



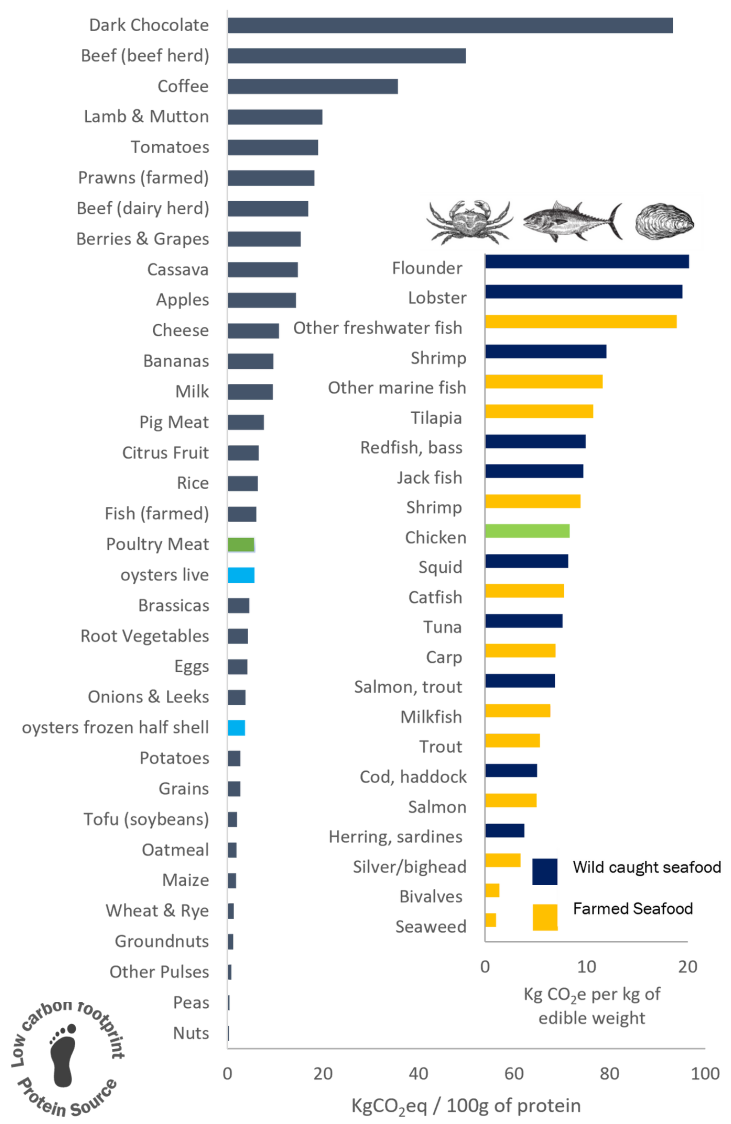
Carbon Neutral Certification for Oyster Farmers

Merimbula oyster farm

To understand the opportunities and value in carbon neutral certification for the Australian oyster industry, FRDC and Oysters Australia commissioned NineSquared Pty Ltd to outline the current policy climate, pathways to certification and knowledge gaps limiting opportunity and growth. This is a synopsis of a wider study.

Summary

- 1 Oyster production is one of the lowest green house gas emission food sources per 100g protein and the lowest amongst land animals, farm fish and crustaceans.
- 2 Oyster farming in Australia has been touted as an area for climate positive investment in sustainable aquaculture, involving zero supplementary feeding, low waste.
- 3 Payments for carbon offsets from oyster farming is not currently available through the Australian Government Emission Reduction Fund.
- 4 Carbon neutral certification may be achieved by minimising and offsetting product and supply chain emissions through the Climate Active framework
- 5 Further research is needed to accurately understand and quantify carbon footprints to assist the development of methodologies and to ensure integrity and transparency of sustainability claims.



Carbon footprints of different dietary proteins on the global market. it does not necessarily reflect Australian conditions.

FRDC Project 2021-032
 2021-032 Provision of strategic advice to Oysters Australia - Identifying opportunities and associated value for the Australian oyster industry in carbon neutral accreditation and environmental accounts is supported by funding from the FRDC on behalf of the Australian Government

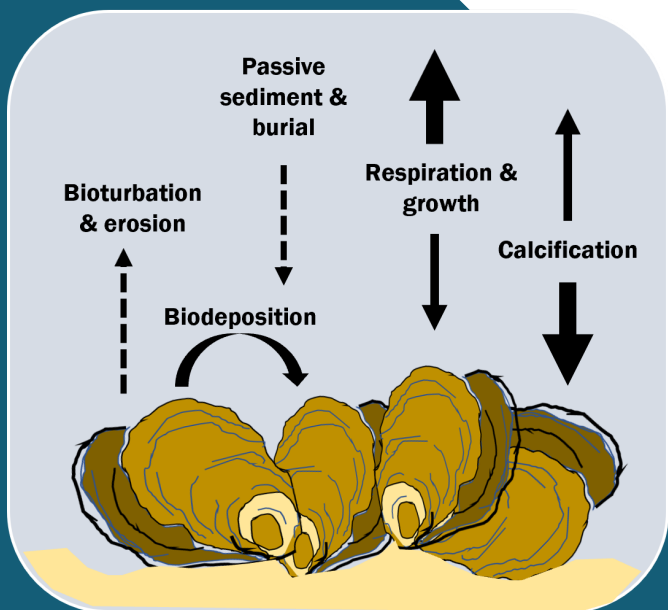
Does the farming of oysters reliably sequester carbon from the atmosphere and if so can it be used to generate carbon offsets for sale?

The Carbon Balance

- Oysters remove, concentrate, and store carbon from the surrounding environment to grow their outer shells.
- Carbon contributes approximately 12g for every 100g shell, or 12% of overall shell mass over the period from spat to harvest.
- + Oysters also release carbon into the surrounding waters through respiration, shell erosion, and by-products of shell calcification.

The Policy Landscape

- Carbon offset methodology is developed by the Australian Government Clean Energy Regulator through the Emissions Reduction Fund (ERF).
- The first 'blue carbon' (coastal carbon sequestration or emission avoidance) method was released by the ERF in January 2022 for tidal restoration of blue carbon ecosystems (i.e. mangroves and tidal marshes). The method excludes aquaculture.
- Blue carbon has also been highlighted as a priority area for further development in 2022 which may help provide direction to other marine based projects looking to analyse carbon footprints and sequestration potential.
- The carbon sequestration potential in mangrove or tidal systems is 20 times greater than oysters. Oyster aquaculture is therefore unlikely to be identified as a priority for method development in the near future.
- The ERF has, however, identified a focus on carbon capture use and the production of construction materials like concrete which has direct relevance to the oyster industry through shell waste recycling.



Research gap:

Carbon flows and interactions with the surrounding ecosystem. This will provide an accurate assessment of carbon sequestration potential.

Understanding your carbon footprint

While there are no current avenues for growers to receive carbon offset payments, there may be benefits in obtaining carbon neutral accreditation. This requires the reduction of emissions and purchase of offsets.

When an entity becomes **carbon neutral**, it has demonstrated that carbon emissions have been reduced where possible and accounted for the remainder by investing in approved carbon offsets projects to achieve net zero overall emissions.



Steps to achieve 'net zero'

- 1 Set net-zero target (including emission boundary and target year)
- 2 Calculate carbon footprint through a lifecycle assessment
- 3 Develop and implement plan for:
 - avoiding emissions
 - reducing emissions
 - producing renewable energy
 - purchasing carbon offsets
- 4 Achieve net-zero



Benefits to Oyster Farmers

- Demonstrate environmental credentials and build social licence
- Differentiate their product in the marketplace
- Product stewardship from cradle-to-gate
- Participate in net zero seafood industry targets
- Ensure future access to overseas export markets that have more stringent trade emission targets
- Safeguard future operations from the possible risk of emission regulatory reform

Done correctly, being carbon neutral can be a profit centre, not a cost centre"

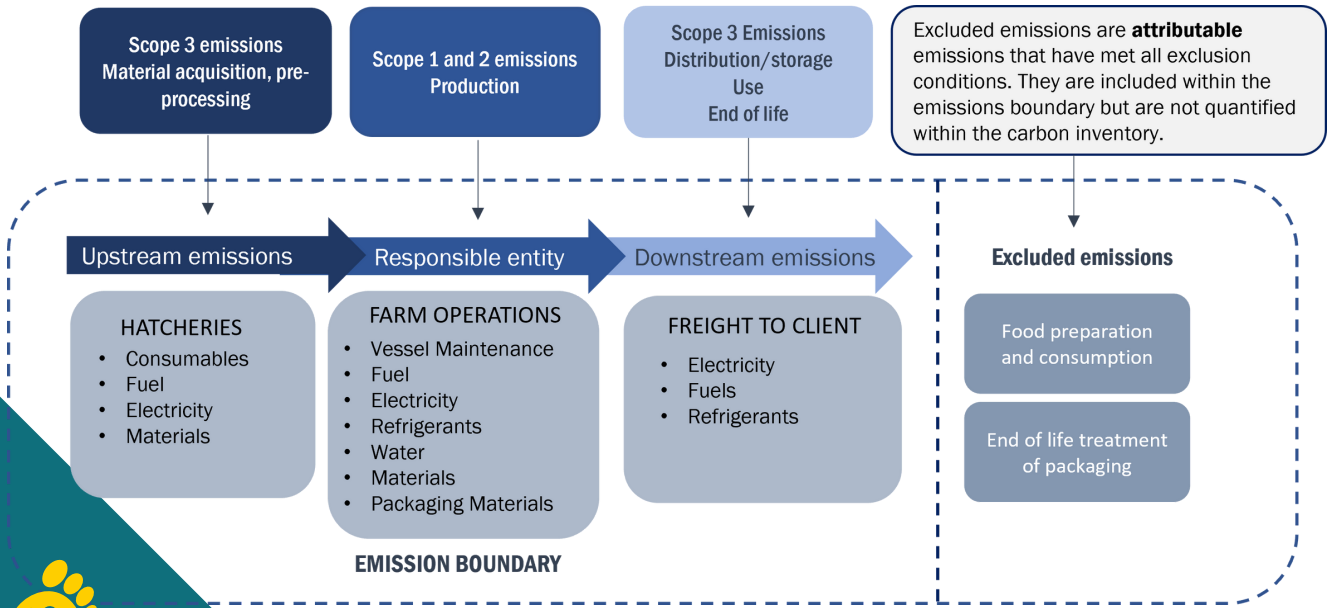
(Austral Fisheries commenting on their Climate Active carbon neutral certification).

Setting an emission boundary

To estimate the carbon footprint of an oyster production, the first step is to draft the emissions boundary which refers to the coverage and extent of the carbon account. It requires identifying attributable processes which are services, material and energy flows that become the product, make the product, and carry the product through its life cycle.



Mapping both upstream and downstream process emissions can assist in determining the emission boundary to enable the calculation of the carbon footprint:



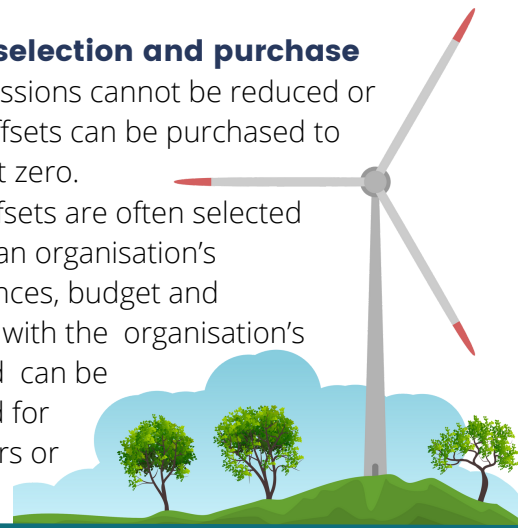
Calculating the carbon footprint through a lifecycle assessment

This requires calculating the energy required to move your product (i.e. a dozen oysters) through its life cycle from cradle-to-grave. This assessment considers the entire life cycle of a product, including hatcheries, farm operations, harvesting, packing and end of life treatment. The assessment can be cradle-to-grave if the final function of the product is known, or cradle-to-gate if unknown. Technical experts can help calculate the life-cycle and carbon footprint of a product.

Offset selection and purchase

Where emissions cannot be reduced or avoided, offsets can be purchased to achieve net zero.

Carbon offsets are often selected based on an organisation's circumstances, budget and alignment with the organisation's values and can be purchased for future years or in arrears.



Pathway to climate Active certification and cost points

Costs associated with certification vary depending on the use of technical experts, the types of offsets used and auditing services. Technical advice may include developing a carbon account and having your carbon neutral claim and data independently validated. Offset costs will depend on how many are required and the types of offset units purchased. These costs are separate to the certification fee, are set by the market and vary across the industry.

