

# Carbon in Marine Sediments: Dundalk Bay and Potential Climate Mitigation

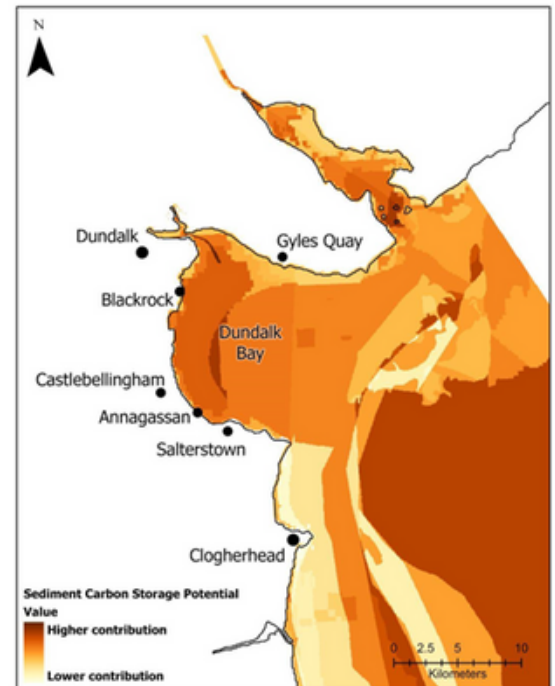
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Taking  
STOCK

## Marine sediments in Dundalk Bay

Marine sediments are a mix of sand, gravel, and mud on the bottom of the sea. Over time, they can trap organic carbon from soil, sewage, plants and animals. Disturbing the sediments increases biological activity, which may release the carbon into the atmosphere as CO<sub>2</sub> and contribute to climate change. To prevent this, it is important to strike the right balance between human activities that disturb the sediments (construction, dredging, fishing, etc.) and protecting the sediments. Dundalk Bay is thought to be an area where large amounts of carbon are stored in marine sediments. This may be a factor in deciding how Dundalk Bay is managed in the future.

Right: Marine sediments storing carbon in and around Dundalk Bay, Ireland. Darker colours represent areas where there is thought to be more carbon stored in the marine environment, based on currently available data. (Source: National Parks & Wildlife Service).



## Findings from the “Taking Stock” project

In Spring 2023, researchers interviewed people who live near Dundalk Bay, individually and in a focus group. The researchers analysed the responses to understand what Dundalk Bay means to residents, and how this informs their understanding of marine sediments and the future management of the area:

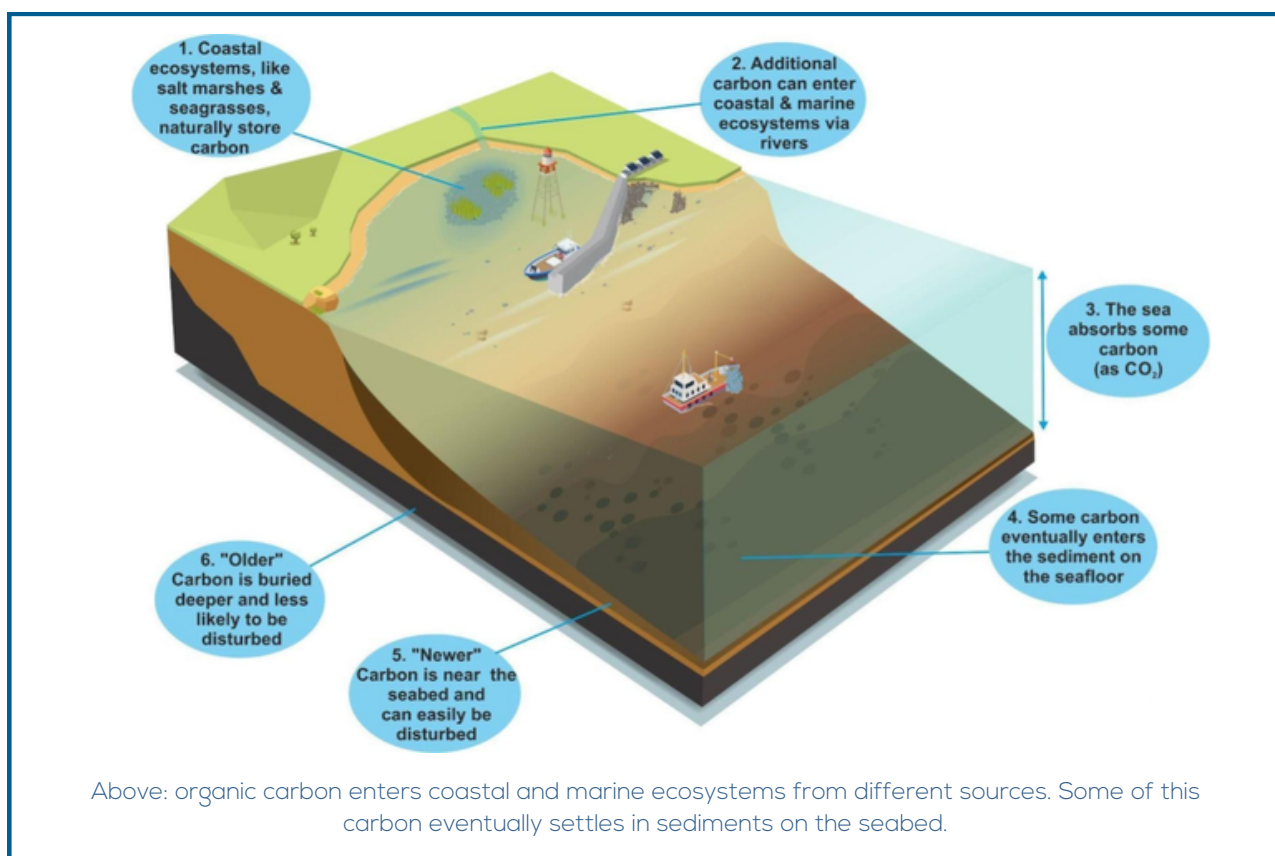
- Dundalk Bay is an important cultural, economic, environmental, historical, and social space.
- Local knowledge can make a contribution to the understanding of the bay and its sediments, and people feel that their voices should be heard as part of future management plans for the area.
- However, people generally remain unaware that marine sediments store carbon, and are concerned about the lack of scientific knowledge about where sediments are located and how much carbon they contain.

## Recommendations

To include local perspectives and knowledge into decisions about the future of Dundalk Bay and the possible role of its marine sediments in addressing climate change, we recommend that these actions should be taken immediately:

- Develop an information campaign about marine sediments and their possible role in mitigating climate change, with information tailored to local residents, community groups, local authorities, and other interested parties.
- Increase communication between stakeholders in Marine Spatial Planning, including between government bodies at national and local levels and coastal communities.
- Support engaged research, where researchers working to understand carbon in marine sediments collaborate with local communities to tackle questions of mutual interest, including through citizen participation and sharing knowledge.

*“It’s critical that people feel part of any... change that’s going to happen in that relationship with the bay” (study participant)*



### How are sediments currently managed in Dundalk Bay?

Dundalk Bay is part of the European Natura-2000 network of protected areas. The tidal mudflats and sandflats in Dundalk Bay have been specifically identified as valuable ecosystems and there are restrictions on activities that disturb them. These restrictions primarily affect the local cockle and razor clam fisheries, which are subject to annual catch quota based on stock surveys and monitoring of the bird population. Dredging for access to Dundalk Port remains allowed, and there are plans to develop offshore wind farms in the area. A recent government report<sup>1</sup> highlighted that Dundalk Bay is a suitable candidate to become a Marine Protected Area, but no decision has been made yet.

### What will happen next?

The Government plans to expand the national network of Marine Protected Areas (MPAs) – these are maritime areas selected for additional conservation measures. They may also increase the level of protection for MPAs, for example to prevent marine sediments storing carbon from being disturbed. Public participation will be an important factor in designating MPAs. To support the decision-making process, scientists are identifying where vulnerable ecosystems are located and how these areas overlap with human activities including fishing, shipping, and offshore renewable energy developments.

<sup>1</sup>Ecological sensitivity analysis of the western Irish Sea to inform future designation of Marine Protected Areas (MPAs) (2023). <https://www.gov.ie/en/publication/4bc80-ecological-sensitivity-analysis-of-irish-sea-main-report/>

## PROJECT INFORMATION

The "Taking Stock" project was carried out by a team of researchers based at the SFI Research Centre in Applied Geosciences (iCRAG) at University College Dublin, and was supported by a research grant from Science Foundation Ireland (SFI) under grant number 13/RC/2092\_P2. Support was also received from the Marine Institute and Environmental Protection Agency-funded QUEST Project (Grant No; PBA/CC/21/01).

## CONTACT DETAILS

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