



Head Office
Overross House
Ross Park, Ross-on-Wye
Herefordshire HR9 7US
T 01989 566 017
E info@mcsuk.org

Scotland
Suite 7, CBC House
24 Canning Street
Edinburgh EH3 8EG
T 0131 633 4000
E scotland@mcsuk.org

London
Unit 120, Metal Box Factory
30 Great Guildford Street
Borough, London SE1 0HS
www.mcsuk.org

An ambitious four-point plan for securing the benefits of blue carbon in Wales

Realising the benefits of Wales' vast blue carbon stores

The Environment (Wales) Act 2016 requires the Welsh Government to reduce emissions of greenhouse gases (GHGs) in Wales by at least 80% for the year 2050 with a system of interim emissions targets and carbon budgets. The Welsh Government has since committed to decreasing emissions by 95% by 2050.

At around 32,000 km², the Welsh marine area is 35% larger than the Welsh land mass. A recent NRW report (July 2020)ⁱ highlighted that at least 113 Million tonnes of carbon are already stored in Welsh marine habitats; this equates to almost 10 years' worth of Welsh carbon emissions. It furthermore represents over 170 % of the carbon held in Welsh forests.

The ocean plays a dominant role in the global carbon cycle and is responsible for taking up 25 to 30 percent of anthropogenic CO₂ released into the atmosphere. However, ocean ecosystems are severely threatened by the way we use them, and by climate change. A recent study (Luisetti et al. 2019)ⁱⁱ suggested that the UK could damage up to US\$12 billion's worth of shelf sea sediment carbon stores over the next 25 years, if we do not address the mismanagement of our seas.

The ocean, and how we use it, has a key role to play in mitigating climate breakdown through providing low-carbon emission sources of protein; locking down 'blue carbon' and restoring 'fish carbon'; by providing renewable sources of energy; and through decarbonising ocean industry – **but we must change the way we use the ocean to ensure it has the resilience to help us mitigate climate change.**

Policy recommendations for blue carbon in Wales:

We are calling on the following policies to be introduced in Wales, in order to help meet the ambitious target to cut carbon emissions by 95% by 2050:

- 1. Develop, implement and fund a national Blue Carbon Recovery Plan**
- 2. Strengthen management and protection of Wales' Marine Protected Areas**
- 3. Ensure that future fisheries policy is 'climate smart' and improve current fisheries management in Wales**
- 4. Invest in low-carbon fisheries and aquaculture innovation and fish carbon restoration strategies**



Head Office
Overross House
Ross Park, Ross-on-Wye
Herefordshire HR9 7US
T 01989 566 017
E info@mcsuk.org

Scotland
Suite 7, CBC House
24 Canning Street
Edinburgh EH3 8EG
T 0131 633 4000
E scotland@mcsuk.org

London
Unit 120, Metal Box Factory
30 Great Guildford Street
Borough, London SE1 0HS
www.mcsuk.org

How can blue carbon policies be implemented effectively?

The estimated carbon sequestration in the Welsh marine environment every year is equivalent to the average annual fuel consumption of 64,800 cars, or 115,600 return flights from Cardiff to the Canary Islands (NRW, 2020).

It is believed that the **vast majority** of carbon is stored in the water column and within sand, mud and gravel on the seafloor. Marine plants also have the ability to 'sequester' and store carbon: Saltmarsh is the most effective at doing so, as are shellfish and seagrass beds. It is estimated that at least **26,100 tonnes** of carbon are potentially sequestered in the Welsh marine environment every year, with saltmarshes and seagrasses accounting for the bulk of this value (NRW, 2020).

There are some simple solutions to help keep Wales on track with its carbon targets:

1. Develop, implement and fund a national 'Blue Carbon Recovery Plan'

The Plan would aim to restore key coastal blue carbon habitat, and include policies that a) plan for inland coastal habitat migration and expansion as a result of sea-level rise through land-owner subsidies and state land purchases, and b) increase the number of **managed realignment projects** for flood defence, with the aim to minimise economic costs of sea-level rise and maximise creation of key blue carbon habitats.

The Plan could also seek to identify and designate '**Blue carbon zones**' - areas recognised for their high carbon storage and/or carbon sequestration potential - which would then be protected from activities which disturb or damage those habitats. Coastal blue carbon habitats also provide key nursery habitat for some commercial fish species and could therefore be managed as blue carbon and fish-stock recovery zones.

The Plan could support strategic, **large-scale reintroduction and restoration of lost 'blue carbon' habitats**, such as re-colonisation of native oyster beds, horse mussel beds, seagrass meadows, etc, and long-term monitoring of reintroduction programmes. One way to achieve this may be by extending the First Minister's 'National Forest for Wales'ⁱⁱⁱ initiative into the sea, to improve coverage of degraded seagrass forests and saltmarsh habitats.

The new Government in Wales should investigate how they might fund such a Plan through any carbon offsetting programmes, which are available but rarely tapped into by marine programmes.

2. Strengthen management and protection of Wales' Marine Protected Areas

The current approach to Marine Protected Area (MPA) management in Wales is to manage the condition of specific 'features' (such as animals or habitats) designated within these sites. By not protecting the wider ecosystem functioning of the MPA in question, this approach fails to secure the site as a whole. It also



Head Office
Overross House
Ross Park, Ross-on-Wye
Herefordshire HR9 7US
T 01989 566 017
E info@mcsuk.org

Scotland
Suite 7, CBC House
24 Canning Street
Edinburgh EH3 8EG
T 0131 633 4000
E scotland@mcsuk.org

London
Unit 120, Metal Box Factory
30 Great Guildford Street
Borough, London SE1 0HS
www.mcsuk.org

means that we are not maximising the carbon stores within these areas. **A much needed 'whole-site' approach to Welsh MPAs should be developed** to enable repair and renewal of marine ecosystems and at the same time reduce damage to key blue carbon habitats, such as seagrass beds, saltmarsh and marine sediments.

Highly Protected Marine Areas (HPMAs) are the most effective type of marine protection for biodiversity recovery. DEFRA are already considering HPMAs in future planning for management in English waters. By excluding extractive activities, HPMAs will support the recovery and protection of key habitat and fish carbon sequestration systems. **MCS is calling for Wales to contribute to a UK network of highly protected^{iv} Marine Protected Areas that cover 30% of UK waters by 2030, including 10% fully protected, which will help to secure blue carbon habitats.**

3. Ensure that future fisheries policy is 'climate smart' and improve current fisheries management in Wales

Future fisheries policy in Wales has the ability to make or break how we manage our important marine carbon stores, after we leave the EU in 2021.

There are 29,514 km² of subtidal muds, sands and gravels in Welsh waters (NRW 2020); however, there is only a tiny fraction of Welsh seafloor protected. Bottom trawling and dredging, re-suspends the top 10cms of sediment where carbon is stored, and releases carbon back into the water column. Globally, bottom trawling may reduce carbon storage by 52% (Pusceddu et al 2014)^v.

Recovering fish stocks to healthy levels will play an important role in carbon storage in our seas: fish have been shown to play an important role in the global carbon cycle. Research estimates that mid-water fish from the UK–Irish continental slope captured and stored a volume of carbon equivalent to over 1 million tonnes of CO₂ every year (Trueman et al 2014)^{vi}.

In order to implement a future fisheries policy in Wales that is synonymous with Wales' ambitious climate objectives, this would require:

- Restoration of our marine vertebrate carbon, or 'fish carbon', by recovering all commercial fish stocks to **Biological Maximum Sustainable Yield (bMSY) levels**. Fish and other marine vertebrates play an important role in the global carbon cycle.
- More effective monitoring of Welsh fisheries through remote technologies such as iVMS on small vessels and **remote electronic monitoring with cameras (REM) on all vessels over 10m**. Fishing activities in Welsh waters are ineffectively monitored at sea, which has resulted in a reduced understanding on the health of fish stocks, as well as how fishing is being undertaken and, importantly, what is being removed.
- **Moving towards lighter, less damaging fishing gears**. Climate smart fisheries requires taking action that both reduces the direct emissions of fishing and restores the habitats that sequester CO₂.



Head Office
Overross House
Ross Park, Ross-on-Wye
Herefordshire HR9 7US
T 01989 566 017
E info@mcsuk.org

Scotland
Suite 7, CBC House
24 Canning Street
Edinburgh EH3 8EG
T 0131 633 4000
E scotland@mcsuk.org

London
Unit 120, Metal Box Factory
30 Great Guildford Street
Borough, London SE1 0HS
www.mcsuk.org

Towed gear incurs greatest fuel use and bottom-towed gear exacts the most widespread disturbance to the seabed and damages seabed biota. Providing real incentives for the development and use of less destructive and lower carbon gear could dramatically reduce the CO₂ emissions of fisheries.

- **Fishing subsidies should be targeted at those fishers that trial low carbon novel technologies** e.g. fuels, appropriate retro-fit engines; fuel-efficient gear technologies.
- Fisheries management should be fully integrated with marine conservation by adopting a **holistic Ecosystem Approach to Fisheries (EAF) management** that mitigates negative fishery impacts on key habitats and non-target species, and invests in novel stock monitoring and modelling that takes into account climatic change effects on commercial stocks.

4. Invest in low-carbon fisheries and aquaculture innovation and fish carbon restoration strategies

Emissions from the global fishing industry grew by 28% between 1990 and 2011, with little coinciding increase in production (average emissions per tonne landed grew by 21%)^{vii}. If we want to ensure 'climate smart' food production in Wales, **we must reduce the carbon footprint of wild capture fisheries, aquaculture production and supply chains.**

In order to decarbonise ocean-based food production, the following action is needed:

- Incentivise and only promote low-carbon, sustainable fish and aquaculture products in Wales.
- Incentivise and invest in rapid development of alternative fuel sources for vessels and production techniques, including supporting energy efficient shipping design.
- Develop novel ways to reduce waste in the seafood supply chain.
- Promote climate-smart aquaculture production, including bivalve aquaculture, seaweed aquaculture and offshore multi-trophic aquaculture, as low-carbon protein production methods. Support co-location of renewable energy installations and offshore aquaculture, where feasible.

Essential decarbonising of our economy to greatly reduce greenhouse gas emissions, coupled with sustainable management of ocean use, and the development and delivery of key nature-based ocean mitigation measures, can help Wales to lead the way for global change on how we tackle the Climate Crisis.

For further information, please contact MCS Policy and Advocacy Manager Wales, Clare Trotman:

Clare.Trotman@mcsuk.org

Last updated: 18.11.2020



Head Office
Overross House
Ross Park, Ross-on-Wye
Herefordshire HR9 7US
T 01989 566 017
E info@mcsuk.org

Scotland
Suite 7, CBC House
24 Canning Street
Edinburgh EH3 8EG
T 0131 633 4000
E scotland@mcsuk.org

London
Unit 120, Metal Box Factory
30 Great Guildford Street
Borough, London SE1 0HS
www.mcsuk.org

ⁱ Armstrong, S., Hull, S., Pearson, Z., Wilson, R. and Kay, S., 2020. [Estimating the Carbon Sink Potential of the Welsh Marine Environment](#). NRW, Cardiff, 74p

ⁱⁱ Tiziana Luisetti, R. Kerry Turner, Julian E. Andrews, Timothy D. Jickells, Silke Kröger, Markus Diesing, Lucille Paltriguera, Martin T. Johnson, Eleanor R. Parker, Dorothee C.E. Bakker, Keith Weston. [Quantifying and valuing carbon flows and stores in coastal and shelf ecosystems in the UK](#), Ecosystem Services, Volume 35, 2019, Pages 67-76.

ⁱⁱⁱ First sites announced for national forest “among very best woodland in Wales”, [Welsh Government announcement](#), 4th November 2020.

^{iv} ‘Highly’ protected and ‘fully’ protected, as defined by the IUCN Protected Areas Category System: IUCN World Commission on Protected Areas, Marine Conservation Institute, National Geographic Society, and UNEP World Conservation Monitoring Centre (2019) An Introduction to The MPA Guide: <https://www.protectedplanet.net/c/mpa-guide>

^v Antonio Pusceddu, Silvia Bianchelli, Jacobo Martín, Pere Puig, Albert Palanques, Pere Masqué, and Roberto Danovaro. (2014). Chronic and intensive bottom trawling impairs deep-sea biodiversity and ecosystem functioning. PNAS. <https://doi.org/10.1073/pnas.1405454111>

^{vi} Trueman, C.N., *et al.* (2014) Trophic interactions of fish communities at midwater depths enhance long-term carbon storage and benthic production on continental slopes. Proceedings of the royal society. <https://doi.org/10.1098/rspb.2014.0669>

^{vii} Parker, Robert & Blanchard, Julia & Gardner, Caleb & Green, Bridget & Hartmann, Klaas & Tyedmers, Peter & Watson, Reg. (2018). Fuel use and greenhouse gas emissions of world fisheries. Nature Climate Change. 8. 333-337. 10.1038/s41558-018-0117-x.

<https://www.researchgate.net/publication/324146378> Fuel use and greenhouse gas emissions of world fisheries