

Thursday September 1 2022

# focus

## The Blue Economy



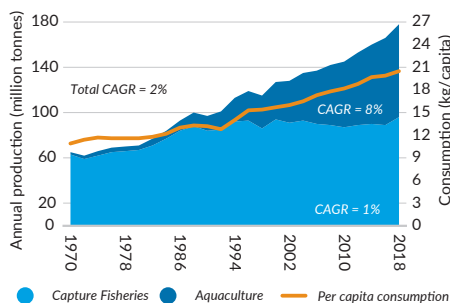
Aquaculture provides the New Zealand seafood industry with the potential to benefit from strong global demand in the years and decades ahead.

## ...Aquaculture offers compelling benefits in comparison with other farming systems...



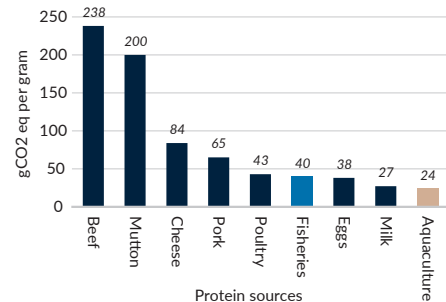
Aquaculture is the farming of finfish, crustaceans, molluscs, algae, and other aquatic organisms. Unlike capture fisheries, aquaculture is not exposed to declining wild fish populations as a result of climate change, and has been the key growth driver of global seafood production over the past 50 years. Following the example of countries such as Norway and Australia, the New Zealand Government is increasingly focused on the potential benefits of aquaculture and the 'blue economy'. It has announced an ambitious target to grow total aquaculture revenue to NZ\$3bn by 2030, around four times today's level.

### INDUSTRY GROWTH OF AQUACULTURE HAS OUTPACED CAPTURE FISHERIES



Source: UN FAO, Forsyth Barr analysis

### AQUACULTURE HAS THE LOWEST EMISSIONS OF COMPARABLE PROTEIN SOURCES



Source: Oceana, Forsyth Barr analysis

Seafood from aquaculture is an increasingly attractive protein alternative to traditional agriculture. Aquaculture offers compelling benefits in comparison with other farming systems, requiring less land use and emitting over 80% less carbon dioxide than beef production. Finfish farming typically has a very low carbon footprint and lower water and effective land use compared to all other comparable proteins. Aquaculture is also more valuable per hectare than comparable primary products, and is aligned with growing consumption trends away from traditional red meat proteins. The health benefit of fish is consistent with the rising awareness of food nutrition.



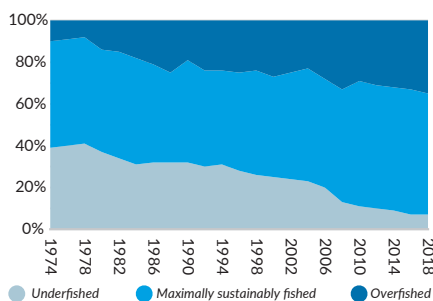
**...Global seafood consumption per capita has almost doubled over the last 50 years...**

**PRIMARY PRODUCT ANNUAL VALUE PER TEN FARMED HECTARES (NZ\$)**

King salmon	14,000,000
Mussels	850,000
Oysters	800,000
Kiwifruit	800,000
Dairy	77,000
Sheep and beef	8,500

Source: NZ Government Aquaculture Strategy, Forsyth Barr analysis

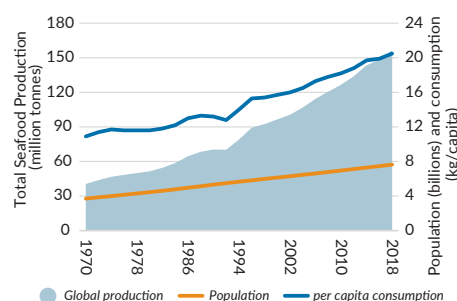
**THE PROPORTION OF ALL FISH STOCKS THAT ARE OVERFISHED CONTINUES TO CLIMB**



Source: UN FAO, Forsyth Barr analysis

Global seafood consumption per capita has almost doubled over the last 50 years, supported by rising living standards and growing health consciousness. Growing awareness of traceability and sustainability are also positive for the industry, with New Zealand fisheries among the most transparent in the world. This provenance and New Zealand brand story contributes to product differentiation in the high-end global foodservice market.

**TOTAL SEAFOOD PRODUCTION CONTINUES TO BENEFIT FROM POPULATION GROWTH AND INCREASED CONSUMPTION PER CAPITA**



Source: UN FAO, Forsyth Barr analysis

**...Successful harvests of King salmon ultimately depend on fish health and minimising mortality events. ...**



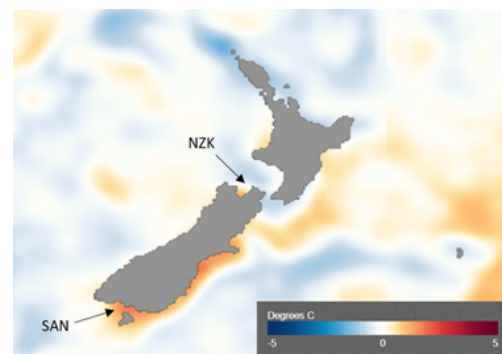
In New Zealand, the aquaculture industry is dominated by King salmon and Greenshell mussels. Both these species are only farmed in New Zealand, and are considered superior compared to global substitutes – Atlantic salmon and blue mussels – in both taste and nutrition. Domestic aquaculture also benefits from a general absence of pollutants, chemicals and disease in New Zealand waters.

Despite these benefits, New Zealand producers continue to lag international peers, partially due to the constraints of a rigid regulatory framework. The government has begun setting up an “Aquaculture Unit”, with the 2022 budget allocating around NZ\$180m for implementation of a new resource management system. Although the government has set a 2030 target date, and a Fisheries Amendment Bill is in the drafting stages, we think changes could take a number of years to implement, due to the contentious nature of some proposals and generally, long lead times for investment in the sector.

Achieving the NZ\$3bn aquaculture revenue target will require expansion into new forms of aquaculture, as well as more space being set aside for farming operations. The Ministry of Primary Industries (MPI) estimates King salmon farming could generate half of the target (NZ\$1.5bn) if production volume increases five-fold from the current level. To do so would require the establishment of new salmon farms and an overhaul of the current consenting process which is long and costly, with decision-making at local council level impacted by capacity constraints. The industry will also need to invest in freshwater or Recirculating Aquaculture System (RAS) hatchery facilities in order to meet the increased demand for smolt (young salmon).

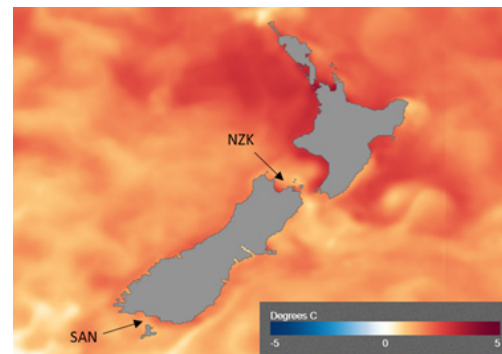
Successful harvests of King salmon ultimately depend on fish health and minimising mortality events. Rising sea surface temperatures restrict viable locations for potential inshore farms, with the ideal water temperature for salmon being between 14-16 degrees celsius. Possible inshore sites are mainly off the east and south coast of the South Island, which is generally within Ngāi Tahu’s rohe (tribal district).

**OCEAN TEMPERATURES IN 2002**



Source: NOAA, Forsyth Barr analysis, scale shown as deviation from historical averages

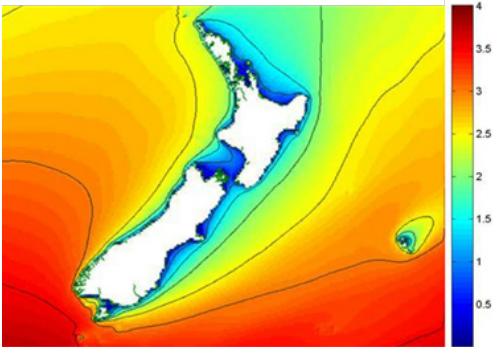
**COMPARED TO DECEMBER 2021 (DURING A LA NIÑA CLIMATE EVENT)**



Source: NOAA, Forsyth Barr analysis, scale shown as deviation from historical averages

Possible alternatives to inshore farming include open ocean aquaculture (OOA), which has been successfully used internationally, although never before attempted in New Zealand. OOA typically occurs further from shore, allowing fish access to a deeper (and cooler) water column. OOA infrastructure, however, needs to be resilient against higher wave energy, and have the technical capability to be able to operate farms remotely. Not all of the New Zealand coastline may be accessible with current industry technology, albeit globally, the sector is innovating rapidly. Lastly, King salmon is notoriously difficult to farm (compared to Atlantic salmon which is highly domesticated) and, even in ideal water conditions, there may be unexpected species-related issues. We expect execution risk is very high.

**LONG TERM AVERAGE SIGNIFICANT WAVE HEIGHTS SUGGEST HIGHER ENERGY ON THE WEST COAST**



Source: NIWA, Forsyth Barr analysis, scale shows mean significant wave height over 45 years

Both NZ King Salmon and Ngāi Tahu have OOA applications in progress. The outcome of NZ King Salmon’s “Blue Endeavour” application is expected in September 2022, and may be transformational for the company if successfully executed. While Sanford is not pursuing OOA at this point, we think the company could, in time, benefit from Ngāi Tahu’s application. Ngāi Tahu is a 20% shareholder in Sanford and the company’s salmon operations in Stewart Island (farm), Bluff (processing) and Kaitangata (hatchery) are nearby. Even if resource consents are issued, we estimate the lead time for pen trials, infrastructure build, and grow-out will mean, at the very least, it will be four years before the first OOA harvest.

Ultimately, the final structure of regulatory reforms or support is uncertain. Early suggestions have included designated water space for aquaculture usage, but no firm conclusions have been reached. We expect changes or new initiatives will take longer than expected, and the aquaculture target may not be met within the 2030 deadline. Nevertheless, over the long-term we expect demand for high quality seafood to only grow and we view the government’s support to be positive for the sector’s prospects.



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