

Core research project portfolio

Theme 2: *Creating value from a blue economy*

Phase II (2019–2024)

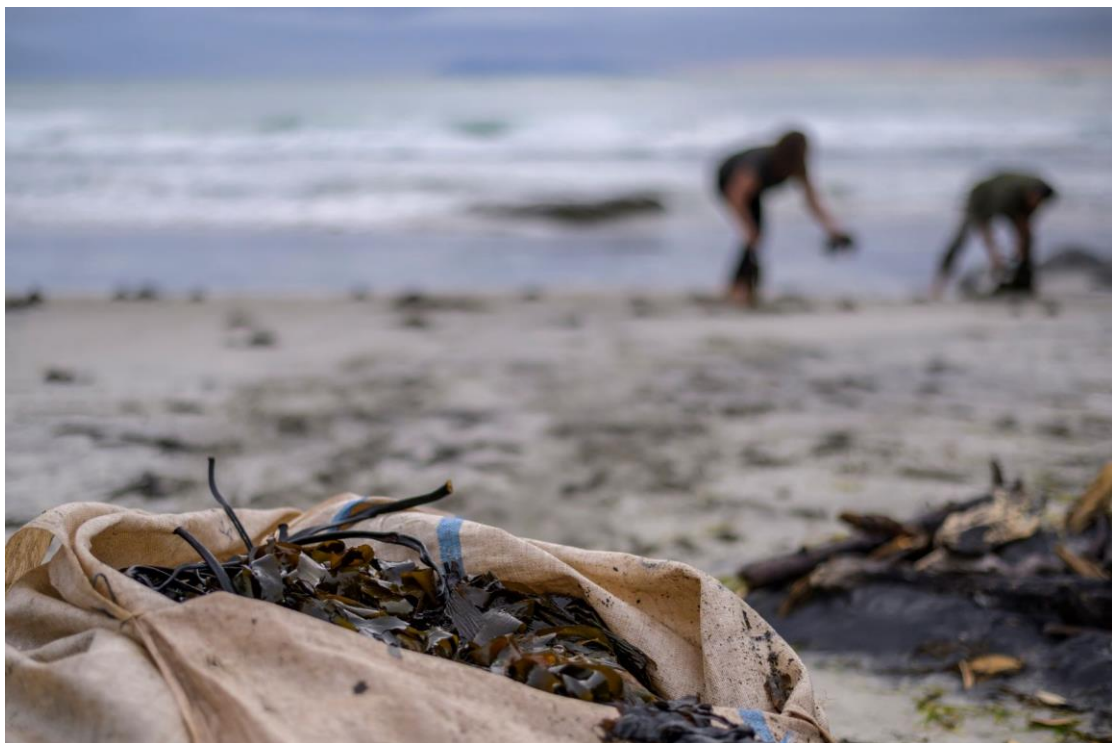


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Introduction

The Sustainable Seas National Science Challenge is pleased to present the [core research project portfolio](#) for the *Creating value from a blue economy* theme for Phase II of the Challenge. Note that the project concepts for the other themes and the Tangaroa programme can be found here: [Phase II Core Research Project Portfolio](#)

The Challenge **Objective** is:

“To enhance utilisation of our marine resources within environmental and biological constraints”

and our **Mission** is:

“To transform Aotearoa New Zealand’s ability to enhance our marine economy, and to improve decision-making and the health of our seas through ecosystem-based management”.

Delivering on the Challenge Objective requires extensive knowledge of ecological functioning and how it is affected by human activities, the economic potential of marine resources, and the social, cultural and environmental values that must be balanced through effective management and decision-making.

Ecosystem-based management (EBM) is a holistic and inclusive approach to managing marine environments and competing uses for them, demands on them and the ways New Zealanders value them, and to support healthy resilient marine ecosystems. Drawing on traditional knowledge, international literature and discussions with marine managers, Sustainable Seas determined that the best way to meet its Objective is to provide research that will underpin an EBM approach specifically for Aotearoa New Zealand’s unique needs and aspirations. Using an EBM approach will lead to fundamental changes in the way we manage our marine environment and the future development of our blue economy.

This holistic approach enables consideration of multiple and cumulative stressors on marine ecosystems, scientific and mātauranga knowledge, and risk and uncertainty in decision-making. EBM tailored for New Zealand circumstances will provide for co-governance in the context of the Treaty of Waitangi partnership where the rights and perspectives of Māori are central to all questions of healthy and prosperous ecosystems. It will also allow for adaptive management approaches and more transparent decision-making processes.

Sustainable Seas will provide underpinning research and tools to support the design and implementation of an EBM approach tailored to Aotearoa New Zealand. Partnering with central and regional government, Māori, industry and other stakeholders is critical for the implementation of EBM and the success of the Challenge.

The development of a blue economy will also be supported by EBM through underpinning sustainability of healthy marine ecosystems. A blue economy is not a ‘business as usual’ marine economy. Rather, it builds sustainable economic value through investment and production practices that balance growth with a focus on value-add, the long-term ecological health of marine ecosystems, and local, regional and national sustainable development goals. A blue economy recognises all dimensions and beneficiaries of the marine economy and all values that marine environments currently produce. This vision of marine economy is increasingly expected by ethical investors, global consumers and Aotearoa New Zealand’s key global economic and political partners. This aligns with Aotearoa New Zealand’s movement toward transforming how it defines and understands success, particularly economic success. Many public and private sector leaders are looking beyond short-term financial targets and reviewing how to safeguard our future prosperity and create sustainable wealth. This is consistent with a Te Ao Māori approach where intergenerational well-being and prosperity is at the heart of decision-making. The Treasury, Ministry for the Environment and Statistics NZ are also investigating the best way to value our natural capital.

Sustainable Seas National Science Challenge will measure its success by:

- Sustainable Seas Challenge research being incorporated into policy frameworks to support EBM;
- Tools and knowledge developed being used in decision-making for the marine environment;
- Proof of concept for an EBM approach to marine management being successfully demonstrated;
- A vibrant blue economy developing regionally and nationally, enabled by Sustainable Seas research;
- Māori knowledge, rights, interests and values underpinning our outputs; and
- Science from the Challenge being published in high-quality international journals.

Implementation of the research is critical to developing EBM as an approach for marine management in New Zealand. We will achieve this by:

- Co-developing proposals with Māori and stakeholders;
- Involving Māori and stakeholders, particularly environmental managers, directly in research projects;
- Engaging and co-designing outputs with Māori and stakeholders to ensure they are fit for purpose;
- Applying Vision Mātauranga to all Themes and Programmes;
- Implementing multiple case studies of EBM approaches to decision-making; and
- Ensuring that data collected are widely and freely available.

Theme 2: Creating value from a blue economy

Indicative Phase II Theme budget: \$ 3,216,900

Securing and enhancing the ecological health of New Zealand's oceans requires a marine economy that is committed to ecologically sustainable practices, just as sustainable economic utilisation of marine resources requires healthy marine ecosystems. These interdependent sets of goals must also respond to the shifting needs and concerns of communities.

The concept of blue economy has become a cornerstone for debating marine futures around the world. It is used widely by governments, international governance bodies, policy agencies, investment funds, and international banks. At its core, a blue economy is built on four propositions: societies must look to the oceans to secure their food, energy and wider economic futures; oceans offer enormous opportunities for economic development; realising these opportunities will require significant investment in science and technology; and growth must involve a fundamental transition to ecologically and socially sustainable economic activities. New international environmental initiatives, enhanced expectations of corporate environmental responsibility, and ever-deepening concerns about the environmental and ecological impacts of marine economies, mean that definitions of 'sustainability' are sharpening and require new, transparent and recorded actions by businesses. However, globally, growing the economy is still seen as separate and often at odds with social and environmental goals.

In the Aotearoa New Zealand context, there are further drivers towards a blue economy. These include the requirement to incorporate Te Ao Māori world views into resource management, the introduction of a four capitals (Human, Natural, Social and Financial) approach to guiding central government policy and a four well-beings (Social, Environmental, Cultural, Economic) approach to local government, and the ever-pressing need to ensure access to overseas markets and add value by demonstrating strong environmental performance. Incorporating these drivers with meeting the Sustainable Seas Objective through an EBM approach to marine management allows us to develop a blue economy that is made up of marine activities that generate economic value and contribute positively to social, cultural and ecological well-being. This broad definition is designed to capture a wide range of initiatives to align marine economy activities with principles of sustainability but is intended to encourage a profound transition away from business as usual to an economy that will support sustainable seas.

Research undertaken in Phase I has shown that Aotearoa New Zealand has a growing marine economy, with many enterprises beginning to develop blue economy initiatives and position themselves to take advantage of its opportunities. Blue economy initiatives are being led by a range of champions at different scales and across different sectors. A thriving Māori blue economy is leading the way. Founded on investment and resource management guided by principles such as kaitiakitanga, a Māori blue economy is being built across the full range of sectors by enterprises of different types, sizes and ownership structures.

Further transition to, and growth of, this blue economy will not just happen by itself. Internationally, it is recognised that while some business will see opportunities and take the leap, others will not - often intensifying conflicts among resource users and generating unnecessary tensions for resource management agencies. Transition pathways have to be built through investment, new science and technology, altered commitments, practices and objectives, and new measures of performance. This will require demonstrations of the value of new approaches, institutions that foster a new economy, and new regulatory frameworks such as EBM.

Theme 2: *Creating value from a blue economy* will both support and draw on research in Theme 3: *Addressing risk and uncertainty* to foster and de-risk new investment initiatives. It will ask how sectors can be framed within an EBM framework, drawing on and adding new dimensions to research in Theme 4: *Enhancing EBM practices*. Many of the possibilities to transition to a blue economy will depend on the ecological knowledge being developed in Theme 1: *Understanding ecological responses to cumulative effects*, while blue economy research will underpin the transmission of that new knowledge into improved community and ecological outcomes. Blue economy research on the ground will intersect closely with the full suite of Tangaroa Programme projects, especially with respect to concerns with community-level economic activities and non-monetary activities, and how indigenous economic thinking will support the use of science to develop innovative investment opportunities.

Research will be complemented by the [Innovation Fund 2020](#), which will make funding available to support science for innovative blue economy research initiatives co-funded by interested parties.

Blue Economy Projects

The core research projects within this Theme support the development of a blue economy by:

- conducting the research necessary to encourage, support and secure transitions pathways (including fostering innovation);
- building supportive cross-sectoral infrastructure, identifying and applying science needs, and ensuring the development of supportive regulatory and decision-making settings; and
- designing measures, tools and approaches for securing that pathway.

The feedback we received on the initial project concepts developed in 2019 for the Theme 2: *Creating value from a blue economy* draft portfolio led us to fund a small exploratory project (*Transitioning to a blue economy in New Zealand*) designed to establish a basis for co-developing the requirements and activities of future projects in this Theme. The report [Transitioning to a Blue Economy: Scoping and Horizon Scanning](#), collated iwi and stakeholder views and an analysis of current trajectories in the domestic and international blue economy. It identified a set of priority concerns and research opportunities, which were workshopped with Māori, researchers and stakeholders in February 2020.

Development of core research projects for the Theme 2: *Creating value from a blue economy* portfolio

The core research projects for this theme (Table 1) which are critical to meeting the Challenge Objective have been identified based on research conducted in Phase I, the [Strategy for Phase II](#) (2019-2024), the [Transitioning to a Blue Economy: Scoping and Horizon Scanning](#) report outlining directions in Aotearoa New Zealand’s Blue Economy, and input gathered from two co-development workshops with Māori and stakeholders held in December 2019 and February 2020. The final workshop landed on a suite of interconnected projects centred on research to support emerging sectors and directions in blue economy within EBM frameworks. They will underpin transitions to a blue economy in a changing world.

This portfolio of core research projects contains concept outlines of each project, not fully developed proposals, as we will be co-developing the research projects with researchers, Māori and stakeholders and do not want to pre-empt this process. They do however clearly identify the research that is required.

Table 1: Indicative Phase II Project budgets (2019 – 2024) for core research projects in Theme 2: *Creating value from the blue economy*

Indicative Budget 2019 - 2024	Core portfolio projects
\$3,216,900	TOTAL
\$90,000	2.1 <i>Transitioning to a blue economy in New Zealand</i> (project complete)
\$900,000	2.2 <i>Encouraging restorative economies in NZ marine spaces</i>
\$800,000	2.3 <i>Indigenising the blue economy in Aotearoa</i>
\$500,000	2.4 <i>Growing blue tourism from low impact principles</i>
\$500,000	2.5 <i>Building a blue economy sector – seaweed</i>
\$426,900	<i>Unallocated</i> ¹

¹ As noted in the table, the budgets for the five blue economy core projects are indicative. The unallocated amount provides the Challenge with some flexibility to revisit core project budgets where we consider those projects might require scope adjustments once full proposals are provided. This unallocated funding also enables the potential to leverage unanticipated opportunities that could arise outside the scope of the core projects.

Links to Theory of Change Outputs

The projects are clearly linked to the Road Map of outputs and outcomes for the Challenge that has been developed for Phase II ([Theory of Change Outputs and Outcomes](#); Tables 2 and 3). These links will be identified in more detail as the full project proposals are developed and the outputs of the projects identified.

Table 2: Theme 2: *Creating value from a blue economy* project links to Theory of Change **Outputs**

		Theme 2: Creating value from a blue economy				
		2.1	2.2	2.3	2.4	2.5
a.	Biophysical and socio-ecological knowledge that supports the development of understanding and tools that underpin EBM as a viable approach to managing Aotearoa New Zealand's marine environment developed and accessibly packaged.					
b.	Traditional, local and other cultural knowledge that supports EBM is captured/understood/recognised.					
c.	Effective partnership models for an EBM approach to decision-making and management developed, evaluated, and demonstrated.					
d.	Decision-making processes that recognise risk and uncertainty evaluated, developed, and demonstrated.					
e.	Scales of management and place-based strategies that reduce environmental risks are identified and demonstrated.					
f.	Tools for predicting and managing cumulative and multiple stressors developed, assessed and demonstrated.					
g.	Governance and policy practices that support EBM identified, evaluated and packaged for targeted decision-makers.					
h.	Frameworks for decision making that consider multiple values and blue economy activities developed and evaluated.					
i.	Guidelines developed, opportunities identified and innovations, for transitioning to a blue economy for businesses operating in the marine sector.					
j.	Guidelines for participation in EBM decision-making processes evaluated, refined and packaged for targeted iwi, stakeholders and decision-makers.					
k.	Pathways for knowledge, understanding and skills developed by the Challenge to be understood by iwi and stakeholders are developed.					
l.	Remaining knowledge gaps that increase environmental risks of decision making are identified for iwi and stakeholders.					

Table 3: Theme 2: *Creating value from a blue economy* project links to Theory of Change **Outcomes**

		Theme 2: Creating value from a blue economy				
		2.1	2.2	2.3	2.4	2.5
1	The value of blue economy business models is recognised and adopted by Aotearoa New Zealand businesses					
2	Decision-making practices that are more inclusive, multi-sectorial and account for the effects from cumulative and multiple activities are adopted					
3	Knowledge from the Challenge (science and mātauranga) is used in decision making to improve ecological health and influences Aotearoa New Zealand's marine management practice and policy					
4	The complementarity of local expressions of Kaitiakitanga and EBM are well understood and enabled					
5	Decision-making processes explicitly identify and address both risk and knowledge uncertainty in a way that reduces risks to ecological, social, cultural and economic wellbeing					
6	EBM practices are understood and accepted as a viable approach by decision makers, stakeholders and iwi					
7	Māori rights, interests and values are supported through the application of EBM					
8	Researchers and iwi and stakeholders involved during the life of the Challenge continue to actively promote, research in, and use knowledge from the Challenge					

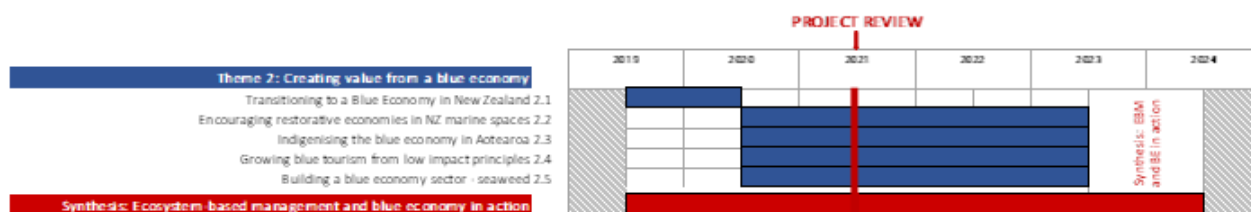
All the research projects will feed into the “EBM and blue economy in action” synthesis. The synthesis knowledge and the regional case studies will enable knowledge and tools (i.e., models, frameworks, guidance, indicators) developed in Phase I and Phase II to be trialled, evaluated and refined for future implementation in EBM. Projects within each Theme and Tangaroa are closely linked and links and dependencies with other projects have been identified within these project concepts.

A strong Vision Mātauranga oversight will be maintained across the breadth of the Challenge research, and its approach to working with Māori. This will be achieved through resourcing specific support and initiatives that will assist and guide science leaders and researchers in the application of the Vision Mātauranga Policy to ensure clear and beneficial pathways for the delivery and uptake of research outcomes for Māori. This will include proactively creating and supporting mechanisms for building capability and capacity, as well as effective engagement, communication and relationship management with iwi, hapū and Māori organisations.

The timeline for each of the projects is outlined in Table 4. It should be noted that all projects spanning more than the initial two years will be reviewed in mid-2021 to ensure that the projects are delivering what is needed to meet the Objective and remain a priority for the Challenge. The final year of the Challenge, 2023-2024, will focus on the synthesis of all knowledge and tools developed during the life of the Challenge to ensure the overall outcome of the Challenge is greater than the sum of the parts.

Projects 2.4 *Encouraging restorative economies in NZ marine spaces* and 2.5 *Building a blue economy sector - seaweed* will be conducted in two stages. The first stage as outlined in these initial project concepts will establish the basis for case study analysis in Stage 2, the broad nature of which is also outlined. The focus of the case studies will be developed during the Stage 1 of the projects.

Table 4: Theme 2: *Creating value from a blue economy* projects timeline



Next steps

Now	<ul style="list-style-type: none"> Project concepts reviewed by Challenge Kāhui and Stakeholder Panel, Independent Science Panel, and the participants of the co-development workshops. Project concepts revised, addressing feedback received, and recommendation made to Challenge Governance Group for approval to proceed with developing full research project proposals.
May - Jun 2020	<ul style="list-style-type: none"> Project Leaders identified, along with best teams for developing full project proposals. This will include discussions with Māori and stakeholders regarding their involvement in the co-development of the research projects.
Jun - Sep 2020	<ul style="list-style-type: none"> Project proposals co-developed with Māori and stakeholders.
Oct 2020	<ul style="list-style-type: none"> Project proposals reviewed – peer, industry and Māori independent reviewers, Challenge Kāhui and Stakeholder Panel, Independent Science Panel, Challenge Leadership Team.
Nov 2020	<ul style="list-style-type: none"> Funding for projects in portfolio approved by Governance Group. Contracting of projects begins.

Project concepts

Project title	2.2 Encouraging restorative economies in NZ marine spaces
Problem definition	<p>The transition from ocean to ‘blue’ economy will require new visions of economic possibilities, creative identification and capturing of multi-benefits, and innovative investment approaches. Restorative economies aim to achieve multiple benefits from investment and business initiatives that directly target ecological enhancement. Restorative economies are in their infancy in New Zealand but are gaining momentum and attracting regional councils and iwi as well as philanthropic, green impact investors, and novel community-scale ecological entrepreneurs. They offer distinct opportunities for iwi and local governments to meet cultural and environmental goals and responsibilities associated with ecological regeneration and community resilience, as well as opportunities for Māori blue economy and co-benefit opportunities for aquaculture and tourism enterprises and enterprises seeking to meet carbon targets and climate change obligations. Restorative economies are an important opportunity for building alliances between investors, local governments, iwi regulatory agencies, communities and existing sectors, which will encourage transitions to sustainability.</p> <p>As yet, these opportunities are poorly understood and restricted by silo approaches (issues, sectors) and conflict with present traditional sector industries. Creating an enabling environment for restorative economies will require a focus on investor demands with respect to scales of investment and a degree of certainty with respect to markets, standards, prices, regulations and consents. In turn, this needs new understandings of the interplay between monetary and non-monetary economies (value creation), co-benefits with present industries, and new measurement (stressor reduction, ecosystem services, resilience) and management infrastructure (EBM).</p>
Research question(s)	<ol style="list-style-type: none"> 1. What is the potential for marine restorative economies (RE) in New Zealand, what benefits can be identified and captured at different scales, and for different groups? What needs to be done to enable them? 2. What institutions, structures, practices, information and measures form the template that will allow the creation and management of RE within a multi-use EBM framework? 3. In what ways can restoration economies be aligned with the Māori blue economy?
Research activities	<p>This research will involve:</p> <ol style="list-style-type: none"> 1. A review of international models and best practice (enterprise, innovative finance, and ecological infrastructure) for restorative economies, including standards and pricing 2. A stocktake of the range of restoration initiatives currently in play in marine economies in New Zealand, during which two case studies will be selected for more in-depth participation and action-learning. These case studies need to allow for development of a multi-scalar understanding and the likely consequences of isolated vs connected activities. 3. Identifying multi-benefits (including ecological resilience) and opportunities/risks for RE in the NZ marine context within an EBM-kaitiaki framework. This is likely to include developing methods for assessment of restoration success and prioritisation of activities- what options are best in terms of benefits, risk and returns? 4. Identifying and contributing to the measurement infrastructure, particularly information and reporting required by regional councils and central government agencies on the anticipated ecological, social and cultural benefits and the likely success rates. 5. In-depth analysis/modelling of at least two selected initiatives in locations where benefits are related to the four well-beings, transitional risks are investigated, and potential de-risking strategies identified. These may be the same as the case studies in RA 2. 6. Identifying roles, instruments, criteria and contexts to encourage further restorative economy initiatives where benefits are recognised and captured.
Outputs	<ol style="list-style-type: none"> i. Guidelines developed, opportunities identified and innovations, for transitioning to a blue economy for businesses operating in the marine sector. h. Frameworks for decision making that consider multiple values and blue economy activities developed and evaluated.

Outcomes	1. The value of blue economy business models is recognised and adapted by Aotearoa New Zealand businesses.		
Critical skills required	<ul style="list-style-type: none"> • Environmental economics • Green finance • Industry connectivity • Natural capital assessment 	<ul style="list-style-type: none"> • Ecosystem services measurement • Values assessments (esp. non-market and non-monetary) • Marine/estuarine ecology 	<ul style="list-style-type: none"> • Regulatory knowledge • Regional development expertise • NZ economic and social and natural capital statistics
Potential location(s)	National scale question but also addressed/trialled at a sub-regional scale (Hauraki Gulf (with AC), Marlborough Sounds, Waituna Lagoon (with Ngai Tahu))		
Potential collaborations & partnerships	Statistics NZ; Ngai Tahu Research Centre; Regional Councils; Aquaculture NZ; MfE; TOK; DOC; Sustainable Business Network; Responsible Investment Assn; philanthropists; MPI/Fisheries NZ; Other BE core projects; projects 1.2, 3.2, and 4.2.		
Partners in co-development of research	NZGIF; Statistics NZ; Ngai Tahu Research Centre; Regional Councils; Aquaculture NZ; MfE; TOKM; DOC; Green investment researchers; hapū and whanau (through Tangaroa projects); Sustainable Business Network; NGO; community members; MPI/Fisheries NZ; Other BE core projects; also projects 1.1, 1.2, 3.2, 4.2.		
Links to and dependencies with other Themes / Tangaroa	<p>Links to (dependent on?) 2.IBE</p> <p>Links to 2. BT and 2. Seaweed</p> <p>Links to 3.2 (which needs to include ability to assess business risks and uncertainties), 1.1 (assessment of ecological footprints, defining restoration, prioritizing restoration actions and understanding CE and hysteresis) and 1.2 (tools for spatial planning and maintaining systems capacities)</p>		
Timing	July 2020 to June 2023		
Building on which Phase I research	<p>3.2.1 Whai Rawa, Whai Mana, Whai Oranga: the Māori marine economy</p> <p>2.2.2.7 New blue economy in Kaikōura: participatory process approach</p> <p>2.2.1 Creating value from a blue economy</p> <p>2.1.3 Measuring ecosystem services and assessing impacts</p> <p>2.1.1 Development of valuation frameworks and principles</p> <p>2.1.2 Mauri Moana, Mauri Tangata, Mauri Ora - Documenting social values</p> <p>1.2.1 Frameworks for achieving and maintaining social licence</p> <p>2.2.2.1 Coastal acidification mitigation strategies</p> <p>2.2.2.2 Re-use of offshore infrastructure and platforms</p>		

Project title	2.3 Indigenising the blue economy in Aotearoa
Problem definition	<p>Māori aspire to be self-determining indigenous people and are actively pursuing a development agenda grounded in a Māori world view, and integrating within this elements of other world views. A Māori world view has the capacity to radically alter conceptualisations of New Zealand’s marine and terrestrial economies, restoring socioecological relationships with these entities as kin.</p> <p>The Māori marine economy can be understood to be <i>mana</i>-enhancing and <i>mauri</i>-inducing, underpinned by <i>mātauranga</i> Māori, <i>kaupapa</i> Māori and <i>tikanga</i> Māori as operating principles of a Māori world view. Outcomes centre on realising and distributing wellbeing—spiritual, environmental, kinship and economic. Yet, transitioning the Māori marine economy to a world class indigenous blue economy is constrained by several factors, including:</p> <ul style="list-style-type: none"> • Providing for Māori Treaty rights and interests to the furthest extent possible; • The absence of Māori influence in institutional and regulatory arrangements; • More fully understanding and applying <i>tikanga</i> and <i>mātauranga</i>-based approaches; • Creating added value through sustainability, branding, provenance and indigeneity; • Economic modelling to generate and distribute multiple forms of Māori wellbeing; • Empowering <i>mana whenua</i> and meaningfully engaging Māori communities; • Complementarity between commercial and customary Māori rights and interests. <p>This project will examine the challenges and opportunities presented by these factors and develop approaches to overcome them. We will leverage previous research, explore existing examples of Māori and indigenous blue economy approaches and examine treaty partnership models to enable a transition to a blue economy founded on New Zealand’s cultural context. We will explore use of credence and provenance values (e.g. through indigenous certification approaches) to incentivise such a transition.</p> <p>As well as recognising existing Māori rights and interests within the marine environment, we will explore marine-based tourism, blue technology, restoration economies, and new sectors such as open ocean aquaculture and seaweed through relationships with other blue economy projects.</p>
Research question(s)	<ol style="list-style-type: none"> 1. What does a multi-sector Māori Blue Economy look like at regional and national levels? 2. What would an indigenised New Zealand Blue economy look like, what opportunities and benefits would it offer and what risks and challenges must be addressed to achieve it? 3. What institutions, structures, practices, information and measures would be required to create and realise the opportunities of an indigenised New Zealand blue economy?
Research activities	<p>This research will involve:</p> <ol style="list-style-type: none"> 1. Identifying, characterising, documenting, and mapping Māori blue economy activities (ie fisheries, aquaculture, marine-based tourism, blue technology, transport), business models and governance structures (ie individual Māori, whanau, hapū, iwi, commercial entities, pan-iwi entities) across Aotearoa. 2. Generating evidence through literature review, financial analysis, and case study inquiry of Māori and international blue economic initiatives. 3. Undertaking qualitative research with Māori enterprises in the marine economy to review the opportunities and barriers to growing an indigenous blue economy in Aotearoa. 4. Determining the characteristics of successful indigenous and orthodox marine product tracing, branding and certification schemes to determine the viability and approach to the potential development of a Te Ao Māori model and how this can be used to incentivise a transition to an indigenised blue economy for Aotearoa. 5. Examining Treaty partnership models to enable a transition to a blue economy founded on New Zealand’s cultural context. 6. Working alongside enterprise champions, constructing and trialling pathways, frameworks and models to achieve indigenous blue economy approaches in Aotearoa. This should specifically include non-Māori owned or driven enterprises.
Outputs	<ol style="list-style-type: none"> i. Guidelines developed, opportunities identified and innovations, for transitioning to a blue economy for businesses operating in the marine sector. h. Frameworks for decision making that consider multiple values and blue economy activities

	developed and evaluated			
Outcomes	<p>1. The value of blue economy business models is recognised and adapted by Aotearoa New Zealand businesses.</p> <p>3. Knowledge from the Challenge (science and mātauranga) is used in decision making to improve ecological health and influences Aotearoa New Zealand’s marine management practice and policy.</p>			
Critical skills required	<table border="0"> <tr> <td> <ul style="list-style-type: none"> • Business development • Building indicators • Measures of Māori economy success </td> <td> <ul style="list-style-type: none"> • Māori economy analysis • Kaitiakitanga • Sustainability certification and metrics </td> <td> <ul style="list-style-type: none"> • Science for EBM • NZ economic statistics </td> </tr> </table>	<ul style="list-style-type: none"> • Business development • Building indicators • Measures of Māori economy success 	<ul style="list-style-type: none"> • Māori economy analysis • Kaitiakitanga • Sustainability certification and metrics 	<ul style="list-style-type: none"> • Science for EBM • NZ economic statistics
<ul style="list-style-type: none"> • Business development • Building indicators • Measures of Māori economy success 	<ul style="list-style-type: none"> • Māori economy analysis • Kaitiakitanga • Sustainability certification and metrics 	<ul style="list-style-type: none"> • Science for EBM • NZ economic statistics 		
Potential location(s)	National scale question with trials and evaluations at regional scale, with potential localities including Ōpōtiki, Hawkes Bay, Auckland and yet to be determined South Island sites.			
Potential collaborations & partnerships	Individual Māori, whānau, hapū business enterprises; Iwi authorities; pan-iwi entities; Māori commercial entities; MBIE; DOC; Regional Councils; and MPI.			
Partners in co-development of research	TBC			
Links to and dependencies with other Themes / Tangaroa	<p>Links to other core BE projects including the potential to connect/align case studies and research initiatives:</p> <ul style="list-style-type: none"> • Blue Tourism • Seaweed • Restoration Economies <p>Links to other Challenge projects:</p> <ul style="list-style-type: none"> • T1, T2 (where economic initiatives and implications are explored) • 3.1, 3.2 (including understanding and mechanisms of considering and assessing risk from a Te Ao Māori perspective) • 4.1, 4.2, 4.3 (informing practices, rights, interests, policy, regulatory and policy implications) • Synthesis projects (tbc) • Regional Case Studies (tbc) 			
Timing	July 2020 to June 2023			
Building on which Phase I research	<p>Whai Rawa, Whai Mana, Whai Oranga: the Māori marine economy</p> <p>Whaia te Mana Māori Whakahaere Tōtika ki Tangaroa: In pursuit of Māori governance models over marine resources</p> <p>New blue economy in Kaikōura: participatory process approach</p> <p>Creating value from a blue economy</p> <p>Measuring ecosystem services and assessing impacts</p> <p>Development of valuation frameworks and principles</p> <p>Hui-te-ana-nui: Understanding kaitiakitanga in our marine environment</p> <p>He Poutokomanawa: kaitiakitanga in practice</p> <p>Mauri Moana, Mauri Tangata, Mauri Ora - Documenting social values</p> <p>Huataukina tō iwi e: Developing marine bioactives from kina</p>			

Project title	2.4 Growing tourism in a blue economy
Problem definition	<p>Tourism has in recent years been Aotearoa New Zealand’s largest marine sector. It has enormous potential to utilise marine resources to deliver economic growth, community livelihoods, and ecological benefits at multiple scales. This potential is recognised in current government policy and by significant industry actors, including DOC and multiple Māori enterprises. Many activities are already centred on (and commonly contingent upon) renewable resource use, activities with low environmental impacts, and commitments to sustainability transitioning. A foundational sector for future regional and national blue economy might be built by extending these activities; exploring co-benefits with other blue economy sectors; building new sector institutions, best practice frameworks, and reputational narratives; and developing new ecologically sensitive, community-based, and regenerative tourism products.</p> <p>The opportunities are now that much more significant and challenges more immediate in a short to medium term context fundamentally reset by Covid-19. More than in any other sector, tourism enterprises and communities will need to develop new products, networks of interaction and balances between scales of activity. Pressures to pursue higher value, lower volume international tourism and increased domestic tourism will intensify. Lower impact, higher value, ecologically sensitive products will help enterprises, government agencies, Māori and tourism stakeholders to respond positively to both Covid-19 recovery and on-going pressures from climate change alleviation.</p> <p>The size and development directions of blue economy tourism and its interactions with local economies, communities and ecologies have yet to be fully investigated. New understandings and measures of blue economy tourism and its possibilities are required, while EBM for tourism protocols, practices and regulatory regimes (government and private) need to be developed. Industry actors and government agencies are already recognising the need for a transformational shift of this nature. The Challenge has the opportunity/capability to help build a new marine tourism founded on EBM principles, an opportunity that will allow it to encourage EBM and foster transitions to sustainability more broadly.</p>
Research question(s)	<p><i>How can New Zealand grow a blue tourism within an EBM framework?</i></p> <p>The project will be conducted in two distinctive stages:</p> <p>Stage 1:</p> <ol style="list-style-type: none"> 1. What baselines exist for identifying, categorising, and measuring blue tourism as a sector for development (including groupings of activities, value propositions, sustainability and green certification initiatives, environmental dependencies and impacts, networks of interaction, and Māori participation and leadership)? 2. What opportunities and aspirations are emerging for a post-Covid-19 blue tourism; what multi-benefit activities can be connected to other BE sectors? <p>Stage 2:</p> <ol style="list-style-type: none"> 3. What social and economic institutions, policy settings/coherence and measurement and monitoring practices can be developed to enhance the potential of blue tourism for different enterprises at different scales? 4. What EBM solutions exist for managing sector development at relevant scales in a multi-use environment (including kaitiakitanga, marine spatial planning)?
Research activities	<p>Stage 1:</p> <ul style="list-style-type: none"> • Document, categorise, map and measure blue economy tourism in New Zealand, including generative tourism and Māori blue tourism initiatives – desktop analysis and key informant research at a multi-regional (national) level (including identifying, defining and measuring low-impact blue tourism). • Identify blue economy tourism activities, aspirations and areas of potential growth (ecotourism, community tourism, Māori tourism, generative tourism, sustainable tourism), barriers to growth (including ecological/environmental impacts), and potential co-benefits with other marine uses – desktop analysis and key informant research at a national level. • PESTLE analysis (Political, Economic, Social, Technological, Legal and Environmental) analysis of low-impact, blue tourism opportunities (including generative tourism) – key informant interviews, document analysis, secondary data analysis.

	<p>Stage 2:</p> <ul style="list-style-type: none"> Case study analysis at relevant scales of 2-3 cases of blue tourism impacts developed within EBM frameworks (e.g. Northland, Kaikoura, Whakaari, Hauraki Gulf); field research (identify and measure ecological and community impacts and map crucial interactions of new products and key categories of low-impact tourism; design indicators to measure progress against goals and develop tools to inform the indicators; co-develop institutions with Māori and stakeholders). 			
Outputs	<p>h. Guidelines developed, opportunities identified and innovations, for transitioning to a blue economy for businesses operating in the marine sector.</p> <p>i. Frameworks for decision making that consider multiple values and blue economy activities developed, evaluated and trialled.</p> <p>l. Remaining knowledge gaps that increase environmental risks of decision making are identified for iwi and stakeholders.</p>			
Outcomes	<p>1. The value of blue economy business models is recognised and adapted by Aotearoa New Zealand businesses.</p> <p>2. Decision-making practices that are more inclusive, multi-sectorial and account for the effects from cumulative and multiple activities are adopted.</p> <p>6. EBM practices are understood and accepted as a viable approach by decision makers, stakeholders and iwi (FO2).</p>			
Critical skills required	<table border="0"> <tr> <td> <ul style="list-style-type: none"> Tourism research experience Māori tourism Tourism development strategy </td> <td> <ul style="list-style-type: none"> Industry development analysis Community development analysis </td> <td> <ul style="list-style-type: none"> Ecological, community and economic impact analysis NZ economic stats Networks of interaction </td> </tr> </table>	<ul style="list-style-type: none"> Tourism research experience Māori tourism Tourism development strategy 	<ul style="list-style-type: none"> Industry development analysis Community development analysis 	<ul style="list-style-type: none"> Ecological, community and economic impact analysis NZ economic stats Networks of interaction
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Potential location(s)	National / multi-regional; Case study			
Potential collaborations & partnerships	NZTRI at AUT; DOC; Lincoln; Blue tourism operators (e.g. Whale Watch); community guardian organisations (e.g. Te Korowai in Kaikoura); Tourism New Zealand; MfE; PCE; Regional EDAs; iwi organisations; New Zealand Māori Tourism (NZMT); Tourism Industry Aotearoa; Sustainable Business Network			
Partners in co-development of research	NZTRI at AUT; DOC; Lincoln; Ngai Tahu Research Centre; University of Auckland; Market Economics; University of Otago; Deliberate			
Links to and dependencies with other Themes / Tangaroa	<p>Links to other core blue economy projects including the potential to connect/align case studies and research initiatives: 2.5 <i>Growing a seaweed sector within an EBM framework</i>; 2.2 <i>Encouraging restorative economies in NZ marine spaces</i>; 2.3 <i>Indigenising the blue economy in Aotearoa</i></p> <p>Links to 3.2 (which needs to include ability to assess business risks and uncertainties); 1.1 (assessment of ecological footprints, understanding CE); and 1.2 (tools for spatial planning and maintaining systems capacities); 4.3 (applied example of EBM and kaitiakitanga)</p>			
Timing	Stage 1 (July 2020-December 2021); Stage 2 (January 2021-June 2023)			
Building on which Phase I research	<p>Whai Rawa, Whai Mana, Whai Oranga: the Māori marine economy.</p> <p>New blue economy in Kaikōura: participatory process approach.</p> <p>Creating value from a blue economy.</p>			

Project title	2.5 Building a blue economy sector - seaweed (Stage 1)
Problem definition	<p>The seaweed sector is poised for take-off, but there are multiple and disparate science and investment initiatives and visions, significant uncertainty about market, regulatory and ecological implications of investment decisions, and significant risks that national benefits will not be fully realised, and ecological harm will be done. Opportunities are being identified in aquaculture, restorative economies, biotech, and beyond. Different models of development are being considered, including different mixes of species, size of enterprise, region, product type (seafood, bioactives, fertiliser, ecosystem services, etc.), and business model (volume v. high value, in-shore v. offshore, farmed v. wild-harvest, monoculture v. multi-trophic, etc.). There are currently limited levels of coordination in assessing opportunities, identifying regulatory requirements, consenting space for farming, assessing ecological and economic risks, and managing ecological impacts and multi-use contests. There is an opportunity to encourage a coordinated blue economy approach that will enhance opportunities, minimise mistakes, and encourage a blue economy economic development path that generates multiple co-benefits at different scales for a range of enterprises. An EBM framework can be developed to encourage a new blue economy sector, thus demonstrating the economic and other values of an EBM framework.</p>
Research question(s)	<p><i>How do we enable an EBM framework for a successful seaweed sector?</i></p> <p>This project will take place in two stages. Stage 1 research will lay the ground for Stage 2, which is designed to involve working alongside businesses, Māori and stakeholders as they build business models and regulatory frameworks.</p> <p>Stage 1:</p> <ol style="list-style-type: none"> 1. What does the seaweed development landscape look like in terms of science, investment, markets, and regulation (domestically and internationally) - who is doing what, what is known, and what are the uncertainties and associated risks? 2. What are the economic, ecological/climate, community and associated business opportunities, risks, barrier/enablers and rewards of different business and regulatory models for sector development in New Zealand? <p>Stage 2:</p> <ol style="list-style-type: none"> 3. What EBM solutions exist for managing sector development (including kaitiakitanga and marine spatial planning), what benefits (economic/ecological) do they offer, and how can they best accommodate different opportunities for different enterprises at different scales, including Māori blue economy? 4. What kind of EBM framework can be co-developed with Māori and stakeholders at an appropriate scale?
Research activities	<p>Stage 1:</p> <ul style="list-style-type: none"> • Mapping investment, market, regulatory, science and ecological landscapes – collating existing knowledge, and identifying and analysing opportunities and risks associated with PESTLE elements. • Qualitative research with domestic seaweed enterprises, potential investors, agencies (MBIE, MPI, MfE, DOC, Regional Councils), Māori and communities to identify visions, barriers and prospective investment models. <p>Stage 2:</p> <ul style="list-style-type: none"> • Building and trialling an EBM framework for seaweed development at a regional and sub-regional scale (identifying, measuring and modelling economic, social and ecological opportunities, costs and benefits, co-developing options) - 1-2 regional/sub-regional case studies (e.g. Hauraki Gulf, Southland, Opotiki).
Outputs	<p>d. Decision-making processes that recognise risk and uncertainty evaluated, developed, and demonstrated.</p> <p>h. Guidelines developed, opportunities identified and innovations, for transitioning to a blue economy for businesses operating in the marine sector.</p> <p>i. Frameworks for decision making that consider multiple values and blue economy activities</p>

	developed, evaluated and trialled. I. Remaining knowledge gaps that increase environmental risks of decision making are identified for iwi and stakeholders.		
Outcomes	<p>1. The value of blue economy business models is recognised and adapted by Aotearoa New Zealand businesses.</p> <p>2. Decision-making practices that are more inclusive, multi-sectorial and account for the effects from cumulative and multiple activities are adopted.</p> <p>6. EBM practices are understood and accepted as a viable approach by decision makers, stakeholders and iwi.</p>		
Critical skills required	<ul style="list-style-type: none"> Breadth of industry knowledge (investment and market analysis). PESTLE analysis. Regulatory knowledge. 	<ul style="list-style-type: none"> Biophysical seaweed science - bioactive potential. Marine ecology. EBM design and modelling. Ecosystem services modelling. 	<ul style="list-style-type: none"> Qualitative research techniques (interviewing up, discourse analysis). Mātauranga Māori.
Potential location(s)	National and sub-regional cases (e.g. Hauraki Gulf, Southland, Opotiki)		
Potential collaborations & partnerships	Aquaculture NZ; enterprise leaders (AgriSea, Wakame Futures, Whakatōhea Mussels / Eastern Sea Farms, Sanford, Southern Clams Ltd, Ngai Tahu Holdings); EnviroStrat; blue-tech firms (including commercialisers of bioactives); Iwi Collective Partnership and Te Ohu Kaimoana; MfE; DOC; Regional Councils; seaweed science programmes (University of Waikato; Cawthron; University of Auckland; AUT); Statistics NZ; hapū and whanau (through Tangaroa project leaders)		
Partners in co-development of research	Cawthron; EnviroStrat; University of Auckland; NIWA; University of Canterbury / Ngai Tahu Research Centre; University of Waikato; Deliberate; Market Economics.		
Links to and dependencies with other Themes / Tangaroa	<p>Links to other core blue economy projects including the potential to connect/align case studies and research initiatives: 2.3 <i>Indigenising the blue economy in Aotearoa</i>, 2.2 <i>Encouraging restorative economies in NZ marine spaces</i></p> <p>Links to 2.4 (co-benefits with tourism); 3.2 (which needs to include ability to assess business risks and uncertainties); 1.1 (assessment of ecological footprints, understanding CE); and 1.2 (tools for spatial planning and maintaining systems capacities); 4.3 (applied example of EBM and kaitiakitanga)</p>		
Timing	Stage 1: July 2020-June 2021; Stage 2 January 2021-June 2022		
Building on which Part I research	Whai Rawa, Whai Mana, Whai Oranga: the Māori marine economy. New blue economy in Kaikōura: participatory process approach. Creating value from a blue economy.		