

NATIVE OYSTER REEF RESTORATION IRELAND CLG (NORRI)

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Macro-algae and oyster reef restoration can help mitigate Ireland's Carbon emissions, and climate change adaptations

- Ireland's coastline is just over 6000 km long, historically supporting vast habitats of oyster reefs and kelp forest
- Ireland's CO₂ emissions were 59.9 million tons in 2019. (provisional GHG emissions estimate)

Below data are taken from the following paper:

Substantial role of macroalgae in marine carbon sequestration.

Dorte Krause-Jensen^{1,2*} and Carlos M. Duarte³, NATURE GEOSCIENCE | VOL 9 | OCTOBER 2016.

FACT: One km wide band of macro algae around Ireland could remove, provide carbon sink, of up to 2.6 million tons of CO₂ per year. A significant percentage of this could be locked away in sediment and the deep ocean.

FACT: When kelp restoration is combined with oyster and mussel reef restoration the amount of carbon sink increases significantly, in symbiosis of biological diversity that kelp (macro algae) together with oyster and blue mussel reefs are supporting. However, as all animals do, shellfish are also carbon source, but at the same time provide multifunctional ecological services that have been supporting climate adaptations for millions of years.

<https://royalsocietypublishing.org/doi/10.1098/rspb.2017.0891>

Vegetated coastal habitats, although significantly degraded, have been identified as one of the most important carbon sinks. In contrast to angiosperm-based habitats such as seagrass meadows, salt marshes and mangroves, marine macroalgae have largely been excluded from discussions of marine carbon sinks. Macroalgae are the dominant primary producers in the coastal zone, but they typically do not grow in habitats that are considered to accumulate large stocks of organic carbon. However, the presence of macroalgal carbon in the deep sea and sediments, where it is effectively sequestered from the atmosphere, has been reported. A synthesis of these data suggests that macroalgae could represent an important source of the carbon sequestered in marine sediments and the deep ocean. A rough estimate suggests that macroalgae could sequester about 173 million tons C yr⁻¹ (with a range of 61–268 million tons C yr⁻¹) globally. Dorte Krause-Jensen^{1,2*} and Carlos M. Duarte³, NATURE GEOSCIENCE | VOL 9 | OCTOBER 2016.

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The NORRI project proposes the integrated habitat restoration and conservation by actively restoring macro algal kelp habitat in tandem with oyster reef and mussel reef restoration. The project has the potential to significantly assist Ireland meeting its GHG ambitions while significantly and simultaneously enhancing the following:

- Massive increase in biodiversity in coastal waters
- Extensive coastal protection to adapt to and mitigate sea level changes and coastal erosion.
- Enhanced water quality health and resilience.
- Enhanced fisheries as these restored habitats are vital nursery grounds for most marine species.
- Enhanced shore-based processing and biotechnology industries from fisheries and seaweed harvesting.
- Increase in marine tourism as these restoration sites will be prime underwater diving and snorkelling locations as well as for sea kayaking, whale/mammal/bird watching, and also sea angling.
- Education: These sites and the work being undertaken in them will be important educational tools to teach future generations about the potential and the beauty of our coastal habitats and hopefully lead to the next generation of educated citizens and marine scientists that will protect and manage these resources for future generations.
- International recognition: The NORRI project wants to create a pilot study restoration site in Co. Wicklow which will become a centre of excellence in integrated marine restoration and conservation that will attract international attention and make Ireland a world leader in sustainable coastal management. The site will show how an area that has been completely over exploited can be regenerated to its natural, resilient healthy conditions and serve as an example to be modelled in other parts of the world.