

## **NZ-farmed shellfish match tofu's low carbon footprint**

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A just-released study by sustainability experts thinkstep-anz has found New Zealand-farmed shellfish have among the lowest carbon footprints of all animal proteins, similar to the footprint of the plant-based protein tofu.

The study, co-funded by the Ministry for Primary Industries and Aquaculture New Zealand, is an in-depth analysis of the life cycle of farmed Greenshell mussels (*Perna canaliculus*) and farmed Pacific oysters (*Crassostrea gigas*) in New Zealand.

Jeff Vickers, co-author and the Technical Director at thinkstep-anz says “The study uses a method called Life Cycle Assessment (LCA) to consider the full life cycle of farmed shellfish from ocean to plate and beyond. It covers everything from collecting spat (the juvenile shellfish), through the grow-out phase on the farm, harvesting, processing, packaging, shipping, and food preparation, to disposing of used shells and packaging.

“We took the inputs from all of these stages, such as diesel used on boats, on-farm materials like floats and wood, electricity used in processing, fuel used for transport, and calculated the total environmental footprint and where the hotspots are,” explains Vickers.

“We then compared the environmental performance of New Zealand’s farmed shellfish to other forms of protein around the world. They compared very favourably.”

The study found that the impact of farmed shellfish (from farming to domestic retail stage) is comparable to tofu and their carbon footprint is comparable to or lower than all other forms of animal protein considered by the referenced study, including overseas-produced beef, poultry, dairy and eggs.

A lack of suitable local data made comparing the footprints of farmed shellfish and locally produced animal proteins unfeasible. While New Zealand producers of animal proteins are among the most efficient in the world, farmed shellfish would still come out favourably in a comparison with other New Zealand protein producers.

Steph Hopkins, Policy Manager at Aquaculture New Zealand says: “Mussels and oysters are filter-feeders. They get all they need to grow by extracting oxygen and food directly from the water they grow in. This allows them to be farmed with a very light environmental touch.

“Our mussel and oyster farmers participated in this study by shining a spotlight on their practices and resource use. We can now be confident that our environmental performance stacks up really well on the international stage. The report has identified some areas we can work on to improve our environmental footprint even further, such as introducing low carbon renewable energy sources” says Hopkins.

Fiona Wikaira, Aquaculture Manager at Moana New Zealand, says “Moana was eager to be part of the Life Cycle Assessment of our farmed oysters. As a Māori-owned seafood company, one of our core values is kaitiakitanga (guardianship). That is why we are committed to understanding our carbon footprint and building a reduction plan to minimise our impacts and provide our customers with the premium seafood they expect.”

Peter Longdill, Sanford’s Sustainability Manager, agrees. “Across our mussel operations, we are actively looking to further reduce our energy consumption and emissions of greenhouse gases and to introduce low carbon solutions into our value chain. It’s great to see the results of this study showing that we are already in an amazing place in terms of sustainability. And we will just keep improving. It all makes shellfish such a good sustainable food choice.”

Longdill says: “New Zealanders know our homegrown mussels and oysters are healthy and delicious-tasting seafood, but now we can be confident they are also great choices for the planet.”

The Government’s Aquaculture Strategy backs the aquaculture industry to generate \$3 billion by 2035 and acknowledges the potential for aquaculture to be a significant part of a low emissions future economy.

Mat Bartholomew, Aquaculture Director at Fisheries New Zealand (Ministry for Primary Industries), says: “The growth of aquaculture in Aotearoa must come from a sustainable platform first and foremost. The Life Cycle Assessment of farmed shellfish is a critical first step to understanding the impact of our activities across the whole life cycle. The study confirms that aquaculture can have a light environmental footprint and could play a role as a leading primary industry for the future.”

## Contacts

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## Quick facts about aquaculture in New Zealand

- Greenshell mussels and Pacific oysters are two of the three main species grown in New Zealand, the third being King salmon. In the 2020 calendar year, the aquaculture sector (including salmon) generated total revenue (including estimated domestic sales) of approximately \$653 million<sup>1</sup>.

	Greenshell mussels	Pacific oysters
Harvested Product (greenweight tonnage)	101,657	1,364
Export Revenue (NZ\$ millions)	\$332m	\$14m
Est. Domestic Revenue (NZ\$ millions)	\$45m	\$8m
Est. total Revenue (NZ\$ millions)	\$377m	\$22m

**Figure 1.** New Zealand aquaculture mussel and oyster production and revenue, 2020 calendar year.

- Greenshell mussels were New Zealand’s most valuable seafood export species in 2020 (with total export revenue of \$332 million) and are exported to over 76 countries.
- Marlborough is New Zealand’s largest growing region for aquaculture products and produces the majority of Greenshell mussels (65%).
- Pacific oysters are grown mainly in the sheltered waters of the upper North Island.
- Aquaculture currently employs over 3000 people primarily in regional communities around New Zealand, from Northland to Stewart Island.
- Māori and Iwi are increasingly important partners in aquaculture, both as business owners, growers and through delivery of aquaculture settlement and Te Tiriti o Waitangi.
- Farming seafood is one of the most environmentally efficient ways of producing animal protein, according to a 2019 report by The Nature Conservancy and Encourage Capital<sup>2</sup>.
- Learn more about aquaculture at <https://www.aquaculture.org.nz/>

<sup>1</sup> AQNZ data based on production figures (greenweight tonnage) and export (Free on Board) values sourced from Stats NZ.

<sup>2</sup> The Nature Conservancy and Encourage Capital (2019). Towards a Blue Revolution: Catalyzing Private Capital in Sustainable Aquaculture Production Systems

([https://www.nature.org/content/dam/tnc/nature/en/documents/TNC\\_EncourageCapital\\_TowardsABlueRevolution\\_v1\\_1.pdf](https://www.nature.org/content/dam/tnc/nature/en/documents/TNC_EncourageCapital_TowardsABlueRevolution_v1_1.pdf))

## **About thinkstep-anz**

At thinkstep-anz, we are passionate about enabling organisations to succeed sustainably. We underpin sustainability initiatives with facts and figures to contribute quantifiable business value. We develop strategies, deliver roadmaps, undertake carbon footprinting and Life Cycle Assessment study and support businesses with Cradle to Cradle certification. Our clients value our ambition to tailor solutions to their specific needs, no matter how large or small. Our work helps all industries in New Zealand and Australia, including manufacturing, building and construction, FMCG, packaging, energy, apparel, tourism, and agriculture. As a certified B Corp with an approved science-based target, we make sure we are walking the talk.

Learn more about thinkstep-anz at <https://www.thinkstep-anz.com/>