



**FRDC**

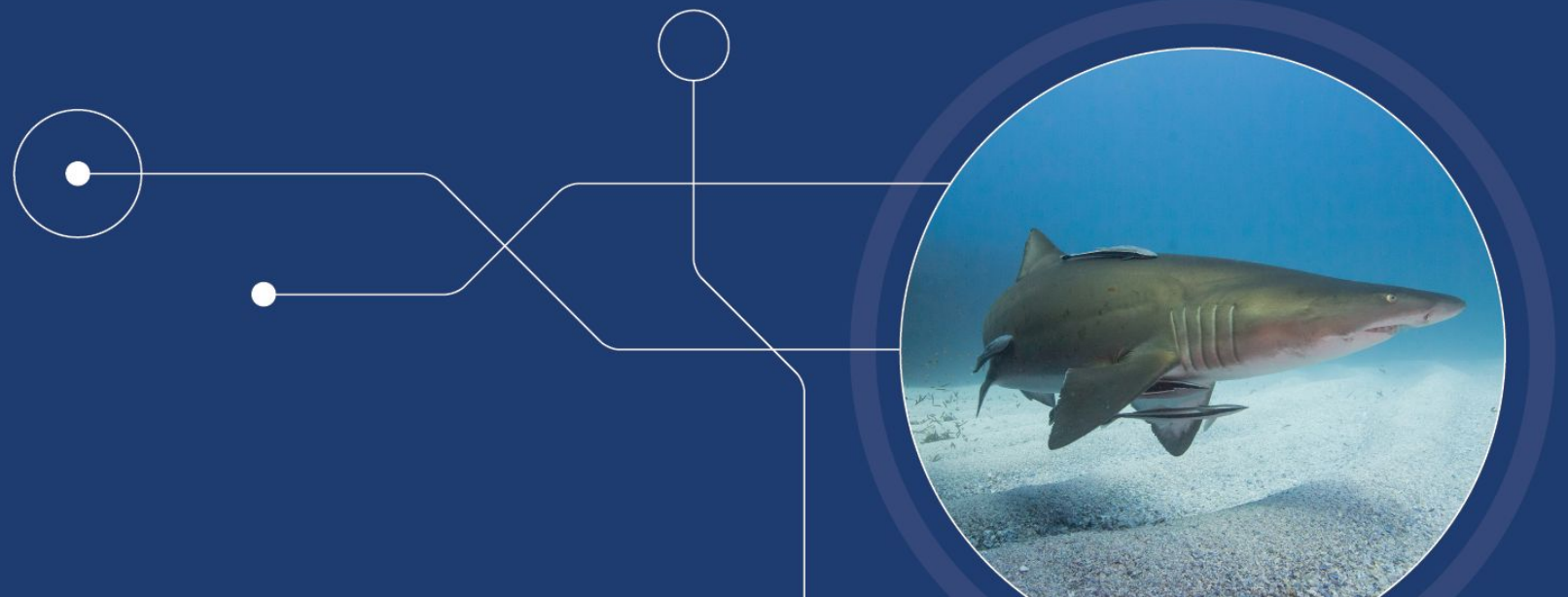
FISHERIES RESEARCH &  
DEVELOPMENT CORPORATION

Workshop | Fisheries Research & Development Corporation

# Final Report

**Collaborative Approach to Shared Systemic Issues & Opportunities**

December 2021



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# Executive Summary

## Background

Under the constraints of COVID19 and in the pursuit of a new form of collaboration we have to engage more deeply with stakeholders in the fishing and aquaculture community. Along with a new approach, the FRDC anticipates being able to demonstrate decisive action following the conclusion of this project in order to build confidence in stakeholders that they have been heard and resources are being moved into place.

## Approach

The goal of this project was to engage fishing and aquaculture stakeholders in the design of research, development and adoption priorities and encourage collaborative and unified execution on major systemic issues and opportunities.

Over the course of the last 5 weeks in conjunction with FRDC, TGD hosted 15 focus groups (of up to 4 participants each), a major co-design workshop with 35 participants. The observations and insights from this stakeholder engagement were synthesised with desktop research and our knowledge of global trends, innovation systems and the RDC environment.

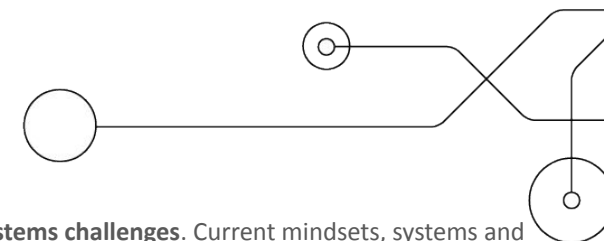
Finally, this report has been produced with recommendations on key initiatives and focus areas for future activities required to deal with both the participants concerns and relatively immediate threats that are yet to be recognised by participants.

## Insights

This project has demonstrated a good alignment between the 5yr R&D Plan and the desired future state expressed by participants with the refocus on the role and stakeholder benefit of different knowledges and data (see pg 10 for a list of desired Future States).

Through analysis of the observations from the project we synthesised the following key insights:

| **The nature of your challenges has changed.** The types of challenges that must be addressed are complex, interconnected and have shifted to be more reliant on social sciences, behaviour science, human centred design and industry transformation.



| **Not equipped to manage systems challenges.** Current mindsets, systems and processes are focused on (but edging away from) linear approaches to research and development. This must transition to adaptive, iterative approaches.

| **Stakeholders to Systems Change Leaders.** Leadership was highlighted as a significant challenge by participants. The skills and capabilities required to intervene in complex systems need to be developed in order to capitalise on new systems and processes.

The workshop participants were tasked to ideate and develop potential initiatives responding to complex, system wide challenges while seizing large opportunities. The initiatives developed in the workshop were filtered to remove small scale, single sector objectives, and then synthesised into three key initiatives and four focus areas and aimed at integrating the challenges and concepts developed by participants as well as our knowledge of RDC context and global trends.

### Initiatives



**New Mindsets & Capabilities**



**Evolve the Approach**



**Build the platform for change**

### Focus Areas

**Integrated Resource Sharing & Security** 1

**Circularity** 2

**Carbon Neutrality** 3

**Integrating alternative bioproducts** 4

**Indigenous Economic Opportunities** 5

The above Initiatives and Focus Areas are produced in order to give direction and broad strategic guidance. Further programmatic and operational planning will be required to implement these through FRDC and partners.



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# 1.0 Background



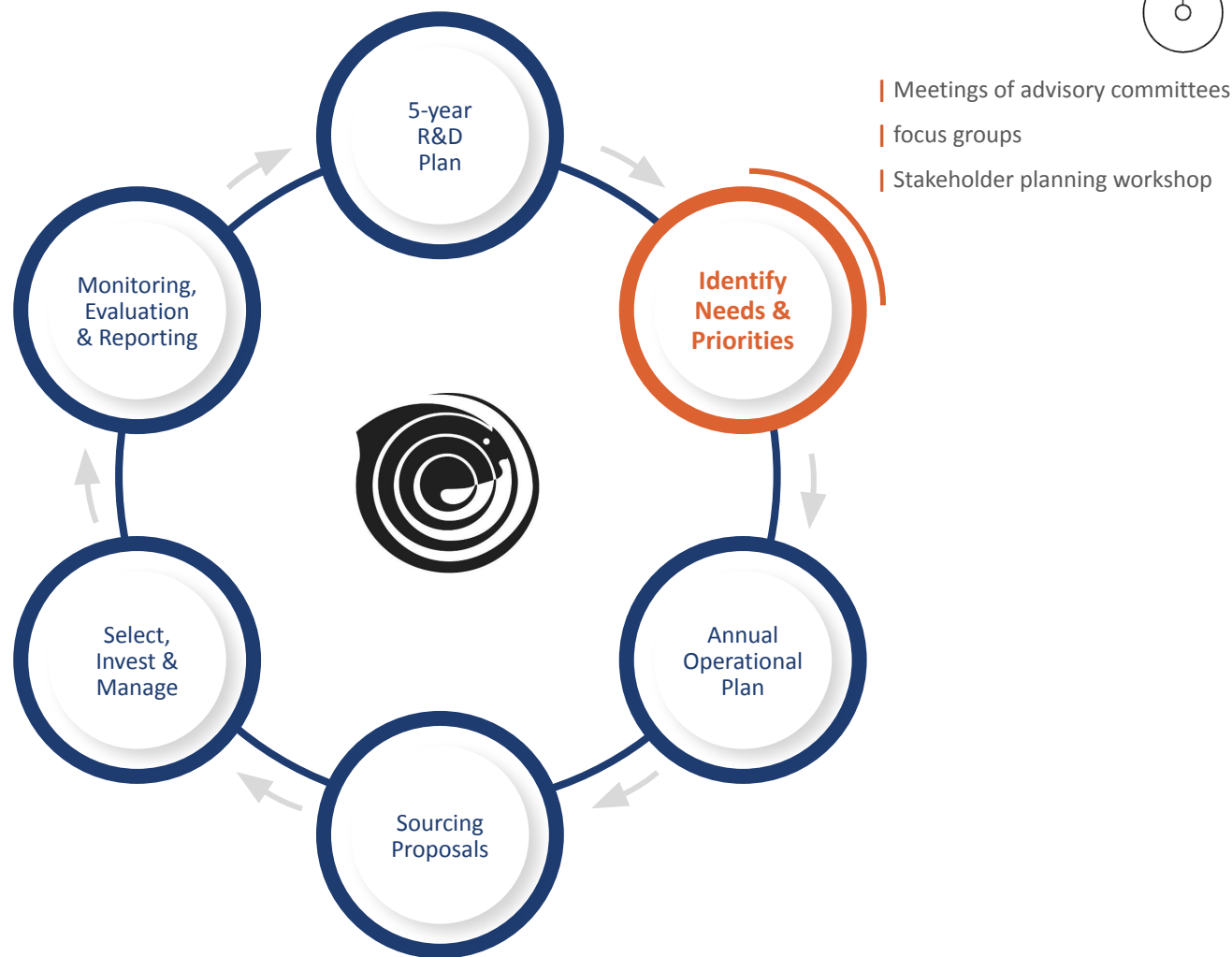
# Background

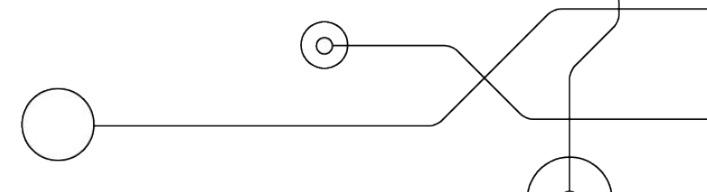
**Purpose |** To listen to stakeholders across fishing and aquaculture, and encourage collaborative and unified execution on major systemic issues and opportunities

In order to achieve this purpose several focus group sessions were held in order to provide a collective understanding of the vision and goals of the fishing and aquaculture community, as well as the major systemic issues and opportunities. This information then guided a larger workshop where the understanding of the desired future state and systemic issues were validated, and participants worked together to identify opportunities and initiatives to address these challenges at scale.

The input from the FRDC stakeholders through the focus groups and workshop will form the basis for guiding FRDC’s annual planning cycle (illustrated on the right). The completed activities inform the “Identify Needs & Priorities” stage of the cycle in order to translate the 5 year R&D plan into the Annual Operational Plan. This engagement with stakeholders is to ensure the response to important challenges and opportunities facing the fishing and aquaculture community is collaborative and engages all fishing and aquaculture sectors in execution.

The activities completed are outlined in more detail on pages 7 & 8.





# Intent Statement

The annual stakeholder engagement process used by the Fisheries Research and Development Corporation was redesigned around digital approaches with a focus on developing a more trusting and connected dynamic. This will undertaken with intention to facilitate in shared understanding and participation in what needs to be done, particularly on large complex issues.

## Current State

### Scope

Before COVID-19, FRDC held a nationally focused two day workshop to engage and seek consensus on shared research, development and adoption priorities across sectors for the year ahead. The scope of this project was to design and deliver digital engagements to achieve the same outputs with a greater emphasis on the quality of engagement from participants.

### Drivers for Change

- There is an opportunity to better demonstrate the FRDC is actively listening to stakeholders.
- When we act collectively we can address our largest challenges, like deaths at sea, climate change and circular economy, which must be dealt with collectively.
- Our diversity and geographic spread makes for many small needs.

### Design Considerations

- R&D plan exists (in its second year) and is a starting point with openness to change.
- There will be some individual concerns that need to be addressed in order to progress.
- Need stakeholders on the journey, need to explain why this is changing and how we're doing this.

## Change State

### Strategic Shifts

#### FROM

Approaches that elevate niche, low impact issues

Gatekeepers and blockers

Many small specific and unrelated projects that can be grouped but don't integrate (>400)

#### TO

Theories of Change and new ways to work on systemic challenges

Democratisation and shared priority setting

Addressing complex community problems at scale (trust, deaths, carbon, Indigenous participation, and more)

### What we are making

- Explanation of why we're doing things differently and what we're doing.
- Information for our Annual Operational Plan
- Identification of any deviations and modifications to the 5 year R&D plan.

## Future State

### In the future...

- Stakeholders will feel reconnected, trusted and heard.
- Improved dynamics will be the start of re-establishing positive relationships and understanding how all participants can pull together towards mutual goals.
- The FRDC is able to clearly articulate the research priorities and impact plans going forward.

### Success from different perspectives

#### Participants

- See demonstration of action.
- Have a better understanding of methods and approaches to deal with complex systemic issues.
- Broad understanding of the national perspective.

#### FRDC

- Stakeholders aligned around larger important issues.
- Can feel and see the trust and investment in the outcomes.
- Increased participation in execution by stakeholders.

### Evidence of success

- 1 | Evaluation returns positive perceptions of content and dynamics through process.
- 2 | There are more cross industry, cross-sector shared needs identified, and investments made.
- 3 | Success measured in terms of the year we had / awareness and support.

**Focusing Question** | How might we start to focus the attention and action of a diverse set of stakeholders on the most important challenges facing the seafood and aquaculture industry over the next decade?

# Approach Summary

To engage fishing and aquaculture stakeholders in the design of research, development and adoption priorities and encourage collaborative and unified execution on major systemic issues and opportunities.



## Focus Groups

**Objectives** | Identify the key systemic challenges you are facing in your sector.

**Outputs** | Synthesis of systemic challenges that should be addressed collaboratively

**Time** | 1hr, 4-9th November

## Workshop

**Objectives** | Co-creating collaborative solutions to shared cross-sectoral national and regional issues.

**Output** | Conversation tracker document

**Time** | 4hrs, 24th November

## Report

**Objectives** | Synthesis of all findings, challenges and opportunities. Recommendations on improving engagement and connectedness

**Output** | Final Report

**Time** | 15th December

Annual Operational Plan development continues

# Approach Details

The table below provides a summary of the project, including key activities, outputs and outcomes to be achieved.

	01 Intent Week 1 - Week 2	02 Explore Week 3 - Week 6	03 Deliver Week 6 - Week 8	04 Report Week 8 - Week 9
Outcomes	<ul style="list-style-type: none"> <li>Deep understanding of context and history</li> <li>Understand the purpose of the project</li> <li>Shared understanding of project aims and activities</li> <li>Clear picture of who and how to engage</li> </ul>	<ul style="list-style-type: none"> <li>Engagement plan for focus groups and workshop agreed</li> <li>Engagement with stakeholders through focus groups</li> <li>Stakeholder challenges synthesised</li> <li>Qualitative performance information gathered</li> </ul>	<ul style="list-style-type: none"> <li>Identify opportunities to align stakeholder strategies towards large complex challenges</li> <li>Empower knowledge capture and exchange between all stakeholders</li> <li>Stakeholders understand how their strategy links to national agendas</li> </ul>	<ul style="list-style-type: none"> <li>FRDC Board and stakeholders confident in the outcomes from the engagement process</li> <li>Increased clarity what will be done about the most complex challenges and why</li> <li>Improved quality of engagement between themselves and FRDC</li> </ul>
Activities	<ul style="list-style-type: none"> <li>Intent meeting with project sponsor</li> <li>Establish a project Core Design Team (CDT)</li> <li>Synthesis of market research into baseline assumptions and lines of enquiry with JF&amp;A</li> <li>Develop preliminary stakeholder map</li> <li>Work with JF&amp;A and new FTEs to advance desktop research</li> <li>JF&amp;A provides list of suitable industry candidates for stakeholder engagement</li> <li>JF&amp;A to provide a framework development of Strategic Export Plan for TGD review, consideration, input and editing</li> <li>CDT meetings</li> </ul>	<ul style="list-style-type: none"> <li>Plan, organise and conduct 4-5 focus groups with stakeholders across the industry</li> <li>Development of stakeholder engagement packs to inform and prepare them for the focus groups and workshop</li> <li>Inform performance reporting</li> <li>Integrate with capability building work with MSS</li> <li>CDT meetings</li> </ul>	<ul style="list-style-type: none"> <li>Plan, organise and conduct workshop</li> <li>Validate synthesis of focus group outputs</li> <li>Synthesise outputs from workshop including shared challenges and opportunities</li> <li>CDT meetings</li> </ul>	<ul style="list-style-type: none"> <li>Synthesise and write up observations and outputs from all engagements</li> <li>Reviewing and improving draft outputs</li> <li>Recommending focus for improvements to the engagement process</li> <li>CDT meetings</li> </ul>
Outputs	<ul style="list-style-type: none"> <li>Intent Statement</li> <li>Research Protocol (project plan, engagement outlines, etc.)</li> <li>Identified list of key stakeholders for engagement</li> </ul>	<ul style="list-style-type: none"> <li>Insights from focus groups</li> <li>Stakeholder engagement packs</li> <li>Plan for focus groups and workshop</li> </ul>	<ul style="list-style-type: none"> <li>Workshop engagement pack developed (if needed)</li> <li>Draft challenges and opportunities for national approach</li> </ul>	<ul style="list-style-type: none"> <li>Final project report outlining the approach, challenges, opportunities and recommendations for improving the process</li> </ul>





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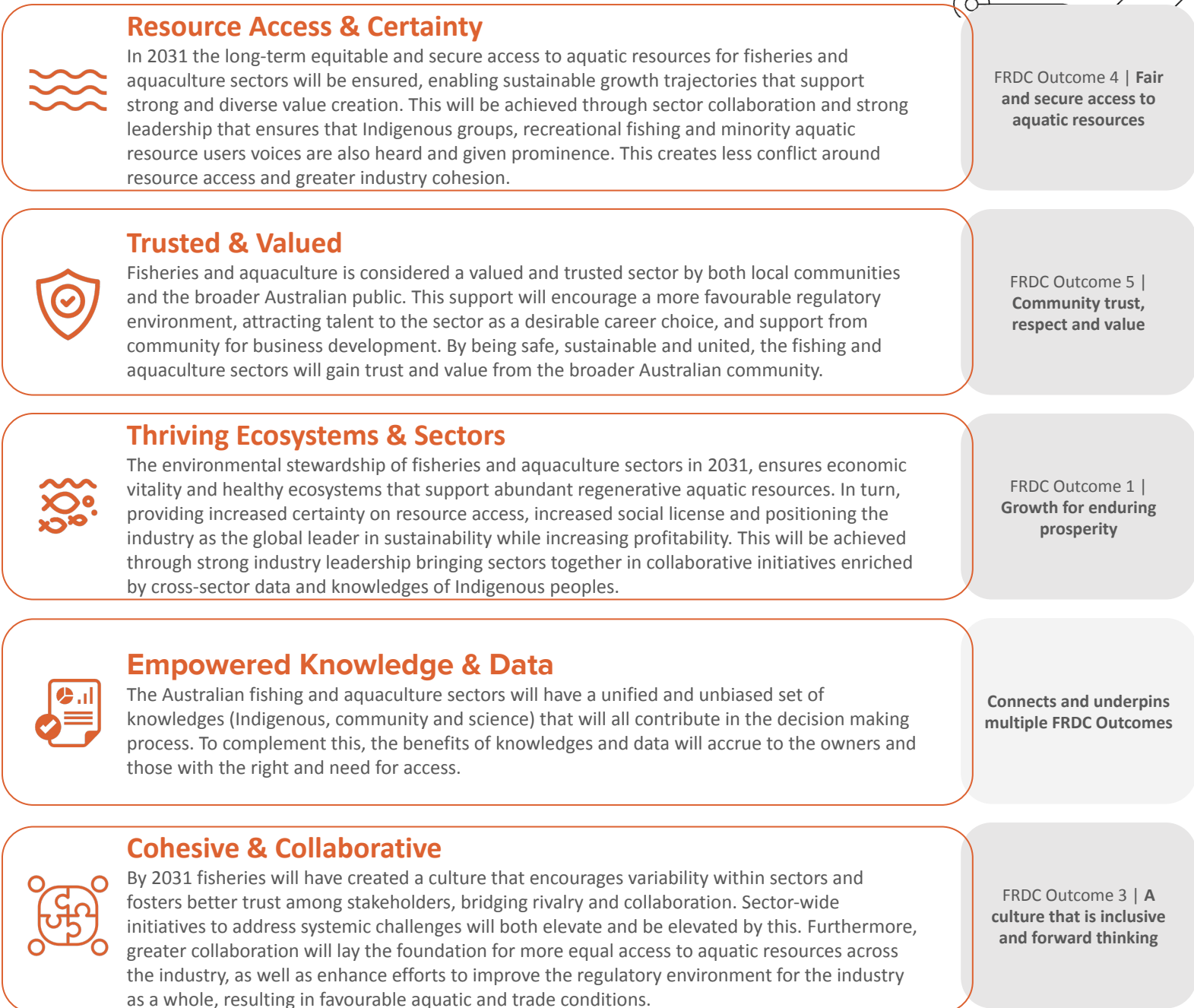
# 2.0 Future State Challenges



# Future State | Overview

What does the Australian fishing and aquaculture community look like in 2031?

The first session of the focus groups looked at listening to what the participants envisioned for the fishing and aquaculture community in 2031. There were 5 key narratives that were strongly communicated throughout the discussions and can be seen in the diagram to the right. It was found that these 5 future states have similar alignment with the outcome areas already identified by the FRDC. Areas of alignment to the FRDC's R&D Plan are also shown on the diagram to the right.



# Challenges | What we heard

What are the key challenges the Australian fishing and aquaculture face moving into the future?

The key challenges discussed during the 15 focus groups were synthesised and categorised into key challenge areas that can be seen on the right. The size of the circle indicates how frequently these challenges were discussed during the process. The orange circles are sector challenges while blue circles are global challenges.

Global Challenges

Sector Challenges

**Fracturing and competitiveness**  
A divided and competitive approach to relationships underpinned by finite mindsets  
[15/15]

**Sustainability**  
Viable and scalable action, including on climate change mitigation, waste management & recycling  
[15/15]

**Diminished Social License**  
Community and consumer perceptions of sustainability, ethics and value of fishing and aquaculture  
[15/15]

**Access to skilled and diverse workforce**  
Equality of Indigenous and women participants, succession planning, skills shortages, attractiveness of careers  
[14/15]

**Leadership**  
Lacking diversity - particularly Indigenous and women voices  
[6/15]

**Self Determination**  
Ability to build economic, cultural and capacity building opportunities for Indigenous fishing and aquaculture  
[6/15]

**Geopolitical Disruption**  
[2/15]

**Safety**  
Continuing loss of life at sea.  
[3/15]

**Alternative Proteins**  
Adapting to consumer preferences for low impact and non-animal based options  
[4/15]

**Long term consistent investment**  
[5/15]

**Biosecurity**  
Maintaining preparedness  
[6/15]

**Resistance to change**  
Defence of the status quo  
[7/15]

**Agtech Adoption** Grow capabilities & execute on current opportunities  
[5/15]

**Climate Change Adaptation** data, flexible regulations, seizing new opportunities  
[8/15]

**Communication across sectors and with the community**  
[8/15]

**Not valued by regulators for social, economic or knowledge contribution**  
[10/15]

**Integration of diverse data and knowledges for shared insight**  
[10/15]

# Future State | Resource Access & Certainty

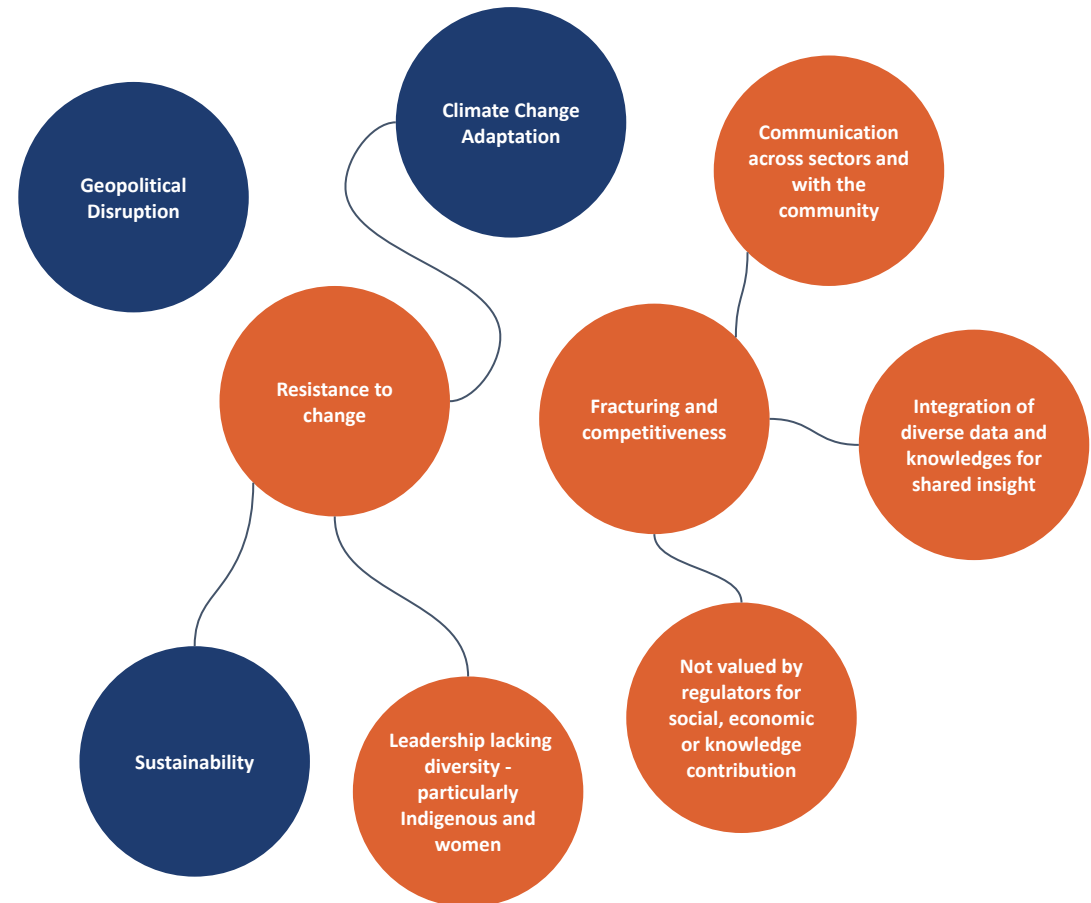
In 2031 there is a clear growth trajectory for sectors bolstered by certainty in ongoing equitable access to aquatic resources.

**Objective** | In 2031 fishing and aquaculture will have established long-term equitable and secure access to aquatic resources, enabling sustainable growth trajectories that support strong and diverse ecosystems.

**Challenges** | There are several interconnected challenges to be addressed in order to achieve this desired future state. Within industry greater collaboration needs to be achieved necessitating better communication across sectors and supported by integration of diverse data and knowledges to address fracturing and competitiveness. In addressing 'fracturing and competitiveness' sectors will be better placed to drive the significance of the value it delivers to government for more favourable consideration in response to external threats that may encroach on access to aquatic resources.

There are two key global challenges that will need to be addressed in achieving this future state: sustainability and climate change adaptation. These challenges encompass both the direct impact sectors are having on the resource and ability to respond to changing environmental conditions that affect the geospatial distribution of species and the viability of fishing and aquaculture as local environmental conditions change. Underpinning the fishing and aquaculture community's ability to respond to these global challenges are challenges within each sector around resistance to change and the leadership required in making this shift.

Success in achieving this future state will see a collaborative fishing and aquaculture community, guided through strong leadership, ensuring that Indigenous groups, recreational fishing and minority aquatic resource users voices are also heard and given prominence. This will allow the sectors to better address external threats whether that be through climate change or competition from other industry, as well as reducing conflict around resource access within fishing and aquaculture.



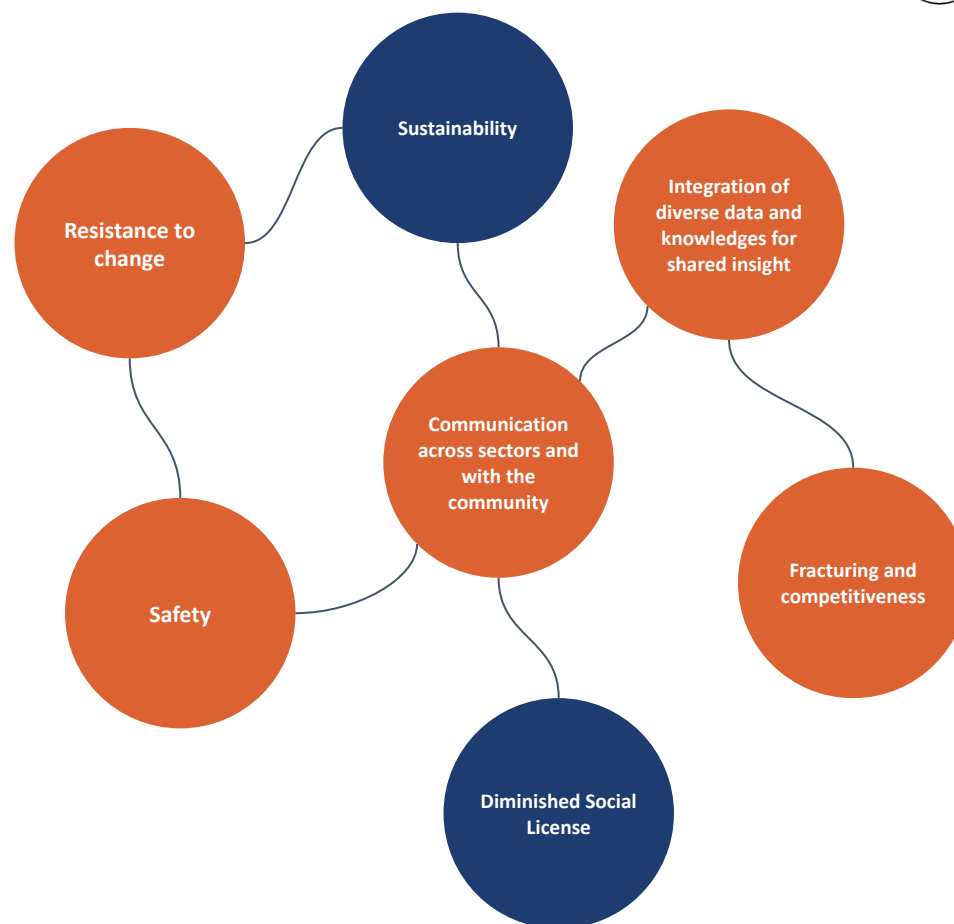
# Future State | Trusted & Valued

In 2031 the Australian fishing and aquaculture sectors will be trusted and valued by the local communities, Australia and globally.

**Objective |** Within Australia, fishing & aquaculture will be considered valued and trusted by both local communities and the broader public. This support will encourage a more favourable regulatory environment, attracting talent to the sector as a desirable career choice, and support from communities in business development and social license to operate.

**Challenges |** To achieve this future state, challenges will need to be addressed on the value fishing & aquaculture delivers to communities and how it communicates it. This gives prominence to challenges of communication on topics of safety and sustainability. Whereby the stories resulting from efforts by each sector to address challenges of sustainability and safety are better captured and communicated in a proactive approach to address the industries diminished social license. Of particular importance will be the stories that arise from addressing sustainability, as this creates a strong value proposition for fishing and aquaculture sectors with the potential to move people to become invested philosophically in fishing and aquaculture.

Additionally, as sectors resolve social license issues, better structures to enable access to information will be required to effectively respond to negative press on a 24-hour news cycle. This will require thought and effort in the integration of diverse data and knowledges as well as ensuring a more unified fishing and aquaculture community through addressing issues pertaining to fracturing and competitiveness



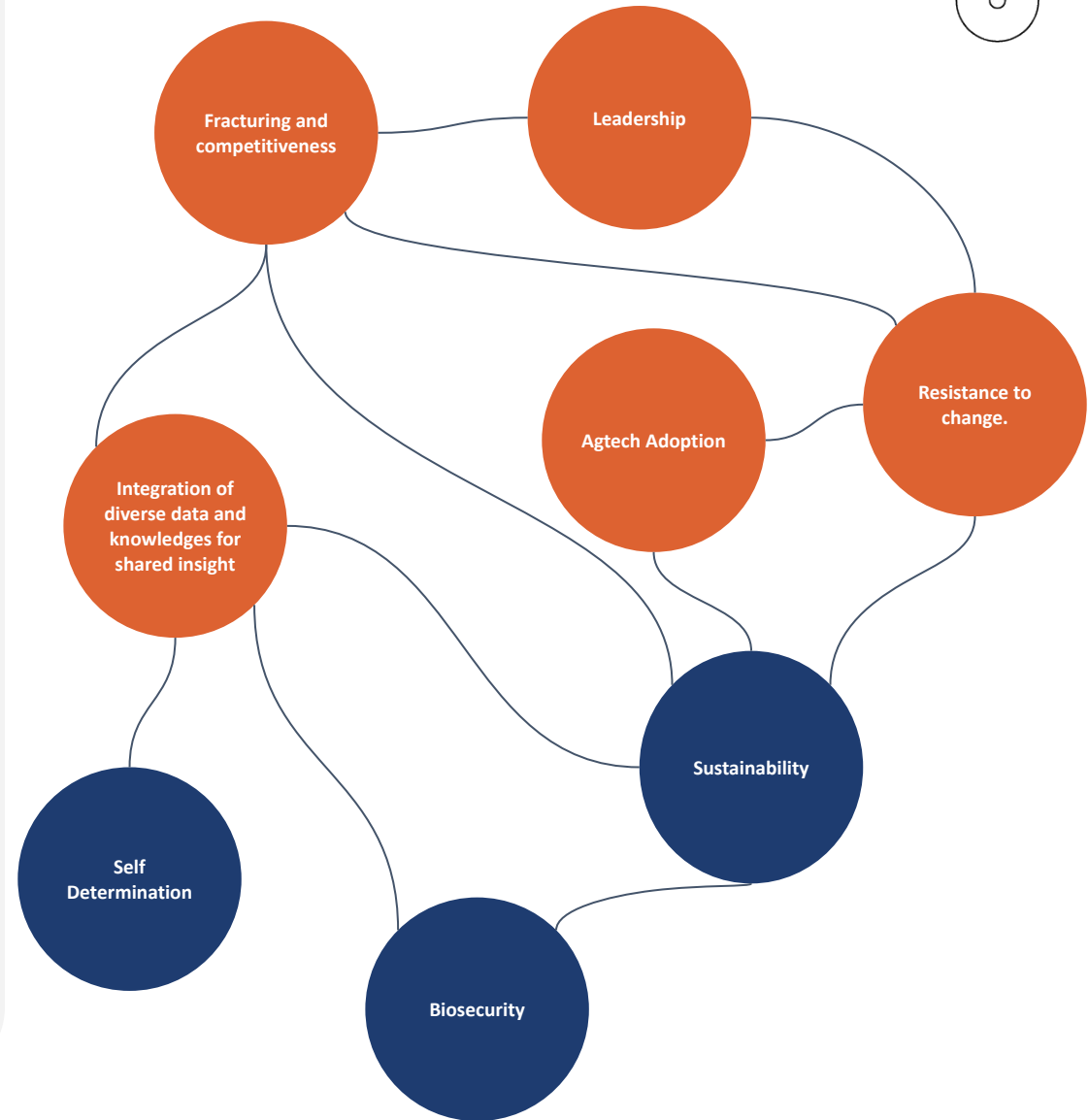
# Future State | Thriving Ecosystems & Sectors

In 2031, the economic success of the Australian fishing and aquaculture sectors will be correlated to the health of aquatic ecosystems.

**Objective** | The environmental stewardship of fisheries and aquaculture in 2031, ensures healthy ecosystems that support an abundant regenerative resource, and so economic vitality. In turn, providing increased certainty on resource access, increased social license amongst the Australian community and positioning Australia’s fishing and aquaculture community as a global leader in sustainability.

**Challenges** | There is significant breadth of highly interconnected challenges to be addressed in achieving this future state centering around the challenge of sustainability. Internal to all fishing and aquaculture sectors will be overcoming collaboration, culture/mindsets and leadership challenges in order to leverage new value through integration of diverse knowledge and data and adoption of agtech. Note that the value of agtech is in it’s utility in addressing the other challenges *and* securing new value (i.e. thriving ecosystems and sectors) through opportunities outlined later in this report.

External to fishing and aquaculture, the most prominent challenge is sustainability. This challenge presents opportunity across multiple facets including moving towards becoming carbon neutral or carbon positive, ensuring wildcatch practices enable biodiverse and healthy ecosystems, as well as the management of waste. Closely connected to the sustainability challenge is biosecurity, whereby practices by all sectors can ensure the protection of ecosystems from foreign pests and disease. Lastly, a key consideration in moving toward this future state will be the integration Indigenous peoples and their knowledge as the traditional custodians of the land. The integration of their knowledge and voice will ensure alignment in direction and action between the traditional custodians and other sectors that utilise aquatic resources.



# Future State | Empowered by Knowledge & Data

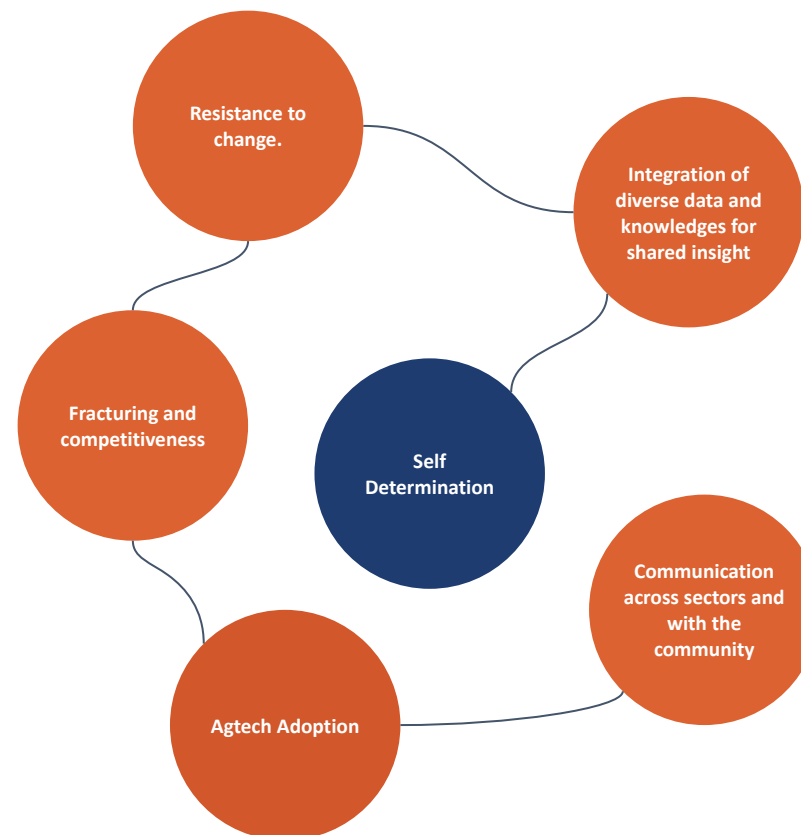
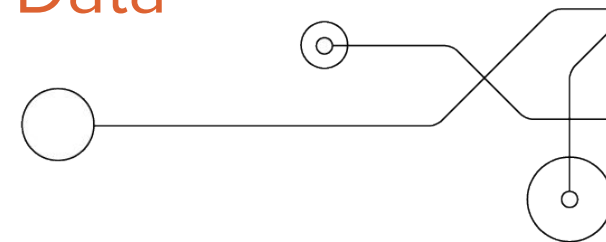
In 2031, decision making in fishing and aquaculture will be fair and unbiased based on Indigenous, community, scientific knowledge and data.

**Objective** | The Australian fishing and aquaculture sectors will have a unified and unbiased set of knowledges (Indigenous, community and science) that will all contribute in decision making processes. To complement this, data will be inter-operable and available across all sectors and businesses to those with the right and need to access it. Users of the data across the sectors will have confidence in the knowledges and data provided through consistency in standards of the data provided. The data sets will be secure to safeguard appropriate access and use. In addition, there will be knowledge and data sovereignty, including an Indigenous-led process of returning Indigenous-owned knowledge and data to their People and communities, moving away from the colonial mindsets of what Indigenous Peoples should be.

**Challenges** | The goal of integrating diverse data and knowledges for shared insight throughout fishing and aquaculture come with several core challenges that presented themselves through the engagement process revolving around the competitiveness, resistance to change, communication and self determination. The current culture within fishing and aquaculture is proving to be a major barrier in achieving this future state as the competitive drive has led to sectors, businesses and agencies being conservative in their estimates of how they can benefit from building agtech capabilities and sharing the right data at the right level.

Sectors and government bodies will have to work together across different levels of maturity to ensure the right knowledges and data sets are being provided to stakeholders with the right and need to access them. Communication across sectors will also play a role as the data and knowledges will need to be easily accessible to all stakeholders requiring it.

The ability to build economic, cultural and capacity building opportunities for Indigenous fishing and aquaculture and bringing their knowledges to the forefront will play an important role in helping to achieve this desired future state.



# Future State | Cohesive & Collaborative

In 2031 greater collaboration across sectors and agencies is uniting participants around systemic challenges and with clear equitable shared access to aquatic resources.

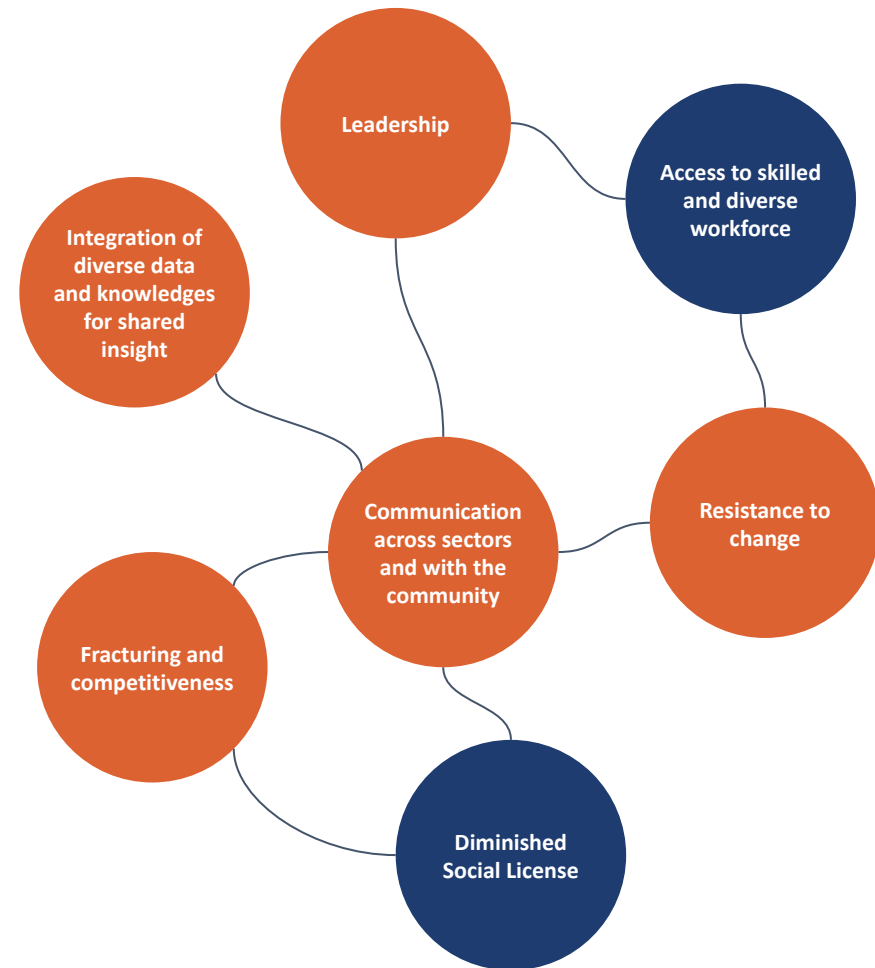
**Objective** | By 2031 fisheries and aquaculture will have created a culture that encourages variability within sectors and fosters better trust among stakeholders, bridging rivalry and collaboration. sector-wide initiatives and multi-jurisdictional approaches to address systemic challenges will both elevate and be elevated by this. Furthermore, greater collaboration will lay the foundation for more equitable access to aquatic resources across the fishing and aquaculture community, as well as enhance efforts to improve the regulatory environment for fishing and aquaculture as a whole, resulting in favourable aquatic and trade conditions.

**Challenges** | It is evident that communication will play a central role in allowing sectors and agencies to be cohesive and collaborative. Most challenges uncovered throughout the process relating to this desired future state will rely on better communication.

In addition, having a shared agreement and 10-year goal will be a large challenge but also necessary in achieving this future state. By having these shared views, it ties together and potentially mitigates some existing challenges such as, poor communication across sectors, fracturing and competitiveness, integration of diverse data and knowledges and resistance to change.

| *“Need agreement on what equitable is in Australia seafood future”*

Currently, the competitive culture across fishing and aquaculture presents a huge challenge to moving forward. There is a culture shift that is required in regards to the competitive nature as well as the resistance to change attitudes across fishing and aquaculture. It was noted that this challenge can be addressed through a skilled and diverse workforce. Access to a skilled and diverse workforce begins with succession planning and improved social licence which was outlined to require strong leadership to navigate these challenges and opportunities.





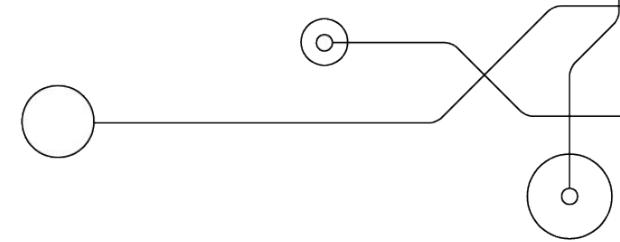


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# 2.1 Future State Challenges Insights





# Insights

Based on the data and observations collected through 15 focus groups, the stakeholder workshop and the background knowledge and desktop research conducted throughout the project there are a number of key insights that can be drawn. These insights help to understand the key factors that must drive change based on both what was said by participants and what was omitted. The insights in brief are as follows with details on the following pages.

Insights



**The nature of  
your  
challenges  
has changed**



**Not equipped  
to manage  
systems  
challenges**



**Stakeholders  
to Systems  
Change  
Leaders**

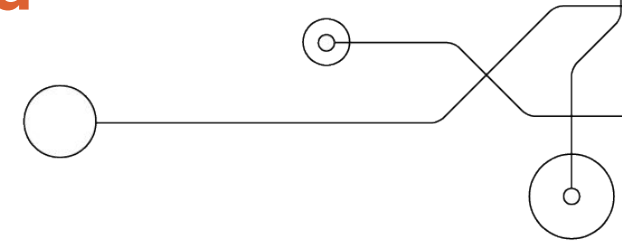
# The nature of your challenges has changed

When asked about the major challenges over the next 10 years, stakeholders did not once mention the need for specific technologies. Implicit in this is the recognition that the nature of the immediate challenges facing fishing and aquaculture are non-technical. This isn't to say that technology doesn't have a very significant role to play in solutions, more that useful technology won't necessarily be useable and therefore, not used.

Browsing through the identified challenges you will note the high frequency of those rooted in issues of social, behavioural and cultural change. For example, of all the funding spent on technologies to reduce bycatch, successful adoption is largely limited to jurisdictions that have put in place mandates. This experience is common, not just to FRDC investment, but with many of the RDCs where technology investment simply hasn't led to solutions being adopted.

Further, the challenges are not challenges in isolation - they are all interconnected in multiple and diverse ways. For example, eroding social license is not just a communications issue, it relates to leadership, ethical and environmental performance, leadership, fracturing and competitiveness between the sectors. Attempting to solve social license by addressing only communication challenges would likely not result in any meaningful change.

The fact is, where a simple tech-fix was possible to solve a large issue, it's very likely been achieved. These more complex interconnected challenges (i.e. Complex Systems Challenges) require a systems view taking in the complexity of the context in which the challenge is felt in real life as well as the related factors up and down supply chains, political and social networks.



There is a need to continually search for not only more advanced technical solutions, but to explore levers through the socio-cultural, behavioural, policy, business structures and models, governance. This change is starting to happen, but based on the types of challenges that fishing and aquaculture is facing, it should become the norm.



# Not equipped to manage systems challenges

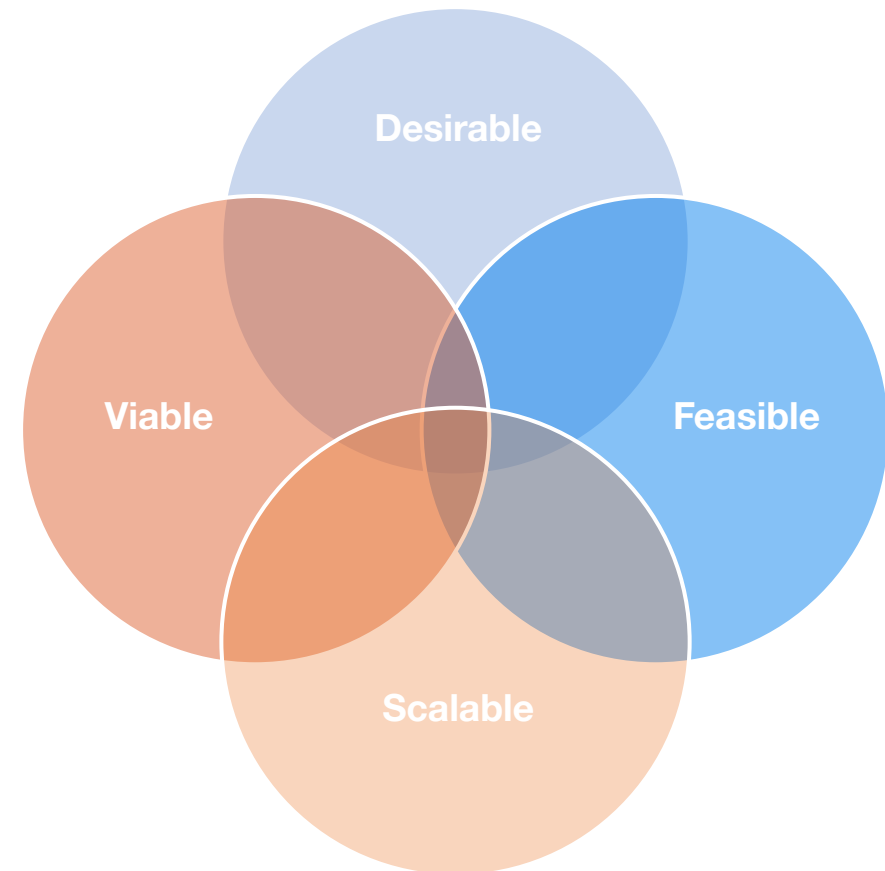
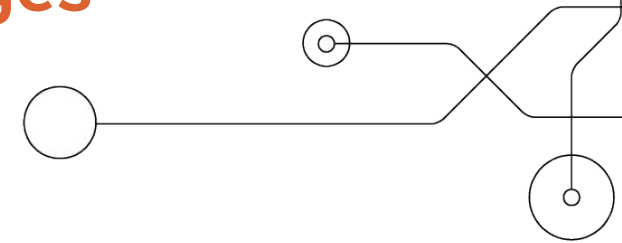
Throughout the process of this project, stakeholders demonstrated a preference for straight-forward or linear action on near term issues. They also displayed difficulty correctly assessing threats or challenges that are future based. For example, to deal with social license, stakeholders preferred a stronger leadership that could defend the sectors, and they focused on near term problems while dismissing potentially larger, but future, threats.

Meanwhile, the FRDC has a set of internal systems and processes that are locked in place through legislated governance structures that make it difficult to prioritise long term major systemic issues, even when the evidence points directly to it.

Many of the challenges are simply not soluble to traditional areas of strength for the FRDC, biology, ecology, technology knowledge creation. For example, fracturing and competitiveness was named as a major challenge and this revolves around the social sciences of trust and collaboration, the need for shared goals and mutual respect.

A focus on technology only deals with the feasibility of the solution. This is one of the four factors of innovation. The others include whether it is desirable to end users, the solution is viable to implement (it pays for itself) and scalable to deliver impact at a scale worth putting effort and resources into.

In order to be successful in contributing to progress on systemic challenges, the FRDC must change out linear approaches to project prioritisation and planning and replace these with adaptive approaches that progressively de-risk investments through an inclusionary approach to prioritisation of challenges worth solving, the rigorous validation of problems and opportunities and a focus on investing with the right partners and measuring progress towards outcomes.



# Stakeholders to Systems Change Leaders

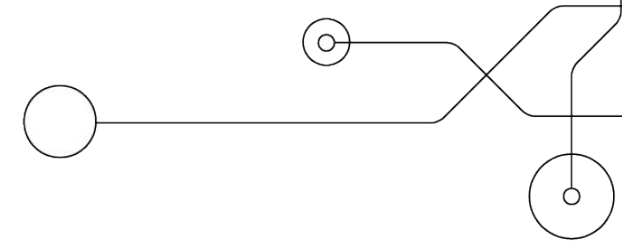
Through the focus groups and the workshop, participants were asked to articulate their desires for the fishing and aquaculture community in 2031. In very many cases, the response was about current frictions and issues that needed to be addressed. These issues were front of mind, and generally framed as barriers and problems.

This demonstrates a need to help stakeholders develop shared stretch goals that will assist in unifying action by building clear platforms for change. Through the facilitation, participants began to unpack the complex nature of some of the challenges thus raising awareness about both the challenges and possible solutions. However, there is a real need to validate those challenges collectively and determine which are systemic long term issues worth solving, what are the relationships between them and what does a coordinated systems approach to seizing upon a shared stretch goal look like.

This cannot be solely the role of FRDC but the FRDC can make significant contribution by providing the forums, methods and capability development required to improve systemic change leadership.

Forums for shared problem and opportunity identification and prioritisation that is inclusive of expertise from within and beyond fishing and aquaculture is likely to import valuable perspectives and insights into the process.

Improving the capabilities of stakeholders in three key areas will have a dramatic effect on the scale of vision and quality of contributions, namely 1) systems approaches to problem solving and solution development, 2) Innovation skills, methods and approaches, 3) strategic communications and branding.

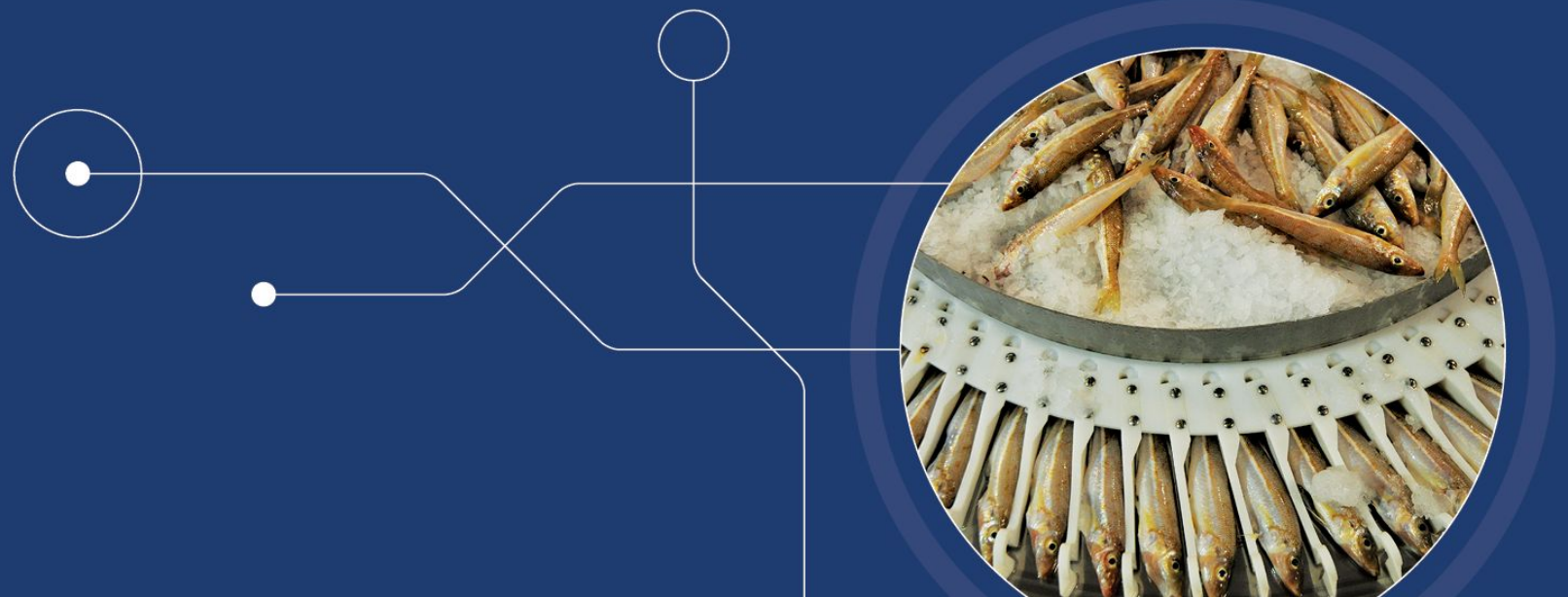




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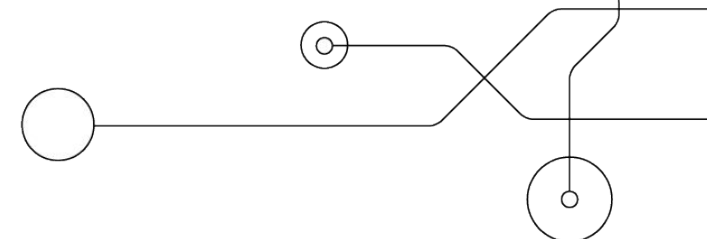
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# 3.0 Initiatives & Focus Areas



# Introduction | Initiatives & Focus Areas

The workshop participants were tasked to ideate and develop potential initiatives responding to complex, system wide challenges while seizing large opportunities. The initiatives developed in the workshop were filtered to remove small scale, single sector objectives, and then synthesised into three key initiatives and four focus areas and aimed at integrating the challenges and concepts developed by participants (W's) as well as our knowledge of RDC context and global trends (⊕).



Initiatives



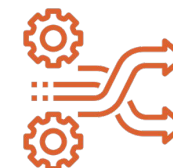
**New Mindsets  
& Capabilities**

W2, W6, W8



**Evolve the  
Approach**

W1, W11



**Build the  
platform for  
change**

W2, W11

Focus Areas

**Integrated  
Resource Sharing  
& Security**

1

W3

**Circularity**

2

W10

**Carbon Neutrality**

3

⊕

**Integrating  
Alternative  
Bioproducts**

4

⊕

**Indigenous  
Economic  
Opportunities**

5

⊕

W - refer to Appendix for corresponding participant generated Focus Areas

⊕ - These Focus Areas have been developed in response to major strategic challenges not addressed by participants

# Initiative 1 | New Mindsets and Capabilities

Through interactions during this project we understand many stakeholders are aware that communication capabilities need to be lifted in order to effectively engage with communities and consumers. Participants developed initiatives to lift communications with communities and stakeholders.

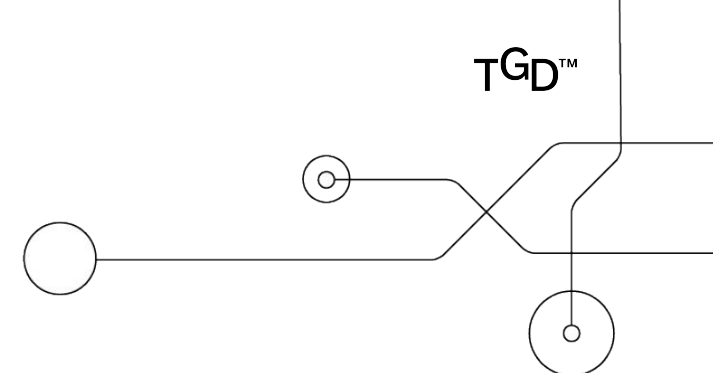
Additionally, through this work and other projects in the sector we're aware both innovation capabilities and systems approaches are areas where stakeholders are typically not strong. This isn't necessarily unusual for a sector but with transformation required to address significant challenges a broad base of capability in innovation and systems change will increase the resilience and adaptability of the sectors.

## How does it work

Capability development should be done within the context of a practical application in a focus area (e.g. carbon neutrality or a sustainability goal). The three areas of capability development respond to the current and future needs in relation to social license:

**1 | Communications capabilities** - To increase understanding around consumer and community engagement approaches. Primarily, this capability development will assist in shifting the response to negative media stories from defending to engaging in the issues and demonstrating progress. Further work in proactively working to develop effective branding and marketing campaigns can be extended from here.

**2 | Innovation capabilities** - To increase successful innovation outcomes in fishing and aquaculture. A broad based increase in the capabilities is part of what is required to address cultural and social abilities to drive innovation. This should occur alongside changes in systems and processes as well as the diversity of thinking brought to bear.



Practically, this could be delivered through accelerators, participation in trialling new solutions as well as coaching and formal education. Additional benefits would be expected in the better identification, development and adoption of technology solutions

**3 | Acting in complex systems** - To increase the understanding and curiosity of the complex nature of the systems in which the major challenges identified operate. Again, applied in the context of validated problems that participants are needing to solve collectively and delivered as training, coaching and/or participation in projects that yield new more coordinated action on systems level issues.





## Initiative 2 | Evolve the Approach

In the insights we saw that the nature of the challenges, the constraints of the current structures and processes as well as the cultural characteristics of stakeholders are impediments to be overcome in achieving desired future states. Part of the solution that addresses all three of those insights is to adapt, trial and implement the following playbook for seizing opportunities in a context of complex challenges.

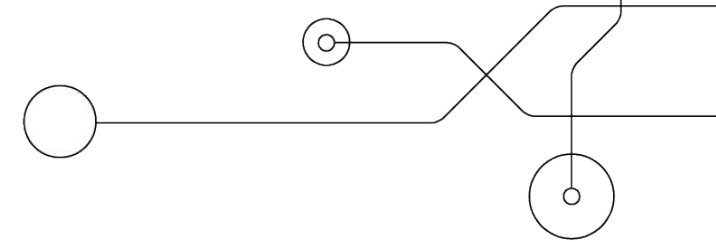
Along with a lift in capabilities, making changes to allow a more adaptive approach to seizing new opportunities is required. It's recognised this will include the need to work with policy, systems, processes, capabilities and not least of all legislation that has been developed around the historical ways of working for an RDC.

In brief, at a high level this evolution in approach requires changes in systems and governance of R&D, mindsets that value rapid testing and adapting, pace that matches industry partners, focus on the biggest opportunities and a default approach to partner with others even outside the sectors.

### How does it work

In practice at a program level this means the following approach should be explored and adapted for use by FRDC:

- 1 |** Engage stakeholders, experts and experience from other sectors in prioritisation of challenges and opportunities. Spend extra time validating the results in order to establish the expected value in proceeding. Ensure the lenses of viability, desirability, feasibility and scalability are applied.
- 2 |** Conduct a global search for candidate solutions and partners inside and outside of fishing and aquaculture in order to maximise the opportunity for success and learn from others. Include also the option to develop or



progress solutions with stakeholders that will be responsible for implementing solutions. Continue to validate and use this information to adapt the solution.

- 3 |** Develop prototypes, conduct trials and test potential solutions in the context in which they will be implemented with stakeholders involved in their implementation. Continue rigorous validation approach and adapt the solution.
- 4 |** Develop implementation mechanisms (organisational structure, partners, suppliers etc) to pilot solutions with small segments to test and validate at small scale. Validate the solution and implementation aspects and adapt as necessary.
- 5 |** Launch and scale the solution adapting as necessary to ensure maximal impact can be derived from the investment that has been made.



# Initiative 3 | Build a platform for change

There is a natural human tendency to discount rewards that occur in the future. The delay in reward from taking action now means that even though the reward may be very large, if it is some time away we tend not to prioritise it. This is called Hyperbolic Discounting in Behavioural Economics.

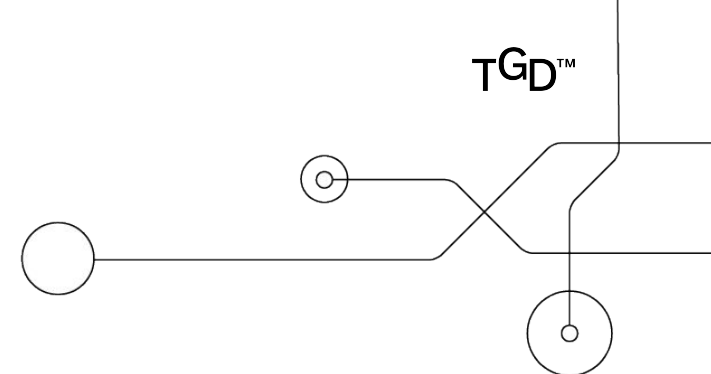
This has played out in discussions through this process regarding the identification of some very impactful global trends which then didn't attract significant attention in the solution development session during the workshop.

In order to spurn stakeholders into action and shift gears from a focus on near term issues, we need to bring long term systemic issues that threaten the survival of the sectors to the fore.

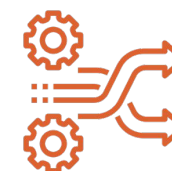
## How does it work?

An initiative that combines a number of approaches is needed to maintain focus on the strategic opportunities that are critical to long term success. This involves targeting segments of the stakeholder population with the practical need for them to engage in urgent change, the opportunities and excitement.

This would include social media, video content, newsletters, town halls, respected thought leaders and anything that will work to demonstrate through social pressure and other mechanisms that driving change locally and collectively at larger scales has real tangible benefits, now. These activities will be most successful when informed by understanding of psychological, cognitive, emotional, cultural and social factors and their influence on individual and collective decision making.



Incorporation of research around social and behaviour change will be critical in monitoring engagement levels for early indicators of change and informing adaptation and other interventions along the way.



# Focus Area 1 - Integrated Resource Sharing & security

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Optimising equitable sharing and security of access to Australia's aquatic resources.

## | What is it?

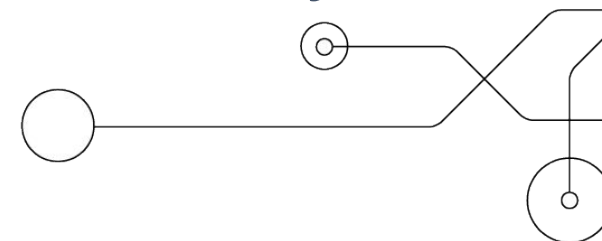
There are multiple demands on Australia's aquatic resources both within fishing and aquaculture and beyond. Resource access and security has been a headline desired future state for some time meaning this remains a high priority.

## | How does it work?

Within the Integrated Aquatic Resource Sharing & security initiative there are three contexts that should be considered together but may require different approaches; 1) fishing and aquaculture users, 2) non-fishing and aquaculture uses, and special consideration should be given to 3) Indigenous resource users.

We acknowledge this space is contentious while also recognising the consequences from not tackling this issue are even more concerning. In order to make progress in this focus area, an approach to convene and facilitate dialogue between sectors to understand stakeholder needs, expectations and historical claims, and translating this into a resource sharing framework that is inclusive of all users, and access rights that give confidence to invest.

In the case of Indigenous resource use and access rights, Indigenous representatives and government agencies all discussed this as part of the future state and an



issue that will need to be resolved. The FRDC can both facilitate access to knowledge to support the discussion on equitable resource sharing and look to develop opportunities for new Indigenous ventures, particularly in regenerative aquaculture (See Focus Area 5).

There are also several jurisdictional and climate adaptation related issues in regards to dealing with resource sharing and security for stocks that straddle or move across jurisdictional boundaries.

This initiative must include existing and future participants in fishing and aquaculture, other aquatic resource users and governments.

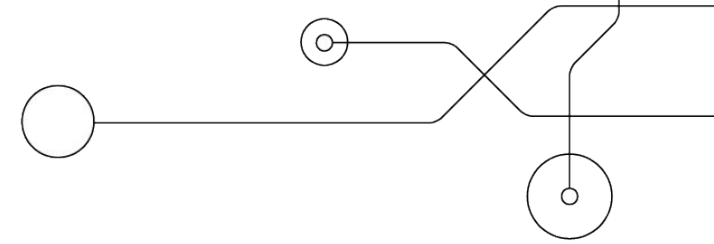
## | What resources are required?

This initiative will initially require skills and funding to enable stakeholder engagement and resource sharing framework development.

## | How does it resolve against the challenges?

This initiative addresses one of the most frequently spoken about challenges in terms of fracturing and competitiveness. It also relates specifically to self determination in respect of Indigenous participants, the capabilities and outcomes from communication across sectors and with the community and finally outcomes in social license.

# Focus Area 1 - Integrated Resource Sharing & Security

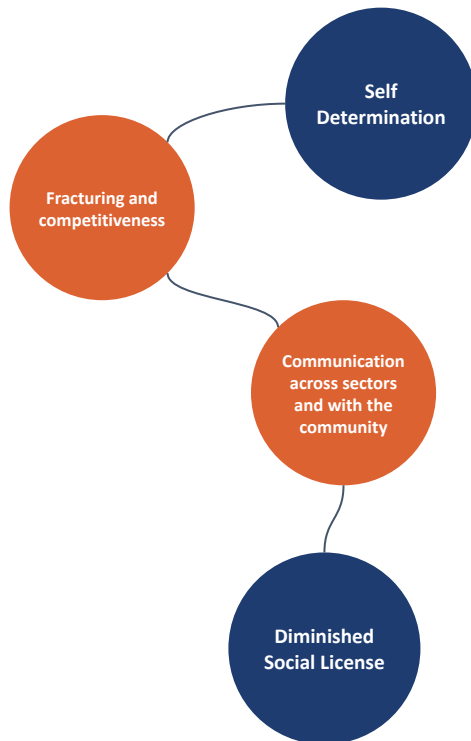


## | What future state does this initiative address?

**Resource Access & Certainty** - This focus area helps by increasing certainty around access rights and resource sharing, including how Fishing and Aquaculture will collaborate and negotiate with other resource users.

**Trusted & Valued** - Reduced friction and tension spilling into the media through increased agreement about how to equitably share the resources.

## | Challenges being addressed



# Focus Area 2 | Circularity

Driving the fisheries and aquaculture sectors towards a circular economy.

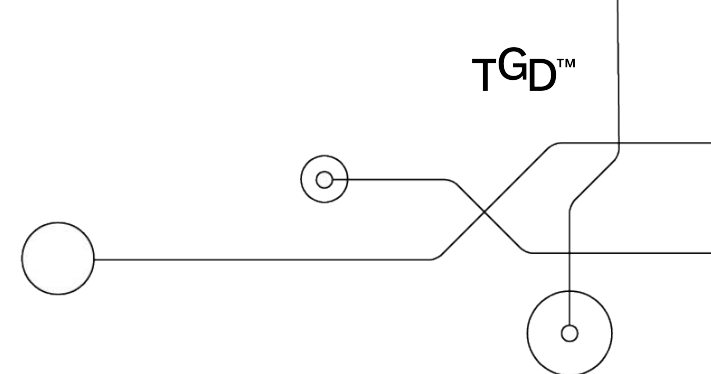
## | What is it?

This focus area looks at developing processes and practices across all areas of fishing and aquaculture value chain to embrace circular economy principles. The Australian fisheries and aquaculture will move towards a system that is restorative and regenerative meaning the ecosystems will continue to thrive each year while restoring its health, ensuring industry sustainability economically and environmentally.

## | How does it work?

Circularity requires coordinated changes and efforts across the entire value chain. This focus area will play out similar to focus area 3, carbon neutrality by:

- 1 | Identifying where opportunities for viable action exist in applying a circularity lens to fishing and aquaculture that considers opportunities created in technological advances including AI and supply chain analytics
- 2 | Sharing of stories of leaders in circularity and their achievements aligned with gaps in fishing and aquaculture to build awareness, curiosity and a platform for change
- 3 | Building capacity to assist stakeholders to identify circularity opportunities in their context and actually develop them through facilitated innovation processes (e.g. accelerators, coaching)



## | Who's involved?

All stakeholders of the fishing and aquaculture supply chain, commencing initially with a regional pilot to confirm approach.

## | What resources are required?

This focus requires expertise from a range of areas including R&D, strategy development, policy development, systems thinking, along with a long term funding program.

## | How does it resolve against the challenges?

By bringing circularity to fishing and aquaculture, it will address sustainability in three fronts: Environmentally, socially and economically. Environmental sustainability will come through the longevity and health of resources and ecosystems (including biosecurity), while bringing a more sustainable economic model across the sectors.

As this is such an ambitious goal, it will only work if all stakeholders are engaged and willing to work together towards it. This will address the fractured and competitive nature of the industry, resistance to change, integration of diverse data and knowledges for shared insight and communication challenges.

# Focus Area 2 | Circularity

By actively voicing this focus area and backing it up with action, it will begin to break down walls around the diminished social licence of fishing and aquaculture by positioning it in a new light as sustainable and valuable, and something the Australian community can be proud of.

## | What future state does this initiative address?

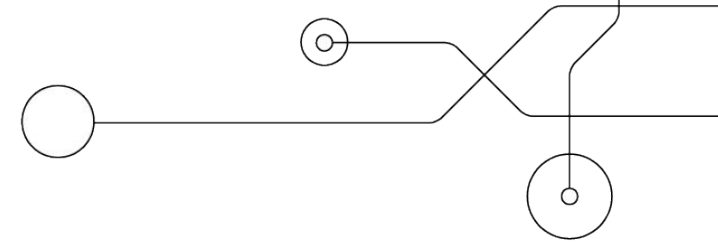
**Resource Access & Certainty** - Circularity will ensure resource certainty by requiring less resource inputs and so helping with fishing and aquaculture’s sustainability, response to community values and therefore social licence.

**Trusted & Valued** - This will position fishing and aquaculture in a far more positive light among the community and governments that see great benefits in participation in the circular economy.

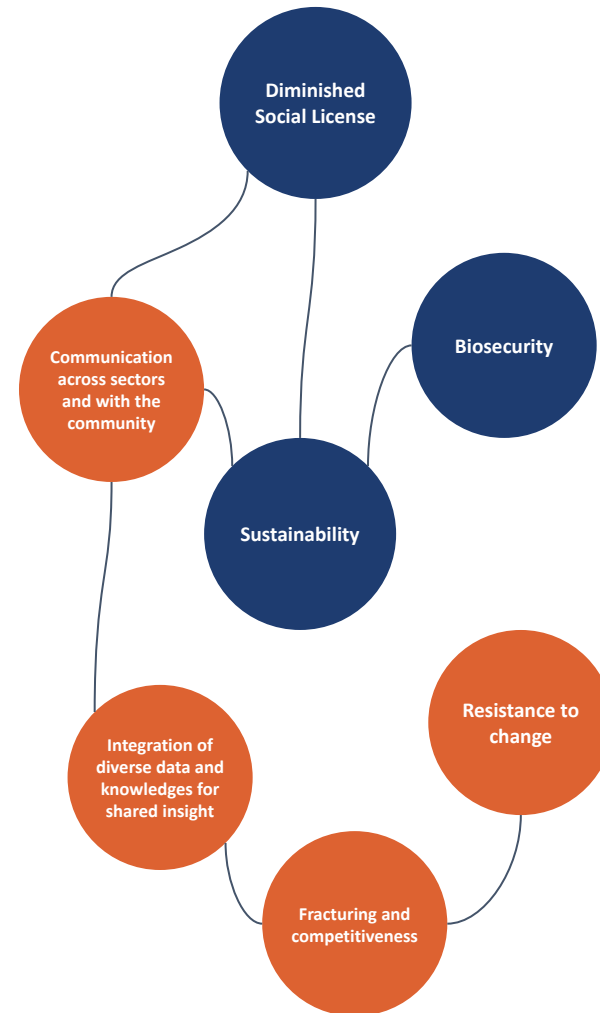
**Thriving Ecosystems & Sectors** - Circularity will ensure thriving ecosystems and sectors through reduction in waste and the transformation of waste into opportunities for new revenue streams.

**Empowered by Knowledge & Data** - Knowledge and data about supply chains, and the flows of materials and value will play a key role in ensuring sector transformation related to circular economy has multiple benefits.

**Cohesive & Collaborative** - As the focus area works along all stages of the supply chain, cohesion and collaboration across sectors is necessary. Those participants that are able to collaborate along the supply chain and find new opportunities for circularity will thrive.



## | Challenges being addressed



# Focus Area 3 | Carbon Neutrality

Making fisheries & aquaculture carbon neutral by 2031.

## | What is it?

A strategy and program of works that will move fishing and aquaculture toward becoming carbon neutral by 2031.

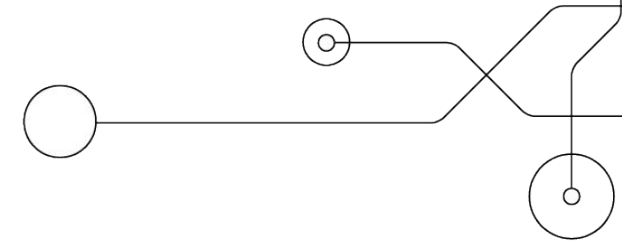
## | How does it work?

The focus area will see development and implementation of programs targeted at driving change in practice and adoption of technologies to address carbon emissions. This will need to coalesce around a fishing and aquaculture plan for Carbon Neutrality by 2031.

Critical stages include stakeholder engagement on the challenges in order to inform participants risk assessments (e.g. carbon pricing or renewable energy costs) and prioritise where co-design efforts are focused.

Programs to support the development of reliable and robust GHG emissions and sequestration reporting at multiple scales in order to understand and monitor progress as well as assess and develop new opportunities for the blue economy.

Finally, it will tell a positive story in Australia and globally, while building a brand through the positive impact of the transformation at scale, from individual to planet.



## | Who's involved?

Carbon neutrality will require the participation of commercial and non-commercial business and organizations across fishing and aquaculture. In addition it will involve external stakeholders such as local communities, science groups such as CSIRO and Indigenous groups.

## | What resources are required?

The success of this focus area will require input from a range of subject matter experts, environmental science groups, system thinking and human centred design expertise and a funding program staged out over several years.

## | How does it resolve against the challenges?

**Sustainability** - By becoming carbon neutral the sectors will have addressed one of the core facets to the challenge around sustainability.

**Communication** - The actions and impacts delivered through this focus area requires communication strategies sharing stories with community to ensure they deliver value to the industry with regards to its social license

**Agtech Adoption** - A key component to delivering impact on climate change mitigation will be how effectively sectors integrate technology and strategy that delivers on-farm/on-water improvements on greenhouse gas emissions

# Focus Area 3 | Carbon Neutrality

**Fracturing & Competitiveness** - as a focus area that requires engagement across the entire sector, challenges around barriers to collaboration will need to be addressed in order to succeed.

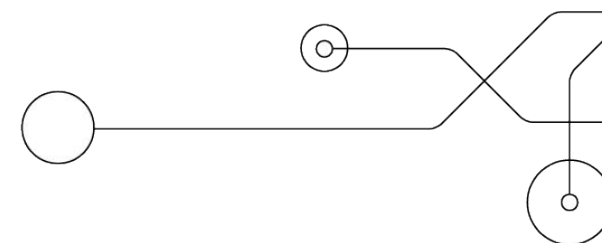
**Resistance to change** - alongside challenges of Agtech adoption and Fracturing & Competitiveness, a challenge emerges relating to the mindsets and cultures of the diverse range of stakeholders. These mindsets and cultures impact willingness to collaborate and drive to adopt new technology.

**Leadership** - in addressing fracturing and competitiveness and resistance to change the focus area necessitates strong and diverse leadership that can speak to the diverse array of stakeholders

## | What future state does this initiative address?

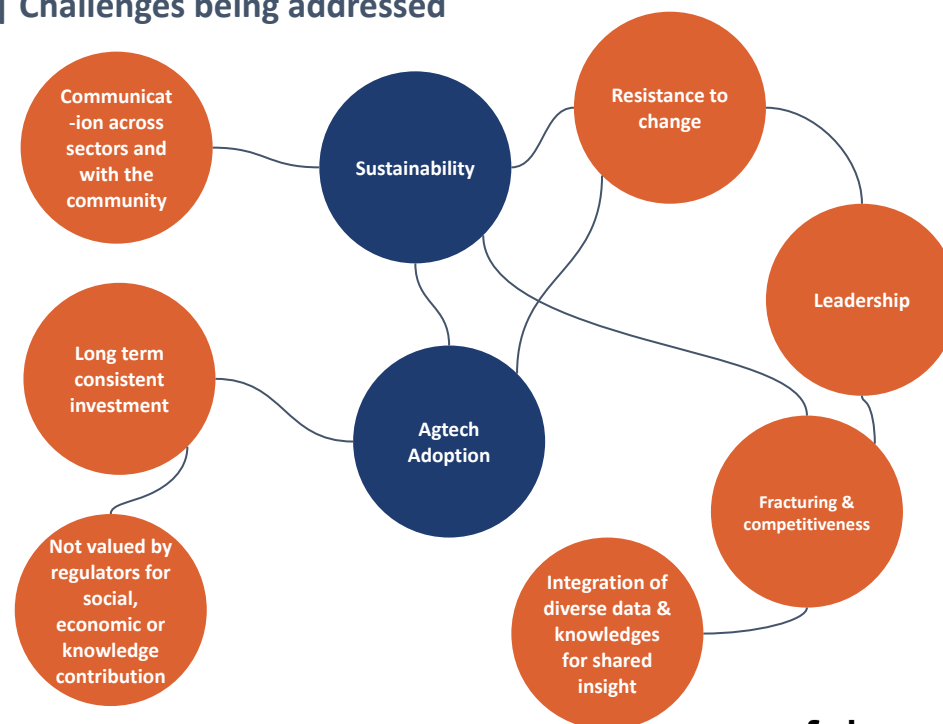
**Trusted & Valued** - Climate change will be one of the dominant public conversations over the next decade. Fishing and aquaculture will need to be able to demonstrate that they are actively contributing to reducing greenhouse gas emissions if they wish to ensure they are trusted and valued by community. This in turn insuring the social license of industry to operate

**Cohesive & Collaborative** - The sector wide nature of the focus area presupposes that fishing and aquaculture work collaboratively towards this common goal. In doing so presents an opportunity to establish long lasting structures and relationships that help ensure the industry becomes more cohesive and collaborative for addressing future systemic challenges.



**Empowered by Knowledge & Data** - In moving toward becoming carbon neutral and alongside becoming Cohesive & Collaborative will require the mobilization of expertise, knowledges and data sources both from within and peripheral to fishing and aquaculture. This will include Indigenous, community and scientific knowledge bases that is unified and unbiased. The integration of which informing long-term trajectory for shifts in mindsets and establishment of structures for data and information sharing.

## | Challenges being addressed





# Focus Area 4 | Integrating Alternative Bioproducts

Embracing the opportunities around alternative proteins and the bio-economy rather than defending against it.

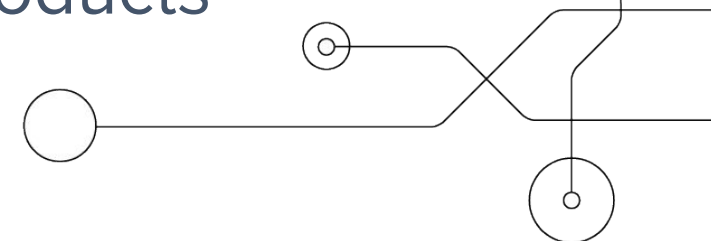
## | What is it?

Adapting to consumer preferences for low impact and non-animal based options by developing strategies for supporting fishing and aquaculture stakeholders to embrace opportunities in alternative protein development and bioproducts.

## | How does it work?

Currently, the stance of most stakeholders within fishing and aquaculture on the introduction of alternative proteins is to defend their loss of market share. This should evolve into stakeholders embracing and participating in the opportunity. An example of this can be seen in the beef and pork industry where one of the worlds largest meat processing companies JBS bought Vivera, a plant based “fake meat” company for AU\$530M to keep up with quickly changing consumer preferences and invest in their R&D.

Understanding of the current technologies, options to licence candidate technologies, pathways to adoption in Australia, and development of new technologies with domestic expertise under Australian regulation will all be key aspects in enabling participation by existing participants in fishing and aquaculture (all the way down the supply chain from production to distribution).



## | Who's involved?

Bioproduction experts, technology owners and developers, marketing and branding expertise, industry transformation expertise, business model developers, food technologists.

## | What resources are required?

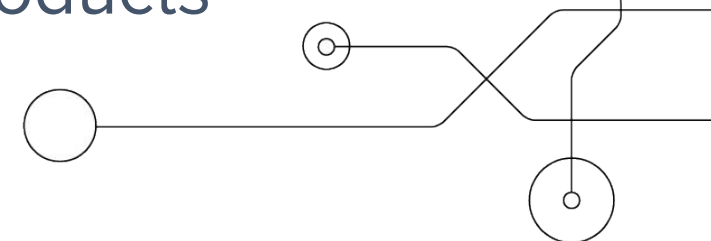
An initial investigation into the adoption, the options available to introduce marine based bioproducts and alternative proteins. This will need to include prioritisation, co-design of solutions with those interested to implement and progressive de-risking, market entry.

## | How does it resolve against the challenges?

This focus area will help resolve the fast changing consumer demand toward alternative proteins as a negative and turn into an opportunity area that is positive in developing new economic opportunities, regenerative practices and positive community outcomes. This has the potential to impact how the industry feels towards change and assist this by presenting different solutions, practices and sectors that stakeholders can benefit.

As this is largely driven by consumer demand, meeting these end user needs and positioning the industry as in a positive light by sustainably providing alternative bioproducts will assist in mitigating the sustainability and diminished social licence challenges.

# Focus Area 4 | Integrating Alternative Bioproducts



## | What future state does this initiative address?

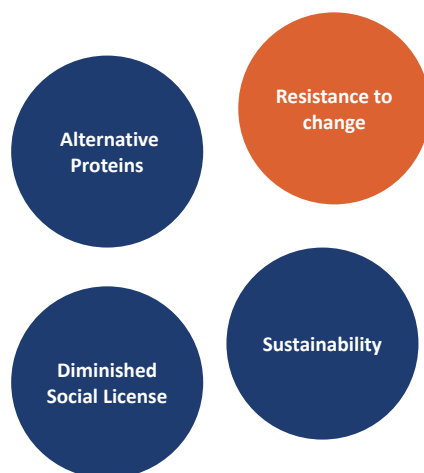
**Resource Access & Certainty** - Alternative marine bioproducts will add another stream of resource production to supply chains and can potentially be guided towards abundant feedstocks managed in a regenerative approach.

**Trusted & Valued** - It is implied that the production and development of marine bioproducts will be ethical, have a low carbon footprint and respond to consumer demands on sustainability.

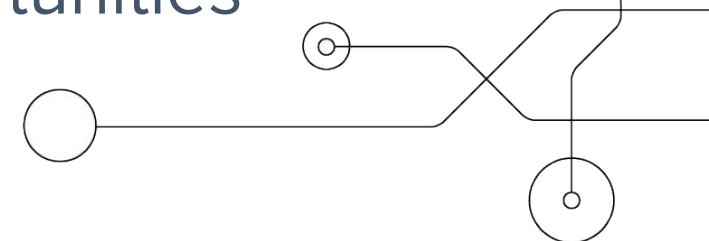
**Thriving Ecosystems & Sectors** - Stakeholders have the opportunity to disrupt themselves by acknowledging future trajectory of some existing fisheries of uncertain viability and transitioning to alternative and sustainable models of production.

**Empowered by Knowledge & Data** - This potentially presents an opportunity for Indigenous stakeholders to explore marketing of traditional species and capitalising on naming rights (e.g. Ponde).

## | Challenges being addressed



# Focus Area 5 | Indigenous Economic Opportunities



Empowering Indigenous led economic participation in fisheries and aquaculture opportunities.

## | What is it?

Indigenous ownership of sea rights is very small and as such doesn't reflect their historical management and connection with land and sea. While access rights to aquatic resources is outside of the FRDC's remit, there is a significant opportunity to support new growth opportunities that help to grow Indigenous economic participation, seat at the table in governance as well as social and likely regenerative benefits of Indigenous owned and operated businesses.

## | How does it work?

There are two distinct areas of opportunity for FRDC to explore with Indigenous groups that progress through this focus area. The first is the development of new opportunities that may lead to new sea rights. The second opportunity relates to developing and expanding Indigenous aquaculture ventures. Both opportunities may relate to or include regenerative practices as aligned with Indigenous culture.

Both of these opportunities have the potential to leverage Indigenous knowledge, naming rights and marketing advantages of Indigenous owned and operated businesses. This may be attractive domestically and internationally, positioning these products as premium whereby consumers buy the intangible value provided in the story behind the product and the support their purchase is providing.

## | Who's involved?

Indigenous Land and Sea Council, Indigenous entrepreneurs / operators, Indigenous groups holding knowledge, names etc that they wish to leverage into a business opportunity. Funding may be available through state and federal government programs, Great Barrier Reef Foundation and similar organisations. Research expertise assist in validating ecological benefits of regenerative practices.

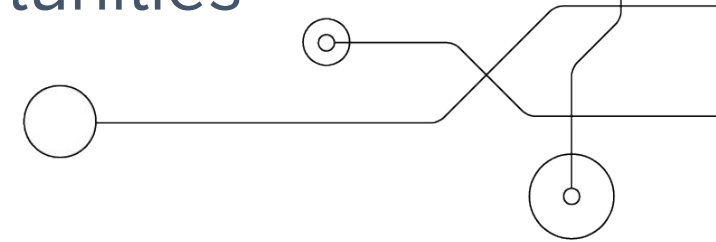
## | What resources are required?

An initial consultation with Indigenous groups and a collaborative investigation into the development of new Indigenous economic opportunities. This will explore the alignment of different groups with different levels of capability, operating requirements, required technology and market development. So to enable the prioritisation of opportunities and align support with what Indigenous operators desire.

## | How does it resolve against the challenges?

This focus area contributes to addressing three primary challenges including self-determination, leadership and integration of diverse data and knowledges for shared insight. In addition, success in this focus area will contribute to social license through the social benefits of Indigenous economic participation. As well as sustainability benefits through the likely regenerative nature of some of the opportunities and furthering advancements in climate change adaptation through the development of new opportunities that arise through climate change.

# Focus Area 5 | Indigenous Economic Opportunities



## | What future state does this initiative address?

**Resource Access & Certainty** - For Indigenous participants this helps to address some of the issue with respect to resource access. Other sectors may still find this challenging.

**Trusted & Valued** - Consumers, communities and governments will value fishing and aquaculture sectors for positive steps in empowering Indigenous owner operators and the likely flow-on social and environmental benefits.

**Thriving Ecosystems & Sectors** - Increased sustainable and regenerative produce enables the sectors and ecosystems to thrive under higher production with positive environmental and social impacts.

**Empowered by Knowledge & Data** - This potentially presents an opportunity for Indigenous stakeholders to explore marketing of traditional species and capitalising on naming rights (e.g. Barramundi).

## | Challenges being addressed





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# 4.0 Conclusion



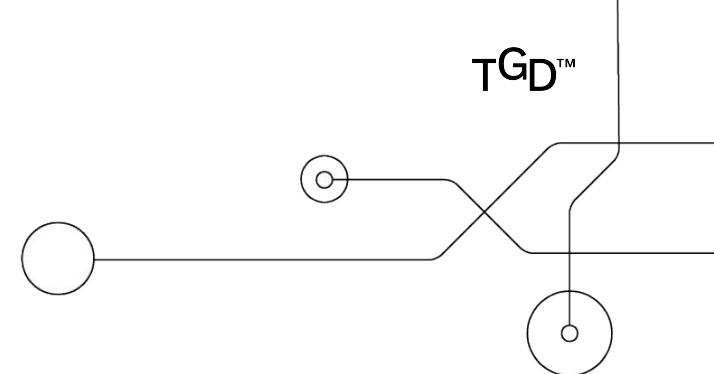
# Conclusion

This project has successfully produced a positive and engaging experience for fishing and aquaculture participants while growing a better understanding of how to approach complex systemic challenges. The hope was that this would also align stakeholders around large important challenges that could inform the FRDC review of it's 5yr R&D plan and focus operational planning going forward. This has also been achieved.

The generation of three key insights based on extensive focus group and workshop interactions point to 1) the nature of fishing and aquaculture challenges, 2) the resultant need for FRDC systems and processes to manage a portfolio of complex challenges and 3) the opportunity to lift capabilities of participants enabling systems change leaders at the forefront of industry transformation.

Three initiatives and five focus areas were developed in response to the documented future states, challenges and insights. This work has helped by providing a critical refocus on the most critical opportunities that was either prioritised by participants or identified independently as being strategically important.

The next steps for these initiatives and focus areas: further work is required to rigorously plan and engage with partners on the best way forward. We wish you luck and fortune on what is an exciting path forward for Australian fishing and aquaculture with the support and leadership of the FRDC and key participants we worked with through this engagement.

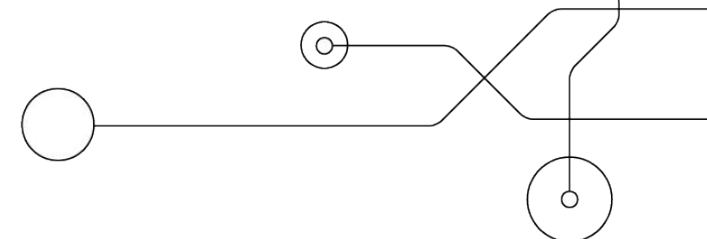




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# Appendix | Initiatives Summaries



## W1 - Collaboration

**Summary** | The core of this idea is the need to establish a way for stakeholders to come together regularly (continuously) to discuss how to tackle different problems/opportunities, at a contextually appropriate scale given the issue in question.

**What has been done** | The current process for planning in a complex environment across fishing and aquaculture is reasonably siloed/disconnected, with numerous structures with jurisdictional/sector/thematic focus. Examples include:

- | Agricultural Innovation Australia
- | Four investment plans under DAWE's Innovation Agenda
- | CRCs (Marine Bioproducts, Fight Food Waste, Blue Economy etc)
- | National Marine Science Plan
- | NESP marine and coastal hub
- | Australian Fisheries Management Forum
- | Federal Minister's National Fishing Advisory Council
- | Federal Recreational Fishing Advisory Committee
- | Seafood Industry Australia and its subcommittees
- | FRDC's Research Advisory Committees
- | FRDC's Industry Partnership Agreements
- | FRDC's Coordinating Programs
- | Sectoral peak bodies
- | Jurisdictional recreational fishing license committees
- | NSW's Marine Estate Management Authority
- | Etc.

The clear, persistent need is a process to ensure that they can operate as a single coherent system, enabling needs to be surfaced and sorted the appropriate level to be actioned, where appropriate.

## W2 - Communication (leadership)

**Summary** | The core of this idea is a long-term strategic communications initiative that explains linkages and benefits flowing from fishing and aquaculture to the community and consumers.

A central element is building awareness and trusting connections, using influencers and trusted sources. From that perspective this initiative is as much about the formation and nurturing of relationships as it is about delivery of messaging.

Noting the focus of this initiative is not strictly extension of R&D, this may be a challenging area of investment for the FRDC. But

### **What has been done** |

Traditionally the FRDC's approach towards investing in the improvement of communication outcomes and relationships via investment in a number of 3-5 year R&D investments, which seek to (for example)

| Understand community/consumer values and expectations and develop an initiative to encourage industry or recreational fishers to use practices

| Understand key determinants of social support

| Improve capability and capacity of industry to speak to media

| One of the more interesting recent projects sought to develop and share authentic stories from fishers to consumers around issues relating to aligned values

| The FRDC has also committed to implementing a regional network of extension officers that seek to build trusted relationships within regions to help promote adoption of FRDC R&D

| The FRDC is also a co-investor in a framework to understand and advance social acceptance of the ag sector in Australia

| The FRDC has funded communication plans and development of communication resources

| Development and delivery of evidence-based information on health benefits of seafood to health professionals

| Development of video resources

| There have also been instances of experimenting with strategic communications executed around programs of work including for the National Carp Control Plan, and the Atlantic Salmon Science Alliance

Additionally, the FRDC has invested in a number of longer term initiatives such as FISH magazine, the Status of Australian Fish Stocks, Whichfish, and others.

The R&D project-focussed nature of the majority of the FRDC's investments in communications may at times contribute to an intermittent nature of relationships between parties involved in communication/extension. There is a need to invest resources into nurturing relationships outside of project-style investments.



# Appendix | Initiatives Summaries

## W3 - Resolving Conflict Within Ocean Communities

**Summary |** There are two core elements of this idea: an observation that the reductive, siloed way in which aquatic resources are currently managed is a primary cause of observed friction between resource users. Second, that historical allocation decisions have in some instances not recognised historical use of all resource users, and this also contributes to friction and competitiveness. The proposed idea builds on the Commonwealth resource sharing framework (summarised below), seeking to implement a resource sharing framework for all marine resource users to give certainty, but also responsibility. One important distinction of this idea is that it is proposed to be underpinned by a co-design process to encourage ‘bottom-up’ support for the process, and consider all resource users, in preference to focussing only on fishing and aquaculture sectors.

**What has been done |** The FRDC has funded several R&D projects that seek to take a jurisdictional approach to determine [social and economic aspirations of resource beneficiaries, and potential social and economic objectives](#). Additional examples [here](#) and [here](#). The FRDC has also funded [a more harmonised and consistent approach towards resource sharing across jurisdictions](#). The Department of Ag Water and the Environment has developed a [resource sharing framework for Commonwealth fisheries](#).

Establishment of the National Oceans Office in 1999 gave rise to ocean planning but was eventually [dissolved in 2005](#). NSW has embarked on their [Marine Estate Management process](#), but has been unsuccessful in bringing all resources users to the table. The Blue Economy CRC has just funded a \$3.5 million marine spatial planning initiative.

The complex web of regulatory responsibilities for various forms of aquatic resource use has been a key impediment to a single,

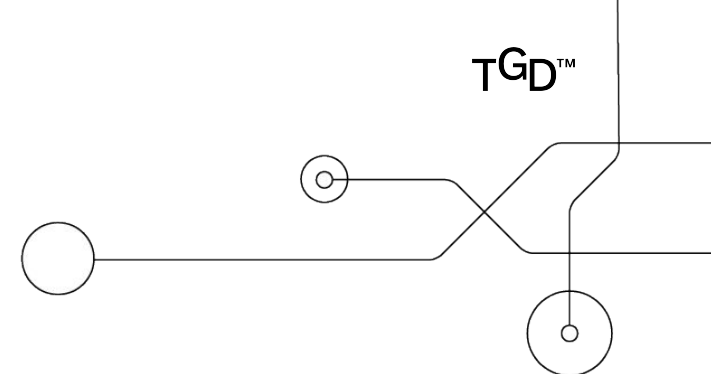
functional, and coherent process for equitable sharing of aquatic resources. The fragmented nature means any actor (including the FRDC) has limited ability to bring all stakeholders to the table. This is particularly true for those with strong access (e.g., mining, shipping, defence etc)

## W4 - Safety at Sea - Protecting those who use the ocean

**Summary |** The basis for this idea is that fishing and aquaculture remains one of the least safe professions despite significant historical and ongoing investment to improve safety. This, and its cross-sector and complex nature makes it a clear candidate for inclusion in this collaborative stakeholder planning process.

The concept builds on an awareness that there is very little data on safety across fishing and aquaculture, that current approaches to improve safety are largely seen as a regulatory burden, that investment in skill maintenance and upskilling is insufficient, and that regulatory provisions should require a higher standard of performance, with stronger penalties for non-compliance.

**What has been done |** The FRDC has funded several initiatives to help understand factors around safety, and how to drive change. Examples include [social science research to understand how to foster a stronger safety culture across fishing and aquaculture](#), a [central web portal](#) to act as a one-stop shop for those in the fishing and aquaculture sectors looking for information about workplace health and safety, a [tool kit to assist with the implementation of the existing safety regulations](#). A [program to improve understanding of fishing industry-specific health issues experienced by fishing families](#), and [case studies and best practice guidelines for industry organisations in enhancing fisher health and wellbeing](#). The FRDC has also partnered recently with Food Innovation Australia Ltd to trial a novel approach to crowdsource information around safety culture from across the seafood sector.



The above initiatives have largely been delivered as individual projects delivered in a linear manner, sometimes with limited connectivity. Their focus has also largely been on delivering new knowledge, tools, programs and case studies and guidelines, with limited focus on implementing appropriate incentives and disincentives to change behaviours and mindsets.

## W5 - Community of practice around co-management

**Summary |** Participative management involving resource users, or co-management, can deliver a variety of benefits, from improved relationship dynamics, improved compliance, reduced cost, and improved decision-making. This idea builds on recognition that co-management is variously applied across Australian fisheries, and there is value in connecting managers and resource users to learn what is working, what’s not, adapt and improve.

**What has been done |** The FRDC funded projects a variety of projects into co-management, from a national [review of different approaches, and their resilience to changing operational and environmental conditions](#), to research identifying key pre-conditions for effective co-management, that has allowed the [trial co-management in case study fisheries](#). The FRDC funded a significant project to [trial different approaches to co-management within commonwealth fisheries](#). Looking across fisheries that have adopted elements of co-management there are some clear examples of success, largely within [highly profitable fisheries with smaller number of operators](#).

# Appendix | Initiatives Summaries

The extent to which authentic co-management has been trialled/enabled has been dependent on several factors including willingness of the management agency to share/devolve control, and capability of the resource users to do so. This has led to a recognition that capacity building is required to allow effective co-management. There is likely to be a persisting need for capability and capacity building beyond the life and reach of project activities funded to date.

The focus of above-described investments has largely focussed on delivery of tangible outputs (knowledge, trials, capacity) and have generally occurred in a linear manner (e.g., not all at once), preventing opportunity for the participants to actively inform and learn from each other.

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## W6 - Complex research & communication needs for non-fishing impacts on marine environment

**Summary |** This concept seems to respond to the observation that complex issues often have a body of work dedicated to their study, can be hard and time consuming to understand, and for this reason often receive low levels of engagement/understanding from time-poor end-users. Though this is likely to be true for all complex issues, the express focus on those relating to non-fishing impacts on the marine environment is likely due to a recognition that fishers and aquaculturists would likely be far more highly engaged collectively on efforts to prevent impacts of non-fishing issues (poor land-use, climate change, etc) if they could clearly understand implications to their livelihoods.

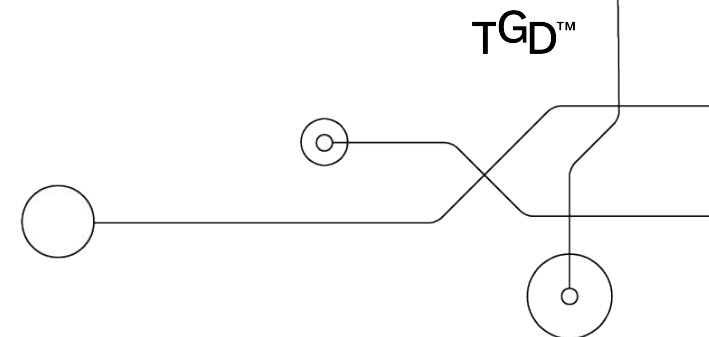
**What has been done |** The FRDC has funded a variety of initiatives to improve understanding of complex topics, including a program of work to understand impacts of pest species, and possible solutions, synthesis pieces on implications of climate change, seismic activity, diseases and global pandemics on fishing and aquaculture. The FRDC also publishes a steady stream of highly readable content via FISH magazine. Though these examples (and there are many more) offer good, clear synthesis of relevant work and implications, it requires time and motivation of end-users to find and digest this content. The degree to which this occurs is unclear, but across the fishing and aquaculture community, the overall proportion who do so is likely to be low.

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## W7 - Check out the local catch

**Summary |** This idea builds on the concept of using technological advances in traceability (blockchain etc) to be able to deliver authentic, verifiable stories to community and consumers about provenance, sustainability, and value flowing to community from fishing and aquaculture.

**What has been done |** The FRDC has funded student research into the use of traceability to tackle Illegal, Unreported and Unregulated (IUU) fishing, trial and validation of traceability systems for wild caught lobsters, fishery-specific case studies, development of a traceability toolbox. FRDC has also invested in initiatives to improve data literacy among fishers for improved business efficiency, and discussion papers on seafood traceability to inform future efforts and investment. The FRDC is also a partner in the Aus. Ag Data Exchange, which seeks to improve data connectivity through the value chain.



## W8 - Accessible national library to inform sector communications

**Summary |** The core of this idea is that there is a need for a centralised, highly curated, easily accessible, evidence-based library of information on fisheries, how they are managed, the mode of fishing, sustainable practices, to allow easy reference when responding to issues that arise.

**What has been done |** Fisheries management agencies such as the Australian Fisheries Management Authority publish summaries on each of the fisheries they manage, including catch data, fishing methods, fisheries management rules, etc. The Status of Australian Fish Stocks publishes information on stock condition, and publishes information on fishing methods.

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## W9 - Managing nutrients (total nitrogen) in pond-based Aquaculture sector

**Summary |** Removal of total nitrogen from pond-based aquaculture systems remains a difficult and expensive process, with 2/3 of the area of aquaculture farms dedicated to water treatment. This reduces productivity potential. If there were an alternative way to treat water to remove total nitrogen in-production ponds using microalgae, it would provide opportunity to use more of the farm area for production, and potentially also produce a valuable by-product in form of nitrogen-rich microalgae.

# Appendix | Initiatives Summaries

**What has been done** | Aquaculture systems typically use high surface area biological systems for removal of Total Nitrogen, with examples including rotating biological contactors, trickling filters, bead filters, fluidized sand biofilters, periphyton biofilm systems etc. The FRDC has funded research into use of [farmed kelp to balance nutrients in and adjacent to sea cages](#), and [reviews of feasibility of Integrated Multi-Trophic Aquaculture](#).

## W10 - Circular Economy

**Summary** | The core of this idea is an initiative to promote problem solving to turn waste into value, recognising a need to understand and overcome barriers to behavioural change, allow piloting of possible solutions, and offer guidelines and communication resources that are easy to understand and follow.

**What has been done** | The FRDC has funded [innovation processes](#) that has helped explore opportunities for converting [fish waste into pet treats](#), R&D into use of [urchin waste as soil fertiliser](#), R&D to use [mechanical separation and extrusion technologies to try and create new products from waste](#), use of [black soldier fly larvae and casting to convert organic waste into agricultural products](#), R&D into [chitin production from rock lobster waste](#), R&D into [fish silage into fertiliser](#), and projects into [waste composition and mitigation](#), including a current audit into circular economy opportunities for [fishing and aquaculture](#).

## W11 - Roadmap to adaptation program: cultural awareness, adaptation and capacity building

**Summary** | This idea seeks to promote bottom-up action, behavioural change, and capacity building across sectors, by providing tools/resources to allow stakeholders to scan the horizon for emerging issues and opportunities. This will allow strategic conversations around what to respond to and how, and who to collaborate with. To mitigate risks, it is proposed to pilot initially. Ensuring there is value in the concept, and then scale.

**What has been done** | The FRDC currently provides a range of information sources to help stakeholders understand contemporary trends. Examples include [seafood production and trade data](#), [SAFEFISH](#), a platform to identify and resolve trade barriers, the [Community Trust in Rural Industries](#) initiative. The FRDC's new Monitoring and Evaluation Framework and web-based performance report will also help stakeholders to track some key metrics across fishing and aquaculture. The FRDC is also in the process of scoping out a risk dashboard as part of a wider intelligence system that delivers insights both internally (to FRDC board and staff) and externally (to key stakeholders) on emerging issues.

