



**The
Aotearoa
Circle**

Mā te Kaitiakitanga
ko te Tōnuitanga
Prosperity Through
Guardianship

Seafood Sector Adaptation *Cross-Cutting Initiatives*

Contents

What is the purpose of this document?

The purpose of this work is to inform the Seafood Adaptation Strategy Leadership Group (the LG), of what priority actions are required to address key challenges facing all parts of the seafood sector.

While there is certainty regarding the value of the actions in relation to the initiatives, **there is uncertainty regarding accountabilities, resources and timing.** The information in this document must be considered **indicative only** at point of publication in August 2024. If any of the actions are to be progressed, as decided by the LG, a further round of scoping will be required, along with agreement to progress this work by the entities listed as either accountable, or part of the project team.

Given the above, this document is designed to inform discussion and decisions by the LG as to what next steps could be taken as a matter of priority, by the sector. The actions are not designed for individual entities to take forward alone, but rather for the sector as a whole to deliver together. This will ensure the benefits from the efficiencies of shared resource and shared findings are experienced by the sector as a whole.

While reading this document, we ask you to consider the following question; Which of these Cross-Cutting Initiatives can your organisation take ownership of and drive across the sector?

What is a cross-cutting initiative?

Our oceans face diverse threats. Climate change is driving warming waters and ocean acidification and then there is the impact of runoff, sedimentation, plastics, and pollution. Concerns about the future of our environment resonate deeply within the seafood industry, highlighting the need for strategic adaptation.

Over the past two years, our Seafood Adaptation Strategy (SAS) workstream—led by The Aotearoa Circle and an Implementation Group comprising of marine science experts, seafood industry leaders, and regulatory authorities—has been addressing the critical question of how to adapt.

Throughout this process, the SAS workstream has revealed larger problems that pose real or perceived barriers to sector-wide adaptation. These barriers are cross cutting issues and addressing them requires a partnership between government and industry at the CEO level. Tackling these broader issues—such as regulatory changes, research priorities, climate and vulnerability forecasting, and fleet decarbonisation—will help generate confidence and momentum for sector-wide action.

Cross-cutting initiatives are needed to solve cross-cutting issues. The four cross-cutting initiatives identified during the adaptation pathways case study workshops were:

- **Agile regulatory framework** - the understanding that the current regulatory system stifles some of the best response options to climate change.
- **Oceans as a national research priority** - Aotearoa needs a coordinated collaborative plan for research that supports the seafood sector's adaptation to climate change.
- **Climate change & vulnerability forecasting** - the industry lacks the ability to forecast climate impacts in relevant temporal and spatial scales needed for making both strategic and operational decisions.
- **Fleet decarbonisation** - the need to understand more about sustainable marine fuels.

Why were these specific topics chosen by the Implementation & Leadership Groups?

Addressing them would create access to knowledge, resources, and flexibility, that not only supports adaptation, but also wider industry transformation:

- Knowledge, so we have confidence in information to act and invest.
- Resources, so we have sufficient profit and capital to implement solutions.
- Flexibility, so we can operate efficiently both on land and sea.

What is the opportunity?

We don't need to fix everything to make a meaningful difference for the industry. Work is already underway on some of these topics, but it often lacks the connection and communication necessary to support sector-wide adaptation.

What impact do we hope to have?

By developing these business cases, we aim to generate confidence within the industry, providing key industry actors with realistic, actionable steps to tackle these challenges, thereby encouraging sector-wide adaptation.

Agile regulatory framework

What is the problem we are trying to solve?

The regulatory systems and management frameworks for aquaculture and fisheries stifle some of the best response options to climate change.

Why are we trying to solve it?

Changes to the regulatory systems and management frameworks will enable more effective adaptation strategies for industry. This will help reduce costs and provide new opportunities.

What actions are required to solve it?

1. Identify where regulatory flexibility is needed to allow the seafood industry to adapt to climate change.
2. Progress (where possible under existing legislation) further work required to allow required flexibility.
3. Government policy, accompanying legislation which further enables and promotes climate resiliency within the aquaculture sector.
4. Enable greater diversity of climate adaptive management options for existing marine farms.

At the time of writing, the scale and impact of the Seafood Industry Forum is yet to be determined, and could potentially supersede some of the actions within the following table.

What can The Aotearoa Circle, through collaboration from partners, do to support this work?

There is not a specific role for the Circle, but to acknowledge the criticality of the oceans where relevant within its broader portfolio of work.

Action	Deliverable	Potential Accountable Entity	Project Team	Indicative Resources Required	Timeline (Calendar year)
1. Identify where regulatory flexibility is needed to allow seafood industry to adapt to climate change.	<p>Produce a report documenting:</p> <ul style="list-style-type: none"> What are the regulatory barriers to climate adaptation? What change is needed? How this may be addressed through the potential work of the Seafood Industry Forum¹ <p>_____</p> <p><small>1 (Noting Actions 2.1 - 2.1.4 on Agile Fisheries Management and Action 2.7 - Industry to identify regulations which are overly complex, duplicative, or impose unnecessary compliance cost).</small></p>	Seafood Industry via Seafood New Zealand.	Fisheries New Zealand through involvement and contribution to the Seafood Industry Forum.	Input, engagement & collaboration from across the sector.	Q3 2024 – Q2 2025
2. Continue to progress (where possible under existing legislation) further work required to allow flexibility for wild capture fisheries.	<p>Fisheries management system that allows enough flexibility for fishers to adapt to climate change.¹</p> <p>_____</p> <p><small>1 Note Actions 1.1 -1.2 in the work areas being progressed by the Seafood Industry Forum.</small></p>	Fisheries New Zealand through involvement and contribution to the Seafood Industry Forum.	Fisheries New Zealand to work with policy specialists & industry representatives via Seafood New Zealand.	<p>Project lead allocated within Fisheries New Zealand.</p> <p>Input, engagement & collaboration from across the sector.</p>	Q2 2025 – Q4 2025
3. Government policy, accompanying legislation which further enables and promotes climate resiliency within the aquaculture sector.	<p>Produce a report documenting the types of permitting pathways needed to remove barriers for climate innovation and resilience in aquaculture space (e.g. scaled offshore production, non-exclusion of spat catching from key areas, species flexible permits, low barriers for innovative trials and tests).</p>	<p>Aquaculture industry (via AQNZ) define, prioritise, and document preferred permitting pathways¹ for new farms to promote and incentivise climate innovation and resilience e.g. scaled offshore production, and flexible adaptive management options.</p> <p>MPI Policy team to support through work on Fast Track and marine consents extensions.</p> <p>_____</p> <p><small>1 The fast-track consenting process (2024) has the potential to impact this objective, though at the time of writing the specific process, outcome and extent of that process is unknown. The sector also need a permanent solution to the challenge, not a solution for select projects only.</small></p>	Industry (AQNZ)	<p>Input, engagement & collaboration from across the sector.</p> <p>Project lead from within Fisheries New Zealand to analyse options and provide advice to the Minister.</p>	Q3 2024 – Q3 2025
4. Enable greater diversity of climate adaptive management options for existing marine farms.	<p>Broader use of marine farm space which supports climate adaptive responses (e.g. species changes, temporary geographic farm movements, re-baselining of receiving environment to reflect external changes).</p>	<p>Aquaculture sector (via AQNZ) – identify and define, document marine farm management and response options for climate resiliency.</p> <p>Marine farm regulatory authorities (regional council, EPA) ensure farm consents allow for best practice responses.</p> <p>Marine farm consent owners (to request and apply for adaptive management principles).</p>	<p>Industry (AQNZ).</p> <p>MPI to review and provide advice to the Minister.</p>	<p>Input, engagement & collaboration from across the sector.</p> <p>Project lead from within Fisheries New Zealand to analyse options and provide advice to the Minister.</p>	Q3 2024 – Q3 2025

Oceans as a national research priority

What is the problem we are trying to solve?

Aotearoa needs a co-ordinated collaborative plan for research that supports the seafood sector's adaptation to climate change.

Why are we trying to solve it?

Aotearoa's oceans are a significant resource for growth in multiple sectors including, but not limited to fishing and aquaculture. This growth can be resilient to the impacts of climate change, but ocean users will need to adapt in order to realise future opportunities and restore and enhance ocean health.

What actions are required to solve it?

1. Identify and prioritise the multi-sector opportunities that will enable the seafood sector to successfully adapt to climate change.
2. Conduct a gaps analysis based on the opportunities identified.
3. Scope research to fill the priority gaps.

What can The Aotearoa Circle, through collaboration from partners, do to support this work?

There is not a specific role for the Circle, but to acknowledge the criticality of the oceans where relevant within its broader portfolio of work.

Action	Deliverable	Potential Accountable Entity	Project Team	Indicative Resources Required	Timeline (Calendar year)
1. Identify and prioritise the multi-sector opportunities that will enable the seafood sector to successfully adapt to climate change.	A workshop and report that identifies and prioritises the opportunities across the seafood sector.	Fisheries New Zealand. SAS Leadership Group and Implementation Group.	Broader aquaculture, seafood sector and regulatory bodies.	A small working group to organise the workshop – Aotearoa Circle and SAS Implementation Group responsible. Costs for designing and hosting the workshop. Time to attend the workshop and travel funding unless on-line. Time to write the report.	Q3 2024-Q4 2024
2. A research gap analysis based on the vision and opportunities identified in part 1.	A research gap analysis report including prioritisation and timelines of what gaps needs to be filled and when.	Science providers. SAS Leadership Group and Implementation Group.	Multi-sector team with appropriate expertise. SAS Implementation Group.	Scoping session outlining research needs previously identified, and areas that are yet to be covered. Relevant expertise. Time for information gathering. Time to write the report.	Q3 2025
3. Scoping research to fill in the priority gaps identified in part 2.	A co-ordinated collaborative research plan that fills priority gaps and supports the seafood sector to adapt to climate change.	Fisheries New Zealand. SAS Leadership Group and Implementation Group.	SAS Implementation Group. Specific project teams based on the priority research identified.	Relevant expertise. Time for information gathering and literature review. Time for research planning. Time to write the summary report.	Q3 2025

Climate change and vulnerability forecasting

What is the problem we are trying to solve?

The sector needs to be able to better understand climate impacts – where they will hit and when. It also needs to understand the horizons we have for operational decisions. Existing climate forecasts do not provide the detail needed with regard to locations or timing. They also do not allow the industry to understand likely specific species or ecological impacts

We need **climate information for space and timescales that match ecological/species needs** e.g. poorly resolved in coastal areas, and in waters below the sea surface, the places that species live.

We do not currently understand the vulnerabilities **of all species** to changing environmental conditions. There are considerable knowledge gaps related to different life-stages.

Why are we trying to solve it?

- To enable fisheries and aquaculture management practices to keep pace with changing environments.
- To enable preparation and prioritisation of actions (ocean and land based) with limited resources, leading to better fisheries and aquaculture management.
- To guide future investment in the industry by fishers, quota owners and aquaculture operators.
- To enable species protection in particular areas where impacts are expected to occur, including habitat requirements at different life stages and distribution at each stage.

What actions are required to solve it?

1. A situation and needs analysis should be undertaken to ensure a clear pathway to action and implementation.
2. We should then identify the needs of the users of this information and ensure the solution takes into consideration the different applications for climate information.
3. Identify current climate models, their limitations and future possibilities.
4. Address recommendations from steps 1,2 & 3 (e.g. tweaking existing or building new models/tools to integrate).
5. Use the climate information to project biological and ecological impacts to enable strategic and operational planning and response.

What can The Aotearoa Circle, through collaboration from partners, do to support this work?

There is not a specific role for the Circle, but to acknowledge the criticality of the oceans where relevant within its broader portfolio of work.

Action	Deliverable	Potential Accountable Entity	Project Team	Indicative Resources Required	Timeline (Calendar year)
1. Situation and needs analysis. <i>This will ensure a clear pathway to action and implementation.</i>	A guidance document/ implementation plan.	Lead: Science providers. Approve: Fisheries New Zealand, MPI, Aquaculture NZ, WWF.			
1.1 Identify the needs of users of this information (e.g. via workshops, questionnaires). <i>This will ensure the solution takes into consideration different applications for the climate information.</i>	Report 1 A report summarising user needs. This will be a live document.	Lead: Science providers. Approve: Fisheries New Zealand, MPI, Aquaculture NZ, WWF.	All parties active in fisheries and aquaculture (Māori, fishers, owners, researchers, etc).	Terms of reference (project description).	Q3 2024-Q4 2024
1.2 A situation analysis to summarise what we can currently do in terms of climate forecasting in Aotearoa, and globally. <i>This will identify current models, their limitations and future possibilities.</i>	Report 2 A report summarising the current options, their applications and limitations. This will be a live document.	Lead: Science providers. Approve: MfE, Fisheries New Zealand, MPI, Aquaculture NZ, Seafood New Zealand, WWF.	Climate forecasters/modellers (NIWA), researchers, Māori, MfE, Fisheries New Zealand/MPI, etc	Terms of reference (project description).	Q3 2024-Q4 2024
2. Address recommendations from the reports (e.g. tweaking existing or building new models/tools to integrate).	Clear implementation plan (including an accessible knowledge sharing platform “fisheries and climate vulnerability”). Tools for climate/ocean/fisheries forecasting.	Lead: Science providers. Approve: MfE, Fisheries New Zealand, MPI, researchers.	MfE, Fisheries New Zealand, MPI, Māori, researchers, DOC, Aquaculture NZ.	Terms of reference; potential capacity building; international expertise.	Q3 2025 – Q1 2027
3. Use the climate information to project biological and ecological impacts. <i>This will enable strategic and operational planning and response.</i>	State of climate environment for Aotearoa NZ fisheries.	Lead: Science providers. Approve: Industry, MfE, Fisheries New Zealand, MPI.	Users of the tools.	Terms of reference.	Q3 2025 - ongoing

Fleet decarbonisation

What is the problem we are trying to solve?

The fishing fleet (globally not just New Zealand) utilises fossil fuels and can be classified within a hard to abate category in terms of climate mitigation. Vessels are high capital investment assets with long life spans, and where cost effective renewable technology is lagging. Vessels cannot be (easily) refitted for new low or no carbon energy systems for propulsion (hydrogen, electric, LPG) and would require significant investment (on vessel) and infrastructure (on land) for e-methanol. Biofuels are an option at a low blend, but supply of any significant volume is a global issue.

There were over 840 active fishing vessels in New Zealand in the 2022 calendar year¹, and significant variability across the fleet. There is no single decarbonisation solution that would suit the diversity of the fleet and each vessel transition could vary widely. Fleet wide decarbonisation would require national efforts and the New Zealand fishing industry hasn't identified commercial advantage in being at the forefront of decarbonisation efforts due to cost and scale constraints.

Despite this, the industry is able to immediately deploy initiatives that reduce carbon emissions through improved fuel utilisation (via behavioural or mechanical means).

Why are we trying to solve it?

From a macro perspective, the industry should be identifying and initiating climate mitigation approaches to reduce emissions and continue to meet evolving consumer expectations. There may be longer term consumer backlash without any progress to (or achieving) a net carbon zero position by 2050. There may be international Carbon Border Tariffs in place in many markets that may make NZ seafood less competitive (price) if New Zealand's marine carbon footprint is significantly higher than those territories.

What actions are required to solve it?

1. Gaining increased understanding of the relevant alternative fuel options for the New Zealand fishing fleet, within the context of the wider marine industry.
2. Develop a fuel optimisation strategy across the industry.
3. Involvement and input into any national marine fuel strategy.
4. Active watching brief on global fishing and aquaculture fleet decarbonisation efforts for adoption in or adaption to NZ.

What can The Aotearoa Circle, through collaboration from partners, do to support this work?

1. Initiate a funded workstream to devise alternative marine fuel pathway options and their feasibility.
2. Liaise with the Australian Government to assess economies of scale.
3. Bring the financial sector together to highlight and extend the challenge and funding opportunities for the industry.
4. Review government legislation that would need to change to achieve scaling of alternative marine fuels.
5. Ensure that fishing is taken into account on any of the alternative fuel workstreams - and advise when industry should get involved.

¹ https://www.seafood.co.nz/fileadmin/Industry_Transformation_Plan/FINAL_Fisheries_ITP_Web.pdf

Action	Deliverable	Potential Accountable Entity	Project Team	Indicative Resources Required	Timeline (Calendar year)
1. Gaining increased understanding of the relevant alternative fuel options for the New Zealand fishing fleet, within the context of the wider marine industry.	<p>A report reviewing the NZ fleet (from aquaculture to deep water) - similar to the work undertaken by Blue X in Australia¹ assessing all options for decarbonisation.</p> <p>1 https://www.frdc.com.au/sites/default/files/products/2021-089-DLD.pdf</p>	The Aotearoa Circle.	Coordinated by The Aotearoa Circle.	Replication of Australian report.	Q1 2025
2. Develop a fuel optimisation and efficiency strategy across the industry.	<p>Share learnings across industry on how to optimise fuel consumption. What is “best practice” for trawling, boiler management, to/from port steaming etc.</p> <p>Agree on common fuel efficiency metric across industry (l/GW kg <i>or</i> vessel by vessel).</p> <p>Monitor that year-on-year at a company level, benchmark against others, share learnings and initiatives.</p> <p>Convene a forum to encourage individual companies to set targets.</p>	<p>Seafood New Zealand to convene and lead.</p> <p>Quota owners to provide resources.</p>	Sanford, Sealord & Seafood New Zealand.	<p>Fuel optimisation tools on different types of vessels.</p> <p>Industry commitment to measurement and allocation of resource to collect data.</p>	2025 and beyond
3. Certainty of future domestic low carbon marine fuel availability, logistics, supplies and pricing to encourage and de-risk new asset investment. Involvement and input into any national marine fuel strategy.	<p>Future marine fuels national strategy (that is inclusive of seafood sector needs) is developed, deployed, and supported by policy.</p> <p>NZ industry should understand their individual carbon footprint (measure and report) to feed into the strategy.</p> <p>An assessment of the industry fuel and refrigeration gas usage (and therefore scope 1 emissions).</p>	Seafood New Zealand to coordinate with relevant Government Agencies.	Seafood New Zealand (supported by appropriate members).	<p>Watching brief (time etc).</p> <p>A data capture tool that can combine industry footprint (outsourced, BraveGen etc).</p>	Q4 2025-Q4 20253
4. Active global watching brief.	Regular reports generated on fishing propulsion and carbon reduction programs.	Sealord/Sanford.	Sealord/Sanford – Operations Team (supported by Sustainability).	Time.	Ongoing (half yearly reporting)

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