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Investing in blue forest ecosystem conservation and restoration along the Norwegian coast

Bringing Norwegian blue forests back to life

By understanding the socio-economic benefits, financing options and business models for conserving and restoring the blue forest ecosystem in Norway, this project unlocks investment potential to enhance this socio-ecological system for the coastal communities and their future generations.

Key Learnings

- **Economic and multiple benefits:** Conservation and restoration of blue forest habitats bring many important benefits related to ecosystem services to local communities. These benefits can have very high economic and non-economic value.
- **Investment decision-making:** Decision-makers must consider the direct economic benefits that can be realised in the short term and the multiple benefits from ecosystem conservation and restoration in the long run.
- **Business models:** It is important to increase the private sector's and financial institutions' involvement in coastal and marine ecosystem conservation and restoration activities. Suitable business models and financing mechanisms must be identified to upscale blue forest conservation and restoration according to local contexts.
- **Involvement of local stakeholders:** Engaging with local stakeholders who interact with the ecosystem is crucial to garner support for conservation and restoration efforts and to safeguard the wellbeing of local coastal communities.

About the region

Northern Norway and Skagerrak

Climate Hazards

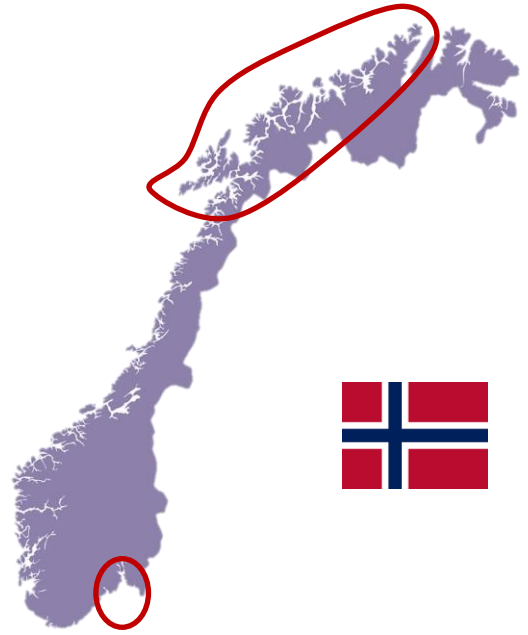
Extreme Temperatures

Sectors

Biodiversity, Coastal Areas, Marine and Fisheries

Key community system

Ecosystem and Nature Based Solutions, Water Management,
Health and Wellbeing



Climate Threats

Blue forests in Norway, such as the kelp forests and seagrass beds, are essential coastal and marine ecosystems that sequester carbon and provide many ecosystem services.

In southern parts of Norway, the once flourishing kelp and seagrass meadows have significantly declined in recent decades due to ocean warming, darkening, and eutrophication. In northern Norway, the blue forests are losing vast kelp areas to sea urchin grazing. These ecosystems are also threatened by coastal development, including real estate, harbours, and other environmental challenges.

The loss of blue forests transforms vast productive areas into desolate underwater landscapes. This phenomenon reduces coastal biodiversity and ecosystem services, such as nursery function, fisheries production, carbon storage, and sequestration, and disrupts the delicate balance of marine life dependent on these habitats. Therefore, there is an urgent need for comprehensive blue forest conservation measures to mitigate the effects of climate change and prevent further ecological degradation and socioeconomic repercussions.



Figure 1: Healthy kelp forest with rich biodiversity contributing to climate change adaptation. Image Credit: Janne Gitmark.



Figure 2: Healthy kelp forest with rich biodiversity sustaining coastal livelihoods. Image Credit: Kjell Magnus Norderhaug.

A Socioeconomic Strategy for Upscaling Blue Forest Conservation and Restoration

Blue forest conservation and restoration can yield substantial benefits as they are important marine habitats with highly productive ecosystems, providing nursery grounds, food and hiding places for juvenile fishes. The blue forest habitat is an ecosystem with high biodiversity and species abundance. Beyond the important **ecological function**, the habitats provide essential **ecosystem services** to our society. They increase fish populations, raise fishing yield, and enhance recreational experiences such as diving, bird watching, and sports fishing. The blue forests also play an important role in carbon storage and sequestration, thus **mitigating and regulating climate change impacts**. All these benefits make them valuable habitats and benefit various types of users.

The Norwegian Institute for Water Research has over four decades of experience implementing blue forest conservation and restoration in Norway. The institute's work includes experimenting with various conservation and restoration measures such as kelp and sea grass transplants, artificial reef development, and sea urchin harvesting and culling. Based on its previous experience in blue forest ecosystem conservation and restoration, the institute is exploring the socioeconomic impacts of upscaling the restoration activities. Researchers are analysing the financial and socio-economic performance of conservation and restoration activities, focusing on the multiple benefits and their effects on the various social groups.

Existing funding sources for coastal ecosystem conservation and restoration of kelp forests primarily come from the public sector with minimal involvement from the private sector. Therefore, the Invest4Nature project team is investigating the needs of private investors and identifying feasible business models that could facilitate their participation in supporting upscaling coastal ecosystem conservation and restoration activities. The activities include the development of hands-on investment decision tools to enable future investment decisions in ecosystem conservation and restoration by the public and private sectors.

The team actively involves local stakeholders in the process through regular dialogues with scientists, in-depth face-to-face interviews and large-scale surveys. Dedicated workshops and bilateral meetings support co-designing sustainable business models and validating the investment decision-making tool.

Funding barriers and enabling factors

Public funds usually finance blue forest ecosystem conservation and restoration activities. Yet, this funding mechanism has proven insufficient. In some cases, the government's focus on industrial development and the blue economy reduced the eligible projects for funding conservation and restoration. Competition for grants among applicants introduces additional uncertainty for continuing the conservation and restoration activities as not all the applicants can secure funding to continue their projects. However, there are examples of small and medium-sized enterprises and the private sector collaborating with the public sector and research institutes with in-kind contributions or financial incentives in the relevant research and innovation activities.

Navigating challenges and finding solutions

Ultimately, the aims are to gain a better understanding of the socio-economic benefits and financial performance of blue forest ecosystem conservation and restoration in Norway. In particular, the research project aims to understand how to reduce climate risks and other related environmental and management challenges. It aims to identify feasible and sustainable business and financing models, including blended financing, to promote greater adoption and large-scale investments in conservation and restoration

activities. Accelerating their acceptance and market integration are core aspects of the project measures. The project works towards more resilient coastal areas of Norway, conserving, restoring and sustainably managing the important blue forest habitats. This, in turn, helps to reach the EU's conservation and restoration targets, enhancing biodiversity, contributing to global carbon regulation and safeguarding the well-being of the coastal communities and their future generations.

Summary

Blue forests are valuable ecosystems, contributing to biodiversity conservation and carbon sequestration. This, in turn, helps coastal areas adapt to climate change and sustain coastal economic activities. Stakeholder involvement is crucial for project support and developing climate-adapted business and financing models.

Further information

This adaptation story is part of the [Invest4Nature](#) project.

The [Economics of Nature-based Solutions](#) (Invest4Nature) project is an EU Horizon-funded project that contributes to creating a market for nature-based solutions.

- [Ecosystem accounting's potential to support coastal and marine governance - ScienceDirect](#)
- [Valuing the ecosystem service benefits from kelp forest restoration: A choice experiment from Norway - ScienceDirect](#)
- [Bioeconomic Modelling of Coastal Cod and Kelp Forest Interactions: Co-benefits of Habitat Services, Fisheries and Carbon Sinks | Environmental and Resource Economics \(springer.com\)](#)
- [Restoring Norway's Underwater Forests UN.docx \(niva.no\)](#)

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