

SEA URCHIN REMOVAL TO RESTORE NORWAY'S KELP FORESTS

Summary for Policymakers

Kelp forests are among the most ecologically and socioeconomically important habitats in Norway and around the world, contributing billions of dollars annually to the global economy.

Large areas of Norwegian kelp forests were replaced by urchin barrens and their recovery via urchin removal provides a unique opportunity for Norway to tackle key climate and environmental challenges, while creating an economically viable urchin fishery.

Kelp forest restoration provides many public and private sector investment opportunities as these ecosystems can function as nature-based solutions to meet three central challenges of today's society: mitigating and adapting to climate change, protecting biodiversity and ensuring human wellbeing.

1 THE PROBLEM

In the 1970s, Norwegian kelp forests were replaced by urchin barrens.

This led to a total depletion of all subtidal kelps, other seaweeds, and associated organisms, from mid Norway and further north into Russia, leaving only a remnant population of kelps at sites too rough and exposed for the urchins.

2 HOW TO GET THERE?

LEGISLATION

Policymakers need to be aware of the difficulties stakeholders have and adapt legislation to encourage restoration to happen at a larger scale in Norway.

INDUSTRY

Industry can harvest and sell urchin roe. If conducted at a large scale, this will contribute to the restoration of kelp forests which create jobs in new green industries.

FINANCIAL RESOURCES

One of the biggest challenges for restoration projects is the lack of available funding. Investment into large scale restoration efforts is critical to ensure a sustained recovery of kelp forests and their benefits to society.

3 THE SOLUTION

Implementation of restoration projects, alongside sustainable commercial activities.

Urchin barrens in numbers



8400 km²
of urchin barrens
formed in the 70s



84 million tonnes
of kelp grazed



>30 urchins per m²



84 000 tonnes/year
of large fish lost

The recovery process

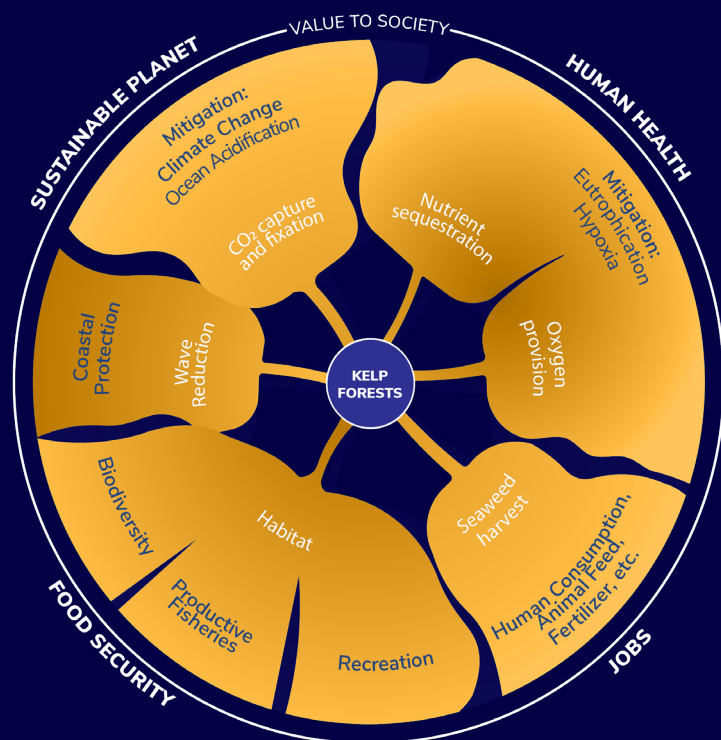
Recolonisation of kelps due to urchin control measures

Gradual expansion of restored areas & recovery of kelp-associated organisms

Expected results

Healthy kelp forest!
Recovery of fisheries and
other lost ecosystem services

THE BENEFITS OF RESTORED KELP FORESTS TO SOCIETY



€16.7 million/km²

Value of Laminaria kelp forests of the North Atlantic

Kelp forests play an important role as natural carbon sinks, support commercial fisheries through the provision of nursery and feeding grounds, filter the seawater alleviating pollution and protect coastlines from erosion.

RESTORING NORWAY'S NATURAL CARBON SINKS

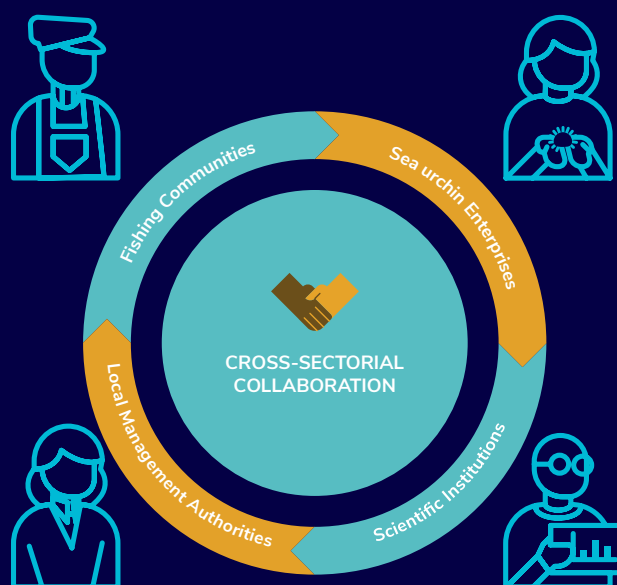
	Current state	With restoration
Kelp biomass	107 million tonnes	180 million tonnes
CO₂ stored in living biomass	18 million tonnes	30 million tonnes
CO₂ long-term storage	1.8 million tonnes annually	3 million tonnes annually



Long-term restoration commitments are needed to achieve healthy and resilient kelp ecosystem.

Policies must support restoration efforts, undertaken by both academia and industry.

Cross-sectoral collaborations are key for successful restoration initiatives and local management authorities should incentivize restoration actions through **legislation and financing**.



Do you want to know more?

Download the full report from:

<https://niva.no/en/reports/restoring-norways-underwater-forests>
<https://seeforester.org/#project-norway>

Collaborating Institutions

