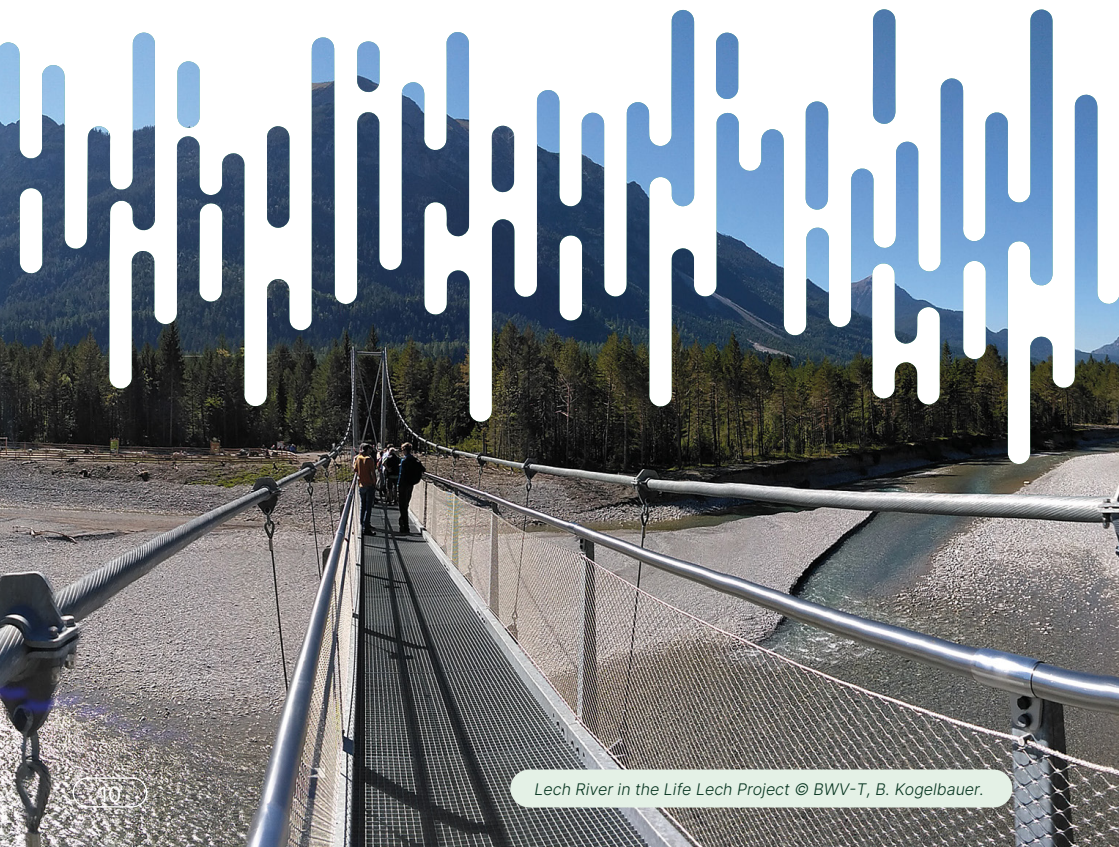


The level of market demand for products and services reported by 124 NbEs from the NbE survey featured in Tedeschini et al., 2024, DOI: [10.5281/zenodo.13997980](https://doi.org/10.5281/zenodo.13997980)

Financing remains a major challenge: **40% of NbEs identify access to finance as their main barrier**. Many rely on personal capital at start up phase, with public funding and reinvested revenues becoming more important as they mature.

These challenges are driven by both internal and external barriers. Internally, limited time and staff capacity, and misalignment of support measures are the greatest barriers to financing for NbEs. Externally, the lack of political prioritisation for investment in nature and the lack of private sector investment continue to limit financing opportunities.

A key recommendation for dismantling these barriers, is to **enable greater engagement of investors and NbEs for increased impact investment**. Dedicated matchmaking and pitching opportunities can increase visibility, build investor confidence, and improve access to capital. As part of Invest4Nature, cohorts of NbEs were supported to pitch at EU Green Week and London Climate Action Week.



NbS financing

Current landscape, gaps, and need for evidence

03

Authors: Lydia Lienhart (Joanneum Research), Vanessa Weiß (Joanneum Research), Linda Romanovska (Melomys Advisory), Martina Brophy (Horizon Nua), Isobel Fletcher (Horizon Nua)

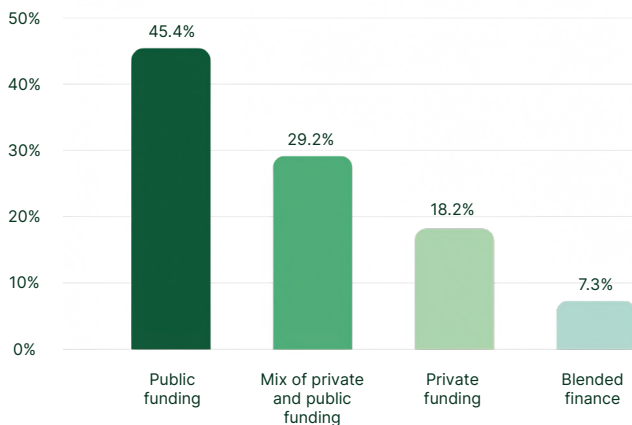
Scaling NbS will require moving beyond public funding alone. Private and blended finance can play a larger role, but only if projects offer clearer evidence, revenue models and long-term maintenance plans.



The current financing landscape

NbS are still mainly publicly funded, and a mature market has not yet emerged.

Growing demand, driven by regulation and climate awareness, is creating opportunities for businesses and nature-based enterprises. But **finance remains the main bottleneck**.



Learn more:
Current Landscape
of NbS Financing
Models and
Incentives



Source of financing for NbS. At over 45%, public funding remains the dominant source of funding for NbS as featured in Tedeschini et al., 2025, DOI: [10.5281/zenodo.16950458](https://doi.org/10.5281/zenodo.16950458)



Global NbS market at a glance

NbS Projects

30% Latin America
21% Europe
21% Asia

Sectors

41% Forestry
23% Water
15% Agriculture

Scale

Most < €2M
20% > €12M

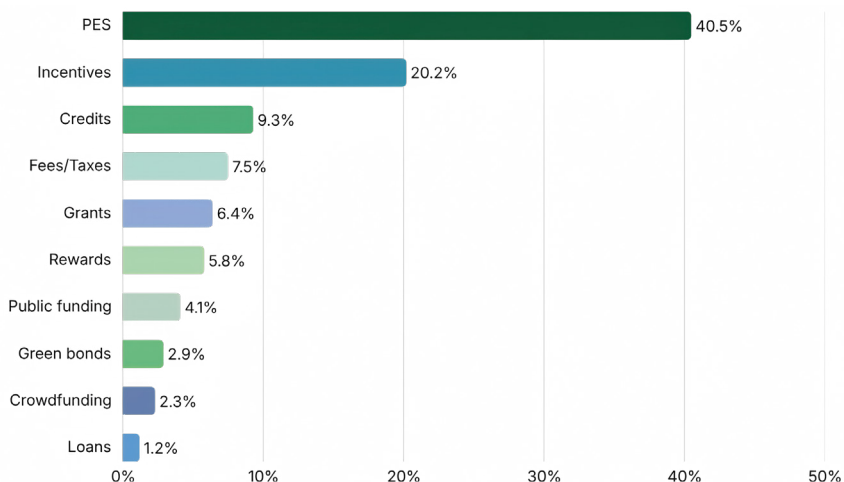
Finance

~50% private contribution
Public funding dominant



Existing financing instruments and incentives

Different financing models are in place, with the Payments for Ecosystem Services (PES) most common, as well as public grants, subsidies, fees, and tax incentives.



Distribution of financing instruments and incentives, with Payments for Ecosystem Services in the lead at over 40%.
(Tedeschini et al., 2025, DOI: [10.5281/zenodo.16950458](https://doi.org/10.5281/zenodo.16950458))

Public NbS investment is mainly driven by biodiversity and climate adaptation policies, as well as co-benefits such as flood risk reduction, urban quality and tourism. Despite local best practice examples inspiring regional action, **uptake is still slowed by low awareness, budget limits, regulatory gaps and unclear responsibilities.**

Invest4Nature insights point to areas where private capital may be easier to mobilise in agriculture, forestry, water management and urban environments, where NbS value is more visible to investors. Sustainable and impact-oriented investors are especially relevant, but instruments such as green and sustainability bonds remain underused.

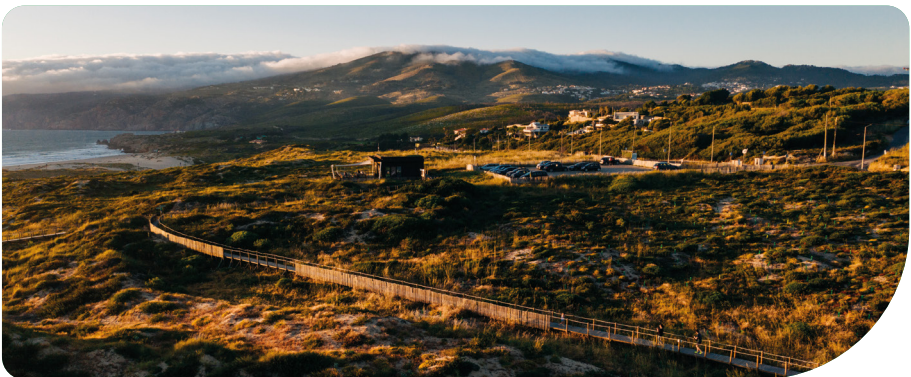


Barriers to scale

Private investment is limited by the investor perception that many NbS projects are complex, small-scale or high-risk, especially when benefits emerge over long timeframes or monitoring data is weak. This raises due diligence costs and makes projects harder to compare.

Different financial institutions also assess NbS differently: banks focus on creditworthiness, while investment funds may prioritise growth potential and sustainability alignment. NbS financing therefore needs to be structured for different investor needs.

The shift from public funding to blended or co-financing remains slow. Budgets often cover planning and implementation, while long-term maintenance and stewardship are underfunded, also known as the „**maintenance cliff**“. Sustainable financing must therefore cover both upfront costs and long-term management.



Duna da Cresmina, Cascais, Portugal. © Cascais Ambiente.



Unlocking private capital and blended finance

Invest4Nature Living Labs have investigated and pursued alternative financing options, such as public-private partnerships, CSR, sponsorship models and private sector grants. Aarhus Municipality, as a frontrunner, has over years developed a range of co-financing models for nature projects, including both investment and donation-based models with the private, public and third sectors.

Living Labs engage with the private sector to varying degrees, but this does not always lead to revenue-generating finance. Barriers include investor expectations on returns and scale, limited municipal experience with blended finance, and regulatory or permitting complexity.

Agriculture, forestry, water management and urban NbS show strong potential, especially for sustainable and impact-oriented investors.

In summary, the insights point to a clear best-practice message. **Private capital is available, but scaling NbS investment requires addressing of outlined barriers:** credible standards, supportive policy, robust data and investable project structures.

Learn more:
Unlocking Private
Capital for NbS



Invest4Nature solutions

The DS Toolbox and Evidence Database

Authors: Nicola Leonardi (Engineering Ingegneria Informatica),
Marianne Zandersen (Aarhus University)

04

The Invest4Nature NbS Decision-Support Toolbox provides hand-on insights and support in understanding and calculating the economic performance and effectiveness of NbS across landscapes. Three distinct tools are combined: Cost-Benefit Analyser, Qualitative Performance and Recommender System, linking users to Invest4Nature's curated NbS Evidence Database.



The Toolbox is a web platform that supports the systematic evaluation and comparison of nature-based solutions (NbS).

Designed for a wide range of users - from **urban planners and nature-based enterprises to researchers and communities** - it helps users assess sustainability, effectiveness, and financial viability, while also raising awareness of the multiple benefits NbS can deliver.

The Toolbox is developed using an agile, user-centred approach with continuous stakeholder feedback and offers an integrated suite of decision-support tools that connect economic analysis with environmental and social performance.

Cost-Benefit Analyser

The Cost-Benefit Analyser enables users to calculate key financial indicators such as Return on Investment (ROI), Benefit-Cost Ratio (BCR), and Net Present Value (NPV), and to explore uncertainty through scenario and sensitivity analyses.



Performance assessment

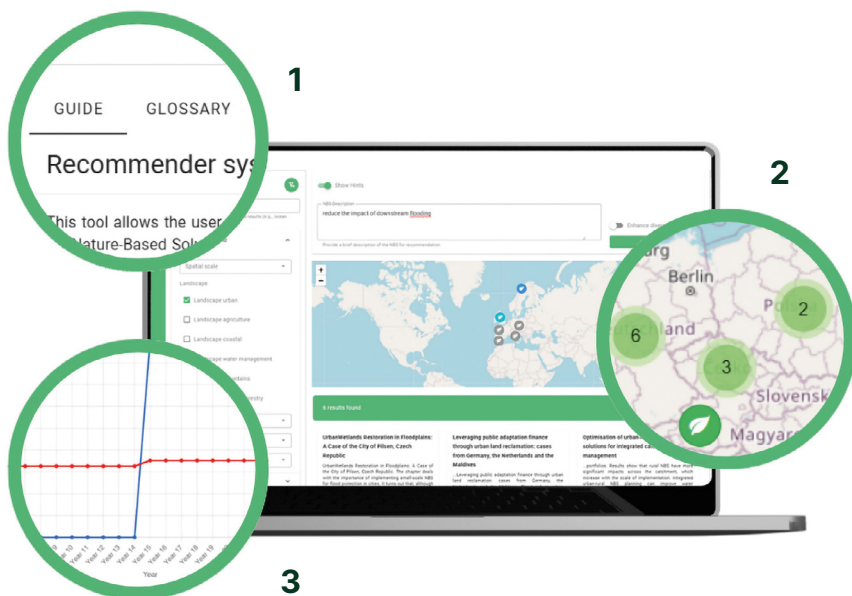
The Qualitative Performance Assessment evaluates non-monetary co-benefits of urban NbS, including ecosystem services related to climate regulation, biodiversity, and human wellbeing.

Recommender system

The Recommender System further strengthens decision-making by linking users to Invest4Nature's curated evidence database of real NbS case studies, displayed through an interactive map and searchable via simple text queries.



The **I4N Evidence Database** covers NbS cases and their financial and economic performance from across Europe and across landscapes published in academic journals in the period 2018-2023. Data covers the type of NbS action, short text descriptions of the context, main challenges, costs and benefits involved and the type of impacts the NbS actions lead to.



- 1 Built-in guides and glossaries lower entry barriers for non-expert users
- 2 The Recommender System integrates proven solutions and their financial data from the Evidence Database and maps real NbS case studies across Europe
- 3 The Cost-Benefit Analyser visualises financial metrics over time

By bringing together quantitative financial metrics, qualitative performance indicators, and real world evidence in a single platform, the NbS Decision Support Toolbox fills a critical gap in the current landscape of NbS assessment tools.

Overall, the Toolbox empowers policymakers, planners, and practitioners to make better, evidence-based NbS decisions with greater confidence and transparency. Further methodological detail and use-case examples are available in the I4N NbS Toolbox report (D5.4) and related Invest4Nature briefs.



Learn more:
NbS DS Toolbox and
Digital Services

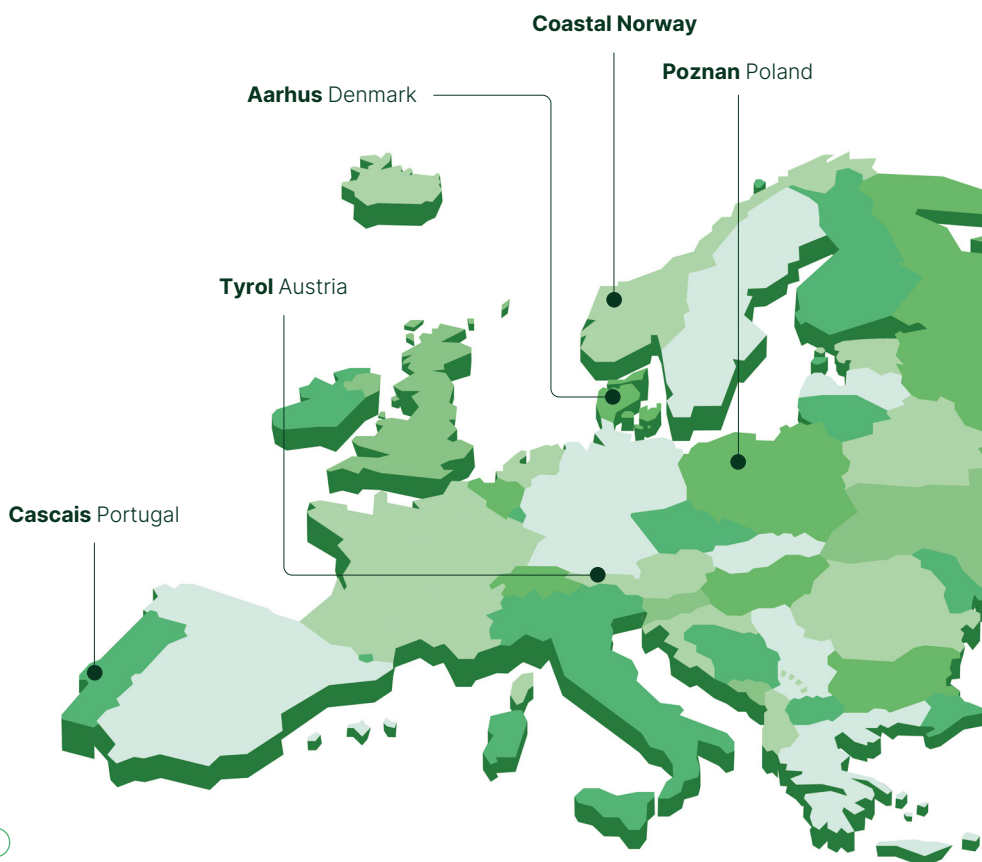
Public sector as enablers

Insights from the Living Labs

05

The Living Labs (LLs) in the Invest4Nature project were established as collaborative environments to test how nature-based solutions (NbS) can be implemented, financed, and scaled in practice. Their main objective was to **connect strategic ambitions with practical delivery by engaging public authorities, private actors, and local communities in co-creation processes**. Through workshops, pilot actions, knowledge exchange, and dissemination activities, the LLs explored governance models, financing approaches, and stakeholder cooperation while strengthening the role of the public sector as coordinator and facilitator of NbS interventions.

Although based on a shared methodological framework, each Living Lab reflected different local priorities, political contexts, landscapes, and climatic conditions.



In **Tirol**, NbS were analysed through a risk reduction perspective, focusing on river revitalisation and climate-resilient forests as measures to reduce environmental and economic risks.

Cascais concentrated on urban flood prevention and public-private cooperation, highlighting both the effectiveness of NbS and the challenges of engaging citizens and private landowners.

Aarhus approached NbS from a welfare economics perspective, using large-scale investments in multifunctional water and nature systems to support long-term land-use transformation.



In **Norway**, the focus was placed on marine NbS, where ecological uncertainty required advanced modelling and strong stakeholder involvement.

Poznań explored financing pathways for NbS through green schoolyards and pilot cooperation models involving public and private stakeholders, particularly within CSR, ESG, and sustainability-oriented initiatives.

Together, the Living Labs demonstrate that there is no single model for NbS implementation. Instead, they show how public authorities can adapt their roles depending on local needs, acting as facilitators, investors, coordinators, and knowledge providers. Across all cases, the public sector proved essential in enabling financing conditions, supporting stakeholder engagement, and creating the framework necessary for long-term environmental, social, and economic benefits.



Aarhus

Water- and nature parks as large scale Nature-based Solution

Authors: Lone Telling and Mette Holm (Aarhus Municipality)

- **Location:**
Aarhus Municipality, Eastern Jutland, Denmark
- **The challenge:**
Securing clean drinking water, counteract the biodiversity crisis and, enhance the quality of aquatic ecosystems, decrease CO₂-emissions and enhance the citizen's recreational options.
- **The NbS:**
Large scale conversion of conventionally managed farmland into forest and nature in the future Water- and Nature Parks: 11 parks and a total of 8.000 hectares in 11 parks.



One of the main challenges in implementing the parks is that participation by landowners is voluntary. Attractive financing mechanisms are needed in order to encourage landowners to join the project, either by converting their land themselves or by selling it for conversion.

Hasselager Forest reforestation project.
© Aarhus Municipality.

Aarhus Municipality established partnerships with external stakeholders, including private companies, foundations, and national institutions to enable the creation of Water- and Nature Parks. A key step has been the creation of a municipal land fund to help aid the financing of the conversion of farmland into forest and nature. In addition, financing is from the local water utility company that contributes with 50% of the land purchase price in order to protect drinking water resources from pesticide pollution.

Two factors have therefore been essential for the municipality's progress: **strong political commitment** through the designation of Water and Nature Parks, and **attractive co-financing models** for landowners and partners.

Even with these foundations in place, maintaining dialogue and collaboration with private companies remains a time-consuming task. Through the Invest4Nature project, Aarhus Municipality organised workshops with both private companies and financial sector representatives.

Afforestation with citizens.
© Aarhus Municipality



On-site workshop with companies.
© Aarhus Municipality

These workshops showed strong interest in biodiversity and a clear need for more knowledge about both responsibilities and investment opportunities related to NbS.

A central tool in the communication with partners has been the results of a social cost-benefit analysis carried out within Invest4Nature (Zandersen et al., 2025, DOI: 10.5281/zenodo.17508980). Using one specific Water and Nature Park as a case study, the analysis demonstrated the added value of using Nature-based Solutions. This has become a valuable tool in dialogue with the private sector, because it helps to show demonstrate that Water and Nature Parks create significant environmental and societal benefits and are valid projects for donations and investments.

Brief:
Aarhus Deep Dive



Cascais

Rewilding of Ribeira das Vinhas

Author: Barbara Coelho (Cascais Ambiente)

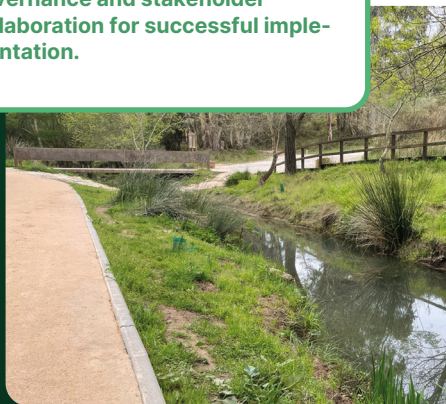
- **Location:**
Cascais, Portugal
- **The challenge:**
Urban flood risk and stakeholder coordination
- **The NbS:**
River restoration and rewilding of Ribeira das Vinhas



The Cascais Living Lab explored how the restoration of Ribeira das Vinhas can help reduce urban flood risk while improving the resilience and liveability of the surrounding city. With increasing exposure to intense rainfall events, flood risk along the river corridor has become a key challenge for Cascais, particularly in densely built-up urban areas.

The rewilding of Ribeira das Vinhas demonstrated how Nature-based Solutions (NbS) can reduce flood impacts by restoring more natural hydrological processes and increasing space for water retention. Post-restoration flood modelling showed a clear reduction in flood extent and water depth, especially in downtown areas and along the urban sections of the river where most buildings at risk are concentrated.

Ribeira das Vinhas demonstrated that Nature-based Solutions can significantly reduce urban flood risk and damages, while highlighting the importance of strong governance and stakeholder collaboration for successful implementation.



Ribeira das Vinhas, Cascais.
© Cascais Ambiente.

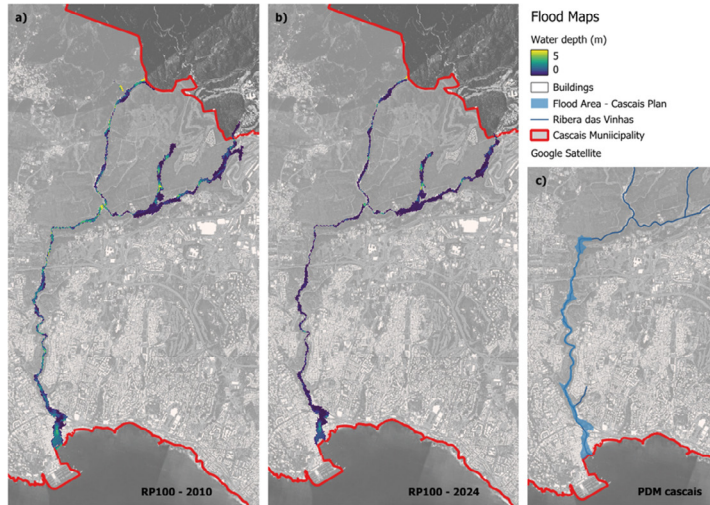
The results indicate significant risk reduction benefits. Flood-related damages decreased by approximately 43% after restoration, with total estimated damages reducing from around €11 million to €6 million. Expected Annual Damage (EAD) was reduced from about €110,000 to €62,000. In addition, the intervention had important social benefits, with the total affected population decreasing by around 9%. There was also a clear shift in impact severity, with approximately 60% fewer people classified as displaced (moving instead to the slightly affected category) and an 18% reduction in moderately affected residents.

A central focus of the Living Lab was also the role of stakeholder coordination in enabling NbS implementation. The process highlighted strong collaboration between municipal departments, researchers, and technical experts, particularly in joint assessments of flood risk and NbS benefits. These collaborations helped build a shared understanding of the value of river restoration as a flood risk management strategy.

At the same time, the Living Lab also revealed coordination challenges. Differences in institutional priorities, administrative procedures and uncertainties around long-term maintenance and financing sometimes slowed implementation and created governance complexity.

The key lesson from Cascais is that while NbS such as the rewilding of Ribeira das Vinhas can deliver clear and measurable reductions in flood risk and damages, their successful implementation depends equally on strong coordination, clear governance structures, and sustained collaboration between public and private stakeholders.

Brief:
Cascais Deep Dive



Flood map of Cascais comparing and visualising the reduction in flood areas in 2010 and 2024 as a result of the river restoration.
© Cascais Ambiente.

Poznań

Financing NbS through public-private cooperation pathways

Author: Agnieszka Dziubala (City of Poznań)

- **Location:**
Poznań, Poland
- **The challenge:**
Limited private sector engagement and unclear financing models for NbS
- **The NbS:**
Green schoolyards and nature-based educational spaces



Brief:
Poznań Deep Dive



Green patios installed in Poznań's schoolyards. © Metropolia Poznań

Poznań Living Lab demonstrates that scaling NbS requires not only pilot implementations, but also the development of long-term cooperation frameworks between public authorities and private actors. Through Invest4Nature, Poznań combined practical NbS testing with the exploration of CSR-based engagement models, helping to position NbS as a shared investment responsibility rather than solely a public-sector task.

A key barrier to the implementation and scaling of nature-based solutions (NbS) in Poznań is the limited involvement of the private sector, combined with a lack of clear, replicable financing models. NbS are still largely perceived as a public-sector responsibility, which constrains opportunities to mobilise additional resources and limits long-term investment potential.

To address this, Poznań developed two complementary but distinct lines of action: on the one hand, the implementation of green schoolyards as practical NbS projects, demonstrating environmental and social benefits such as improved biodiversity, enhanced rainwater retention, and increased well-being for users. These projects also serve as testing grounds for co-creation processes, involving school communities and local stakeholders.



Planted willow play tunnels at Poznań's green schoolyards. © Metropolia Poznań



Aerial view of the development of green schoolyards in Poznań. © Metropolia Poznań

On the other hand, the Living Lab is independently exploring new models of co-operation between the public and private sectors. These efforts focus on CSR, ESG, and sustainability-oriented frameworks, aiming to design long-term, engagement-based partnerships that could support NbS implementation in the future. At this stage, these cooperation models remain conceptual but are being actively developed through stakeholder dialogue, workshops, and collaboration with actors such as the Poznań Science and Technology Park, NGOs, and businesses.

Evidence of progress includes strong stakeholder engagement in co-creation processes, increasing institutional capacity, and growing interest from external partners. Work is also ongoing to improve indicators and evaluation methods to better capture the economic value of NbS.

The key lesson is that public authorities can enable NbS financing by simultaneously delivering tangible pilot projects and creating conditions for future investment. Even when financing models are not yet fully operational, building relationships, testing approaches, and demonstrating value are essential steps towards scalable and sustainable NbS implementation.

Tyrol

Safeguarding mountain forests in a changing climate

Author: Sigrid Mourits-Andersen
(Klimabündniss Tirol)

- **Location:**
Mountain Forests in the Municipality of Wildermieming
- **The challenge:**
Mountain forests are a key NbS for reducing natural hazards, but climate change, particularly in low-altitude monocultures, is making resilient forest management increasingly urgent.
- **The NbS:**
Protecting and building resilience in mountain forests through sustainable forest management
- **Local partners:**
Tyrolean Regional Government Forest Division and Municipality of Wildermieming.



Renaturation of the Tyrolean Lech river

Author: Sigrid Mourits-Andersen
(Klimabündniss Tirol)

- **Location:**
Tyrolean section of the Lech River
- **The challenge:**
For decades, flood management along the River Lech relied on grey infrastructure. While effective in reducing short-term flood risks, it disrupted natural river dynamics, degraded habitats, and weakened both the ecosystem and flood protection.
- **The NbS:**
River renaturation projects enhancing biodiversity and flood protection.
- **Local partners:**
Economic assessment of river renaturation measures, supported by regional partners

Klimabündniss Tirol brought together Invest4Nature researchers and local stakeholders to explore two Nature-based Solution (NbS) case studies. Drawing on strong regional support, the work examined the value of NbS in mountain landscapes, combining practical experience with an assessment of social and economic benefits. While NbS have long been part of the region, their future success depends on awareness, biodiversity conservation, long-term stewardship, and securing sustained investment.

Safeguarding mountain forests in a changing climate

Within Invest4Nature, the Tyrolean Climate Resilient Mountain Forest case served, with support from local partners, as an analytical setting to assess the implementation and economic benefits of a nature-sensitive forest management strategy aimed at strengthening ecosystem resilience.

With only 12 % of its land permanently settled, Tyrol has a long tradition of managing natural hazards. With climate change, the forest management in Tyrol is shifting from monoculture focused practices toward a close to nature approach that enhances resilience through forest heterogeneity, active rejuvenation, and the reintroduction of mixed site-specific tree species. The improved microclimatic conditions, supported by low impact forestry and long term maintenance, together constitute a core strategy for enhancing climate resilience.

The initial transition began over two decades ago in the Tyrolean municipality of Wildermieming. It aligns with the principles later articulated in the EU Forest Strategy for 2030. This management approach is now being promoted across Tyrol.



A dry gully that is activated by heavy rain
© N. Lang



Damage caused by wild animals © N. Lang

The success of the reforestation process in Tyrol is challenged by structural barriers such as fragmented forest ownership, high costs in difficult terrain, and wildlife browsing. At the same time, the value of resilient forests is often underestimated because forests are already present. This reduces awareness of the need for resilience-building measures, long-term management and maintenance, and sustained financial support.

To address these barriers, the Tyrolean Regional Government launched the Climate Smart Tyrolean Mountain Forest project, which promotes sustainable forest management through sponsorships, education, and mixed-forest "islands" inspired by the Wildermieming model.

The case demonstrates that ecosystem revitalisation can generate ecological, social, and economic benefits, but depends on appropriate framework conditions, capacity building, and long term awareness and support.

Learn more:
<https://klimafitter.bergwald.eu/>

Renaturation of the Tyrolean Lech River

The renaturation of the River Lech in Tyrol served as a pilot site to assess the economic impacts of restored river sections with support from local partners.

The Lech River projects implemented a combination of green and grey measures and is a classic example of a hybrid NbS in mountain areas. These interventions restored river dynamics, enhanced habitats, and reinforced flood protection.

A key factor in the success of the initial project, was the interdisciplinary collaboration between engineers, conservation authorities, NGOs, scientists, and local stakeholders. This ensured that flood protection, biodiversity conservation, and regional development objectives were addressed simultaneously.

Monitoring results now show positive flood protection and ecological impacts, including increases in indicator species such as the common sandpiper and little ringed plover. To maintain long-term data collection beyond project funding, continued monitoring was integrated into the management plan of the Tiroler Lech Nature Park. As the river's revitalisation progresses, data monitoring continues and is made available. This work raises awareness of mountain rivers among visitors and the public.

While monitoring and coherent data collection is often a challenge, the early efforts and regional cooperation have spurred new activities and attracted science-based tourism and activities, creating a hub around the ecological status of the river Lech in Außerfern.

Beyond ecological-scientific benefits, **the restoration has generated social and economic value through recreation possibilities and sustainable tourism concepts, with a strong focus on visitor management and awareness** to ensure protection of sensitive habitats.

According to regional tourism representatives, the revitalised dynamic sections of the Lech River has now become a strong regional brand, demonstrating how ecosystem re-storation can create multiple benefits while overcoming barriers to NbS implementations



Benefits of two LIFE Lech Projects

- Between 2001 and 2022, 63 measures were implemented through two LIFE projects addressing ecological and hydraulic flooding issues at the alpine river Lech.
- The LIFE Lech I (2001-2007) hybrid NbS measures directly led to significantly reduced damage in 2005 that would otherwise have occurred.
- LIFE Lech II (2016-2021) created 200,000 m² of retention areas and investments of more than 5 Mio euro benefited the regional economy.
- Learn more about the Life Lech project at: www.life-lech.at

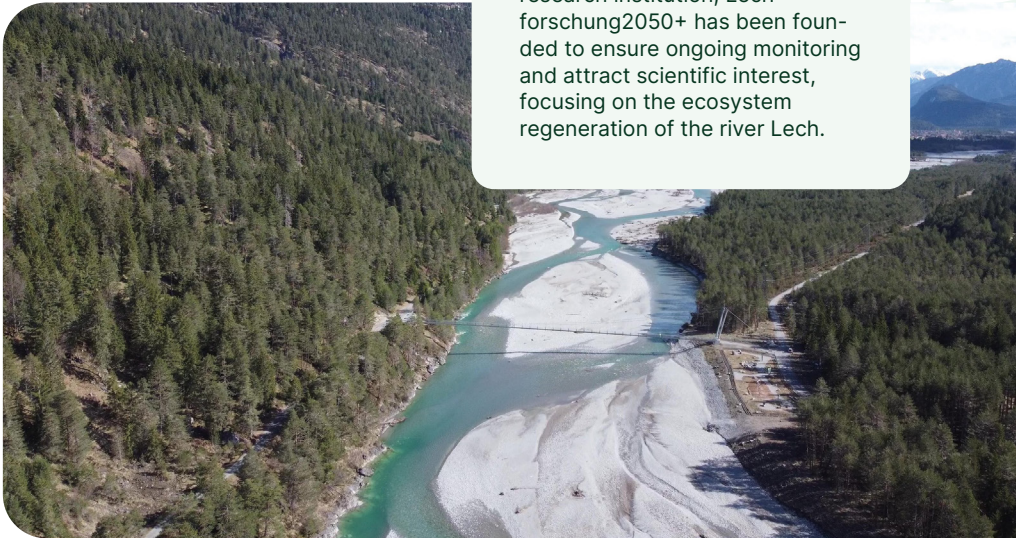


Brief:
Tyrol Deep Dive

Science-based NbS business models

The Tyrolean Lech Nature Park has established a knowledge database, available on request, containing studies, articles and updates. This makes the project results publicly available, highlights its outcomes for visitors, and supports the ongoing monitoring of the area's development. Learn more: www.naturpark-tiroler-lech.at/en/

The independent non-profit research institution, Lech-forschung2050+ has been founded to ensure ongoing monitoring and attract scientific interest, focusing on the ecosystem regeneration of the river Lech.



Comparison of the Lech River before and after the renaturation in 2019 (left) and 2024 (right) © BBA-Reutte.

Coastal Norway

Kelp forest restoration and coastal ecosystem recovery in Northern Norway

Author: Wenting Chen (NIVA)

- **Location:**
Northern Norway
- **The challenge:**
Declining kelp forest habitat due to sea urchin grazing
- **The NbS:**
Restoration of kelp forest ecosystems through sea urchin management, predator conservation, and ecosystem-based coastal management

Ecosystem restoration in the Oslofjord

Author: Wenting Chen (NIVA)

- **Location:**
South Norway
- **The challenge:**
Coastal development and ecosystem degradation, leading to declining coastal fish populations
- **The NbS:**
Restoration of Oslofjord ecosystem and conservation of ecosystems along the coast to support the integrated and climate smart coastal planning



The cases demonstrate how combining ecosystem modelling, climate scenarios, and socio-economic valuation can support evidence-based decisions for coastal NbS. By quantifying both ecological and societal benefits under uncertainty, the project provides a new framework for assessing the long-term resilience and insurance value of marine ecosystem restoration. Private financing is still in an experimental phase and requires further research, practical testing, and iterative learning in real-world implementation.



Kelp forest. © NIVA

Northern Norway: Kelp forest restoration and coastal ecosystem recovery

The NbS focuses on restoring kelp forest ecosystems as a foundation for coastal ecosystem recovery: combining sea urchin management, predator conservation, and ecosystem-based coastal management.

Historically, most financing sources for kelp restoration came from the public funding or philanthropic donation and volunteers. In close collaboration with Mission Ocean A-Agora project, Invest4Nature mapped initiatives with innovative private financing and business models to restore kelp forest in Northern Norway, including experimental voluntary carbon credits purchase by private companies and involving tourists to harvest urchins.

Kelp forest restoration provides natural insurance by strengthening biodiversity, climate resilience, fisheries productivity, and coastal livelihoods in Northern Norwegian coast in the long run.

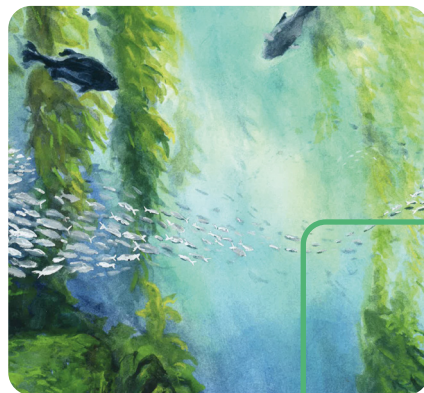
South Norway: Ecosystem restoration in the Oslofjord

The Oslofjord case focuses on restoring degraded marine ecosystems through a broader set of NbS and nature-positive measures: underwater habitat restoration, such as kelp forests and marine animal forests, and establishing marine protected areas.

Restoration measures aim to enhance biodiversity, carbon regulation, fisheries, and recreational quality in the Oslofjord. Financing for underwater habitat restoration still mainly comes from public funding, impact investments, and voluntary activities.

Stakeholder-based business canvas analysis points to the importance of clear value creation, aligned incentives, effective regulation, and coordinated governance for achieving successful restoration with low transaction costs. Local residents also show a positive willingness to pay for improved ecological status, with willingness to pay shaped by distance from the shoreline and patterns of coastal use.

Ocean kelp illustration: Claudia Schioppa Copyright © CMCC.



Key lessons and policy recommendations

06

Authors: Lydia Lienhart (Joanneum Research), Vanessa Weiß (Joanneum Research), Andrea Staccione (CMCC), Caterina Guidi (CMCC), Simone Taddeo (CMCC)

The successful uptake of NbS requires moving from policy ambition to concrete implementation, with binding and coherent policy frameworks, improved governance, and long-term financing.

While EU policy increasingly recognises the multifunctional benefits of NbS, operational, binding, or financially enabling mechanisms remain insufficient. This Best Practice Booklet offers key policy recommendations for public authorities at all governance levels and private actors to remove barriers, strengthen coordination, and create an enabling environment for mainstreaming NbS across Europe.

Local level: city and municipality authorities



1. Establish cross-sector coordination mechanisms, enable public-private partnerships, and remove barriers in spatial planning and zoning.

This includes establishing local NbS coordination bodies to connect departments and create added value, as well as using local cooperation formats and carbon certificates to deepen collaboration. Reviewing spatial planning and zoning rules removes barriers and ensures that NbS can be systematically integrated into urban development.

2. Tailor financing instruments to landscape needs, promote performance-based incentives, and explicitly include maintenance costs in funding schemes.

Key approaches involve using instruments such as PES for forestry or blended finance for water management. Performance-based incentives that reward ecosystem service delivery, along with co-developing projects with sustainable lenders and investors, help reduce risks and aligns environmental goals with financial returns. Dedicated maintenance budgets further ensure long-term viability.

- 3. Provide targeted training and technical support for stakeholders and municipal staff and cooperate with trusted local institutions to raise awareness.**

Effective strategies include offering training and technical support to address skill gaps and boosting NbS visibility through public awareness campaigns and partnerships with trusted local institutions, such as football clubs, to reach broader audiences.

Regional and national level



- 1. Strengthen cross-sectoral cooperation, set clear targets and action plans, and integrate NbS into policies through binding biodiversity targets.**

This can be achieved by creating regional NbS management bodies to coordinate across sectors and setting measurable targets for biodiversity and natural capital, providing investor certainty and supporting national climate goals. Integrating NbS into policies through binding biodiversity targets, minimum green space requirements, and closing regulatory gaps and conflicts with older laws further supports implementation.

- 2. Simplify funding procedures, dedicate more funds for NbS, and encourage company investments through tax incentives and compensation schemes.**

Recommended actions include simplifying application processes, establishing dedicated NbS funding, and using tax incentives to attract private investment and ensure long-term financing. Compensation and offset schemes can create reliable revenue streams, requiring industries causing environmental damage to finance NbS projects.

- 3. Create national competency hubs, expand cross-sector training, and launch large-scale awareness campaigns.**

This involves creating competency hubs for consistent training and knowledge exchange across regions, ensuring consistent quality and improving access to EU projects. Expanding cross-sector training and launching national awareness campaigns for policymakers and the public will further strengthen capacity.

At the EU level



1. Streamline EU regulatory frameworks for NbS by closing legal gaps and revising the EU Taxonomy.

Key actions are aligning policies across governance levels, updating the EU Taxonomy to cover all relevant NbS actions, and making NbS provisions mandatory with clear guidance, territorial focus, participatory governance and funding beyond the pilot stage. A multi-level governance structure should coordinate place-based action and ensure policy coherence.

2. Simplify EU funding procedures, dedicate more funds for NbS, and strengthen incentives for private investment.

This involves simplifying application processes, expanding dedicated NbS funding, and aligning incentives - such as guarantees and blended finance - with CSR and EU Taxonomy frameworks. Clearer reporting and explicit integration of NbS criteria into the EU Taxonomy, including harmonised sustainable finance tools and de-risking mechanisms, can further attract investment and ensure long-term viability.

3. Promote EU-wide data transparency, standardised monitoring, and knowledge-sharing.

Developing localised monitoring frameworks with standardised indicators, complemented by best-practice databases and knowledge-sharing platforms, will provide comparable evidence for investors, enable market-driven scalability, reduce uncertainty, and clarify NbS performance, co-benefits, and returns. Participatory governance and local capacity building ensure projects are taxonomy-aligned and investment-ready.

Private sector



1. Enhance policy signals, planning certainty, and market frameworks to unlock private capital for NbS.

Scaling up private NbS finance requires clear public policy, robust planning, and consistent market frameworks. Local governments can embed NbS in spatial planning and develop project pipelines; national governments should set clear bio-diversity targets and create compensation mechanisms. At the EU level, consistently embedding NbS in the sustainable finance framework, including the EU Taxonomy, give investors the clarity and confidence needed.



Learn more:
Policy framework
assessment and
recommendations



Forest illustration: Claudia Schioppa Copyright © CMCC.

Beyond the project

Keeping knowledge in play

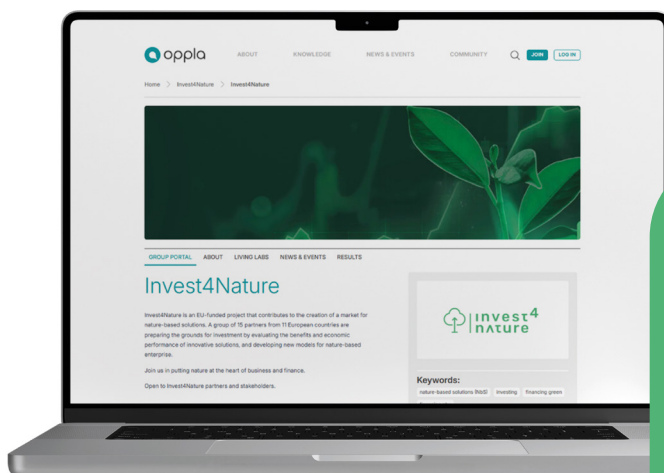
07

Author: Paul Mahony (Oppla)

Invest4Nature may be time-bound, but the need for trusted knowledge on nature-based solutions (NbS) is not. As the project concludes, the **Invest4Nature Workspace will remain a lasting home for the evidence, tools and practical insights developed along the way** - helping to ensure the knowledge generated by the project stay accessible, usable and easy to build upon.

Hosted on **Oppla, Europe's established platform for sharing knowledge on nature-based solutions**, the Workspace brings together project resources, Living Lab experiences and practical evidence in one place. From decision-support tools and reports to real-world insights from Living Labs, it offers a space where practitioners, policymakers, businesses and researchers can continue to explore what works, learn from others and share experiences.

Why does this matter? Because scaling up NbS depends on more than good ideas - it depends on confidence, evidence and examples that people can act on. By keeping Invest4Nature's knowledge open and connected to a wider European community, the Workspace helps carry momentum forward, supporting better decisions, stronger collaboration and more effective implementation beyond the lifetime of the project.



Continue the journey at oppla.eu/invest-4nature



Our Consortium





 www.invest4nature.eu

 Invest4Nature

 info@invest4nature.eu

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