FRDC Stakeholder Consultation Report

*We can't impose our will upon a system. We can **listen** to what the system tells us, and **discover** how its properties and our values can **work together** to bring forth something much **better than could ever be produced by our will alone**. -*

Donella Meadows - https://donellameadows.org/archives/dancing-with-systems/

DATE: **9/01/2024**

IMPACT INNOVATION
#1 FOR INNOVATION ROI

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Document Purpose
This document aims to offer a comprehensive summary of the methods and results from the 2023 FRDC stakeholder consultation process. It encompasses an introduction to the objectives, a breakdown of essential activities, an overview of the findings and insights collected from participating FRDC stakeholders, observations provided by the facilitators, and outlines the subsequent actions to be taken.

Disclaimer
This document has been prepared in good faith based on information available at the date of publication without any independent verification. Unless otherwise specified, this is an internal document for the nominated client to assist with informing internal decision-making. The reader is advised that changes in internal and external operating environments may have a marked impact on the discussion and recommendations made in this document.

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1 EXECUTIVE SUMMARY

The principle that underpinned this consultation process design was a finding from a previous FRDC stakeholder workshop[1] which made the case for *FRDC needing to change to a new way of thinking* based on the following key insights:

- The nature of the challenges in the sectors has changed,
- The sectors are not equipped to manage systems challenges, and
- Stakeholders need to become systems change leaders.

Feedback from stakeholders and recent stakeholder surveys suggests that FRDC staff "*Try to be everything to everyone*" yet the same group can also passionately generate an extensive list of problems to be solved by FRDC.

With this growing demand for change combined with an on-going lack of clarity about the remit of FRDC (e.g. confusion about fisheries management[2]), it is not surprising that FRDC appears to have fallen victim of the system trap called "shifting the burden to the intervenor".

This is a type of innovation anti-rule related to the more familiar addiction loop, but like this complex social issue it can also be extremely challenging to identify and work with. Unfortunately, leaving this anti-rule unchecked will eventually lead to catastrophic failure of future FRDC AOPs and R&D Plans to achieve any meaningful impact.

Our observation is that over time, the role of FRDC as the intervener increased, until it has become an essential part of the system that it is trying to change. Often seen as altruistic, this behaviour is probably motivated by ego and/or impulsive decisions by government.

Whether consciously or unconsciously, people derive personal benefits such as higher self-esteem and/or political capital from aiding others and/or cost avoidance by camouflaging who has the true power for legislative change.

If FRDC is over-nurturing others, it can negatively affect the quality of your relationships (i.e. recent FRDC Net Promoter Scores[3]). By excessively helping others, you prevent them from becoming self-sufficient, resulting in imbalanced relationships (i.e. evidence of adoption). The consequence is that people you're supporting may also expect that you will always be there to solve their problems.

The stakeholder consultation process, particularly feedback in the workshop could be taken as confirming this view, particularly in response to a question about obstacles to collaboration in terms of:

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[1] Collaborative Approach to Shared Systemic Issues & Opportunities Workshop | Fisheries Research & Development Corporation December 2021.

[2] This relates to feedback from a 2022 stakeholder survey result, indicating that a high proportion of stakeholders believed that FRDC contributed to fisheries management as part of its role.

[3] The 2022 Stakeholder Research focused on evaluating net promoter scores to gauge stakeholder willingness to recommend FRDC within the fishing industry.

- **Political and Policy Contexts** - legislative, and policy settings, as well as government priorities and election cycles, were mentioned as factors that can hinder collaboration and impact.
- **Traditional Mindset and Self-Interest Contexts** - traditional mindsets, self-interests, and egos were cited as roadblocks. These factors can create barriers to effective collaboration.
- **Bureaucracy and Governance Contexts** - bureaucracy, governance structures, and the fear of how input will be used were identified as challenges that need to be addressed to facilitate collaboration.

The reality is that FRDC has neither the remit nor the resources to best serve its diverse and increasing divergent interests of stakeholders using the existing way of thinking and current operating model.

The following actions are recommended for consideration by FRDC in the next AOP.

Actions for next AOP arising from feedback – Part One

Impact map #	X-species/x-jurisdictional Issue considered	Possible FRDC actions arising
1	**#6: Impact of climate change (includes declining health of ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**	**AI-1.1** Collecting data on fisher behaviour in response to these changes and they will be willing to share data about their responses to changing conditions.
		AI-1.2 Gathering information on local market dynamics and supply chain responses to these changes.
2	**#12: Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)**	**AI-2.1** Assessment of change in level of risk due to shift in how biosecurity testing and approval are managed.
		AI-2.2 A better understanding of the national disease status.
3	**#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**	**AI-3.1** Examination of what is currently working in this space in Australia and overseas.
		AI-3.2 Analysis of reasons for turnover in workforce across fishing and aquaculture.
4	**#14: Diesel alternatives**	**AI-4.1** Improved data quality on diesel usage by fleet.
		AI-4.2 Volunteer trial demonstrations of alternative fuel technologies.
		AI-4.3 Access to supplier list for equipment using diesel alternatives.

5	**#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)**	**AI-5.1** Analysing supply chain dynamics.
		AI-5.2 Assessing benchmarking for operational costs.
		AI-5.3 Generating forecasts for various cost factors (e.g., fuel, labour, compliance).
6	**#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**	**AI-6.1** Proposing viable alternatives, such as a federated authority or co-management approach and articulating the value proposition for adopting a different regulatory approach.
7	**#4: Equitable, sustainable resource access and security (incl Indigenous)**	**AI-7.1** Achieving equivalency in assessment units, which involves setting consistent and fair standards and evaluation methods in fisheries management. This ensures that when assessing resource access and security, all stakeholders are judged using the same criteria, promoting fairness and inclusivity across the whole ecosystem.
		AI-7.2 Identifying the costs of disengaging individuals in all sectors, including mental health.
8	**#1: Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)**	**AI-8.1** Fill local knowledge gaps and ensure the integrity of data for dynamic operating marine spatial plans.

Actions for next AOP arising from feedback – Part Two

Impact map #	X-species/x-jurisdictional Issue considered	Possible FRDC actions arising
1	**#6: Impact of climate change (includes healthy ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**	**AV-1.1** Localised scenario analysis tool for individual fishers to provide a knowledge base to inform fishing decisions by understanding potential impacts and net gains or losses.
		AV-1.2 Ministerial engagement in the sharing and use of data.

2	**#12: Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)**	**AV-2.1** Building capability of the national biosecurity testing non-government lab network.
		AV-2.2 Implementation of passive surveillance (nano-sensors & IoT).
		AV-2.3 Conducting translocation testing.
3	**#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**	**AV-3.1** Training related to marine and fishing industries.
		AV-3.2 Inclusion of industry-specific content in regulated school curricula, with Wi-Fi connection on all work sites (onboard vessels).
4	**#14: Diesel alternatives**	**AV-4.1** Customisable tools for assessing vessel requirements for feasibility of switching and performing ROI (Return on Investment) comparisons.
5	**#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)**	**AV-5.1** Exploring fishing ground accessibility and industry capacity for decision-making.
		AV 5.2 Referring to market and cost data when determining research priorities thereby directing research towards reducing operating costs.
6	**#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**	**AV-6.1** Fostering a willingness among stakeholders to engage in conversations aimed at removing regulatory inflexibility.
		AV-6.2 Engagement and resourcing of representative organisations (representative organisations).
7	**#4: Equitable, sustainable resource access and security (incl Indigenous)**	**AV-7.1** Developing new means to allocate resources at the national level with multi-jurisdictional collaboration.
8	**#1: Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)**	**AV-8.1** Encouraging the fishing industry to share operational data across all sectors.

It is recommended that FRDC consider exploring each of these to 'reality check' the inferences made about the hypothesed pathways to impact and to clarify what FRDC

actions (if any) are required in the next R&D plan to effectively support achievement of results.

The table below emphasises the importance of the various stakeholders in the industry; achieving the desired outcomes and impact is contingent on these actors enacting the suggested actions.

Impact map #	X-species/x-jurisdictional Issue considered	Causal link(s) described **(key actor)**
1	**#6: Impact of climate change (includes healthy ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**	• **Fishers** will share their data if they can use it in return for enhanced knowledge for better commercial decision making. • **Ministers** will trust the data for legislative decision-making if they can be reassured of the outcome of the process (no surprises).
2	**#12: Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)**	• Loss of control of the biosecurity testing process by **official (government) labs** weakens the national biosecurity system.
3	**#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**	• Providing **young people** with greater awareness and certainty of future career paths in the wild-catch sector would remove barriers to entry and retention of existing workforce.
4	**#14: Diesel alternatives**	• **Owners of fishing vessels** will switch to non-diesel fuel alternatives if it is practical and cost effective to do so.
5	**#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)**	• Setting the Total Allowable Commercial Catch (TAC) at Maximum Economic Yield (MEY) would mean that **commercial fishers** would be more viable because they would shift towards being more market and business-oriented rather than solely production-focused.
6	**#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**	• **Politicians and legislators** willing to use economic and social impact data from various perspectives, including community, commercial, recreational, indigenous, and environmental groups; instead of using blunt tools, risk aversion, and a jurisdiction-focused approach; will establish a collaborative,

		secure, efficient, and effective regulatory environment.
7	**#4: Equitable, sustainable resource access and security (incl Indigenous)**	• Collaborating on Total Allowable Catch (TAC) agreements among **indigenous, commercial, recreational, and ENGO sectors** based on a rights-based management framework would increase certainty, security, and transparency across jurisdictions.
8	**#1: Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)**	• Localised mapping projects, sustainable claims, and marine spatial planning generated by sharing local data would allow collaboration among **multiple government departments** to understand and manage the marine estate as a whole ecosystem.

2 BACKGROUND

2.1 Purpose

The FRDC's annual stakeholder workshop plays a pivotal role in a co-design approach intended to gather valuable insights from stakeholders, ultimately shaping the content of FRDC's 2024-2025 Annual Operational Plan (AOP) and 2025-2030 R&D Plan. Given the mid-term stage in the current planning cycle, the goal of this work is to work with stakeholders to identify any gaps in the current AOP and/or highlight emerging issues for consideration in the next FRDC planning cycle.

In addition to this stakeholder workshop, other activities were carried out to ensure thorough stakeholder engagement in informing these crucial documents. These activities included a series of online discussion's, "Have Your Say", as well as an online survey, both of which were employed to solicit input and feedback from FRDC's diverse stakeholder base. Figure 1 below illustrates the overarching process employed by FRDC to craft the next R&D plan and to ensure that the intervening AOPs align with stakeholder priorities by addressing their needs, with the aim of achieving maximum impact.

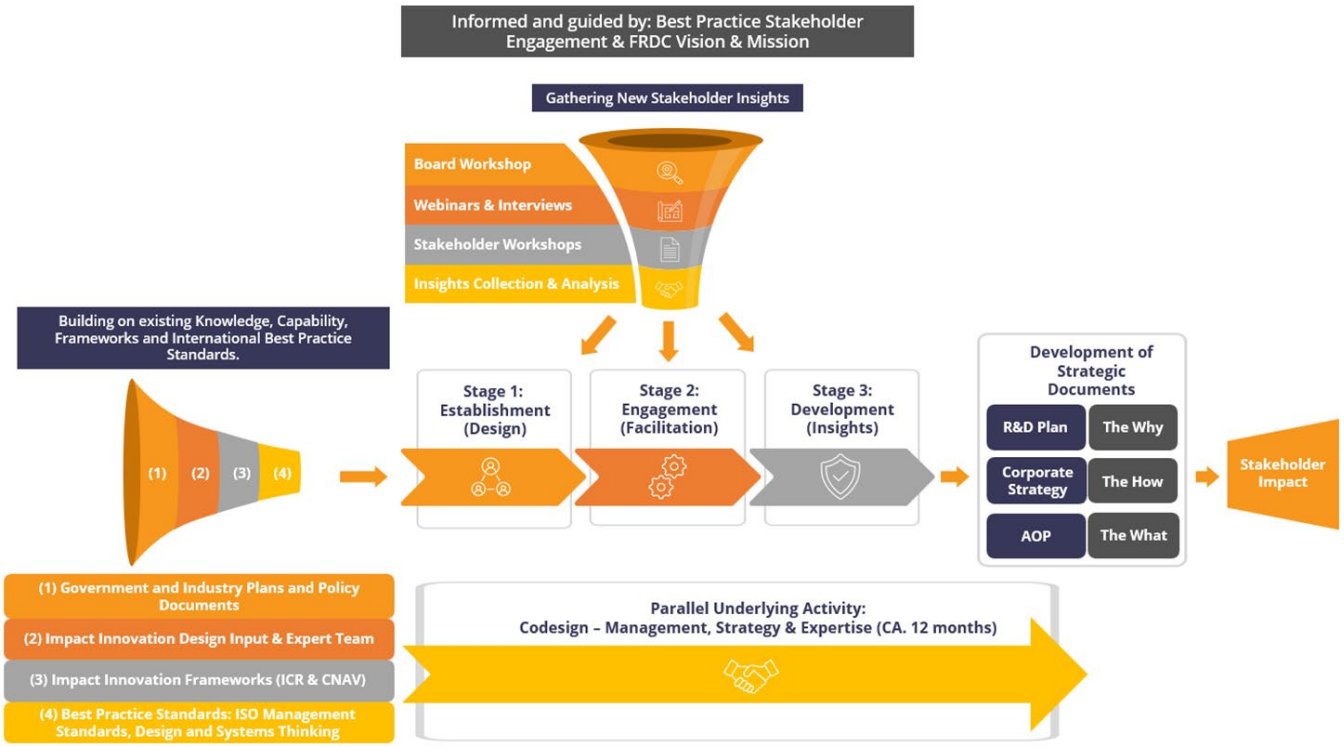

Figure 1: Overview of the co-design process to inform critical FRDC documents.

The objectives of the FRDC stakeholder workshop were as follows:

1. **Inform Stakeholders and Assess Progress**: The workshop aimed to inform stakeholders about FRDC's recent activities and achievements in line with the current R&D Plan (2020-2025) and assess the progress made toward key outcomes.

2. **Identify Industry-Wide Challenges**: It provided a platform for identifying significant challenges and issues affecting the entire fisheries industry, with a focus on exploring alternative approaches to finding effective solutions.
3. **Prioritise Critical Issues**: Participants had the opportunity to actively engage and prioritise the identified challenges. They chose to work on issues where their expertise and contributions can make a meaningful impact.
4. **Explore Innovative Approaches**: The workshop introduced stakeholders to innovative tools and methodologies for system-level innovation, empowering them to design collaborative solutions for addressing industry-wide challenges.
5. **Shape Future Plans**: The insights and input gathered during the workshop play a crucial role in shaping FRDC's future plans, including the development of the 2024-25 Annual Operating Plan and in preparation for the new R&D Plan 2025-2030.

3 ONLINE DISCUSSION & SURVEY

The 2023 FRDC stakeholder workshop was built based on the findings and insights obtained from the 2023 "Have Your Say" online discussion series, which occurred from September 26th to October 3rd. A total of seven "Have Your Say" sessions were held during this period, targeting specific stakeholder groups, including Commercial Wild Catch, Recreational Fishing, Researchers and Fishery Managers, Youth, Aquaculture, Indigenous, and Other Aquatic Users. Additionally, a survey was circulated to gather further insights and perspectives to complement the information gathered from the online discussion series.

3.1 The Approach

A total of seven online discussion sessions were conducted, employing an innovative hybrid model that combined webinars and focus groups to actively engage participants. These sessions collectively attracted 201 stakeholders, thereby providing the primary data for our analysis. Each session followed a structured format, including an introductory presentation about FRDC, a presentation on the current R&D Plan outcomes, and a future-focused presentation addressing the top 11 global trends and challenges in the fishing and aquaculture industry. Furthermore, open-floor discussions allowed participants to explore topics of their interest. After each segment, which included the introduction, R&D outcomes presentation, future focus presentations, and the "open floor" discussions, a series of pre-planned questions were posed to participants using the Mentimeter platform. The panel consisted of FRDC representatives and facilitators from the Impact Innovation Group.

Additionally, to reach a wider audience and gather more insights from stakeholders unable to attend the online discussions, a survey was conducted that garnered 8 more responses, enhancing our information pool. The survey utilised the same questions as the online discussions and included an accompanying video for context.

3.2 Summary of Results

From the "Have Your Say" online series, key themes emerged for each sectoral group. These themes were instrumental in structuring the activities of the 2023 stakeholder workshop to ensure that voices from all sectoral groups were heard and could better inform FRDC's 2024-2025 Annual Operational Plan (AOP) and 2025-2030 R&D Plan. The table below provides more information about the key themes identified. These themes and common issues across different species and jurisdictions informed the Theory of Change (TOC) activity conducted during the 2023 stakeholder workshop, which is described in detail in the subsequent sections of this report.

Key Themes by Sector	
Commercial Fishers: 1. Social licence 2. Easy catch data capture & digitisation 3. Resource access & security	**Indigenous:** 1. Net bans 2. Indigenous participation in R&D 3. Economic development

<table>
<tr>
<td>4. Transition from diesel
5. Sustainable fishery
6. Develop alternative fishing apparatus for inshore fisheries
7. Gillnet bans
8. Queensland:
• Inshore fin fish will nearly be all closed on January 1, 2024.
• 25% of the GBRMP is green zone
• 2017 to 2027 sustainable fishing policy</td>
<td>4. Cross-jurisdictional legislation
5. Resource allocation
6. Aquaculture start-up costs</td>
</tr>
<tr>
<td>Recreational fishers:
1. Sustainable fishery with transparent data
• Stock Assessments must be shared
2. Sharks
3. Licensing & bag limits
4. Off-shore wind farms (spatial squeeze)
5. Fisher stewardship
• Put FISH and Fish Habitat FIRST
6. Formation of peak bodies
7. Engage CALD (Culturally and Linguistically Diverse) Communities interests and input</td>
<td>Researchers and Fishery management:
1. Social media vs science
2. By-catch
3. Traceability
4. Social licence
5. Sustainability
6. Biosecurity
7. Real-time data monitoring stocks
• Species, size, grade, process, catch time, location
8. Compliance/ill-legal fishing
9. Whole-of-lifecycle management (including coastal habitat planning)</td>
</tr>
<tr>
<td>Youth:
1. Social licence
2. Shifting demand (age)
3. Public engagement
4. Succession planning
5. Resistance to changing industry culture
6. Marine bioproducts and circular supply chains</td>
<td>Aquaculture:
1. Circular economy
2. Regulatory constraints on growth
3. Carbon Neutral
4. Sustainable aquafeeds
5. Biosecurity
6. Translocation (off-shore)
7. Microplastics
8. Innovation leadership on costs vs imports
9. Fish kills…
10. Investment in breeding stock and lower trophic species</td>
</tr>
<tr>
<td colspan="2">Other Aquatic Users:
1. Social Equity
2. Workforce retention
3. Trust in science
4. Trust in government
5. Data collection
6. Co-management with renewable energy projects
• Declaration of renewable energy zones offshore
7. Seafood Supply Security</td>
</tr>
</table>

8. Co-management - co-existence - do we have the model right?
Issues in Common: Cross-species/cross-jurisdiction
1. Off-shore wind farm renewable energy 2. Due to there being no spatial rights considered, only quota and season 3. Social licence (NB: social media vs science) 4. Sustainable resource access and security 5. Automation of data capture, ownership and real-time sharing 6. Species population footprint shifting South 7. Flexible management of stocks across jurisdictions 8. Shared management of biosecurity risks across jurisdictions 9. Leadership pathways and succession

The high-level thematic analysis revealed a multitude of key concerns and priorities across seven critical areas of the fisheries and aquatic management landscape. Commercial fishers are particularly focused on issues like securing resource access, transitioning from diesel to more sustainable practices, and developing alternative fishing apparatus for inshore fisheries. Meanwhile, in Queensland, the impending closure of inshore fin fish areas in 2024 and the sustainable fishing policy from 2017 to 2027 are of paramount importance. Indigenous communities emphasise net bans, economic development, and cross-jurisdictional legislation. Recreational fishers highlight the need for transparency in data sharing, stewardship, and managing the impact of offshore wind farms. Researchers and fishery management professionals are concerned about social media's influence on science, by-catch, and ensuring traceability and biosecurity. Youth voice concerns over shifting industry demographics, public engagement, and industry culture transformation. In the realm of aquaculture, circular economy practices, regulatory constraints, and innovation in aquafeeds and biosecurity are central themes. Lastly, other aquatic users underscore the importance of social equity, trust in science and government, co-management with renewable energy projects, and seafood supply security.

The thematic analysis of issues in common surrounding cross-species and cross-jurisdictional concerns highlights a range of complex challenges. These include the need for effective management and sustainable utilisation of offshore wind farms for renewable energy, the absence of spatial rights considerations in favour of quota and season-based regulations, the evolving dynamics of social license influenced by both social media and scientific discourse, ensuring access to and security of sustainable resources, the growing importance of automated data capture, ownership, and real-time sharing in fisheries management, the migration of species populations due to climate change, the necessity for flexible management of stocks across different jurisdictions, the shared responsibility for biosecurity risks management, and the importance of leadership pathways and succession planning within the fishing and aquaculture industry. These issues collectively pose significant challenges that require collaborative efforts and innovative solutions to address effectively.

4 WORKSHOP APPROACH

4.1 Stakeholder Workshop Process Overview

A collaborative co-design approach was adopted in the preparation for the stakeholder workshop. Multiple meetings were held with FRDC executives to plan the workshop's agenda (Refer to Appendix 7.1), activities, and materials, including presentation slides and workbooks that were provided to workshop participants. The workshop took place in Fremantle, Australia, from October 10th to 11th, with 44 invited stakeholders (51 including FRDC personnel) participating (Refer to Appendix 7.1).

4.1.1 Open Space Method

The facilitation process chosen was a version of the "Open Space" approach which is a technique for running meetings with the intent of participants gaining ownership of an issue(s) and coming up with solutions. The motivation for using this method was feedback from the 2022 stakeholder workshop *that participants did not want to work on issues selected for them* and because the facilitators were not able to establish final composition of the group until after the agenda was finalised.

The principles for a successful "open space" process are summarised as follows;

- whoever comes are the right people,
- activities must focus on an issue that is of passionate concern to participants,
- voluntary self-selection to work on the issues that a participant is passionate about, and
- accepting that whatever happens is the only thing that could have.

Another principle that underpinned this workshop design and process was a finding from a previous FRDC stakeholder workshop[4] which made the case for FRDC needing to change to a new way of thinking based on the following summary of key insights:

- The nature of the challenges in the sectors has changed,
- The sectors are not equipped to manage systems challenges, and
- Stakeholders need to become systems change leaders.

To this end, throughout the workshop, the workshop agenda was adaptively managed to meet the needs of the participants to ensure opportunity to gather insights emerging from collaborative efforts. We were particularly interested in capturing *how these stakeholders think* things causally influence each other.

Self-selected group work using a Theory of Change Impact Map template was selected as the method to facilitate these efforts. The diagram below provides a high-level summary of the process flow for the workshop also indicating means of collecting stakeholder feedback.

[4] Collaborative Approach to Shared Systemic Issues & Opportunities Workshop | Fisheries Research & Development Corporation December 2021

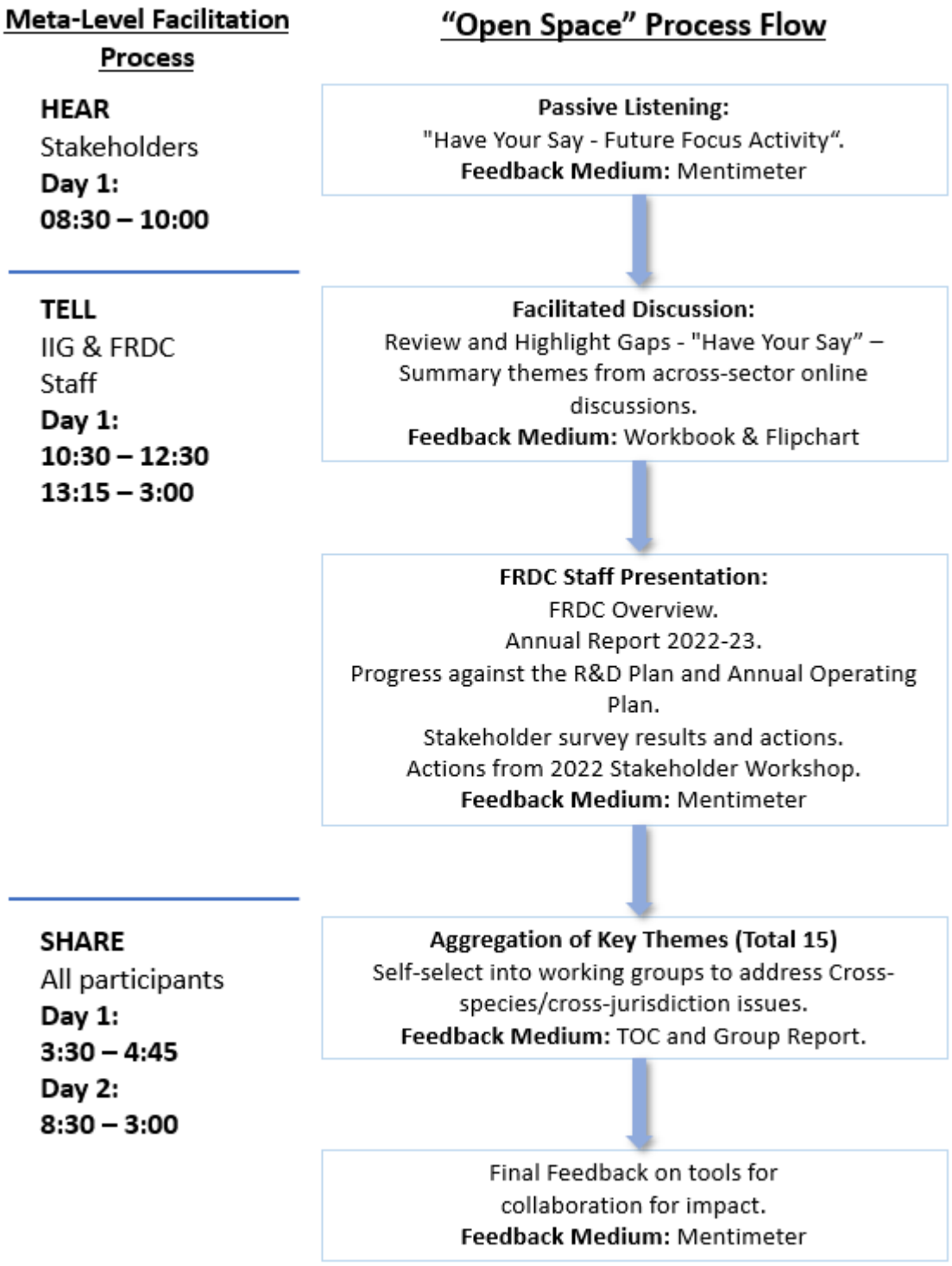

Figure 2: Stakeholder Workshop Process

4.1.2 Phase 1: HEAR - Passive Listening

The first day began with passive listening **(HEAR)** to the stakeholders gathered in the workshop. The primary means of collecting this feedback was using Mentimeter, an online surveying tool. Participants were asked to contribute their thoughts and perspectives in response to questions asked during the "Have Your Say - Future Focus Activity." These questions were the same as those posed to the groups in the Have Your Say" online discussions that preceded the stakeholder workshop. These discussions involved active participation from seven vital sectors within the fisheries and aquaculture

industry, encompassing commercial wild harvest, aquaculture, youth, indigenous communities, recreational fishing, researchers, fishery managers, and other aquatic users.

4.1.3 Phase 2: TELL – Facilitated Discussion

Facilitation discussion **(TELL)** commenced by referring participants to the workshop workbook which contained a high-level summary of the cross-species/cross-jurisdictional issues raised by each of these sector discussion groups. Stakeholders in the workshop were invited to provide feedback on the issues raised, reinforced key themes and suggested additional themes if they thought they were missing. This feedback was captured on flipchart paper for each sector. This session also featured a comprehensive overview of the industry's operating environment, including updates from FRDC staff such as; key achievements, priorities, progress against the R&D Plan, feedback from the 2022 Stakeholder Workshop, and Stakeholder Survey results. Questions were posted to the stakeholders using Mentimeter requesting their perceptions of evidence of the progress that FRDC had reported, any gaps in activities that should be highlighted, and any areas where effort could be reduced and/or more focus applied. An additional specific action was requested of FRDC to share a progress report on the implementation of the Extension Officers Network (EON), specifically; top 3 activities in each jurisdiction and best way for stakeholder to engage with EON.

4.1.4 Phase 3: SHARE – Self-selected Group Work

In preparation for the group work to come **(SHARE)**, participants were provided with an introduction to a description of an "Innovation Mindset and Tools for Impact" in their workbooks. The participants were also presented with 15 cross-species/cross-jurisdiction issues which were an aggregation of responses based on a count of the frequency of appearance of the theme in text source of the responses from the online discussion groups and the participant responses to "Have Your Say - Future Focus Activity" on the same day. After some clarifying questions and discussion, the participants self-selected themselves in to 8 work groups each focused on one of the 15 issues presented. This list of 15 issues is presented below with the **bold type** representing the issue around which one of the 8 groups formed:

Number (NOT IN PRIORITY ORDER)	Description the cross-species/cross-jurisdictional industry-wide critical issue (Challenge) based on an aggregation of frequency of response
1	**Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)**
2	**Markets and economics (cost of operations, viability of supply to domestic and international markets)**
3	Social licence (includes respect for science, microplastics), social media vs science)
4	**Equitable, sustainable resource access and security (incl Indigenous)**
5	Automation of data capture, digitisation, AI, ownership/sharing and real-time sharing

6	**Impact of climate change and water heating (includes healthy ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**
7	**Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**
8	Aquatic animal welfare-based (best) practices
9	Imports & Country of Origin Labelling (COOL)
10	Genetics/Genomics
11	Leveraging investment
12	**Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)**
13	Full utilisation of product (incl value add to by-catch)
14	**Diesel alternatives**
15	**Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**

The concept of Theory of Change was introduced as in the participant workbooks. The workbook book also contained a table summarising; priority areas, priority descriptions, outcome descriptions and targets for the National Fisheries Plan 2030. The first task for each group was to define their challenge and if it was solved to highlight which of the 2023 priorities and outcomes it would support, which could be more than one ("the bookends" for their TOC). Day One concluded with group work on this first task, reflection participant feedback on the process to that stage of the workshop and preparations for Day Two.

On Day Two, the workshop began with a reflective check-in, enabling participants to exchange thoughts and insights gained from the previous day's activities. Group work continued **(SHARE)** to progress through Steps #2 through to #4 of the TOC exercise with each group progressively working their way towards the "missing middle" of their TOC impact map with group report back and discussion after each critical step. Their work on each step was buttressed by an introduction to concepts and information contained within their workshop workbooks.

The morning session also featured discussions on fostering an innovation mindset and implementing impactful tools. In the afternoon, the final group report back on step #4 focused on sharing their deliberation on the necessary elements of their approach for driving significant change. What processes, structures and mindsets need to change, and how do they cause change? The workshop concluded with a comprehensive summary, reflection on key takeaways, discussions about future steps, with feedback collected using Mentimeter and closing remarks by FRDC staff.

The workshop's approach provided stakeholders with a platform for meaningful engagement, data-driven discussions, and an opportunity to actively shape FRDC's strategic direction for the future. By drawing on the outcomes of pre-workshop online consultation and leveraging innovative tools, we ensured a comprehensive and unbiased exploration of critical industry issues for FRDC to target and achieve greater impact.

5 WORKSHOP OUTPUTS

In the subsequent section, we present the valuable insights derived from the stakeholder workshop. These insights are summarised in accordance with the workshop agenda. For more detailed input information, the raw data can be found in the Appendix 7.3 onwards.

The analysis of the workshop data initiates with a thorough examination of the insights garnered through the same set of questions posed to stakeholders as those featured in the pre-stakeholder workshop "Have Your Say – online discussion series." These inquiries spanned topics of interest, existing and anticipated challenges (including regulation), opportunities, and emerging trends. The identified themes were then analysed against the five R&D outcomes and enabling strategies listed out in the current 2020-2025 R&D plan.

Figure 3: 2020-2025 R&D Plan - R&D Outcomes and Enabling Strategies.

Following this initial examination, the analysis delves deeper into the perspectives of the participants regarding the updates provided by FRDC. It aims to identify potential gaps, evaluate the strengths and areas for improvement within FRDC's initiatives, identify areas for FRDC to focus less on and discern any tangible evidence of progress resulting from FRDC activities.

Furthermore, the analysis includes an examination of the participants' perspectives regarding any gaps identified within the summary of findings obtained from the "Have Your Say – online discussions series." Subsequently, the analysis extends to the group work conducted on the Theory of Change impact map for identified issues. These maps encapsulate critical activities, methodologies, context, and underlying assumptions necessary to attain the desired outcomes and impact, as chosen by stakeholders during the workshop.

Lastly, participants were presented with a series of questions eliciting their perspectives on the workshop, the potential utility of specific activities for enhancing collaboration, their observations from the two-day workshop that would be useful to enhance the impact of R&D in the future, and any prevailing obstacles to collaboration and future impact.

A comprehensive summary of the outcomes stemming from these workshop activities is elaborated upon in the subsequent subsection.

5.1 Have Your Say – Future Focus Activity

The "Have Your Say - Future Focus Activity" was an extension of the previous "Have Your Say" online discussions and webinar series that preceded this workshop. Its aim was to build upon the themes emerging from the online discussions, which targeted a broader audience of stakeholders from the fisheries and aquaculture industry. The objective is to comprehensively inform the development of FRDC strategic documents.

Participants in this workshop were presented with the same seven questions using Mentimeter with text source of the responses being analysed using an AI tool to ensure no key themes are missed. Sections 4.1.1 to 4.1.7 offer a summary of this thematic analysis of responses collected from these stakeholders.

5.1.1 Topics of Interest

Responses regarding the question; ***"What is one topic you hope to discuss over these next two days?",*** are as follows. Please refer to Appendix 7.3.1 for the raw data.

These responses can be categorised into several key themes:

Theme	Description
Economic Considerations	Many stakeholders expressed an interest in economic aspects, including topics such as economics, markets, profitability, investment, and sustainable economic growth.
Environment and Sustainability	Environmental concerns were prevalent, with participants mentioning sustainability, climate change, habitat conservation, and decarbonisation as important areas for discussion.

Resource Access and Security	Issues related to resource access, security, and management featured prominently, with mentions of resource security, access to resources, and biosecurity.
Technological Advancements	Participants showed interest in technology-related topics like digitisation, artificial intelligence, and innovation, reflecting the industry's ongoing evolution.
Social and Governance	Social and governance aspects were also important, with mentions of social license, leadership, capacity building, and collaboration.
Spatial Planning	Spatial considerations, including spatial squeeze, spatial planning, and marine park sanctuaries, were raised, indicating the significance of spatial management in the industry.
Regulatory and Policy Issues	Stakeholders emphasised the importance of effective governance, government intervention, and science-based decision-making.
Industry Collaboration	Collaboration and industry future were frequently mentioned, highlighting the desire for a unified approach within the industry.
Biosecurity	Biosecurity was a recurring theme, including discussions about vaccines, disease control, and resource security.
Other Considerations	Some stakeholders mentioned more specific or niche topics like recreational parity, offshore wind, and demographic factors such as an ageing industry affecting the industry.

The diversity of topics reflects the complexity and interrelatedness of issues facing the sector. The workshop was structured to facilitate discussions and collaborative efforts across these thematic areas.

The provided table is a matrix that associates the key themes derived from participant responses with the five R&D outcomes and enabling strategies delineated in the 2020-2025 R&D plan.

Key Themes	R&D Outcomes #	Enabling Strategies #
Economic Considerations	1	
Environment and Sustainability	1	
Resource Access and Security	4	
Technological Advancements		I
Social and Governance	All	
Spatial Planning	4	
Regulatory and Policy Issues	All	
Sector Collaboration	3	
Biosecurity	1	
Other Considerations	1, 4	III, IV

The FRDC's R&D plan effectively addresses several key themes raised by participants, including economic considerations, environmental sustainability, resource access and

security, technological advancements, social and governance aspects, regulatory and policy issues, industry collaboration, and biosecurity. Recreational parity, offshore wind, and factors like an aging demographics within sectors can find relevance within the FRDC's R&D plan. Recreational parity aligns with Outcome 4, emphasising fair resource access, while offshore wind projects relate to sustainable economic growth in Outcome 1, fair and secure access in Outcome 4, and innovation in Enabling Strategy III. Addressing demographic challenges, particularly an aging workforce, fits under the capacity-building approach of Enabling Strategy IV. While not explicitly mentioned, these topics can be integrated into the plan's existing outcomes and enabling strategies to address pertinent challenges and opportunities in the fishing and aquaculture sectors.

5.1.2 Current Challenges

The responses regarding the question; "***What is the greatest challenge the fisheries and aquaculture sector currently faces?",*** reveal a wide array of concerns and issues. Please refer to Appendix 7.3.2 for the raw data.

These responses can be categorised into several key themes:

Theme	Description
Resource Access and Security	Stakeholders emphasised the challenges related to resource access and security, including concerns about loss of access to marine areas, spatial squeeze, and tightening access to resources.
Economic and Market Challenges	Economic sustainability and profitability are recurring concerns, with stakeholders highlighting issues such as the low price of fish, premiumisation on capped supply, and challenges in accessing markets.
Environment and Climate-Related Challenges	Environmental challenges, particularly climate change and its impacts, were frequently mentioned. Stakeholders expressed concerns about meeting decarbonisation targets, a lack of data to support climate-related decision-making, and the need for climate adaptation.
Social and Governance Challenges	Social and governance issues were also prominent, with mentions of the need for alignment across competing needs, adapting to rapidly changing societal norms, and addressing political agendas.
Collaboration and Industry Engagement	Stakeholders emphasised the importance of collaboration, both within the sector and with government agencies. Issues related to collaboration between various sector participants, community and industry engagement, and industry/government partnerships were raised.
Biosecurity	Biosecurity emerged as a significant concern, with stakeholders highlighting the importance of disease control, resource security, and vaccines.
Technological Advancements	The role of technology and innovation in addressing challenges was mentioned, including topics like digital

	transformation, data sharing for new insights, and the adoption of AgTech and AI.
Market Diversification and Value Addition	Stakeholders expressed interest in exploring new markets, value addition, and promoting the sustainability and environmental credentials of the wild harvest fishing industry.
Human Resources and Workforce Development	Challenges related to the labour market, workforce development, and succession planning were mentioned, along with concerns about maintaining expertise and job security.
Regulatory and Compliance Issues	Stakeholders raised concerns about compliance and regulation, highlighting the need for more flexible regulation and coordination.
Renewable Energy	The compulsory acquisition of renewable energy resources was cited as a challenge, along with the potential benefits of renewable energy.
Community and Perception	Stakeholders noted the importance of addressing community perception versus industry reality and the need to build awareness of the sustainability and environmental credentials of the industry.
Equity and Access	Equity in access to fishing rights and access to resources was raised as a challenge, along with the issue of latent workforce participation.
Health and Well-Being Benefits	Some responses highlighted the growing acknowledgement of the health and well-being benefits of recreational fishing.

These diverse and multifaceted challenges underscore the complexity of issues faced by the fisheries and aquaculture sector. Addressing these challenges will require a collaborative and holistic approach that encompasses economic, environmental, social, and technological dimensions.

The table presented below links the key thematic analysis of the prevailing challenges, as identified from participant responses, with the five R&D outcomes and enabling strategies outlined in the 2020-2025 R&D plan.

Key Themes	R&D Outcomes #	Enabling Strategies #
Resource Access and Security	4	
Economic and Market Challenges	1	
Environment and Climate-Related Challenges	1, 2, 5	
Social and Governance Challenges		V
Collaboration and Industry Engagement	3	IV
Biosecurity	1	II

Technological Advancements	1	I
Market Diversification and Value Addition	1	
Human Resources and Workforce Development	1	IV
Regulatory and Compliance Issues	All	
Renewable Energy	1, 4	
Community and Perception	5	
Equity and Access	4	
Health and Well-Being Benefits	5	

The analysis of participant feedback regarding emerging challenges in the fisheries and aquaculture sector, when compared to the FRDC's Research and Development (R&D) plan, reveals a robust alignment between the plan's outcomes and enabling strategies and the evolving industry needs. Key themes such as resource access and security, economic and market challenges, environmental concerns, and technological advancements are well-addressed within the plan's framework. Additionally, social and governance challenges, collaboration, and biosecurity also find relevance within the plan's enabling strategies. While the plan comprehensively addresses existing and anticipated challenges, it demonstrates its adaptability by accommodating issues related to renewable energy, community perception, equity, and health and well-being benefits, indicating the potential for flexibility and growth within the industry.

5.1.3 Current Opportunities

The following are responses to the question, ***"What is the greatest opportunity currently within the sector, from your perspective?"***, reveal a wide array of opportunities currently facing fisheries and aquaculture. Please refer to Appendix 7.3.3 for the raw data.

These responses can be categorised into several key themes:

Theme	Description
Market and Economic Growth	Market expansion is a prominent theme, encompassing opportunities related to entering new markets, adding value to products, and growing the industry. Respondents see potential in diversifying offerings, meeting consumer demands for local and healthy seafood, and capitalising on opportunities for growth, particularly through investments and setting industry standards. Value addition and premiumisation of products are seen as strategies to meet the demand for high-quality food.
Sustainability and Environmental Awareness	Sustainability and environmental awareness are recurring themes, reflecting the sector's commitment to addressing environmental challenges and reducing its ecological footprint. Respondents view these efforts as

	opportunities to promote the industry's sustainable practices and seek eco-friendly alternatives.
Collaboration and Partnerships	Collaboration and partnerships remain crucial opportunities within the sector. Respondents emphasise the need for joint efforts to address issues such as climate change, food security, and innovation. This theme highlights the importance of working together to achieve common goals and overcome challenges.
Innovation and Technology	Innovation and technology adoption continue to be seen as essential for sector development. Respondents recognise opportunities in digital innovation, advanced technologies, and overcoming regulatory hurdles to enhance productivity and competitiveness. Staying technologically relevant is emphasised.
Food Security	Food security and value addition are key themes. Respondents acknowledge the sector's potential to contribute to food security by providing nutritious and affordable protein sources.
Government Support and Policy	Government support, policies, and partnerships play a vital role in shaping the sector's future. Respondents see opportunities in government investments, supportive policies, and collaborations with research organisations. This theme underscores the importance of government involvement in sector growth and development.
Education and Awareness	Education and awareness-building are identified as opportunities to enhance the sector. Respondents believe that educating the public about the benefits of recreational fishing, providing training and education, and inspiring the next generation can promote sustainability and growth.

Overall, the sector is poised for growth and improvement by capitalising on these key opportunities, ranging from market expansion and sustainability to collaboration, innovation, and government support. These themes reflect the sector's adaptability and commitment to addressing critical challenges while seizing opportunities for a prosperous future.

The tables below illustrate the connections between the identified themes and the R&D outcomes and enabling strategies outlined by the FRDC.

Key Themes	R&D Outcomes #	Enabling Strategies #
Market and Economic Growth	1	
Sustainability and Environmental Awareness	1, 2	
Collaboration and Partnerships	3	II
Innovation and Technology		III

Food Security	1	
Government Support and Policy	1, 4	
Education and Awareness	5	IV

The analysis of key themes derived from participant feedback reveals a strong alignment between the priorities identified by stakeholders and the objectives outlined in the FRDC's Research and Development (R&D) plan. Market and economic growth, sustainability, collaboration, innovation and technology, food security, government support, and education all find resonance within the plan's five R&D outcomes and enabling strategies. These themes underscore the plan's adaptability and responsiveness to the sector's opportunities and challenges. They reinforce the R&D plan's focus on economic growth, sustainability, community trust, and the adoption of innovative practices and technologies. The strong convergence between stakeholder priorities and the R&D plan ensures that it remains well-positioned to address emerging trends and meet the evolving needs of the fisheries and aquaculture sector.

5.1.4 Regulatory and Policy Challenges

The responses regarding the question; ***"What are the regulatory or policy challenges that R&D efforts may need to address?"***, are described below. Please refer to Appendix 7.3.4 to view the raw data.

These responses can be categorised into several key themes:

Theme	Description
Resource Access and Spatial Issues	Stakeholders expressed concerns about competition from increasing resource users, spatial squeeze, and the lack of property rights due to policy-related chaos.
Fisheries Legislation and Innovation	Challenges related to fisheries legislation and its impact on commercial innovation were mentioned. This includes restrictions on alternative gears, vessel sizes, engine sizes, and specified gears.
Marine Park Sanctuaries	Stakeholders highlighted challenges related to marine park sanctuaries and the need for policies that balance conservation with sector interests.
Science vs. Policy	Issues surrounding the dichotomy between science-based and policy-based decisions were raised, indicating the need for better alignment between these two areas.
Flexibility in Harvest Strategies	Stakeholders called for greater flexibility in harvest strategies and expressed concerns about the current regulatory landscape, including the presence of too many fisheries management agencies.
Climate Change and Adaptation	Climate change adaptation and the importance of an ecosystem approach were identified as critical challenges. There is a need for policies that facilitate adaptation and address offshore wind energy impacts and opportunities.

Collaboration and Integration	The importance of co-creation and collaboration in policy development and the need for integration and coordination across agencies and regulatory frameworks were emphasised.
Regulation and Governance	Challenges related to regulation, governance, and the agility of regulation in responding to change were mentioned. Stakeholders called for more flexibility, consistency, and collaboration in policy and regulation.
Sector Influence and Recognition	Stakeholders expressed the need for greater influence in regulation and policies that recognise and support the recreational sector. Practical policies that align with industry growth plans and the management for abundance were highlighted.
Change Management	Challenges related to the speed of change and the process of bringing about change within the regulatory framework were noted. Stakeholders called for better change management practices.
Biosecurity	The importance of biosecurity and the need for policies and regulations to address biosecurity concerns were highlighted.
Data and Technology	Stakeholders identified the importance of data security, the use of technology, and data-rich policies. They also called for better utilisation of research to inform decisions.
Economic Viability and Green Energy	Concerns about the economic viability of regulation, the industrialisation of the industry, and the impact of green energy on the sector were mentioned.
Consistency and Collaboration	Stakeholders emphasised the need for consistency across jurisdictions, collaboration across sectors, and policies that support cross-sector management.
Government Action and Inaction	Stakeholders expressed concerns about government inaction and the need for policies that respond to disease outbreaks and environmental compliance.

These diverse challenges highlight the complexity of the regulatory and policy landscape within the fisheries and aquaculture industry.

The table provided below correlates the key thematic analysis of present regulatory and policy challenges, drawn from participant responses, with the five R&D outcomes and enabling strategies specified in the 2020-2025 R&D plan.

Key Themes	R&D Outcomes #	Enabling Strategies #
Resource Access and Spatial Issues	4	
Fisheries Legislation and Innovation		III
Marine Park Sanctuaries	4	

Science vs. Policy	All	
Flexibility in Harvest Strategies	1, 4	
Climate Change and Adaptation	1, 2	
Collaboration and Integration	3	IV
Regulation and Governance	4	
Sector Influence and Recognition	1	
Change Management		IV
Biosecurity	1	
Data and Technology	All	I
Economic Viability and Green Energy	1	III
Consistency and Collaboration	3	IV
Government Action and Inaction	All	

The analysis of regulatory and policy challenges emerging from participant feedback reveals several key themes that can be effectively integrated into the framework of the FRDC's R&D plan. Challenges related to resource access and spatial concerns align with Outcome 4, emphasising fair and secure access to aquatic resources and integrated resource management. Issues surrounding fisheries legislation and its impact on innovation can be addressed through Enabling Strategy III, promoting innovation and entrepreneurship. Balancing conservation and industry interests in marine park sanctuaries may find resonance in Outcome 4 and Enabling Strategy III. Aligning science and policy and fostering flexibility in harvest strategies are pivotal aspects that can be incorporated into various outcomes, such as Outcome 1 for sustainable growth and Outcome 2 for climate adaptation. Collaboration, governance, and industry recognition can be supported through Enabling Strategy IV, building capability and capacity. Change management, biosecurity, and data and technology concerns can be addressed under various outcomes and enabling strategies, highlighting the adaptability of the R&D plan. Overall, the FRDC's R&D plan exhibits flexibility to accommodate emerging regulatory and policy challenges, ensuring its relevance in addressing the evolving needs of the fisheries and aquaculture sector.

5.1.5 Future Challenges

The responses regarding the question; ***"What are the greatest challenges that the fisheries and aquaculture sector may face in the next five years?"***, are shown below. Please refer to Appendix 7.3.5 for the raw data.

These responses can be categorised into several key themes:

Themes	Description
Resource Access and Spatial Issues	Stakeholders highlighted spatial squeeze and competition for resource access as significant challenges. There are concerns about the diminishing commercial wild-caught sector due to increasing costs and regulatory inefficiency, as well as the cumulative food security impacts of the loss of spatial access.

Economic and Market Challenges	Economic challenges were a recurring theme, including issues related to industry economics, high operating costs, and the inability to compete globally. Stakeholders also expressed concerns about the impact of cheap seafood imports produced in environmentally depleted environments and the need to market products to niche high-end restaurants.
Regulatory and Policy Challenges	Regulatory and policy challenges were mentioned, with stakeholders expressing uncertainty about regulations and resource access. Challenges related to regulatory incompetence, compliance costs, and the interference of government policies in market restrictions were also highlighted.
Climate Change and Adaptation	Climate change and its impact on the sector, including heat waves and a southward shift of fish, were identified as significant challenges. There is a need for policy adaptation to climate variables and addressing climate change adaptation.
Environmental and Sustainability Concerns	Stakeholders expressed concerns about extinction, global warming, and the need for equitable resource sharing. Challenges related to marine parks, animal welfare, and dealing with increasing shark depredation were also noted.
Management and Governance Issues	Challenges related to management regulations, flexibility within regulations, and inflexible management regulation were mentioned. Stakeholders also highlighted the importance of co-management and resilience in fisheries.
Energy and Clean Energy	Energy-related challenges, including rising energy costs and the need for net-zero solutions, were mentioned. There is a call for transparency in clean energy regulator decision-making.
Market and Supply Chain Challenges	Challenges related to market requirements, supply and demand dynamics, and trade shocks from geopolitical tensions were identified. The importance of trade market access and profitability concerns, including rising energy and staff costs, were also raised.
Labour and Workforce Challenges	Challenges related to the labour market, workforce willingness, staff training, and capacity building for workers were noted.
Social License and Public Perception	Concerns about social license, public perception, and advocacy efforts were expressed. Stakeholders highlighted the importance of impactful advocacy and research and development.
Demographic and Population Shifts	Demographic challenges, including an ageing population and low tax base, were mentioned. There were also concerns about global pollution incidents and environmental, social, and governance (ESG) issues.

Government and Policy Inaction	Stakeholders expressed frustration with government inaction and the need for policies to address ongoing issues.

The table presented below links the key thematic analysis of the most significant challenges expected to arise in the fisheries and aquaculture sector over the next five years, as determined from participant responses, with the five R&D outcomes and enabling strategies outlined in the 2020-2025 R&D plan.

Key Themes	R&D Outcomes #	Enabling Strategies #
Resource Access and Spatial Issues	4	
Economic and Market Challenges	1	
Regulatory and Policy Challenges	All	IV
Climate Change and Adaptation	1, 2	
Environmental and Sustainability Concerns	1, 5	
Management and Governance Issues	All	IV
Energy and Clean Energy	1, 5	III
Market and Supply Chain Challenges	1	
Labour and Workforce Challenges		IV
Social License and Public Perception	5	
Demographic and Population Shifts	5	IV
Government and Policy Inaction	2	IV

The emerging challenges for the fisheries and aquaculture sector in the next five years encompass a wide range of issues, from economic sustainability and regulatory uncertainty to climate change adaptation and social license concerns. These challenges align well with the outcomes and enabling strategies outlined in the FRDC's R&D plan. Key areas of alignment include resource access and security, economic and market challenges, climate change adaptation, and environmental sustainability, all of which can be addressed within the framework of the R&D plan's outcomes and strategies. Additionally, workforce development and government policy inaction can be targeted through capacity-building initiatives and science-based decision-making. Overall, the FRDC's R&D plan demonstrates flexibility and relevance in addressing the evolving challenges faced by the fisheries and aquaculture sector.

5.1.6 Future Opportunities

The responses regarding the question; "**What are the greatest opportunities that the fisheries and aquaculture sector may face in the next five years?**", are outlined in this section. Please refer to Appendix 7.3.6 to view the raw data.

These responses can be categorised into several key themes:

Themes	Description
Digital Technologies and Innovation	Stakeholders identified digital technologies, innovation, and real-time data as significant opportunities. This includes using technology to reduce production costs, automation of processing on board, and remote sensing techniques like eDNA for environmental monitoring.
Marketing and Value Addition	Opportunities related to developing niche products, direct marketing with high-end restaurants, and premiumisation of seafood products were highlighted. Stakeholders also mentioned the potential for value addition in the sector.
Cross-Sector Collaboration	Collaboration across sectors and stakeholders was seen as an opportunity. This includes improving ecosystem productivity, habitat enhancement, and working together for the benefit of all participants.
New Markets and Market Reform	Expanding into new markets, implementing cost of compliance reforms, and establishing a marine planning framework to prevent spatial squeeze were identified as opportunities.
Technology Advancements	The advancement of technology, including AI, robotics, and data analysis, was noted as a potential opportunity to reduce management costs and improve efficiency.
Sustainability and Environmental Initiatives	Riding the sustainability wave for consumer preference, growth in seafood consumption per capita, and adopting environmentally friendly practices such as waste reduction and energy transition were seen as opportunities.
Indigenous Partnerships	Collaboration and partnerships with First Nations people in northern Australia for Indigenous seafood enterprise development were highlighted.
Blue Economy and Regional Growth	Opportunities related to the blue economy, regional workforce growth, and rebranding the sector were mentioned.
Genomic and Genetic Advances	Stakeholders identified genetics/genomics and advancements in technologies like CRISPR-Cas9 gene editing as potential opportunities.
Youth Engagement	Engaging youth in the sector and fostering their participation were seen as opportunities for the future.

ESG and Export Markets	Exporting products based on Environmental, Social, and Governance (ESG) values and accessing emerging markets were considered as potential opportunities.
Alternative Product Uses	Identifying alternate uses for products in emerging markets was noted.
Cultural and Social License Initiatives	Opportunities for storytelling and improving social license, as well as engaging communities and enhancing community expectations, were highlighted.

These diverse opportunities indicate that the fisheries and aquaculture sector has the potential for growth, innovation, and sustainability in the coming years. Leveraging digital technologies, collaborating across sectors, and focusing on sustainability and market reform are key themes that can drive positive change in the sector.

The table below connects the insightful thematic analysis of the most promising opportunities anticipated in the fisheries and aquaculture sector over the next five years, derived from participant responses, with the five R&D outcomes and enabling strategies outlined in the 2020-2025 R&D plan.

Key Themes	R&D Outcomes #	Enabling Strategies #
Digital Technologies and Innovation	All	I, III
Marketing and Value Addition	1	
Cross-Sector Collaboration	3	IV
New Markets and Market Reform	1	
Technology Advancements	All	I
Sustainability and Environmental Initiatives	1, 2	V
Indigenous Partnerships	1, 4, 5	IV
Blue Economy and Regional Growth	1, 3, 5	
Genomic and Genetic Advances	1, 2	
Youth Engagement	1, 3, 5	IV
ESG and Export Markets	1, 5	V
Alternative Product Uses	1	
Cultural and Social License Initiatives	5	

The analysis of the greatest opportunities for the fisheries and aquaculture sector in the next five years reveals a multitude of promising avenues for growth and sustainability. These opportunities are well-aligned with the objectives and enabling strategies outlined in the FRDC's R&D plan. Key themes such as digital technologies and innovation align with the plan's focus on driving digitisation and advanced analytics. Market-related opportunities resonate with outcomes emphasising economic growth and community value. Cross-sector collaboration aligns with building capability and capacity. Sustainability initiatives correspond to economic sustainability and environmental

stewardship objectives. Indigenous partnerships find synergy with building community trust and value, as well as fostering collaboration. The blue economy and regional growth opportunities are consistent with goals related to economic growth and community value. Genomic and genetic advancements align with economic growth and R&D in genetics/genomics. Youth engagement is harmonious with building future workforce capacity. ESG and export market opportunities relate to economic growth and community trust, while alternative product uses can diversify economic growth. Cultural and social license initiatives strongly align with building community trust, respect, and value. This analysis underscores the adaptability and relevance of the FRDC's R&D plan in addressing emerging opportunities and challenges in the fisheries and aquaculture sector.

5.1.7 Emerging Innovations and Trends

Responses to the question regarding ***"What are the emerging innovations and trends that could be applied in the fishing and aquaculture sector?"***, are shown below. Please refer to Appendix 7.3.7 to view the raw data.

These responses can be categorised into several key themes:

Theme	Description
Data and Technology Advancements	• Real-time data collection and exchange between industry and government. • Efficiencies in data capture through digitisation. • Use of AI and technology improvements in fishing gear. • Remote monitoring systems. • Blockchain technology for traceability. • Utilisation of drones and electrification of vessels for data collection. • Machine learning and machine vision applications. • Rapid screening tools and consumer engagement tools. • AI for compliance monitoring, modelling, and forecasting. • Point-of-care testing. • Genetic and genomic advancements.
Environmental Sustainability	• Seaweed farming to reduce methane emissions. • Carbon and nitrogen trading. • Electric engines and hybrid fuel systems in boats. • Low/zero carbon fuels. • Sustainable, ethical, and responsible practices. • Blue carbon initiatives. • Integration and diversification in hatcheries. • Ocean forecasting for environmental monitoring. • Greater carbon capture. • Use of technology to reduce loss of fishing gear. • Waste management into new products.

Alternative and Renewable Energy	• On-site harvest of energy from wave and tide. • Electrification of vessels. • Hybrid fuel systems. • Energy-efficient technologies.
Supply Chain and Traceability	• Traceability of products throughout the supply chain. • Smart GPS buoys to reduce loss of fishing gear and record data. • Integration of technology in post-harvest onboard processes. • Real-time monitoring in harvest areas and along the supply chain. • Rapid screening tools for quality control.
Innovations in Fishing Practices	• Development of new fishing gear such as ropeless and GPS tracking systems. • Adoption of selective harvest using AI. • Dynamic fisheries management. • Stewardship and responsible fishing practices. • Multiple gear types being used in the same trips. • Adoption of traditional practices with low environmental impact.
Market and Product Innovation	• Marketing strategies targeting niche markets and high-end restaurants. • Value addition to seafood products. • Packaging innovations to reduce plastic use. • Plastic alternatives. • Meeting the expectations of younger consumers for ethical and sustainable food choices. • Creating value-added products. • Meeting changing consumer demands.
Collaboration and Engagement	• Collaboration between sectors, research, and government. • Engaging with consumers and communities. • Better collaboration and partnerships among stakeholders. • International partnerships to combat illegal, unregulated, and unreported fishing. • Collaboration with Indigenous communities. • Engagement with the new generation of consumers and their expectations.

These responses highlight the diverse range of innovations and trends that stakeholders see as relevant for the fishing and aquaculture sector. Leveraging technology, ensuring environmental sustainability, enhancing collaboration, and adapting to changing consumer preferences are key areas for consideration in the sector's future development.

The table provided below establishes a connection between the insightful thematic analysis of the most promising opportunities expected in the fisheries and aquaculture sector over the next five years, as derived from participant responses, and the five R&D outcomes and enabling strategies detailed in the 2020-2025 R&D plan.

Key Themes	R&D Outcomes #	Enabling Strategies #
Data and Technology Advancements	All	I
Environmental Sustainability	1,2	V
Alternative and Renewable Energy	1,2	III
Supply Chain and Traceability	1, 5	III
Innovations in Fishing Practices	1, 2	III
Market and Product Innovation	1, 2, 5	III
Collaboration and Engagement	5	IV

The emerging innovations and trends in the fishing and aquaculture sector align closely with the key outcomes and enabling strategies outlined in the FRDC's R&D plan. These trends encompass a wide range of areas, including data and technology advancements, environmental sustainability, alternative and renewable energy, supply chain and traceability improvements, innovations in fishing practices, market and product innovation, and enhanced collaboration and engagement. These trends strongly correspond to the R&D plan's objectives, including economic growth, environmental stewardship, community value, and cross-sector collaboration. The plan is well-positioned to address these emerging innovations and leverage them effectively, demonstrating a strong synergy between industry needs and the plan's framework for achieving sustainable and economically viable outcomes in the fishing and aquaculture sector.

5.1.8 Improving sectors

The responses regarding the question ***"What could change fisheries and aquaculture for the better?"***, are outlined in this section. Please refer to Appendix 7.3.8 to view the raw data.

These responses can be categorised into several key themes:

Theme	Description
Improved Management and Governance	• Improved co-management or increased industry self-management. • Single management agency. • Collaboration and one voice.

	• Removing politics from management. • Politicians seeking votes influencing decision-making. • Science-based decision-making. • Timely decisions are based on sound science. • Mandated standard fish names. • Take politics out of decision-making. • Equity for First Nations.
Environmental Conservation	• Eliminate illegal, unregulated, and unreported fishing. • Protecting spatial rights for commercial fishing. • Improving and restoring habitats. • Stabilising/restoring the ocean environment. • Making environmental compliance/regulations easier to navigate. • Easily accessible plastic recycling. • Catering for fisheries in renewable energy planning processes. • Finding viable alternatives to foam boxes. • Leaving the UN.
Industry Recognition and Support	• In-demand brands. • Excellent consumer understanding of the industry. • Recognition of shared concern with changing climate. • Being an employer of choice. • Influencing government policy to support fisheries. • All stocks are abundant. • Succession planning. • Owner-operators. • Pipeline of new people.
Community Engagement and Values	• Positive community engagement. • The community values the fishing industry. • Remove the time and effort involved in battling those opposed to fishing. • Common sense. • Certainty. • Number one sought-after career. • Demographics. • Being an afterthought in planning policy.

These responses emphasise the importance of effective management, environmental conservation, industry recognition, community engagement, and a focus on science-based decision-making to bring positive change to fisheries and aquaculture. Collaboration, transparency, and addressing political influences are also prominent themes in the desire for better outcomes in the sector.

The table presented below links the key thematic analysis of potential improvements in the fisheries and aquaculture industry, as identified from participant responses, with the five R&D outcomes and enabling strategies outlined in the 2020-2025 R&D plan.

Key Themes	R&D Outcomes #	Enabling Strategies #
Improved Management and Governance	All	IV
Environmental Conservation	1, 2, 5	
Sector Recognition and Support	1, 5	
Community Engagement and Values	5	

The analysis of what could change fisheries and aquaculture for the better reveals key themes that align closely with the objectives outlined in the FRDC's R&D plan. These themes encompass improved management and governance, environmental conservation, industry recognition and support, and community engagement and values. The call for enhanced management, science-based decision-making, and collaboration mirrors the R&D plan's emphasis on building capability and capacity (Enabling Strategy IV). Efforts to eliminate illegal fishing, protect spatial rights, and restore habitats correspond with Outcomes 1&2, which focuses on environmental stewardship and sustainability. Sector recognition and support directly align with Outcome 1, emphasising economic sustainability and profitability, as well as Outcome 5, targeting community trust and value. The importance of positive community engagement and shared values resonates strongly with Outcome 5, highlighting the plan's commitment to fostering community understanding and engagement. These congruent themes underscore the R&D plan's potential to drive positive change in the fisheries and aquaculture sector, addressing critical issues and fostering sustainable growth.

5.2 Reflection on Updates

In this section, we will explore the reflections of the participants concerning the updates presented by FRDC during the workshop. These updates encompass various aspects, including key achievements and priorities, progress in relation to the current 2020-2025 R&D Plan, feedback received and actions taken as a result of the 2022 Stakeholder Workshop, and the outcomes of the 2022 Stakeholder Survey.

To gain deeper insights, the subsequent subsection will provide a comprehensive analysis of the raw data collected through Mentimeter with the text source of the responses being analysed using an AI tool to ensure no key themes are missed. Raw data for this whole section is shown in Appendix 7.4.

5.2.1 Feelings Towards FRDC Updates

The responses to the initial question about how participants feel after hearing the updates provided by FRDC can be categorised thematically as follows (Refer to Appendix 7.4.1 to view raw data):

Themes	Associated Feelings
Positive Feelings	Informed, Hopeful, Ambitious, Reassured, Interested, Progress, Impressed, Positive, Encouraged, Trusting, Confident, Transparent, Safe
Mixed or Conflicted Feelings	Frustrated, Disconnected, Confused, Out of touch, Overwhelmed, Concerned, Conflicted
Neutral or Informational Feelings	Heard, Thinking, Updated, Considered, Enlightened, Listened to, Devil in detail, Intrigued, Okay, Detailed
Negative Feelings	Excluded, Tired, Not achievable, Possible barriers
Feelings Associated with Opportunity	Opportunities, Opportunities positive, Opportunities hopeful, Hoping, Better, Optimistic-ish, Positive, Encouraged, Detailed

These responses showcase a range of emotional reactions, from positive and hopeful to mixed or conflicted feelings, reflecting the diverse perspectives and expectations of the participants regarding the updates provided by FRDC. Some participants expressed optimism, feeling informed and encouraged, while others indicated frustration, confusion, or concerns. It's essential for FRDC to consider this varied feedback to tailor the R&D plan and AOP strategies effectively.

5.2.2 Gaps in FRDC Updates

The responses to the question about gaps in the material/updates presented during the workshop can be categorised into distinct themes as follows (Refer to Appendix 7.4.2 to view raw data):

Themes	Description
Desire for More Information	• Collaboration with other funders. • Demographic breakdown of investment. • Specific roles of extension officers. • EON (Extension Officer Network) activities and updates. • Infographics. • Assessment and approval processes. • Project assessment and approval process. • Future strategic plan. • How is zgTFzc (sic) tracking against the 20-25 strategic plan? • Responsible sector for implementation. • RAC approval process and budgets. • % allocation by sector of total investment. • Summaries of the IPAs. • What's not included and future opportunities.

Understanding the Impact and Benefits	• Participants sought information on how the presented updates and activities translate into benefits for end-users and fishers' financial sustainability. • Questions about how the updates help meet Sustainable Development Goals (SDG) commitments. • Wanting to understand the actual impacts for end-users. • Ambiguity around the major risks facing the CRC (Cooperative Research Centres).
Process and Improvement Suggestions	• Improvements to internal processes. • Explaining acronyms at the beginning. • Failures and lessons learned. • Lack of enabling strategy for theme 3. • Improving timeframes to get things done. • Anything that wasn't able to be done and things that might not have been deliverable.
Specific Information Requests	• Requests for specific information, such as the percentage allocation by sector, to understand priority setting. • Information about developments in Coordination Programs, partnerships with CRCs and other science/industry initiatives. • Information on broad-scoped projects like Safe Fish and Fish Names. • The role of the board in the assessment process. • RAC approval process and budgets. • Responsible sector for implementation. • % allocation by sector of total investment.

These responses highlight the participants' interest in obtaining more detailed and specific information about various aspects of the presented updates and activities. They also suggest a desire for greater clarity and transparency in the processes and strategies related to the CRC's work.

5.2.3 Positive Feedback on FRDC's Initiatives and Areas for Improvement

The responses to the question regarding what FRDC is doing well and what participants want to see more of can be categorised into distinct themes as follows (Refer to Appendix 7.4.3 to view raw data):

Themes	Description
Efficiency and Streamlining	• Participants praised FRDC for streamlining processes, including the industry dashboard and milestone reporting. • Acknowledgment of FRDC's efforts to improve programmatic R&D administration and delivery.
Effective Extension Services	• Positive feedback on FRDC's extension services, with mentions of the extension officer network and the EON.

	• Recognition of FRDC's ability to decipher big-picture policy movements and respond to changing needs.
Engagement and Collaboration	• Participants appreciated FRDC's support for sectors, better engagement with all sectors, and its ability to listen to industry and support key issues. • Acknowledgment of FRDC's efforts to leverage commercial investment into projects. • Praise for FRDC's collaboration and focus on meaningful and useful outcomes. • Recognition of the enthusiasm and commitment of FRDC staff to the industry. • Mention of FRDC's responsiveness to feedback and efforts to reduce time to contract.
Indigenous Engagement	• Positive feedback on FRDC's Indigenous activities and engagement with Indigenous communities.
Communication and Transparency	• Recognition of FRDC's communication efforts, including promoting research and activities. • Praise for FRDC's transparency, reacting to feedback and removing barriers to rapid project approval. • Acknowledgment of FRDC's culture, making them an easy and good organisation to work with.
Strategic Investment and Planning	• Mention of FRDC's strategic investment for long-term benefits and initiatives related to workforce planning. • Specific mention of Capability, Capacity and Culture Change program in the context of workforce planning.
Expansion and Resources	• Participants expressed a desire for more extension network officers and additional resources (RIP). • Mention of the number of extension officers based on geographical area of coverage. • Suggestion for more financial resources, particularly with less restriction.
Specific Acknowledgment	• Acknowledgment of IPA managers' contributions. • Positive feedback about extension officers (EOs) and enthusiasm for their work.

These responses highlight the aspects of FRDC's work that participants find commendable and wish to see more of. Effective extension services, collaboration, transparency, and engagement with stakeholders, including Indigenous communities, are among the areas where FRDC is recognised for its strengths. Participants also value FRDC's efforts to streamline processes and its strategic approach to investment and planning.

5.2.4 Recommendations for Areas of Reduction and Focus

The responses to the question regarding what FRDC should do less of can be categorised into distinct themes as follows (Refer to Appendix 7.4.4 to view raw data):

Themes	Description

Reduced External Reviews	• Participants mentioned doing fewer external reviews of IPA-supported project proposals, suggesting that this process may be too extensive or time-consuming.
Communication Moderation	• There was a suggestion for FRDC to practice more concise communication, indicating that sometimes less communication can achieve better outcomes.
Focus and Prioritisation	• Participants advised FRDC to avoid trying to cover too many areas and to be more selective in its priorities and investments. • The idea of not trying to be everything to everyone was suggested, with a call to choose priorities and invest in them properly. • There was a suggestion to reduce efforts to influence political agendas or industry direction and instead focus on research. • The concept of wide coverage of many issues being reduced was mentioned.
Project Selection	• Participants recommended doing less of "picking winners" or funding specific projects that may not align with broader industry needs or long-term goals. • There was a mention of doing less funding "blue sky" projects, which are typically high-risk, high-reward endeavours. • The idea of reducing funding for low-risk projects was suggested. • Participants expressed a need for FRDC to diversify its funding mechanism to support and maintain long-term databases rather than focusing solely on funding sexy, novel new science projects.

These responses highlight areas where participants believe FRDC could potentially scale back or refocus its efforts, such as in the review process, communication strategies, project selection, and the breadth of coverage across different areas and project types. The emphasis on prioritisation, focus, and long-term planning is a recurring theme among the suggestions.

5.2.5 Perceived Evidence of Progress in FRDC Initiatives

The responses regarding evidence of progress being made can be categorised into distinct themes as follows (Refer to Appendix 7.4.5 to view raw data):

Themes	Description
Climate-Related Initiatives	• There was an acknowledgement of progress in addressing climate-related research priorities through a special climate call earlier in the year, demonstrating responsiveness to cross-sectorial climate research priorities.
Management and Flexibility	• Progress was noted in IPA management and relationships, particularly in terms of flexibility and

	adaptation in programmatic R&D. Examples included using Committee update presentations by Principal Investigators (PIs) as milestone reports.
Extension and Engagement	• Several participants cited progress in connecting the dots in extension services, indicating improvements in awareness and engagement with social license issues. There was also recognition of investment in human capital in the industry through extension services. • Positive feedback was given about the use of steering groups for projects, leading to increased involvement of stakeholders throughout a project. • Progress was noted in technology-focused initiatives, extension services, and digitisation work. • The use of webinars to share learnings and insights was seen as a positive development. • The greater use of standard names and their accessibility via EON was mentioned as evidence of progress.
Collaboration and Funds	• Collaboration with other agricultural sectors and the implementation of collaborative funding mechanisms were acknowledged as signs of progress. • Access to GVP (Global Verification Program) data earlier was seen as a positive development. • The growth of GVP in seafood production and high international sustainability rankings for fisheries were mentioned as indicators of progress. • The high esteem of FRDC within the industry was noted. • Progress was also noted in the employment of individuals such as Ariyana.
Specific Initiatives and Projects	• Some participants cited specific projects and initiatives, such as the Tasmanian Marine Atlas, as examples of progress. • The reintroduction of Rapid Impact Projects (RIPs) was seen as a positive step, although the timeframe to access funding for RIPs was mentioned as a consideration. • The improved functioning of the Research Advisory Committees (RACs) was highlighted.

These responses suggest that participants have observed various aspects of progress in FRDC's activities, including climate-related initiatives, management and flexibility, extension and engagement efforts, collaboration and funding mechanisms, specific projects, and the use of technology and data. The feedback generally reflects positive perceptions of FRDC's efforts and their impact on the industry.

5.3 Gaps in the Findings of the "Have Your Say" Online Discussions

During this session, participants were briefed on the findings (as outlined in section 3.2 of this report) derived from seven of the “Have Your Say” online consultations and survey.

Building upon these findings, participants in this stakeholder workshop contributed their insights into what might be missing from each of the "Have Your Say" online discussion findings. These valuable insights are detailed in the following table (Refer to Appendix 7.5 to view raw data).

Key Area	Gaps in Findings
Commercial Wild Catch	• Economic considerations related to the fishing industry. • Understanding of markets in diverse locations. • Biosecurity concerns for the industry. • Issues related to human welfare within the industry. • The impact of climate change on fisheries. • Special species quotas (SQU) and their management. • Safety concerns at sea, particularly regarding the IWCEW. • Challenges related to fuels, both in terms of cost and environmental impact. • Market requirements and demands. • The regulatory burden on the industry and associated costs. • Workforce development and sourcing. • Animal welfare concerns, particularly for fish. • The issue of microplastics in the marine environment. • Habitat degradation and its effects on fisheries.
Indigenous	• Discussion around the positive and negative impacts of "net bans." • Concerns about capacity and capability within indigenous communities. • The role of policy and advocacy in indigenous participation. • The influence of political and social pressures and expectations for positive change. • Questions related to primacy rights in resource allocation and grant distribution. • The lack of effective management and engagement with indigenous communities. • The balance between commercial recognition and customary rights. • Strategies for activating indigenous estate resources.
Recreational Fishers	• Questions regarding the payment of biosecurity levies. • Concerns about the recognition of the recreational sector compared to others. • The need for a framework that can apply to multiple sectors. • The role of technology in recreational fishing. • Issues related to access and allocation of resources. • The impact of climate change on recreational fishing. • Leadership and capacity-building within the sector. • Changing social values and norms.

	• Considerations for animal ethics and welfare. • Biosecurity concerns related to imported bait. • Challenges related to diversity and addressing gender stereotypes. • Strategies for habitat and stock enhancement, particularly in inland areas. • The cost of stock assessment and recovery efforts. • The contribution of recreational fishing to health and well-being. • Considerations for native title access. • The issue of marine debris, including pods, plastic, and lead. • An emphasis on the economic value of recreational fishing to Australia. • The importance of markets and managing for abundance in fish stocks.
Research & Fishery Management	• Discussions about post-harvest activities. • The role of oceanography and data linkages in fisheries management. • Considerations for food safety in the seafood industry. • Challenges posed by competing government priorities. • The need to separate research from fishery management for clarity. • Strategies for linking research and development with end-users. • Questions about the credit and credentialing of research scientists. • Addressing the perception of research as "second class." • Approaches to research approval and operational flexibility. • Building extension and capacity into every project. • The importance of leveraging resources and forming partnerships. • Concerns about resource constraints. • Incorporating indigenous knowledge and value into research and management. • Developing pathways to impact and co-designing solutions. • Adopting a supply-chain perspective for science, from government to application. • Balancing stock assessment with special species quotas. • Addressing issues related to intellectual property ownership and management. • The importance of baseline social and economic data. • Recognising that regulation alone may not drive political will for change.
Youth	• Concerns about sexism and poor behaviour within the industry. • The need for skills training and pathways into the industry. • Ensuring psychological and physical safety for young people.

	• Addressing the financial barriers to entry, including skipper qualifications and equipment costs. • Enhancing education in schools to promote ocean literacy. • Strategies for encouraging careers and pathways in the industry. • Shifting the measure of success from financial gain to lifestyle and fulfilment. • The importance of STEM qualifications and their relevance to the industry. • Flexibility in career opportunities and pathways.
Aquaculture	• Challenges related to inconsistent policies across jurisdictions. • Concerns about biosecurity, both at the farm and border levels, particularly in comparison to international standards. • Emergency disease response strategies. • Issues related to coastal conflicts and sea cage management. • The role of AI, AgTech, and machine learning in aquaculture. • Welfare considerations for aquatic species. • The increasing cost of energy and input resources. • Shortages of skilled staff and government support for training. • Assessing the potential for growth in the aquaculture industry. • Addressing public perception and environmental concerns. • Understanding and adapting to changing food safety risks driven by climate change and other factors. • Strategies for sea ranching and diversification of products and species. • Approaches to market disruption and public relations. • Considerations for international trade.
Other Aquatic Users	• Concerns about biosecurity, especially regarding exotic species. • Compliance with environmental regulations. • Responsible use of recreational vehicles, such as jet skis. • Addressing theft and vandalism in aquatic areas. • Dealing with illegal activities and sharing data for enforcement. • Understanding the cumulative impacts of various aquatic activities and the need for collaboration in management. • Utilising data and innovation for forecasting. • Managing other land-based risks like runoff and pesticide use. • Assessing the impacts of fishing on other aquatic users, both in terms of perception and reality.
General (Issues in Common)	• Strategies for collaborative and united efforts across different sectors.

	• Expanding discussions to encompass aquaculture and its connected aspects. • Addressing spatial squeeze and pressures on marine environments. • Considering markets and the cost of operation. • Removing regulatory barriers that inhibit innovation. • Broadening discussions to include climate change and adaptive policy. • Focusing on ecosystem productivity. • Recognising the importance of import issues and collaborative management. • Exploring offshore and renewable infrastructure concerns. • Acknowledging that a focus on healthy aquatic ecosystems and welfare is central to all discussions.

In summary, participants provided valuable insights into the missing elements from the "Have Your Say Online" discussion findings across various sectors, highlighting the need for a more comprehensive and inclusive approach to address the complex challenges and opportunities in the industry. These insights underscore the importance of considering a wide range of factors and perspectives when planning for future collaboration and impact on R&D efforts.

5.4 Theory of Change Impact Maps

All strategy is a hypothesis. Each are a *theory of change* with lots of assumptions including interrelated supporting factors as necessary parts of a plan for transformation. These *theories of change* are common-sense hunches about a chain of causes and effects. So, strategy formulation must be a process of learning over time, in which, at the limit, formulation, implementation and execution become indistinguishable. So, a more adaptive approach to management is needed to give best chance of achieving desired impact. So, a theory of change serves as a visual representation or written narrative outlining the strategies, actions, conditions, and resources that drive change and bring about specific outcomes. It possesses the capacity to provide explanatory insights into how particular activities or initiatives can lead to desired results.

The frequency of use of TOC shows a strengthening trend in the agricultural RD&E planning as suggested in *Responding to global change: A theory of change approach to making agricultural research for development outcome-based* http://dx.doi.org/10.1016/j.agsy.2017.01.005 in response to the increasing speed of global change and its impacts on natural and socio-economic systems.

The utility of TOC impact maps for RD&E planning is still highly contested in the literature. This was also a concern expressed by workshop participants in their saying that; "*not all tools may be practical enough or that they didn't perceive substantial progress in specific areas*." However, the level of engagement witnessed by the facilitators during the group work suggests that partners would be willing to take on the challenge to develop new ways of collaborating and working beyond delivering outputs. This level of stakeholder

buy-in and FRDC support will be necessary elements for successful implementation of the approach in development of the next RD&E Plan. It was also observed that some groups recognised that additional skills beyond disciplinary expertise would be required, such as skills in coordination, facilitation, engagement, communications, and participatory and learning-oriented monitoring and evaluation. This sentiment was confirmed by workshop participants saying that there is; "***need for more collaboration among stakeholders, including greater involvement of end-users and collaboration with multiple sectors and industries. This collaborative approach is seen as essential for achieving better impact from R&D.***"

In the context of this workshop, Impact Innovation designed a group activity using the TOC impact map template aimed at eliciting insights on ways that FRDC use different approaches that could enhance its impact and possibly avoid negative unintended outcomes.

The TOC impact map tool that was introduced to participants and referred to in their workshop workbooks asks for a reflection on the context for the challenge. This is important because it is an acknowledgment that the conditions (contextual factors) are dynamic and uncertain and now changing even more rapidly which can lead to emergent (unpredictable) outcomes which will also influence of the impact of the proposed approaches to solving the problems selected by participants.

Impactful FRDC activities and approaches will adapt to changing context and remain fluid enough to allow for continual emergence. Adaptive management seeks to better achieve impact through systematic, iterative and planned use of emergent knowledge and learning.

Eight groups worked on eight system-wide challenges, and the ensuing findings from this activity are elaborated upon in the subsequent sections. The group process involved defining the shared, cross-species/cross-jurisdictional challenge, aligning it with relevant National Fisheries Plan (NFP) 2030 priority areas (referred to as "The Goal") and the associated outcome descriptions ("The Impact"). Subsequently, participants delineated key activities and their corresponding outcomes, delving into the approaches required. This exploration encompassed identifying necessary changes in processes, structures, and mindsets, along with an examination of how these changes drive transformation. Additionally, participants were tasked with outlining their assumptions underpinning their causal claims.

It was not the intent for each group to produce "perfect" TOCs, rather the exercise was intended to highlight the unpredictability of undertaking work on system-wide challenges due to rapidly changing contextual factors. (e.g. growing community demand for renewal energy infrastructure, a key minister is replaced, there is a state/federal election, etc). To this end, the most beneficial output from the process for the FRDC staff is likely to be identification of the information that is missing about the complex causal pathways

necessary to address the cross-species/cross-jurisdictional issues that the groups wanted to tackle. These insights can lead FRDC to gain a better understanding of;

- what information is needed,
- by whom, and
- when they need it to decide their next steps.

This would lead FRDC staff to also reflect on the following questions:

- In the light of the changing context, what we learned about how change happened, our own assumptions about change and the role we played in the process:
    - Are we working with the right people in the right way?
    - To what extent are planned changes actually taking place?
    - Are they making a difference?
    - What exactly did our efforts contribute (could be positive, negative unintended)?
    - What have we learned and how should we adapt our plans in light of this?

In general, this kind of evidence generation will almost certainly involve multi- and trans-disciplinary research mixing quantitative approaches to measure outcome variables with qualitative approaches that establish the causal mechanisms involved, however difficult this may be in relation to social processes and human behaviour.

For the subsequent sections, please refer to Appendix 7.6.1 to 7.6.8 to view the raw data.

5.4.1 Theory of Change Impact Map 1

The Theory of Change Impact Map 1 was for issue **#6: Impact of climate change and water heating (includes healthy ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)** and was crafted by a group of participants during the workshop to address the challenge of fishers experiencing lower catch rates, changes in fish species composition, lower profits, and increased uncertainty in the fishing industry. Here is an edited version of the raw data, presented in a more comprehensible format for analysis. Please refer to Appendix 7.6.1 to view the raw data.

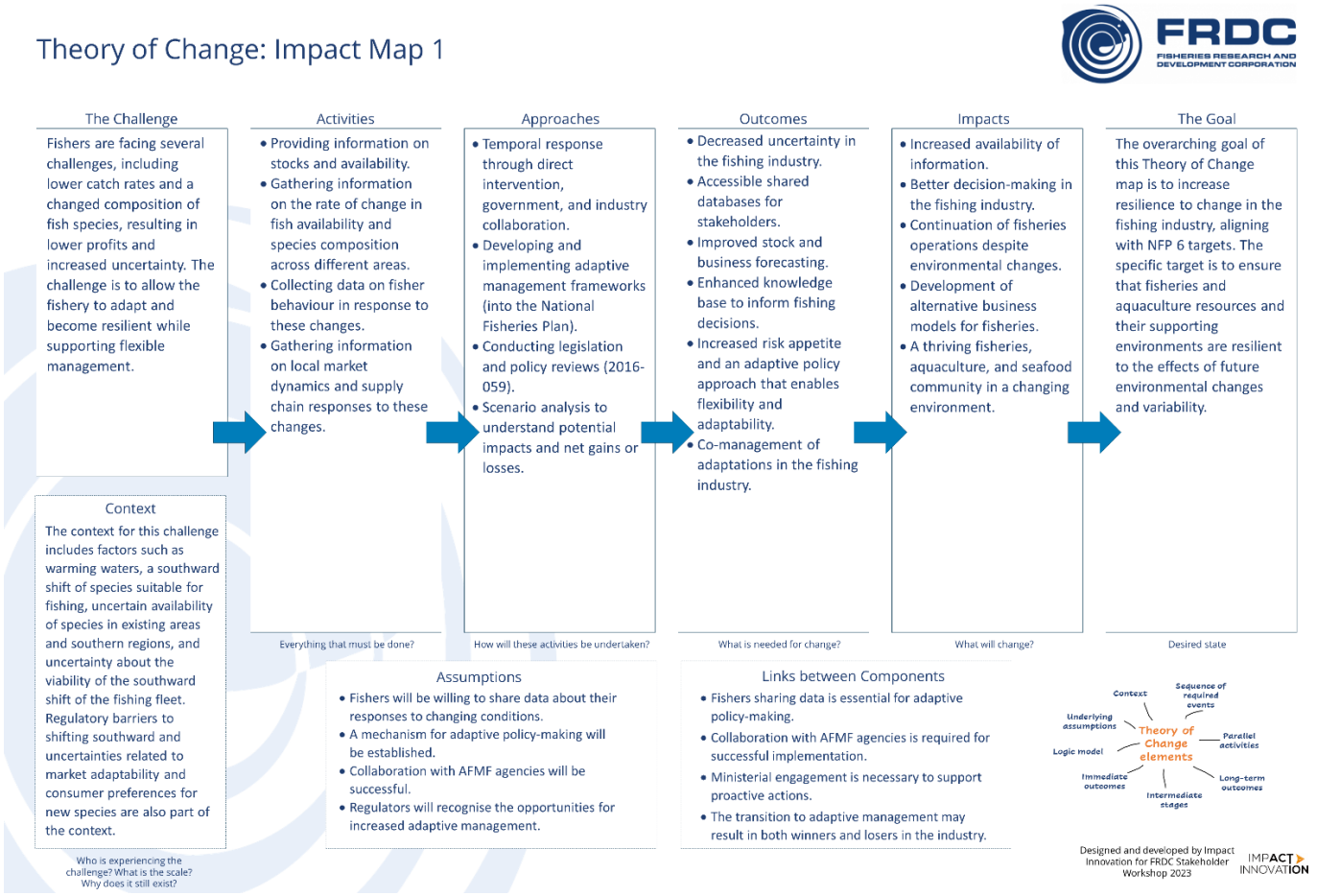

Figure 4: TOC Impact Map 1 (edited)

5.4.2 Theory of Change Impact Map 2

The Theory of Change Impact Map 2 was for issue **#12: Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)** defined as the challenge of establishing a national, cross-jurisdictional, and cross-sectoral aquatic animal harmonised biosecurity strategy. Below is an edited version of the raw data, presented in a more comprehensible format for analysis. Please refer to Appendix 7.6.2.

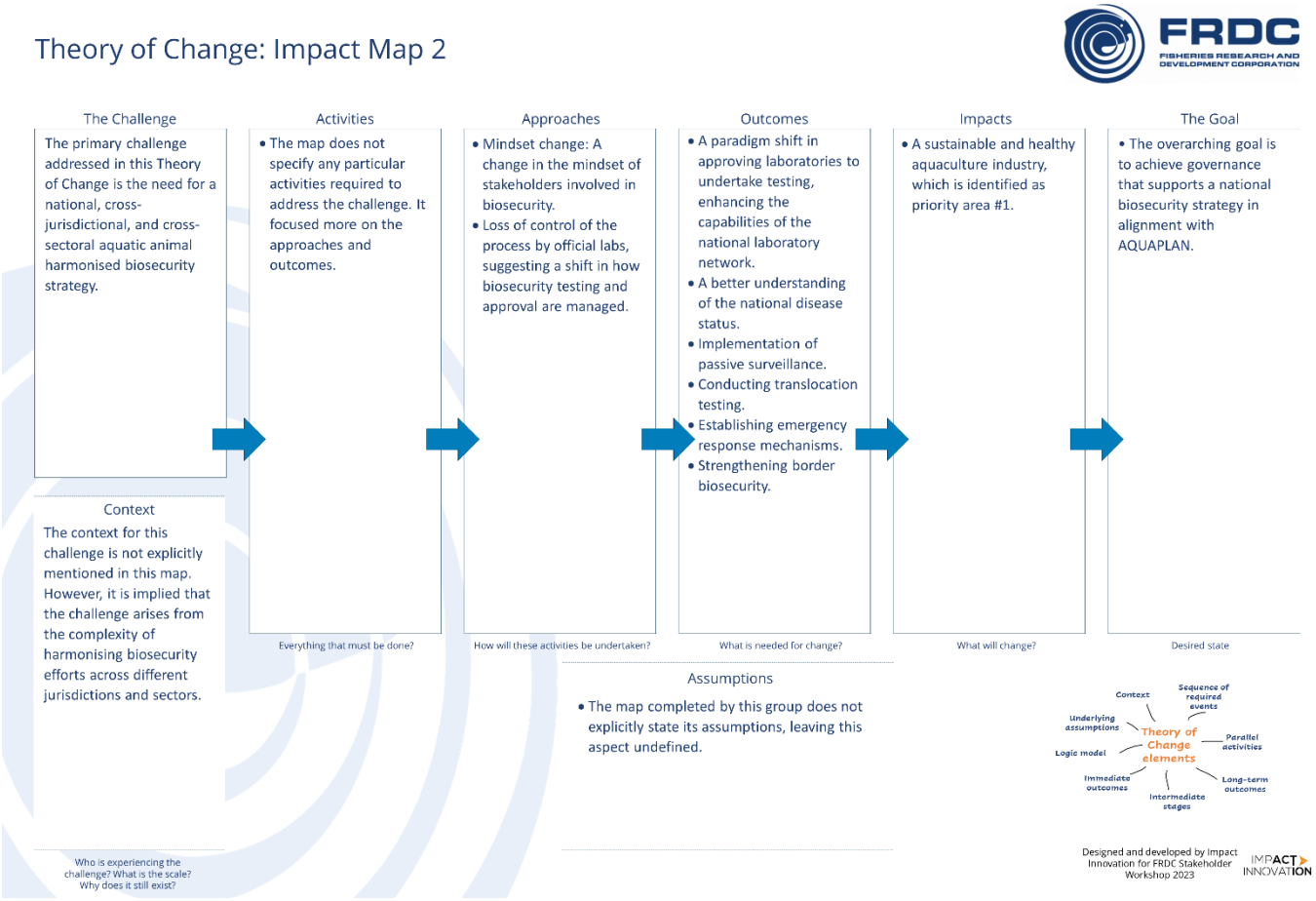

Figure 5: TOC Impact Map 2 (edited)

5.4.3 Theory of Change Impact Map 3

The Theory of Change Impact Map 3 was for issue **#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers** and outlines a plan related to the National Fisheries Plan targeting priority areas #4 and #7. The following is an edited version of the raw data, presented in a more comprehensible format for analysis. Please refer to Appendix 7.6.3 to view the raw data.

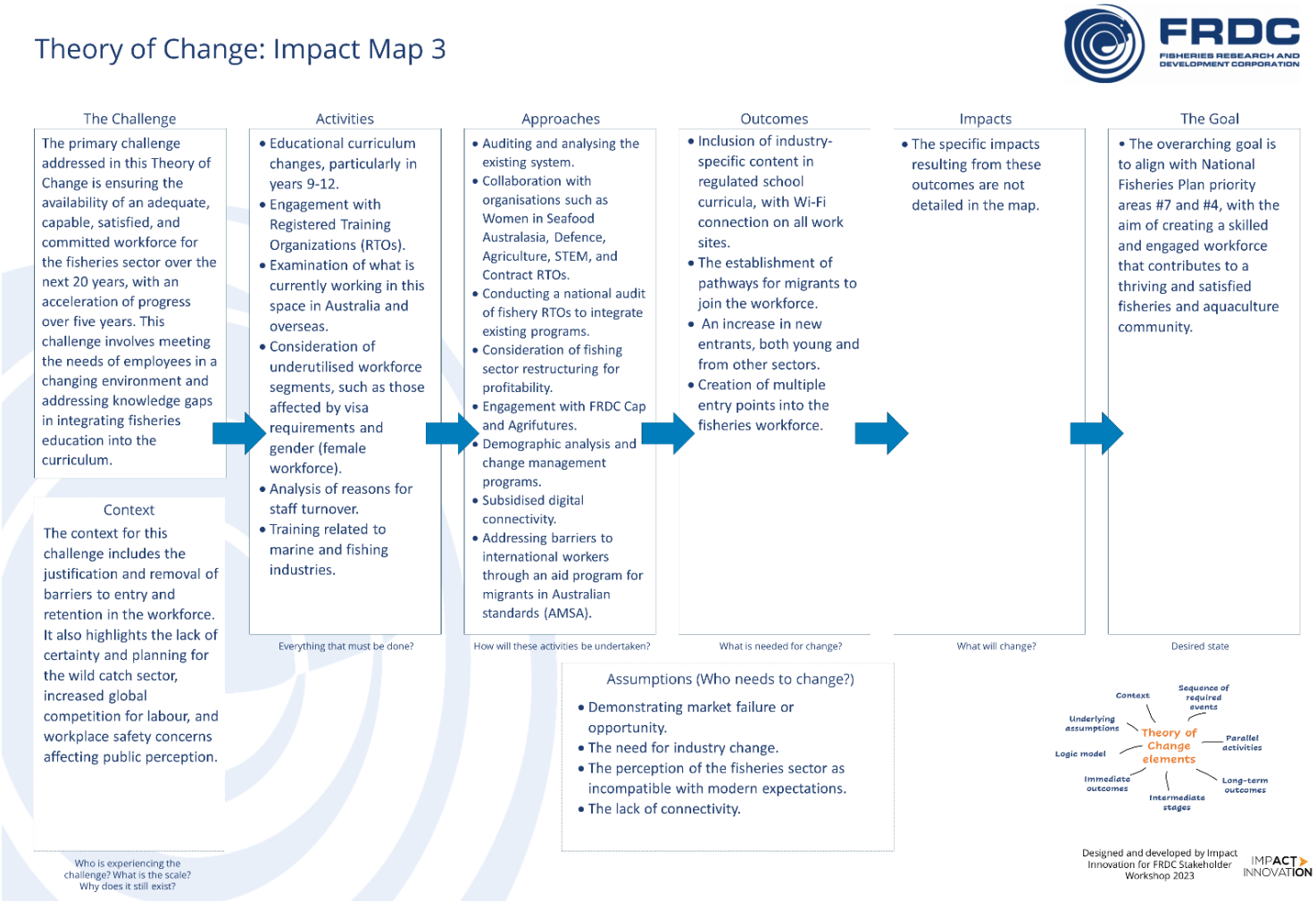

Figure 6: TOC Impact Map 3 (edited)

5.4.4 Theory of Change Impact Map 4

The Theory of Change Impact Map 4 was for issue **#14: Diesel alternatives** and outlines a plan related to addressing challenges associated with industry CO2 reduction, maintaining export market access, and addressing high and rising fuel costs in the context of climate change. Here is an edited version of the raw data, presented in a more comprehensible format for analysis. Please refer to Appendix 7.6.4 to view the raw data.

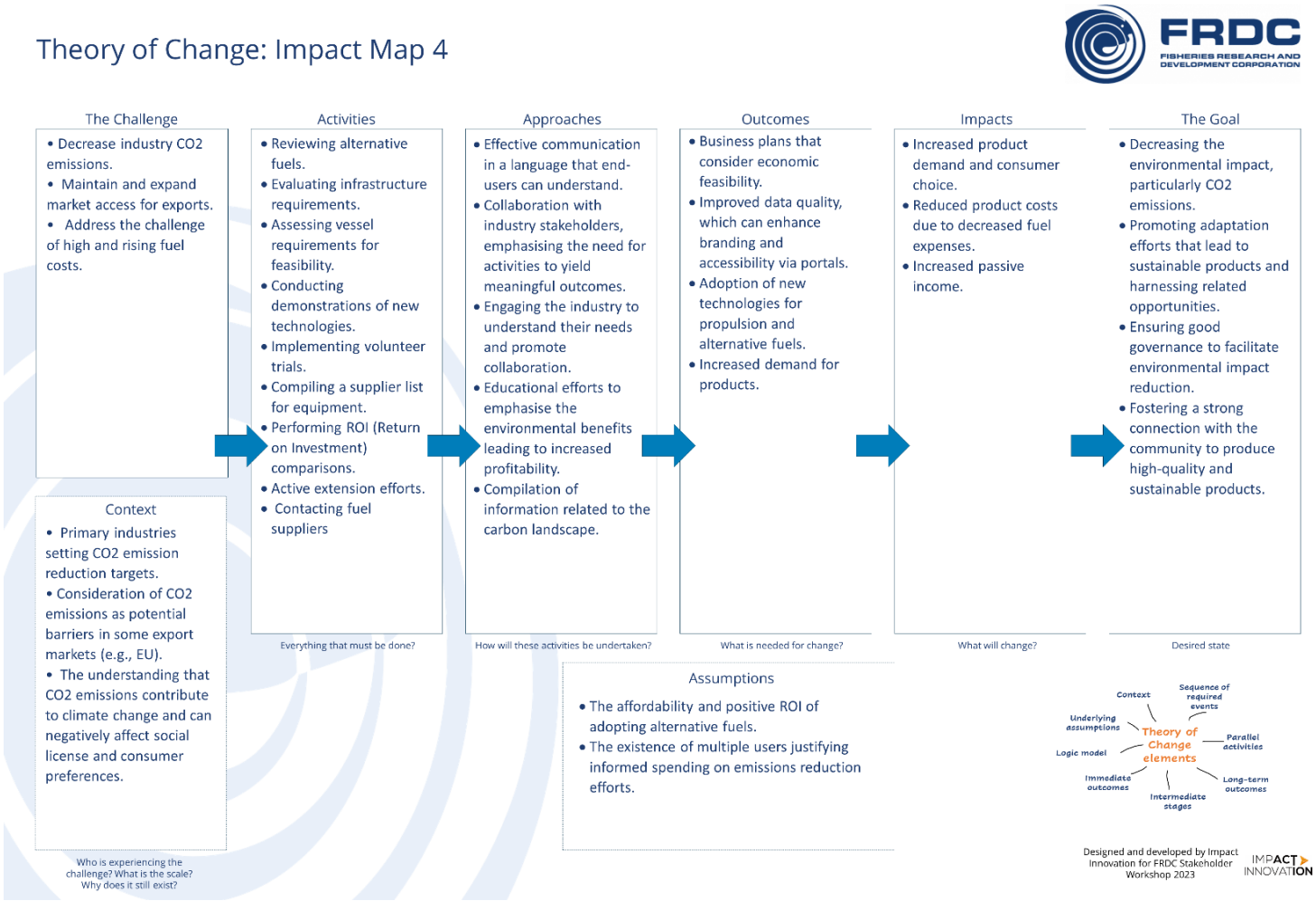

Figure 7: TOC Impact Map 4 (edited)

5.4.5 Theory of Change Impact Map 5

The Theory of Change Impact Map 5 is for issue **#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)** outlines a strategy aimed at addressing the challenge of profitability in the context of commercial fishing. Here is an edited version of the raw data, presented in a more comprehensible format for analysis. Please refer to Appendix 7.6.5 to view the raw data.

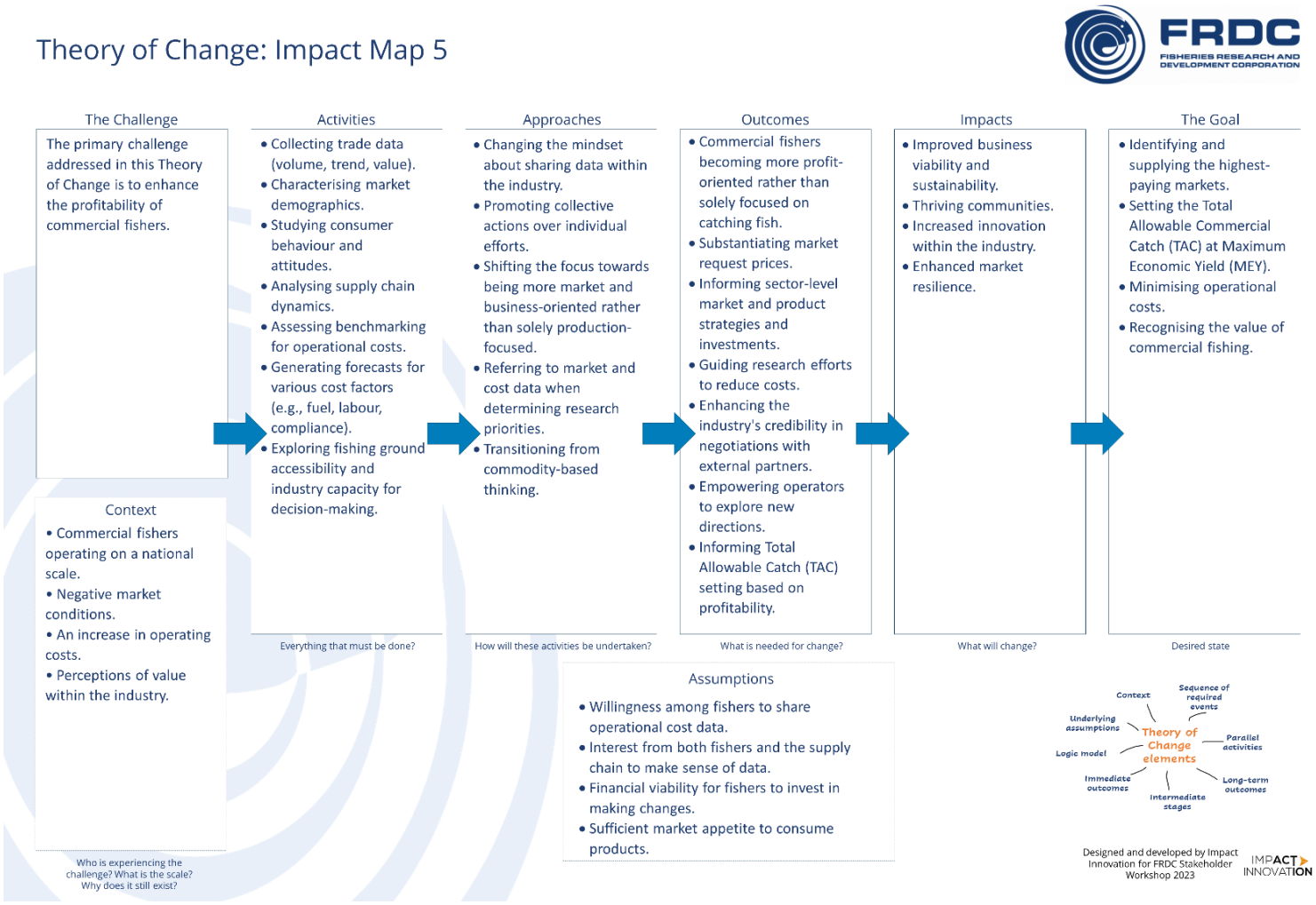

Figure 8: TOC Impact Map 5 (edited)

5.4.6 Theory of Change Impact Map 6

The Theory of Change Impact Map 6 is for issue **#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)** and presents a strategy to address the challenge of inflexibility in fisheries legislation and regulation. Here is an edited version of the raw data, presented in a more comprehensible format for analysis. Please refer to Appendix 7.6.6 to view the raw data.

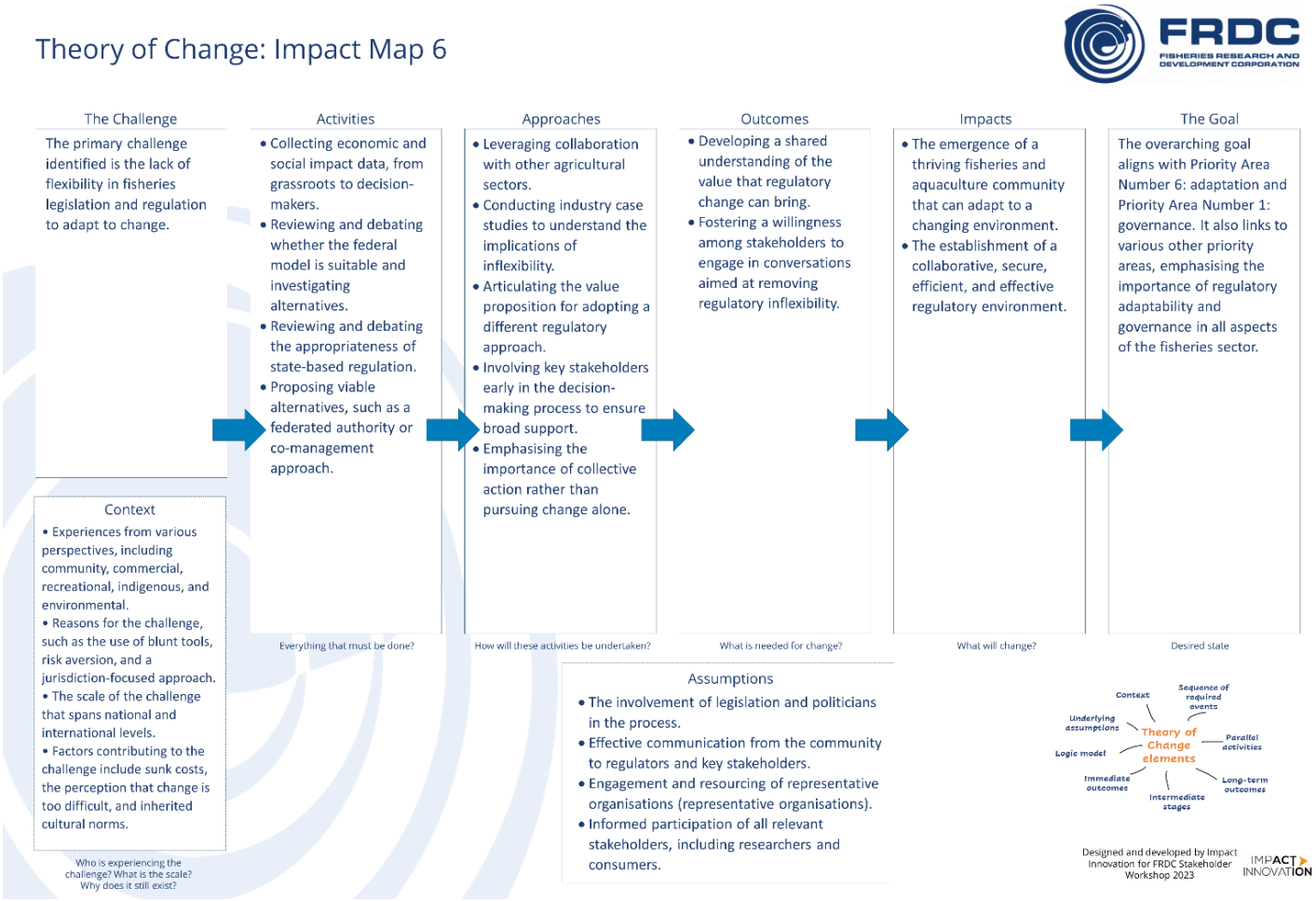

Figure 9: TOC Impact Map 6 (edited)

5.4.7 Theory of Change Impact Map 7

The Theory of Change Impact Map 7 is for issue **#4: Equitable, sustainable resource access and security (incl Indigenous)** and outlines a strategy to address the challenge of allocating resources sustainably and equitably while incorporating indigenous perspectives and ensuring the long-term security of access. Here is an edited version of the raw data, presented in a more comprehensible format for analysis. Please refer to Appendix 7.6.7 to view the raw data.

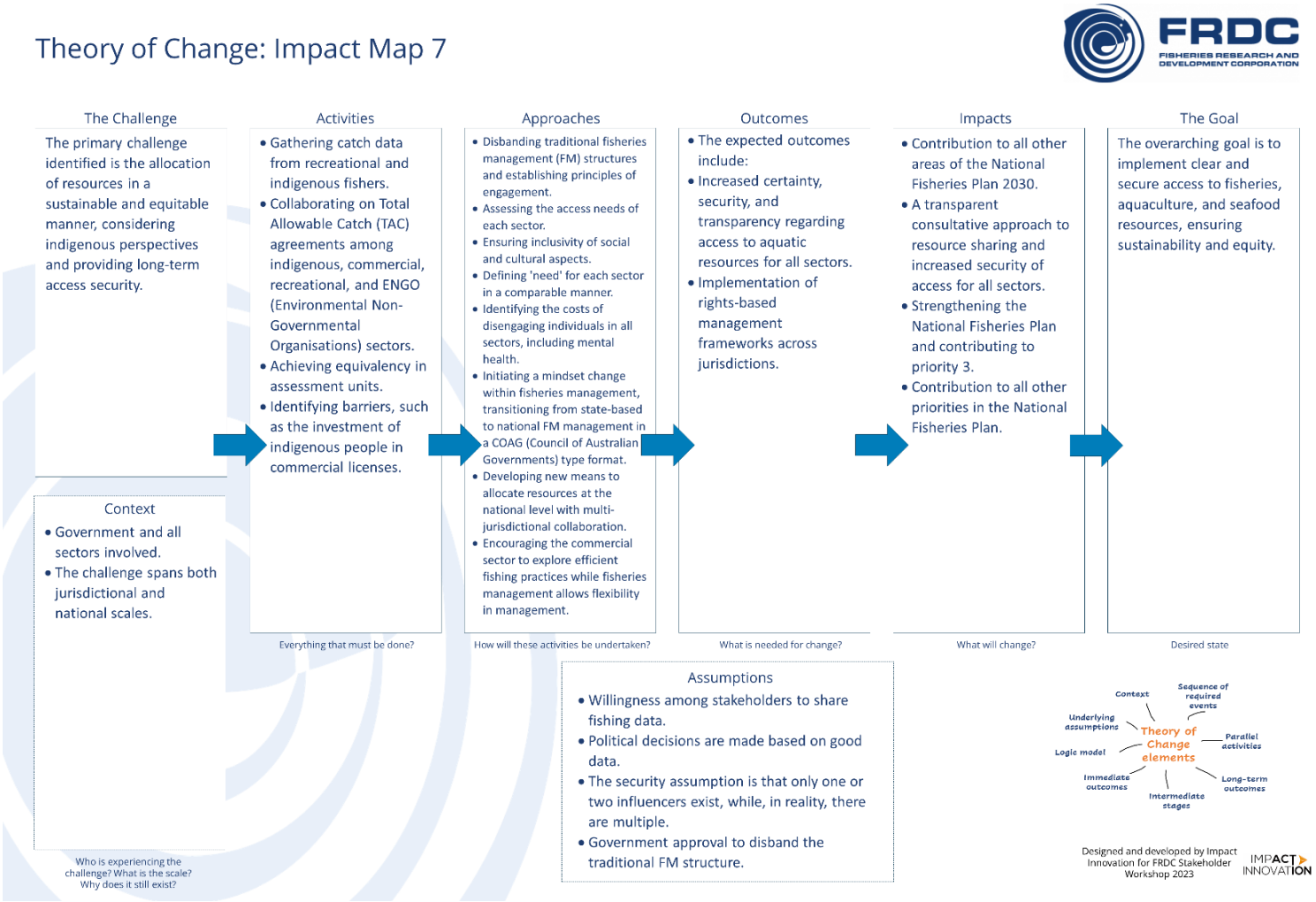

Figure 10: TOC Impact Map 7 (edited)

5.4.8 Theory of Change Impact Map 8

The Theory of Change Impact Map 8 is for issue **#1: Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)** and outlines a strategy to address several challenges related to the fishing industry, including loss of access, lack of understanding and recognition of the industry, lack of industry value, and lack of industry goals. Here is an edited version of the raw data, presented in a more comprehensible format for analysis. Please refer to Appendix 7.6.8 to view the raw data.

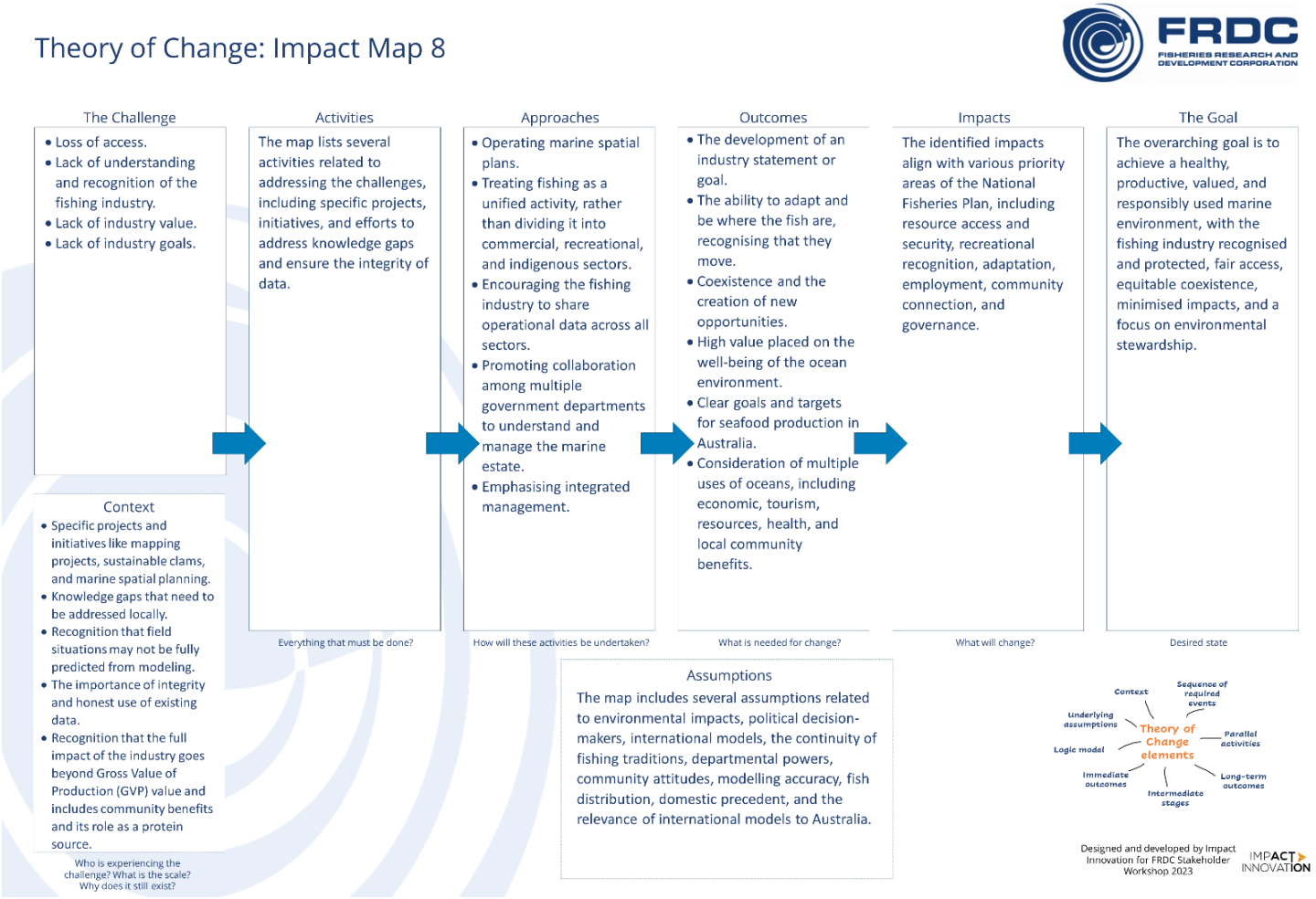

Figure 11: TOC Impact Map 8 (edited)

5.4.9 Summary table mapping impact to NFP 2030 Priority Areas

Impact Map # (Issue #)	NFP 2023 Priority Area								
	1	2	3	4	5	6	7	8	9
1 (#6)						✅			
2 (#12)	✅								
3 (#7)				✅			✅		
4 (#14)		✅							
5* (#2)									
6 (#15)	✅					✅			
7 (#4)			✅						
8 (#1)	✅		✅		✅	✅	✅	✅	

*Group suggested a **new NFP 2030 priority #10: Economic performance and contributions** and includes the following outcomes:

1. Identifying and supplying the highest-paying markets
2. Setting the Total Allowable Commercial Catch (TAC) at Maximum economic Yield (MEY)
3. Minimising operational costs, and
4. Recognising the value of commercial fishing.

Impact map #	X-species/x-jurisdictional Issue considered	Possible FRDC actions arising
1	**#6: Impact of climate change and water heating (includes healthy ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**	**AI-1.1** Collecting data on fisher behaviour in response to these changes and they will be willing to share data about their responses to changing conditions.
		AI-1.2 Gathering information on local market dynamics and supply chain responses to these changes.
2	**#12: Collaboration on biosecurity harmonisation – (Shared**	**AI-2.1** Assessment of change in level of risk due to shift in how biosecurity testing and approval are managed.

	management of biosecurity risks across jurisdictions)	**AI-2.2** A better understanding of the national disease status.
3	**#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**	**AI-3.1** Examination of what is currently working in this space in Australia and overseas.
		AI-3.2 Analysis of reasons for staff turnover.
4	**#14: Diesel alternatives**	**AI-4.1** Improved data quality on diesel usage by fleet.
		AI-4.2 Volunteer trial demonstrations of alternative fuel technologies.
		AI-4.3 Access to supplier list for equipment using diesel alternatives.
5	**#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)**	**AI-5.1** Analysing supply chain dynamics.
		AI-5.2 Assessing benchmarking for operational costs.
		AI-5.3 Generating forecasts for various cost factors (e.g., fuel, labour, compliance).
6	**#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**	**AI-6.1** Proposing viable alternatives, such as a federated authority or co-management approach and articulating the value proposition for adopting a different regulatory approach.
7	**#4: Equitable, sustainable resource access and security (incl Indigenous)**	**AI-7.1** Achieving equivalency in assessment units.
		AI-7.2 Identifying the costs of disengaging individuals in all sectors, including mental health.
8	**#1: Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)**	**AI-8.1** Fill local knowledge gaps and ensure the integrity of data for dynamic operating marine spatial plans.

5.4.9.1 Actions for next AOP arising from feedback – Enabling strategy V

Impact map #	X-species/x-jurisdictional Issue considered	Possible FRDC actions arising

1	**#6: Impact of climate change and water heating (includes healthy ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**	**AV-1.1** Localised scenario analysis tool for individual fishers to provide a knowledge base to inform fishing decisions by understanding potential impacts and net gains or losses.
		AV-1.2 Ministerial engagement in the sharing and use of data.
2	**#12: Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)**	**AV-2.1** Building capability of the national biosecurity testing non-government lab network.
		AV-2.2 Implementation of passive surveillance (nano-sensors & IoT).
		AV-2.3 Conducting translocation testing.
3	**#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**	**AV-3.1** Training related to marine and fishing industries.
		AV-3.2 Inclusion of industry-specific content in regulated school curricula, with Wi-Fi connection on all work sites (onboard vessels).
4	**#14: Diesel alternatives**	**AV-4.1** Customisable tools for assessing vessel requirements for feasibility of switching and performing ROI (Return on Investment) comparisons.
5	**#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)**	**AV-5.1** Exploring fishing ground accessibility and industry capacity for decision-making.
		AV 5.2 Referring to market and cost data when determining research priorities thereby directing research towards reducing operating costs.
6	**#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**	**AV-6.1** Fostering a willingness among stakeholders to engage in conversations aimed at removing regulatory inflexibility.
		AV-6.2 Engagement and resourcing of representative organisations (representative organisations).
7	**#4: Equitable, sustainable resource access and security (incl Indigenous)**	**AV-7.1** Developing new means to allocate resources at the national level with multi-jurisdictional collaboration.

8	**#1: Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)**	**AV-8.1** Encouraging the fishing industry to share operational data across all sectors.

5.4.9.2 Next R&D Plan

The group process involved defining the shared, cross-species/cross-jurisdictional challenge, aligning it with relevant National Fisheries Plan (NFP) 2030 priority areas (referred to as "The Goal") and the associated outcome descriptions ("The Impact"). We were particularly interested in capturing *how these stakeholders think* things causally influence each other. This insight could be powerful because we assume that the "causal landscape" recorded in the impact maps was the consensus position reached by stakeholders with multiple perspectives within that landscape.

The table below lists the causal links that were identified, and associated assumptions about enabling conditions noted in each of the TOC impact maps. These statements seemed to be most relevant to FRDC Enabling strategy III: Promote innovation and entrepreneurship and Enabling strategy IV: Build capability and capacity.

A simplified representation of the causal links between results in a logic model within a TOC is shown below (source):

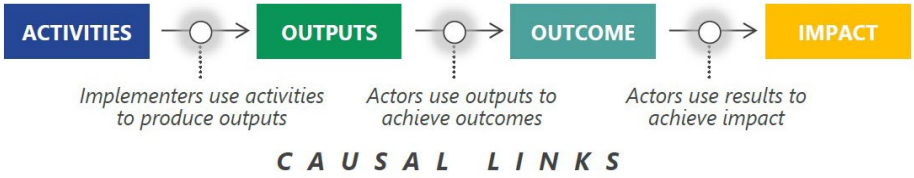

Figure 12: Causal links between results in logic model.

The key thing to note above is the role that different 'actors" play in adoption of an outcome and consequent achievement of impact.

In some cases, these groups listed more than one result-producing process being required to achieve impact. It is recommended that FRDC consider exploring each of these to 'reality check' the inferences made about the hypothesed pathways to impact and to clarify what FRDC actions (if any) are required in the next R&D plan to effectively support achievement of results.

Impact map #	X-species/x-jurisdictional Issue considered	Causal link(s) described **(key actor)**
1	**#6: Impact of climate change and water heating (includes healthy ecosystems,**	• **Fishers** will share their data if they can use it in return for enhanced knowledge for better commercial decision making.

	species population footprint shifting South, adaptive policy making, ecosystem productivity)	• **Ministers** will trust the data for legislative decision-making if they can be reassured of the outcome of the process (no surprises).
2	**#12: Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)**	• Loss of control of the biosecurity testing process by **official (government) labs** weakens the national biosecurity system.
3	**#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**	• Providing **young people** with greater awareness and certainty of future career paths in the wild catch sector would remove barriers to entry and retention of existing workforce.
4	**#14: Diesel alternatives**	• **Owners of fishing vessels** will switch to non-diesel fuel alternatives if it is practical and cost effective to do so.
5	**#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)**	• Setting the Total Allowable Commercial Catch (TAC) at Maximum Economic Yield (MEY) would mean that **commercial fishers** would be more viable because they would shift towards being more market and business-oriented rather than solely production-focused.
6	**#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**	• **Politicians and legislators** willing to use economic and social impact data from various perspectives, including community, commercial, recreational, indigenous, and environmental groups; instead of using blunt tools, risk aversion, and a jurisdiction-focused approach; will establish a collaborative, secure, efficient, and effective regulatory environment.
7	**#4: Equitable, sustainable resource access and security (incl Indigenous)**	• Collaborating on Total Allowable Catch (TAC) agreements among **indigenous, commercial, recreational, and ENGO sectors** based on a rights-based management framework would increase certainty, security, and transparency across jurisdictions.
8	**#1: Spatial Squeeze issue (includes, renewable**	• Localised mapping projects, sustainable claims, and marine spatial planning generated by sharing local data would allow

	infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)	collaboration among **multiple government departments** to understand and manage the marine estate as a whole ecosystem.

5.4.9.3 New questions for FRDC to ask about the outcomes to impact step

Causal analysis is very different to traditional thematic analysis. It helps to assemble evidence for M&E to make a judgement about causal explanation and qualitatively assess the "causal landscape"; How do people think the world works? What shape are their causal maps? How do they differ between stakeholder sectors? How are they changing over time?

We recommend building on the work by Michael Sparks at Intuitive Solutions which was shared at the workshop by Dr Jennifer Marshall Cross-functional Facilitator. Jen highlighted the work that they have been doing in defining the difference between "passive" and "active" adoption of FRDC outcomes. Whilst active adoption refers to the traditional idea of a practice change or implementation of new technology by a target stakeholder being "publicly observed".

We suggest that the idea of measuring of "passive" or "private" adoption as conceived by FRDC is one way to measure progress along the pathways to impact suggested for each of the cross-species/cross-jurisdiction issues considered at the stakeholder workshop. For example, some or all of the questions below could be tailored to specific impact pathways;

- Increase in your knowledge of a particular issue?
- Facilitated new thinking or ideas on a particular issue?
- Lead to you communicating R&D to others?
- Lead to you being connected to other potential partners?

5.4.9.4 Purpose of continuing to map FRDC Impact to SDGs

We looked at the existing R&D Plan in response to feedback from stakeholder workshop; *"Questions about how the updates help meet Sustainable Development Goals (SDG) commitments".*

The Sustainable Development Goals (SDGs) were designed by the United Nations to be a "blueprint to achieve a better and more sustainable future for all." The 17 SDGs span from ending poverty to achieving gender equality to responsible production and consumption, and are said to provide a north star for many organizations to judge progress toward targets. We also think that thoughtful alignment will make an important contribution for making a case for the social licence to operate of each sector.

The FRDC says that the existing R&D Plan has meaningful impact by contributing to international targets and Australian Government commitments, such as the United Nations Sustainable Development Goals. The current 2020–25 R&D Plan aligns with 14 of the 17 United Nations Sustainable Development Goals (SDGs).

Based on a high-level scan of the documents it appears that they have integrated the general thrust of the organisation into SDGs. Also there is nothing in the attached "how

the 2020-25 plan was created" document that mentioned the SDGs…so I suspect at best they are a retrofit to the 5 outcomes (see - The five outcomes in FRDC's R&D Plan align with 14 of the 17 United Nations SDGs, although the extent to which each outcome contributes to a particular SDG will depend on how the FRDC allocates its R&D investments) and the 5 enabling strategies but the fit to "14 of the 17 SDGs" is not clear to us yet.

However, to be more conclusive it would be necessary to select one SDG such as Gender Equity (Goal 5) and track it through the whole document to see what connections are made. Given the higher-level nature of the R&D Plan it is not surprising that there are not any specific links, but the same is true for the current AOP 2022-23.

However, on searching the fine detail of the Gender SDG we found at least 2 elements that may have been usefully attended to in the FRDC planning process:

- Target 5.4: Recognise and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate. This could be an important consideration, particularly in family-owned wild catch businesses.

- Target 5.5: Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life. This may be a focus of the various representative organisations in the fisheries and aquaculture industry.

5.5 The Utility of Workshop Activities & Concepts

In this section, we present the outcomes of participants' assessments regarding the effectiveness of workshop concepts such as the TOC Impact Map, Innovation Tools and so on. Furthermore, we explore their perspectives on the practicality of these concepts in fostering future collaboration and augmenting the impact of FRDC's investments in research and development. Additionally, we share insights gathered from participants regarding the challenges and impediments they perceive in the realm of cross-jurisdictional collaboration and the realisation of R&D impact.

5.5.1 Useful Workshop Resources for Future Collaboration

The responses regarding what has potential for use when planning future collaboration can be categorised into distinct themes as follows (Refer to Appendix 7.7.1 for raw data):

Themes	Description
Tools and Frameworks for Collaboration	Participants mentioned several tools and frameworks that have potential for use in future collaboration, including causal linkages, collaborative approaches, models, Circle of Connections tools, processes and structures, Theory of Change, impact mapping, and connection circle tools. These tools and

	frameworks likely facilitate effective planning and implementation of collaborative efforts.
Innovative Thinking	Some responses emphasised the importance of thinking outside the square, suggesting that innovative thinking is a valuable asset in planning future collaboration.
Readiness Assessment	The IC Readiness tool for assessing projects was mentioned as a potential resource for evaluating project readiness and suitability for collaboration.
Integrated Management and Networking	Integrated management across departments and jurisdictions, as well as networking, were highlighted as important aspects of collaboration planning. These approaches can help bring together diverse stakeholders and resources.
Trust and Engagement	Collaboration, trust, and engagement were mentioned as critical factors for successful collaboration planning. Building trust and fostering engagement among stakeholders are essential components of collaborative efforts.
Incorporating All Issues	One response indicated that all issues were addressed in the workshop, suggesting that the workshop itself served as a valuable platform for addressing various aspects of collaboration planning.
Challenges and Concerns	Some participants expressed concerns about the practicality and effectiveness of certain tools or resources mentioned. They indicated that not all tools may be practical enough or that they didn't perceive substantial progress in specific areas.

Overall, the responses suggest that participants found various tools, frameworks, and approaches discussed during the workshop to be valuable resources for planning future collaboration. These resources encompass both practical tools and more conceptual frameworks focused on building trust, engagement, and integrated management. However, some participants also expressed challenges and reservations regarding the effectiveness of certain tools.

5.5.2 Observation of Enhancing R&D Impact

The responses regarding what is needed in the future to achieve better impact from R&D can be categorised into distinct themes (Refer to Appendix 7.7.2 for raw data):

Themes	Description
Enhanced Collaboration and Partnerships	Collaboration and partnerships were a common theme, with several participants emphasising the need for more collaboration among stakeholders, including greater involvement of end-users and collaboration with multiple sectors and industries. This collaborative approach is seen as essential for achieving better impact from R&D.
Stakeholder Involvement	Participants stressed the importance of stakeholder involvement, including the need for greater stakeholder project steering committees, stakeholder consultation,

	and end-user involvement. Involving stakeholders in the research process is seen as a key factor in achieving impact.
Alignment of Goals and Focus	Alignment of goals between sectors, a focus on commonality across all sectors, and a commitment by different sectors/groups/departments to their role in activating research were mentioned as important factors. Having a clear focus and shared objectives can contribute to better impact.
Data Sharing and Communication	Data sharing and data sharing principles, as well as strengthened communication of outcomes, were highlighted as critical elements. Effective communication and sharing of research findings are essential for ensuring impact.
Adaptive Management and Policy Uptake	Adaptive management, particularly in relation to policy, was mentioned as a potential game-changer. Uptake of research findings by government in policy setting is seen as crucial for achieving impact.
Understanding the Problem and Prioritisation	Understanding the problem and prioritising projects were also emphasised. These aspects help ensure that research efforts are focused on the most relevant and impactful areas.
Facilitated Conversations and Realistic Approaches	Facilitated conversations and a realistic approach to research and outcomes were mentioned. These approaches can help stakeholders engage in meaningful discussions and set achievable goals.
Strong Representation and Diverse Groups	Having strong representative organisations and involving diverse groups of stakeholders were highlighted as important for achieving impact.

Overall, the responses underscore the significance of collaboration, stakeholder involvement, clear goals, effective communication, and adaptive management in making R&D efforts more impactful. Participants also stressed the importance of understanding the problem at hand and prioritising projects to focus efforts effectively.

5.5.3 Obstacles to Collaboration and R&D Impact

The current roadblocks for collaboration and impact in the future, as identified by participants in the workshop, can be categorised into distinct themes (Refer to Appendix 7.7.3 for raw data):

Themes	Description
Regulatory and Jurisdictional Challenges	Issues related to regulations, jurisdictional boundaries, and state jurisdictions were mentioned as significant roadblocks. The slow pace of regulation, jurisdictional disputes, and patch protection hinder collaboration and impact.

Resource Constraints	Participants highlighted resource-related challenges, including a lack of time, money, and investment. These constraints affect the ability to drive collaboration effectively.
Stakeholder Engagement and Understanding	Challenges related to stakeholder engagement and understanding were noted. Lack of engagement across sectors, diverse interests, and each sector not knowing each other were identified as roadblocks.
Political and Policy Factors	Political, legislative, and policy settings, as well as government priorities and election cycles, were mentioned as factors that can hinder collaboration and impact.
Traditional Mindsets and Self-Interests	Traditional mindsets, self-interests, and egos were cited as roadblocks. These factors can create barriers to effective collaboration.
Bureaucracy and Governance	Bureaucracy, governance structures, and the fear of how input will be used were identified as challenges that need to be addressed to facilitate collaboration.
Capacity and Overwhelmed Workforce	Capacity issues, such as an overwhelmed workforce and lack of Indigenous peak body representation, were mentioned as roadblocks.
Lack of Data and Understanding	The lack of data and understanding, especially in the context of the seafood industry, was noted as a challenge.
Diverse Systems and Vested Interests	The diversity of systems and vested interests were identified as roadblocks that can impede collaboration.

In summary, the roadblocks to collaboration and impact in the future encompass a wide range of challenges, including regulatory complexities, resource constraints, difficulties in stakeholder engagement and understanding, political and policy factors, entrenched traditional mindsets, bureaucratic hurdles, capacity limitations, and the diversity of systems and vested interests. Overcoming these roadblocks will be pivotal in fostering effective collaboration and achieving a meaningful impact within the industry.

5.6 Workshop Survey Summary

The participants' survey results ((Refer to Appendix 7.8 for raw data) from the end of the workshop indicate several positive aspects of the event. The majority of respondents felt that they were able to communicate their key points effectively to the FRDC, with many giving high ratings (scoring of 4 out of 5) for feeling heard and respected. Participants also expressed a clear understanding of how their key points would be addressed by FRDC. The workshop was generally praised for being well-developed and facilitated, with participants looking forward to assisting FRDC in the future. Collaborative sessions and table discussions were found to be useful for stimulating thought and generating ideas. Some suggestions for improvement included reducing theory-based content, increasing diversity in participant groups, and providing more time for shared priorities. Overall, participants found the workshop informative and valuable, highlighting its networking

opportunities and the need for improved participant planning to enhance collaboration throughout the year.

6 SUMMARY INSIGHTS AND NEXT STEPS

There was a high level of engagement during the workshop. Most participants appeared to appreciate the context of the workshop, that a collaborative effort is required to effectively address the sector challenges.

The review of challenges indicated that there weren't any emerging issues that are not covered by the scope of the current R&D strategy and related AOP process. To this end, the most value for FRDC will be to explore new ways of "how" to address the challenges, rather than "what" challenges to address.

The workshop introduced an approach to explore how to approach the challenges with a focus on cross-sectorial and cross-jurisdictional challenges. Adopting this type of approach would potentially focus FRDC on fewer, larger projects. A greater number of stakeholders would be involved in the projects, and it may be possible to address conflict between sectors with this type of approach. However, individual sector issue may remain unresolved. The role of FRDC would need to be reviewed to execute this strategic change. The main consideration is if FRDC undertakes a facilitation role or a skills development role to upskill sectors lead to effectively facilitate the development of these larger initiatives. Our recommendation would be to begin by providing a facilitation role to more effective design initiatives for funding.

Given the constraints on FRDC's available budget and scope, it is clear that a new approach is needed to effectively address sector challenges and achieve impact. FRDC cannot be held accountable for impact alone, but it is within its scope to support change of practice and impact. Whether via a new co-designed cross-sectorial approach to design investment differently or to scale small regional projects, a more defined pathway to scale and impact is required. This pathway must identify and work with those people and organisation that will have to change perceptions, structures, and behaviours. FRDCs new approach must also be evaluated to enable reporting on performance and value for money investment.

6.1 Where to next with Theory of Change Impact Maps?

The most beneficial output from the process for the FRDC staff is likely to be identification of the information that is missing about the complex causal pathways necessary to address the cross-species/cross-jurisdictional issues that the groups wanted to tackle.

These insights can lead FRDC to gain a better understanding of:

- what information is needed,
- by whom, and
- when they need it to decide their next steps.

The workshop activities selected 8 of 15 topics. It is recommended that FRDC consider the priority and apply the TOC approach to the topics that weren't addressed during the workshop.

6.1.1.1 Actions for next AOP arising from feedback – Part One

Impact map #	X-species/x-jurisdictional Issue considered	Possible FRDC actions arising
1	**#6: Impact of climate change (includes declining health of ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**	**AI-1.1** Collecting data on fisher behaviour in response to these changes and they will be willing to share data about their responses to changing conditions.
		AI-1.2 Gathering information on local market dynamics and supply chain responses to these changes.
2	**#12: Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)**	**AI-2.1** Assessment of change in level of risk due to shift in how biosecurity testing and approval are managed.
		AI-2.2 A better understanding of the national disease status.
3	**#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**	**AI-3.1** Examination of what is currently working in this space in Australia and overseas.
		AI-3.2 Analysis of reasons for turnover in workforce across fishing and aquaculture.
4	**#14: Diesel alternatives**	**AI-4.1** Improved data quality on diesel usage by fleet.
		AI-4.2 Volunteer trial demonstrations of alternative fuel technologies.
		AI-4.3 Access to supplier list for equipment using diesel alternatives.
5	**#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)**	**AI-5.1** Analysing supply chain dynamics.
		AI-5.2 Assessing benchmarking for operational costs.
		AI-5.3 Generating forecasts for various cost factors (e.g., fuel, labour, compliance).
6	**#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**	**AI-6.1** Proposing viable alternatives, such as a federated authority or co-management approach and articulating the value proposition for adopting a different regulatory approach.

7	**#4: Equitable, sustainable resource access and security (incl Indigenous)**	**AI-7.1** Achieving equivalency in assessment units, which involves setting consistent and fair standards and evaluation methods in fisheries management. This ensures that when assessing resource access and security, all stakeholders are judged using the same criteria, promoting fairness and inclusivity across the whole ecosystem.
		AI-7.2 Identifying the costs of disengaging individuals in all sectors, including mental health.
8	**#1: Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)**	**AI-8.1** Fill local knowledge gaps and ensure the integrity of data for dynamic operating marine spatial plans.

6.1.1.2 Actions for next AOP arising from feedback – Part Two

Impact map #	X-species/x-jurisdictional Issue considered	Possible FRDC actions arising
1	**#6: Impact of climate change and water heating (includes declining health of ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**	**AV-1.1** Localised scenario analysis tool for individual fishers to provide a knowledge base to inform fishing decisions by understanding potential impacts and net gains or losses.
		AV-1.2 Ministerial engagement in the sharing and use of data.
2	**#12: Collaboration on biosecurity harmonisation – (Shared management of biosecurity risks across jurisdictions)**	**AV-2.1** Building capability of the national biosecurity testing non-government lab network.
		AV-2.2 Implementation of passive surveillance (nano-sensors & IoT).
		AV-2.3 Conducting translocation testing
3	**#7: Leadership pathways, succession, (training), capacity, next generation, latent workforce, and decline small fishers**	**AV-3.1** Training related to marine and fishing industries.
		AV-3.2 Inclusion of industry-specific content in regulated school curricula, with Wi-Fi connection on all work sites (onboard vessels).

4	**#14: Diesel alternatives**	**AV-4.1** Customisable tools for assessing vessel requirements for feasibility of switching and performing ROI (Return on Investment) comparisons.
5	**#2: Markets and economics (cost of operations, viability of supply to domestic and international markets)**	**AV-5.1** Exploring fishing ground accessibility and industry capacity for decision-making.
		AV 5.2 Referring to market and cost data when determining research priorities thereby directing research towards reducing operating costs.
6	**#15: Flexibility in application of policy and fisheries regulation (includes holistic management, flexible management of stocks across jurisdictions (holistic management)**	**AV-6.1** Fostering a willingness among stakeholders to engage in conversations aimed at removing regulatory inflexibility.
		AV-6.2 Engagement and resourcing of representative organisations (representative organisations).
7	**#4: Equitable, sustainable resource access and security (incl Indigenous)**	**AV-7.1** Developing new means to allocate resources at the national level with multi-jurisdictional collaboration.
8	**#1: Spatial Squeeze issue (includes, renewable infrastructure, ocean energy, wind farms, expansion of marine parks & aquaculture)**	**AV-8.1** Encouraging the fishing industry to share operational data across all sectors.

6.1.1.3 Next R&D Plan

The group process involved defining the shared, cross-species/cross-jurisdictional challenge, aligning it with relevant National Fisheries Plan (NFP) 2030 priority areas (referred to as "The Goal") and the associated outcome descriptions ("The Impact"). We were particularly interested in capturing *how these stakeholders think* things causally influence each other. This insight could be powerful because we assume that the "causal landscape" recorded in the impact maps was the consensus position reached by stakeholders with multiple perspectives within that landscape.

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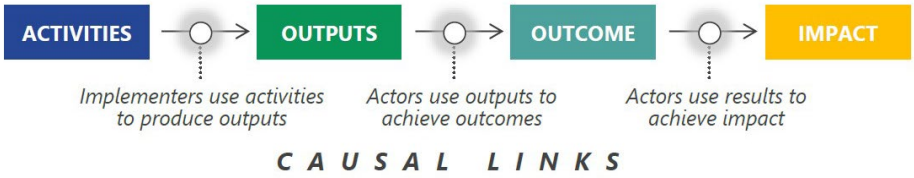

Figure 13: Causal links between results in logic model.

The key thing to note above is the role that different 'actors" play in adoption of an outcome and consequent achievement of impact.

In some cases, these groups listed more than one result-producing process being required to achieve impact. It is recommended that FRDC consider exploring each of these to 'reality check' the inferences made about the hypothesised pathways to impact and to clarify what FRDC actions (if any) are required in the next R&D plan to effectively support achievement of results.

The following table underscores the significance of the diverse industry actors or stakeholders. Realising the desired outcomes and impact hinges on these stakeholders implementing the recommended actions.

Impact map #	X-species/x-jurisdictional Issue considered	Causal link(s) described **(key actor)**
1	**#6: Impact of climate change (includes declining health of ecosystems, species population footprint shifting South, adaptive policy making, ecosystem productivity)**	• **Fishers** will share their data if they can use it in return for enhanced knowledge for better commercial decision making. • **Ministers** will trust the data for legislative decision-making if they can be reassured of the outcome of the process (no surprises).
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The FRDC says that the existing R&D Plan has a meaningful impact by contributing to international targets and Australian Government commitments, such as the United Nations Sustainable Development Goals. The current 2020–25 R&D Plan aligns with 14 of the 17 United Nations Sustainable Development Goals (SDGs).

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However, to be more conclusive, it would be necessary to select one SDG, such as Gender Equity (Goal 5) and track it through the whole document to see what connections are made. Given the higher-level nature of the R&D Plan it is not surprising that there are not any specific links, but the same is true for the current AOP 2022-23.

However, on searching the fine details of the Gender SDG we found at least 2 elements that may have been usefully attended to in the FRDC planning process:

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nationally appropriate. This could be an important consideration, particularly in family-owned wild catch businesses.

- Target 5.5: Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life. This may be a focus of the various representative organisations in the fisheries and aquaculture industry.

7 APPENDIX

7.1 Appendix 1 – Detailed Agenda

Day One: 10th October 2023

Timing	Topics	
8:00	**Arrival tea and coffee**	
8:30	1.	Welcome and setting the scene
9:10	2.	*Have Your Say* - Future focus activity
9:30	3.	Broader fisheries and aquaculture operating environment update
10:00	**Morning tea break**	
10:30	4.	Summary of findings from *Have Your Say* and results from sector online discussions
11:00	5.	Updates from FRDC • Key achievements and priorities • Progress against the R&D Plan • Feedback and actions from the 2022 Stakeholder Workshop • Stakeholder Survey results and actions
11:30	6.	Reflection on Updates. What do you think?
12:00	7.	Innovation mindset and tools for impact (Part 1)
12:30	**Lunch**	
1:15	8.	Check-in and anti-innovation rules activity
1:30	9.	Exploring and identifying common challenges and forming working groups
2:00	10.	Introducing and beginning to develop a Theory of Change for selected challenges
3:00	**Afternoon tea break**	
3:30	11.	Group work continues, and report back
4:30	12.	Reflection and set-up for Day 2
5:00	**Day 1 concludes**	
6:00	**Optional Event** WHERE: Little Creatures Harbourside, 40 Mews Rd, Fremantle, WA 6160 WHO: Fair Catch Alliance discussion with Tricia Beatty and Chris Wilcox WHEN: 6.00 – 7.00pm WHAT: Informal discussion, drinks and nibbles (See next page for invitation)	
7.00 – 10.00pm	**FRDC workshop dinner** Little Creatures Brewery Harbourside, 40 Mews Rd, Fremantle, WA 6160 Please join the FRDC team and facilitators for a sit-down dinner and drink (or two!)	

Day Two: 11th October 2023

Timing	Topics	
8:00	**Arrival tea and coffee**	
8:30	13.	Check-in and reflection activity
9:00	14.	Group work continues, and reporting back
10:15	**Morning tea break**	
10:45	15.	Innovation mindset and tools for impact (Part 2)
11:15	16.	Group work continues, and the final report back
12:30	**Lunch**	
1:45	17.	Innovation mindset and tools for impact (Part 3) - Co-design activity and review of tools - Exploring what else is needed to facilitate impact?
2:45	18.	Summary, reflection, and next steps
3:30	19.	Closing remarks
4:00	**Workshop concludes**	

7.2 Participant List

Participant	Company Name	Job Title
Bo Carne	Aboriginal Sea Company	Chief Executive Officer
Steve B. Percival	Aquaculture Development and Veterinary Services Pty Ltd	Principal Consultant
Jo-Anne Ruscoe	Australian Barramundi Farmers Association (ABFA)	Chief Executive Officer
Rachel King	Australian Council of Prawn Fisheries Ltd (ACPF)	Executive Officer
Jackson Taber	Australian Prawn Farmers Association (APFA)	Research & Administration Coordinator
Tony Charles	Australian Prawn Farmers Association (APFA)	Chair APFA RD&E Sub-committee
Danny Simpson	Australian Recreational Fishing Foundation (ARFF)	
Ian Bladin	Australian Recreational Fishing Foundation (ARFF)	Board Member
Lockie McDonald	Australian Rural Leadership Foundation (ARLF)	Manager - Leadership Programs
Kirsten Rough	Australian Southern Bluefin Tuna Industry Association	Research Manager
Chris E. Calogeras	C-AID Consultants	Consultant

Christine Kershaw	Commonwealth Fisheries Association Inc (CFA)	Chief Executive Officer
Nicholas J. Moody	CSIRO Australian Animal Health Laboratory	Research Group Leader - ACDP Fish Diseases Laboratory
Adam Cavalieri	Department of Agriculture, Fisheries and Forestry (DAFF)	International Fisheries
Stephanie Martin	Department of Agriculture, Fisheries and Forestry (DAFF)	
Dan Gaughan	Department of Primary Industries and Regional Development (DPIRD) Hillarys	Chief Fisheries Scientist WA
Gordon Yearsley	Ellipsis Editing	
Alex Ogg	Fisheries Research and Development Corporation (FRDC)	Director
Chris Izzo	Fisheries Research and Development Corporation (FRDC)	Senior Research Portfolio Manager
Crispian Ashby	Fisheries Research and Development Corporation (FRDC)	General Manager - Research and Investment
Felicity Horn	Fisheries Research and Development Corporation (FRDC)	Extension Officer
Jennifer Marshall	Fisheries Research and Development Corporation (FRDC)	Cross Functional Facilitator
Kylie Dunstan	Fisheries Research and Development Corporation (FRDC)	General Manager Stakeholder Engagement
Sue Rana	Fisheries Research and Development Corporation (FRDC)	Corporate Affairs Manager
Dempsey D. Ward	Fisheries Research and Development Corporation (FRDC) Adelaide	Communications Officer
Samantha L. Coates	Indigenous Marine Resources Consultants Australia (IMRCA)	Administration and Financial Manager
Stan S. Lui	Indigenous Marine Resources Consultants Australia (IMRCA)	Manager
Emily Ogier	Institute for Marine and Antarctic Studies (IMAS) Hobart	Researcher - Marine Social Sciences
Kate J. Brooks	KAL Analysis	Director / Social Scientist
Matt Watson	Marine Stewardship Council Fremantle	Senior Fisheries Outreach Manager
Katherine Winchester	Northern Territory Seafood Council (NTSC)	Chief Executive Officer

Lowri Pryce	OceanWatch Australia Ltd	Chief Executive Officer
Anne Stunzner	Oysters Australia Ltd	Executive Officer
Nicole Anderson	Paspaley Pearling Co Pty Ltd	R&D Research Manager - Pearl Production
Tricia E. Beatty	Professional Fishers Association (PFA)	Chief Executive Officer
David Bobberman	Queensland Seafood Industry Association (QSIA)	Chief Executive Officer
Russell Conway	Recfish Australia	Chair
Andrew Rowland	Recfishwest	Chief Executive Officer
Julie Petty	Seafood Industry Australia (SIA)	Policy and Project Officer - Aquaculture
Iain Evans	Southern Rocklobster Ltd (SRL)	Chair
Tom T. Cosentino	Southern Rocklobster Ltd (SRL)	Executive Officer
Alison Turnbull	University of Tasmania	Seafood Food Safety and Market Access Research Scientist
Sarah C. Ugalde	University of Tasmania	Research Fellow - Shellfish Aquaculture
Darryl Hockey	Western Australian Fishing Industry Council Inc (WAFIC)	Chief Executive Officer
Matt H. Taylor	Western Rock Lobster Council Inc (WRLC)	Chief Executive Officer
Manue Daniels	Women in Seafood Australasia (WISA)	Company Secretary
Brett J. McCallum		Director / Consultant
Paul Richardson		
Richard Little		
Richard Peters		Director

7.3 Have Your Say – Future Focus Activity (Mentimeter Raw Data)

7.3.1 Topics of Interest (Raw Data)

Figure 14: Word cloud of all responses from the question "What is one topic you hope to discuss over these next two days?"

What is one topic you hope to discuss over these next two days? (171 responses)		
Spatial	Spatial	Compliance
Access to resources	SUSTAINABILTY	Fossil fuel industry
Habitat	Climate change	Future Security
Profitability	Climate change	Climate change
Climate change	Research themes	Governance
Strategy	Harvest strategies	Disease control
Harvest strategies	Climate change	Spatial squezze
Profitability	Decarbonisation	Consultation collaboration
climate change	Industry future	Recreational parity
Capacity building	Trust in science	Supplychain
Climate adaptation	Recreational	Sustainable
Recreational parity	Marine Park Sanctuaries	Sustainable ocean plan
Spatial	Biosecurity	Global pressures
Economic	Conservation	Welfare
Sustainability	Trust in science	Leverage funding
Climate change	Multiple impacts	Resilience
Renewable energy impact	Consistency	Implementation
Standards	Wind	Science based decisions
Offshore	FRDC processes	Labelling
Carbon	Extension	Social license
Leverage funding	Effective engagement	Sustainability
Capacity	Leveraging	Social Licence
Spatial planning	Government intervention	Harmonisation

Investment	Extension capabilities	Aging
Annual plan	Resource access security	Access
Social Licence	Climate change	Project coordination
Economics	Next Generation	Vaccines
The next generation	Collaboration	Artificial intelligence
Digitisation	Consolidation	Decarbonisation
Biosecurity	Management	Wind
Demographics	Capacity building	AI
Future proofing	Biosecurity	Next generation
Equity	Welfare	Planning
Shared data and expertise	Biosecurity	Leadership
Biosecurity	Adaptation Technology	Social licence
30 x 30	Resilliance	Capital investment
Marine spatial squeeze	Technology	Resourcing
Climate change impacts	Process efficiencies	Social licence
Leveraging	Cost	Support ongoing data coll
Biosecurity	Conservation	Priority gaps
Resource security	Climate change	Biosecurity
Spatial planning	Marketing	Markets
Windfarms	Data	Supply
Future wild catch fisheries	Social licence	Planning
Animal welfare	Resourcing	Climate change
Recreational parity	Adoption	Circular economy
Profitability	Capacity	Resourcing
Recreational parity	Capacity building	Extension
Non sexy science	Digitisation	Climate change
Spatial squeeze	Climate	Post harvest value add
Bycatch	Market Access	Work force development
Spatial squeeze	Politics	Social
Vaccines	Leadership	Translocation
Digitisation	Research and Development	RAS production
Decarbonisation	Circular economy	Unite the industry
Wellness	Biosecurity	Translocation
Climate change	Bivalves	Dynamic management of res

7.3.2 Current Challenges (Raw Data)

What is the greatest challenge the sector is currently facing, from your perspective? (72 responses)

Tightening (locking down) of access to resources and target locations	Impact of legislative change	Limited succession planning
Future triple bottom line sustainability	Job security and maintaining expertise	Biosecurity
Adapting to changing landscapes: climate, governance, markets, consumers	Aquatic animal disease Climate change	Climate change
Animal welfare	Renewable energy compulsory acquisitions	Compliance
Climate change	Spatial access	Spatial squeezw
Loss of so much access to marine areas to sustain commercial fishing	Compliance / regulation	Climate adaptation
Adapting to rapidly changing societal norms	Climate change	Labour market
Commercial access to the resource for sustainability harvested wild caught seafood.	Political agenda	Mental health
Trust in science	Resource security	Lack of data to support changing climate
Lack of resources affecting science and management	Cost recovery management	Innovative adaptive data collection
Non compliance	As a wild catch micro business fishing family, our greatest challenges are spatial squeeze, increase workload to keep up with regulations, change of in marine environment	Workforce or lack there of
Regulation	Climate change	Lack of shared intent across sectors
Government policy	Climate change and impacts to participation	Climate change
Social licence	Workforce development	Delivery of essential service - food products
Spatial rights	Failure to meet decarbonisation targets	Apathy
Resource access	Generating timely useable science	Consultation overload
Impact water heating	Lack of resources	Technology
Perception	Government processes	Lack of government funding support for climate data gathering

Resource access security	State jurisdiction policy	Less resources for science and management
Fish is too cheap!	Capacity within Fisheries Dept	Food security
Changing Landscape	Climate change and spatial rights	Community and industry disengagement
Lack of resources	Resource access	Climate change
Renewal. With an aging demographic and no or very limited career path how do we entice new partcipants	Water heating	Technology
Alignment across competing needs	Community perception vs industry reality	Equity to access fishing rights

7.3.3 Current Opportunities (Raw Data)

What is the greatest opportunity currently within the sector, from your perspective? (62 responses)		
New markets / value add	Aquaculture growth	0 waste systems
Collaboration between the various sector participants	We'll beat ng benefits	Clumate change
Collaboration	Food security	Government willing to invest to tackle climate change
Premiumisation on capped supply	Data sharing for new insights	Innovation
Collaborate to adapt	Have practical govt policy and legislation	Value adding post harvest
Building resilience	Food security	Equity
Growth of the industry	Carbon farming	Latent workforce
Opportunity to restructure with sufficient capital investment	FRDC willing to partner and invest	Technology
Setting the norms not chasing those imposed by others	First mover	Collaboration
Increasing acknowledgement of health and well being benefits of rec fishing	Training and education	Collaboration
Building awareness of the sustainability and environmental credentials of the wild harvest fishing industry	Adaptation	Harvest Strategy reviews
Digital innovation	Technology	New markets

People want local seafood	Better utilisation of resources	AgTech / AI
Landed Standard	Labour market	New markets
Be the answer to food security	Digital transformation	CoOL potential
Coordination	Food security	More Flexible regulation
Quota is increasing	Value add	The economy
Cheap healthy protein	Industry/government partnerships	Educate, inspire the next generation
Collaboration	Nil, just way too hard	Codesign
Food security	Finding common ground	Welbeing and health benefits from rec fishing
Finding a sustainable (price and environmental) alternative to diesel - single biggest cost	Fisheries legislation (state) prohibiting innovation	

7.3.4 Regulatory and Policy Challenges (Raw Data)

What are the regulatory or policy challenges that R&D efforts may need to inform, and how can these be addressed? (92 responses)		
Spatial squeeze	Cost recovery	Educate political sector
Federal and state policy differences	Government spending cut backs	What does good change management look like
Influence of industry in regulation	Offshore wind energy impacts and opportunities	Resource sharing
Science vs policy based decisions	Response to disease outbreaks from Government at State levels	Failure to manage marine space holistically
Agility of regulation is usually Slower than rate of change	Too many fisheries management agencies	International interference
Harvest strategies not working	Feelings v science based decisions	Recreational effort and take
State vs Federal Legislation	Tracking supply chains for efficiency	Make them actually practical
Flexibility in harvest strategies	Apparatus	Conflict resolution between industries competing for same locations
Non fishery interference	Need for integration or coordination across agencies/policies/regulatory frameworks	Economic viability of regulation
Marine park sanctuaries	Recreational recognition in policy	Biosecurity

Stock structure	Having processes and systems in place that are understood/implemented to support policies	Full utilization of product
Marine spatial management	Spatial planning	Deregulation or co management where pass
Difficult process to bring change	Lack of property rights due to policy chaos	Data poor, policy rich
Desolve state boundries!!!	Spatial squeeze	ITQ
Harvest strategies	Politics	Educate political sector
Ability to adapt to shifting fishing grounds	New gear and practices for social licence	National climate change data system
Fisheries legislation (regulations) prohibiting commercial innovation (alternative gears, vessels size restrictions, engine size restrictions, specified gears)	Training	Align growth plans with useful on ground policy
Climate change adaptation	Collaboration	Industry consultation
Competition from increasing resource users and displacement/compensation for removal of resource access	Need for more flexibility in policy and regulation	Effective fisheries management for data poor fisheries
Importance of co-creation/management	Full utilization of product	Cost of regulation
Change is too slow	More ecosystem approach	That we don't sign off of treaty and such that actually our wiping us out
Government inaction	Resilience and adaptation to climate	Managing for abundance
Inconsistency across jurisdictions	Cross sector management	Alternative to ITQ
Using research to make informed decisions	Green energy	Add more flexibility to enable adaptive decisions
Consistency	Moving to dynamic fisheries management	Industrialisation of the industry
Nature related financial disclosures	Increased public good funding	True alignment across jurisdictions
Fisheries legislation is rigid	Climate change policy	Biosecurity
Environmental Compliance Border Biosecurity	Path of least resistance	Use of tech and data security
Transition from diesel - infrastructure & vessel standards	How to deal with all the rubbish from green energy that we can't recycle	Loss of the small operating fishing families model

Waste utilization	Adaptation to climate change	

7.3.5 Future Challenges (Raw Data)

What do you think will be the greatest challenge that your sector may face in or within the next 5 years? (104 responses)		
Government policy	Dealing with increasing shark depredation	Lack of labour
Animal welfare and marine parks	Climate change adaptation	Feelings driven decision making
Climate change, heat waves	Resilience	Access
Reduced capital value of fleet as it reduces in size	Poor labour market	Increasing retail cost
Development squeeze	Lose of small fishing families business	Sustainable stocks
Lack of management flexibility	Ability to adapt to climate change	Access to staff
Global pollution incidents	Government policy	Climate impacts
Climate change vs management	Social licence	Food supply and supply chains (product value)
Survival from environmental groups	Leadership	Greater Co-management of fisheries
Cumulative food security impacts of loss of spatial access	ESG	Inflexible management regulation
Extinction	Marine space management	Same issues
Southward shift of fish	Regulatory incompetence	Net zero
Less resources for science and management	Global warming	Low tax base
Compliance	Trade shocks from geopolitical tensions	Industrialisation
Regulation	Lack of staff training	Markets restrictions
If we do nothing it will be the same	Social licence	Cost of compliance
Survival	Fisheries will close without impactful advocacy and r and d	No local fish on market
SPATIAL MANAGEMENT and fishing access	Flexibility within regulations to aid business viability	Compliance costs v industry income
Diminishing commercial wild-caught sector due to increasing costs and regulatory inefficiency	Cheap seafood imports produced in environmentally depleted	Marketing product to niche high end restaurants through direct relationships

	environments with slave labour and no safety	rather than selling a commodity
Adapting policy to climate variables	Political expediency wiping out commercial access to vote grab	Capacity building for workers
Management Regulations hampering sustainable catching sector	Increasing operating costs and inability to compete globally	Offshore
Spatial squeeze. Competition for resource access	Access	Biosecurity
High/unprofitable operating costs for fishers and businesses.	Industry economics	Economic survival
Uncertainty around act, regulations and resource access.	Government legislation changes to accommodate climate crisis	Inequity
Same as now	Prioritisation of competing needs	Geopolitical issues
Inaction still refusing to deal with the same issues	Aquatic animal disease	Mining geospatial data
Workforce willingness. Climate crisis.	Increased local supply	Death if a thousand cuts
No progress	Resource conflict	Increased management costs
Climate change	Equitable resource sharing	Aging population
Climate change	Climate change adaptation	Cost of compliance
Clean energy regulator decision making transparency	Energy	Climate change unknowns
Marine area access and supply demand	Public finances	Over regulation
Profitability - rising energy, feed and staff costs.	How to recycle green znerygy	Demographics
Trade market access	Interfering with itq	Spatial squeeze
Cost of business	Market requirement increases	

7.3.6 Future Opportunities (Raw Data)

What do you think will be the greatest opportunity that your sector may face in or within the next 5 years? (80 responses)		
New markets	Value add	Protein

Collaboration to maximise outcomes from limited resources	Tell our story as responsible custodians of a shared resource	Aquaculture systems that filter micro plastics
New technologies	Habitat enhancement	Greater co-management of fisheries
Premiumisation of scrapped supply of seafood	Export markets based on ESG values	AgTech / AI
Improving labour standards	Restructure	Tech
Riding the sustainability wave for consumer preference	Growth in seafood consumption per capita	Technology
Improving ecosystem productivity	Change of govt	Cost of compliance reform
Partnership with First Nations people in northern Australia	More integrated management across jurisdictions/industries	Collaboration. Trying to get everyone onside to enhance community expectations
Get out before then	CoOL	Youth engagement
Shift the narrative to a positive for industry	Social licance	Offshore
Value adding	Technology reducing production costs	Seafood is a healthy sustainable food
By out	Collaboration	Expansion
Data sharing	Real time data	Smart fishing technology
New technology	Remote sensing techniques - eDNA	AI
Identification technology	Blue economy	AI
Technology	Value add	Genetics / genomics
Better coordination of investment, effort, activity for more impact	Energy transition	Crispr-cas9 gene editing
Food security	Social media	Increased local supply
Sustainable stocks	Technology advancements	Data analysis to reduce management costs
Developing niche products and marketing directly with high end restaurants to maximize price	Innovation to reduce costs of production (diesel alternatives, automation of processing on board)	Fishing Industry sectors working together for the benefit of all participants
Survival of the fittest	Robotics	Habitat restoration
Digital technologies and innivation	None for our small fishing families	Rebranding
AI	eDNA	Cool
Cross-sector collaboration	Collaboration across stakeholders	Indigenous partnerships

New technology	Indigenous seafood enterprise development	From federated to National focus
First Nation participation	Carbon farming	Get rid of multiple management agencies
Regional workforce growth	Data harvest and analysis	

7.3.7 Emerging Innovations and Trends (Raw Data)

What innovations do you see being applied, or trends that should be considered for application in fishing and aquaculture? (99 responses)		
AI and technology improvements to fishing gear	Traceability	Rapid screening tools
eDNA, AI	Social values in harvest strategies	AI Oyster sorting
Nature Positive	Electric engines in boats	Robotics and AI fishing technology
Seaweed farming to reduce methane emissions	AI to reduce researcher and modeling costs	Drone
Real time monitoring in harvest areas and along supply chain	De carbonisation	Use of AI in forecasting
Habitat enhancement	New stock enhancement technologies	Waste management into new products
Greater carbon capture	New seafood processing technologies	Robotics
Ai to reduce compliance monitoring costs	Under-utilised species	Remote monitoring systems
IDV ->bycatch	Traceability	Value adding
Different enterprise models between existing industry, non-for-profits, emerging industry (e.g., offshore)	Hybrid fuels vessel refits	Eliminate plastics in the marine
New fishing gears ie ropeless, gps tracking etc	Alternatives to diesel or quick solutions to reduce diesel costs - single biggest input cost	Expectations of the new consumer (younger peoples expectations for food and consumer choice)
Genetics	Community perception changes	Plastic alternatives
eDNA	Cost effective E-monitoring solutions	Post harvest onboard technology
Stewardship	Learn from terrestrial industries	Industry working together - crazy idea!
Data data data	Blue carbon	Better tech to connect customers with low carbon

		renewable protein source-seafood
Ocean forecasting	Carbon and nitrogen trading	On-site harvest of energy/ wave and tide
Look globally for innovations with aquaculture/fishing technology and processing	Vaccines	Smart gps buoy to reduce loss fishing gear and record data
Consumer voice	Machine learning	Consumer engagement tools
Real time data collection and exchange between industry and government, then through supply chains	Alternative fuels	Integration and diversification in hatcheries ie asparagopsis
Temperature mgmt in supply chains	Less boats / same catch	Utilisation of underutilsed fish proteins
Efficiencies in data capture through digitisation	AI	Electo fishing
Point of care testing	Electrification of day trip vessels, support vessels	Indigenous engagement and partnerships
Actually reversing the trend towards consolidation and centralisation of quota holdings. It is pretty hard to get small coastal communities inside when they have seen their fishing communities decimat	International partnership to monitor, regulate and eliminate illegal, unregulated and unreported fishing	Global climate research - connecting globally to reduce duplication and increase research insights
Traditional practices based on low impact to environment and TEPS	"AI" - many applications	Better collaborations between research, industry and government
Sustainable, ethical and responsible practices	Low/zero carbon fuels	Ai
AI to reduce cost	eDNA	Diesel replacement
Genetics	AI	Selective harvest using AI
Multiple gear types being used in same trips	Genetics / genomics - multiple applications	Better collaboration
Gene editing (Crispr)	Real time data	Alternate to current modelling practices based on big data
Alternate fuels	Turf based management systems	Packaging - reducing plastic use

Traceability of product	Collaborative marketing with other low carbon food sectors	3D printing tech to reduce business costs
Hybrid fuel sustems	New marketing agency like grains have AEGIC	Remote monitoring
Blockchain	3D printing replacement parts vessels	Dynamic fisheries management

7.3.8 Improving the Industry (Raw Data)

What is one thing that you wish we could do, that would change fisheries and aquaculture for the better? (51 responses)		
Better security of access for fishers	Improved co-management or increased industry self management	Pipeline of new people
Abundance focus	Less waste in the supply chain	One voice
Improve, restore habitats	Excellent consumer understanding of industry	Easily accessible plastic recycling
In demand brands	Timely descisions made on sound science	Science based decision making
Collaboration	Owner operators	Certainly
Increase ecosystem productivity	Equity for First Nations	Cater for fisheries in renewable energy planning processes
Succession Planning	Collaboration	All stocks are abundant
Remove environmental warriors	Demographics	Number one sought after career
Protected spatial rights for commercial fishing	Single jurisdiction	Eliminate illegal, unregulated and unreported fishing and discards gear and rubbish
Commonsense	Make environmental compliance / regulations much easy to navigate.	Science rather than politics
Recognition of shared concern with changing climate	Remove politics from management	Positive community engagement
Find viable foam box alternative	TURF based fisheries management	Community values fishing industry
Mandated standard fish names.	Leave the UN	Qld legislation change on farmed fishing in a reef catchment
Influence govt policy to actually support fisheries	Politicians seeking votes	To be loved

Take the politics out if decision making	Attract brightest young people into sector… we are all becoming fossils 🙃	More timely data collection and response
Being an after thought in planning policy	Stabilise/restore the Ocean environment	We are an employer of choice
International partnership to monitor, regulate and eliminate llegal, unregulated and unreported fishing	Reduce the time and effort involved in battling those opposed to fishing in all forms	Single management agency

7.4 Reflection on Updates (Mentimeter Raw Data)

7.4.1 Feelings Towards FRDC Updates (Raw Data)

Provide a word that convey how you feel after hearing these updates.
74 responses

Figure 15: Word cloud of all responses when participants were asked how they felt after hearing FRDC's updates.

Provide a word that convey how you feel after hearing these updates. (71 responses)		
Opportunity	Opportunities	Opportunities
Hopeful Positive	Informed	Updated
Thinking	Reasuured	Strategic
Trusting	Comfident	Positive
Tired	Tired	Low risk projects
Reassured	Impressed	Positive
Hopeful	Progress	Hopeful
Heard	Heard	Positive
Excited	Better	Opportunities
Excluded	Transparent	Reassured
Optimistic ish	Possible barriers	Safe
Encouraged	Devil in detail	Encouraged

Frustrated	Disconnected	Opportunities
Ambitious	Out of touch	Enlightened
Out of the loop	Strategic	Considered
Excited	Confused	Positive
Conflicted	Hopeful	Confident
Interested	Okay	Opportunities
Intrigued	Reassured	Detailed
Concerned	Listened to	Confused
Hopeful	Progress	Impressed
Not achievable	Overwhelmed	Progress
Hopeful	Hopeful	Positive
Informed	Hoping	

7.4.2 Gaps in FRDC Updates (Raw Data)

Are there any gaps in the material presented? If so, what is missing? (33 responses)		
How what is being done actually helps the fishers be more financially sustainable	Ambitious is the word I would have used. Probably sounded to easy/good	Developments in Coordination Programs (eg. Ocean access)
Percentage allocation by sector would be helpful to understand the priority setting process	More info on broad scoped projects such as Safe Fish and Fish Names.	What role does the board have in the assessment process
Explain what the acronyms mean when you begin	Partnerships with CRCs and other science/industry initiatives	How does this all help meet our SDG commitments?
RAC approval process	Eon updates	Major risks facing the CRC
Specific role of extension officers	How is zgTFzc tracking against the 20-25 strategic plan?	Anything that wasn't able to be done
EON activities	Infographics	Summaries of the IPAs
Failures and lessons learnt	RAC budgets	Actual impacts for end users
Demographic breakdown of investment	No enabling strategy for theme 3	What not included, future opportunities
Future strategic plan	Improvements to process internally	Things that might not have been able to deliver
Assessment and approval processes	Project assessment and approval process	Collaboration with other funders
Improving timeframes to get things done	Responsible sector for implementation	% allocation by sector of total investment

7.4.3 Positive Feedback on FRDC Initiatives and Areas of Improvement (Raw Data)

Based on the updates, what is FRDC doing really well (that you want to see more of)? (50 responses)		
Support for the sectors	Deciphering big picture policy movement - thank you	Reducing time to contract
Engagement	Reacting to feedback	Removing barriers to rapid project approval
Frdc extension is great	Linking with other programs to add value	Covering the issues no one else wants to do
Tranparency	Extension network	Excellent staff attitude and commitment to industry and role of FRDC
More money with less no from Crispian	The EON	Number of extension officers based on geographical area of coverage
Indigenous activities	EON.	Promotion of research and activities
Communication	Eon kpis shared	The FRDC culture make them a really easy and good organisation to work with
Listening to stakeholders	Workforce planning initiatives under Sally's program	Extension officer
Strategic investment for long term benefits.	Becoming more outcome focused 👍	Better engagement with all sectors
Improving engagement with all sectors	Indigenous engagement	Details of how people know that the FRDC work is hitting the mark
Helping position a viable future	Focus on meaningful and useful outcomes	More extension network officers
IPA managers	More RIP	Listening to industry and supporting key issues.
Extension	EON process	Leveraging commercial investment into projects
Improving programmatic R&D administration and delivery	How risks/ lessons learned have been handled and shared internally	Further streamlining of FRDC's processes (ie industry dashboard and milestone reporting)
Extension officer network 🤘	Yay EOs	Responsiveness
Responding to changing needs	Progressing collaboration	Communicating
Enthusiasm for what they do	Keeping on top of a wide agenda	

7.4.4 Recommendation for Areas of Reduction and Focus (Raw Data)

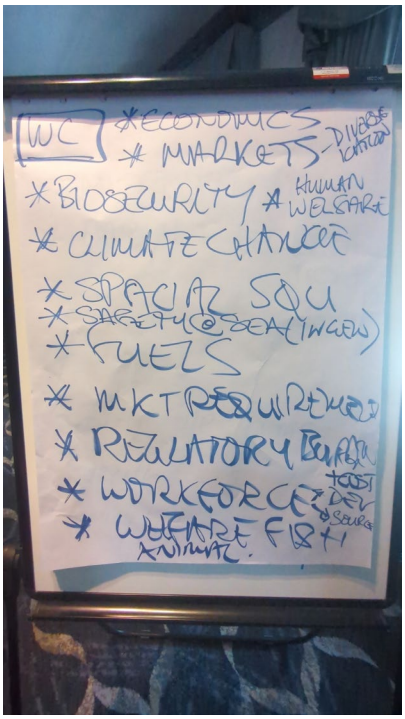
What should FRDC do less of? (13 responses)		
Cover too many areas	Try to be everything to everyone.	Low risk projects
Wide coverage of many issues	Choose priorities and invest properly.	External reviews of IPA supported project proposals.
Blue sky projects	Picking winners	Talk
Only funding sexy novel new science. Need mechanism to fund snd maintain long term data bases	Less trying to influence political agendas … or industry direction… focus on research	Communication. Sometimes less can achieve more.
Extension Network		

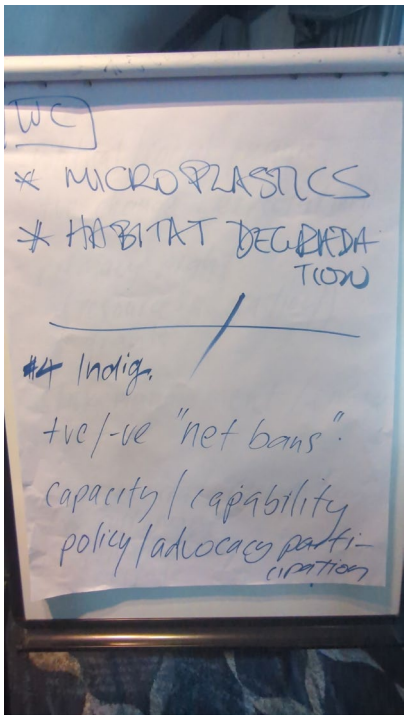
7.4.5 Perceived Evidence of Progress in FRDC Initiatives (Raw Data)

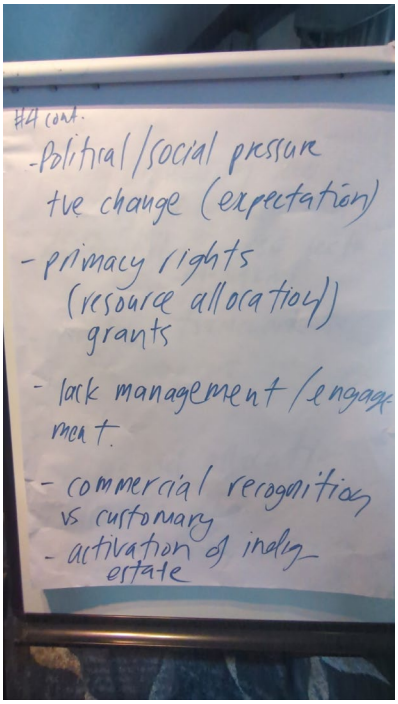
Do you see evidence of progress being made? If so, please provide an example. (43 responses)		
Extension works	Collaboration with other ag sectors	Webinars to share learnings
Connecting the dots (extension)	Reviewing HS effectiveness	Project management
Rip	Eon	Influence politics
New products	More easily accessible via eon.	High esteem of FRDC
Digitisation work	Increasing opp to leverage up and attract more $$$#	Awareness and engagement with issues of social license
Yeah definitely, some projects like the Tas Marine Atlas. But still lack of awareness with an overall idea f projects	Yes in flexibility and adaptation for programmatic R&D eg using Committee update presentations by PIs as milestone reports	Greater use of steering groups for projects meaning increased involvement of all stakeholders throughout a project.
Digitisation and data sharing platforms	Grass roots input	Extension services
Yes - colab fund - asked last year and its being implemented	Engagement and investment with human capital in the industry by the industry	Yes - special climate call earlier this year was in response to cross sectorial climate research priorities.
Increase in aquaculture activity	Great that not just using stupid Linkedin	Cross sectoral spread
Today's presentations gave insights	Positive investment in standard names.	Yes. Change to a more fit for purpose investment process

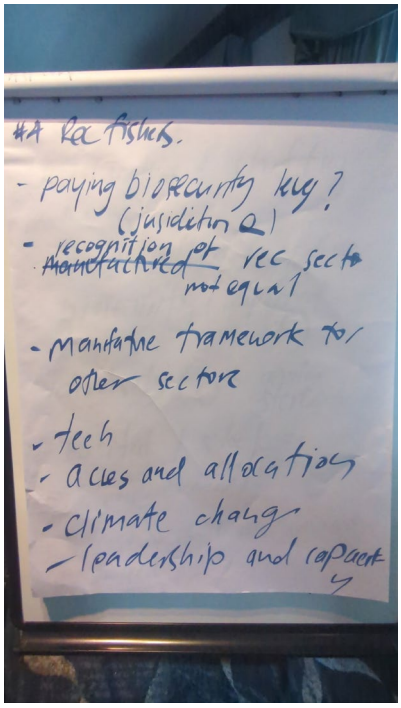
Reintroduction of Rapid Impact Projects	Fisheries ranked highly internationally on sustainability	EON
Extention network	Been getting more out and about	Technology focus
Yes in IPA management/relationship	Industry led projects	Rip but timeframe to get to fund is critical
Reducing administrative burden	Growing GVP of seafood production	RAC working better
Employment of Ariyana	Getting access to GVP data earlier	

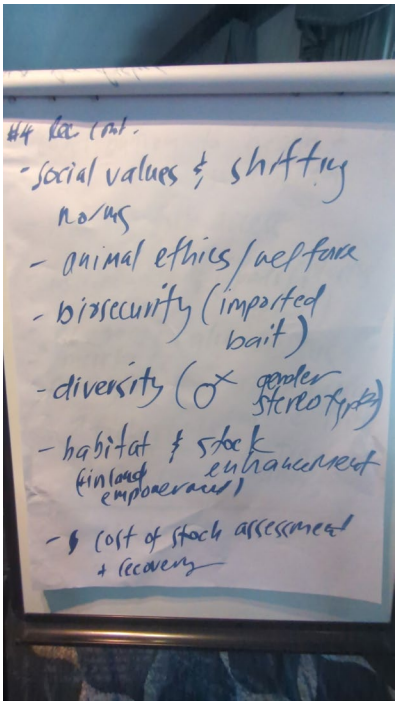
7.5 Gaps in the Findings of the "Have Your Say" Online Discussions (Raw Data)

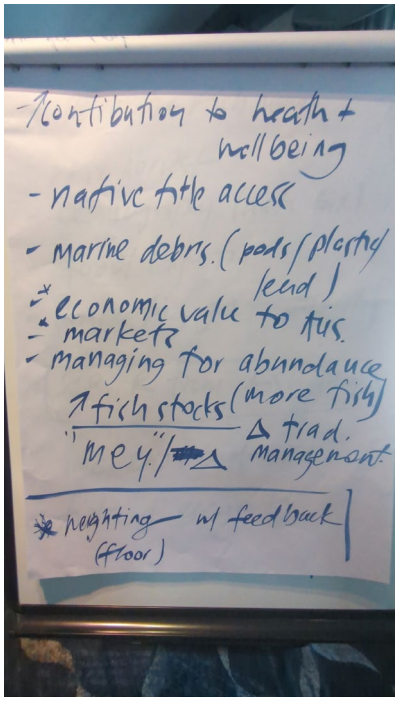


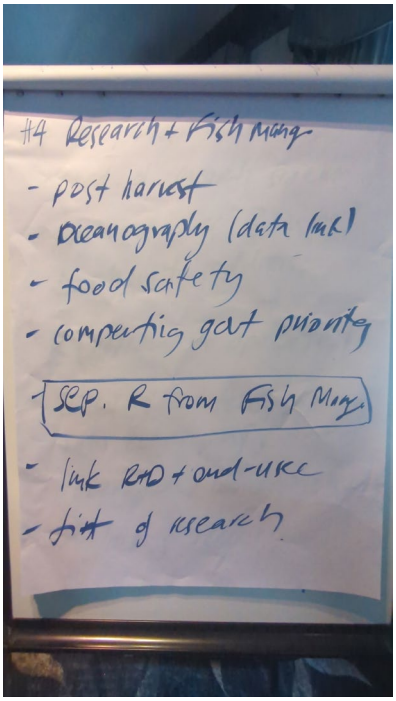


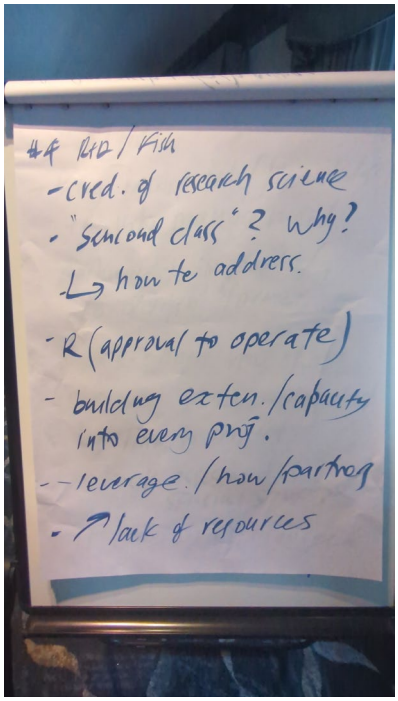

#4 cont.
-Political/social pressure tve change (expectation)
- primacy rights (resource allocation) grants
- lack management/engagement
- commercial recognition vs customary
- activation of inalienable estate

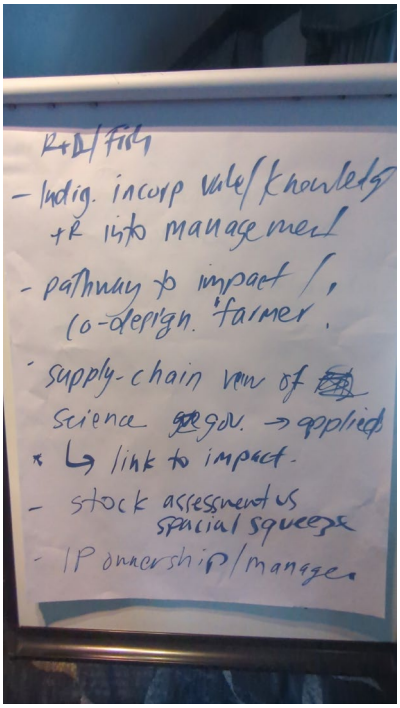

#4 Rec fishers.
- paying biosecurity levy? (jurisdiction Q)
- recognition of rec sector not equal
- mandate framework for other sectors
- tech
- access and allocations
- climate change
- leadership and capacity

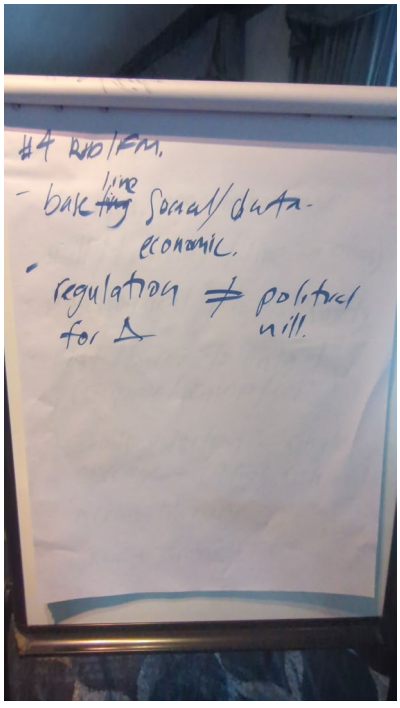

#4 Rec cont.
- social values & shifting norms
- animal ethics/welfare
- biosecurity (imported bait)
- diversity (♂ gender stereotypes)
- habitat & stock enhancement (Kirinari empowerment)
- $ cost of stock assessment + recovery

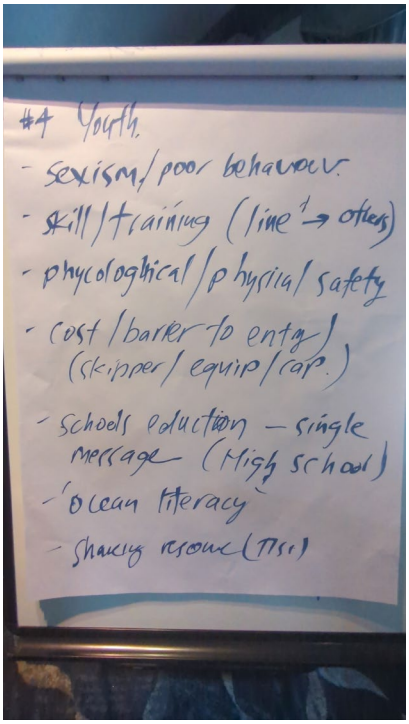

- contribution to health + wellbeing
- native title access
- marine debris. (pods/plastic/lead)
- economic value to this.
- markets
- managing for abundance
↑fish stocks (more fish)
"levy"/ Δ trad. management
* weighting w/ feedback (floor)

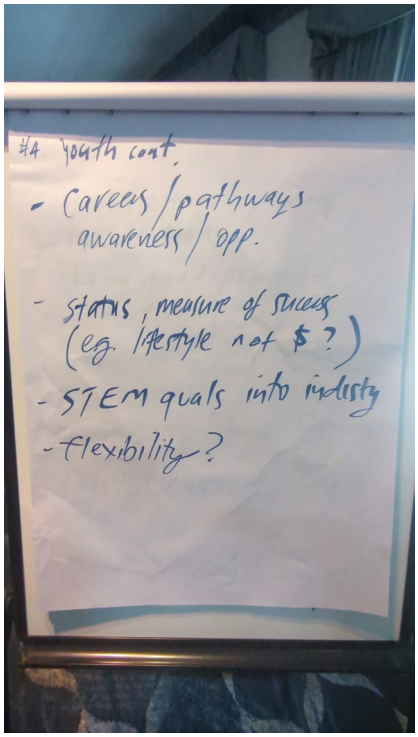

#4 Research + Fish Mang-
- post harvest
- Oceanography (data lack)
- food safety
- competing govt priority
- Sep. R from Fish Mgt.
- link R&D + end-user
- dist of research

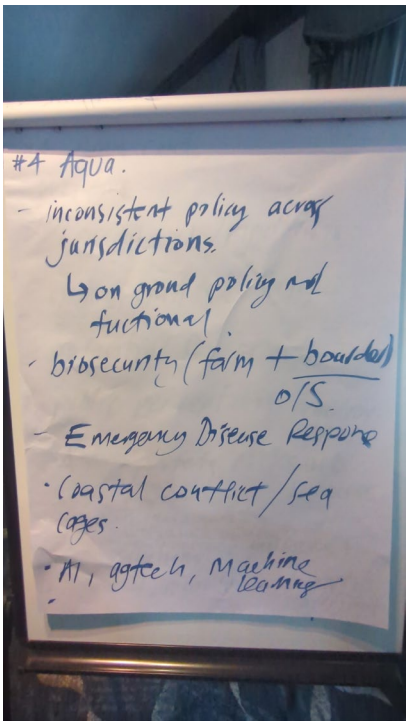

#4 R&D / Fish
- cred. of research science
- "second class"? why?
↳ how to address.
- R (approval to operate)
- building exten./capacity into every proj.
- leverage / how / partner
- ↗ lack of resources

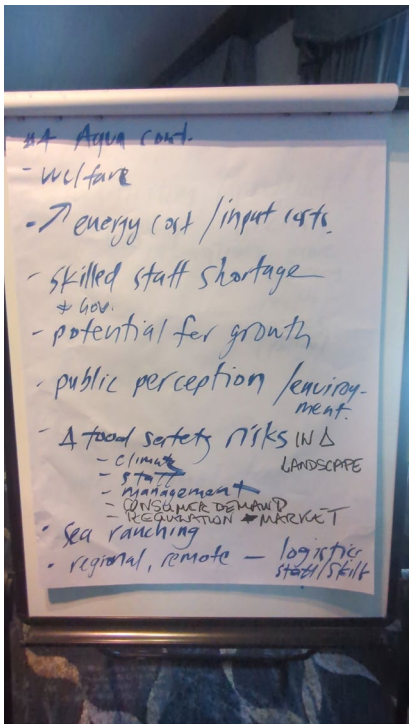

R&D / Fish
- Indig. incorp value/knowledge + R into management
- pathway to impact / co-design. farmer.
- supply-chain view of Science gov. → applied
↳ link to impact.
- stock assessment vs spacial squeeze
- IP ownership/manage.

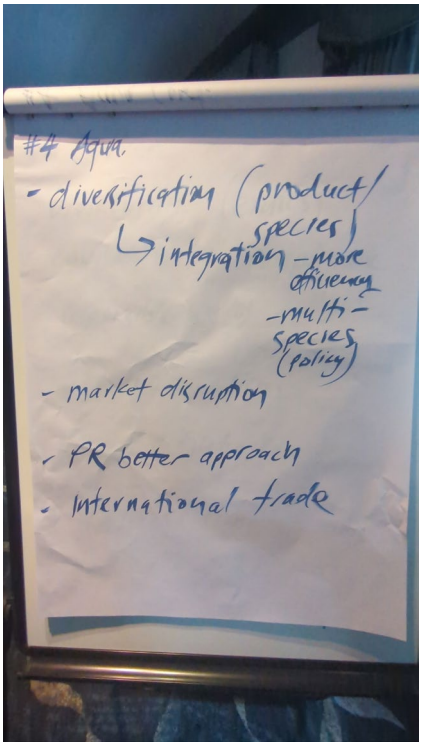

#4 R&D / Fm.
- baseline Social/data-economic.
- regulation ≠ political will.
for Δ

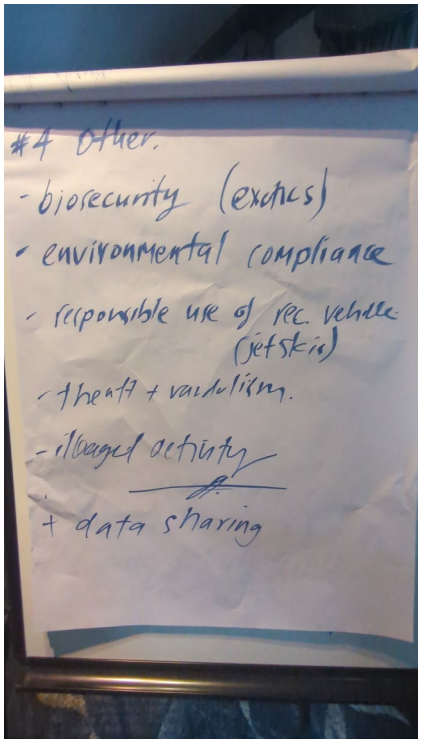

#4 Youth.
- Sexism/poor behaviour
- skill/training (line → others)
- phycological/physical safety
- cost/barrier to entry (skipper/equip/cap.)
- schools eduction – single message (High school)
- Ocean literacy
- Sharing resource (TSI)

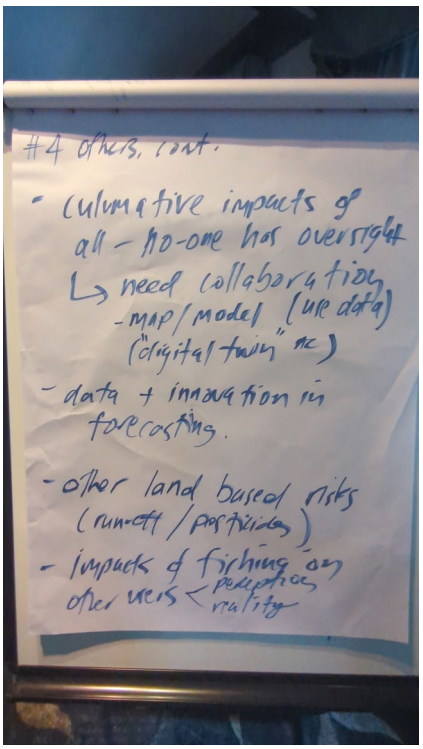

#4 Youth cont.
- Careers/pathways awareness/opp.
- status, measure of success (eg. lifestyle not $?)
- STEM quals into industry
- flexibility?

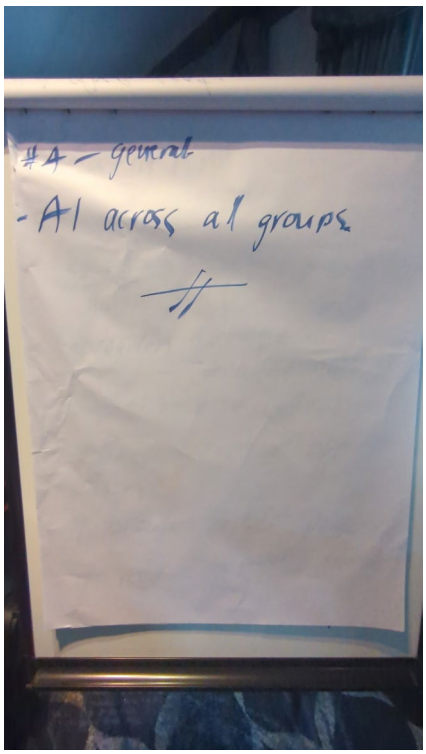

#4 Aqua.
- inconsistent policy across jurisdictions
↳ on ground policy not fuctional
- biosecurity (farm + boarder) o/s
- Emergency Disease Response
- Coastal conflict/sea cages
- AI, agtech, Machine learning


#4 Aqua cont.
- welfare
- ↗ energy cost/input costs
- skilled staff shortage
* Gov.
- potential for growth
- public perception/environment
- Δ food safety risks IN Δ
- climate
- staff
- management
- CONSUMER DEMAND
- REGULATION
LANDSCAPE
MARKET
- Sea ranching
- regional, remote – logistic staff/skill









A digital version of the images above are provided below, in case FRDC requires it for further development.

4. Summary of Findings. **What do you think is missing from the Have Your Say Online discussion findings?**	
Commercial Wild Catch – Online Discussion	• Economics • Markets – Diverse location • Biosecurity

	• Human welfare
	• Climate change
	• Special SQU
	• Safety at sea (IWCEW)
	• Fuels
	• Market requirements
	• Regulatory burden and cost
	• Workforce
	  ○ Development
	  ○ Source
	• Animal welfare – fish
	• Microplastics
	• Habitat degradation

#4 Indigenous - Online Discussion	• Positive/negative "net bans" • Capacity – capability • Policy/advocacy participation • Political/social pressure, positive change (expectation) • Primacy rights (resource allocation/grants) • Lack of management/engagement • Commercial recognition vs customary • Activation of indigenous estate

#4 Rec Fishers - Online Discussion	• Paying biosecurity levy? (Jurisdiction Q)
	• Recognition of recreational sector not equal
	• Manufacture framework to other sectors
	• Technology
	• Access and allocation
	• Climate change
	• Leadership and capacity
	• Social values and shifting norms
	• Animal ethics/welfare
	• Biosecurity (imported bait)
	• Diversity (gender stereotypes)
	• Habitat and stock enhancement (inland empowered)
	• Cost of stock assessment and recovery
	• Contribution to health and wellbeing
	• Native title access
	• Marine debris (pods/plastic/lead)
	• *Economic value to Australia
	• *Markets
	• Managing for abundance
	  ○ ↑fish stocks (more fish)
	  ○ Change "MEY": Maximum Economic Yield
	  ○ Change traditional management
	*Weighting with feedback (floor)

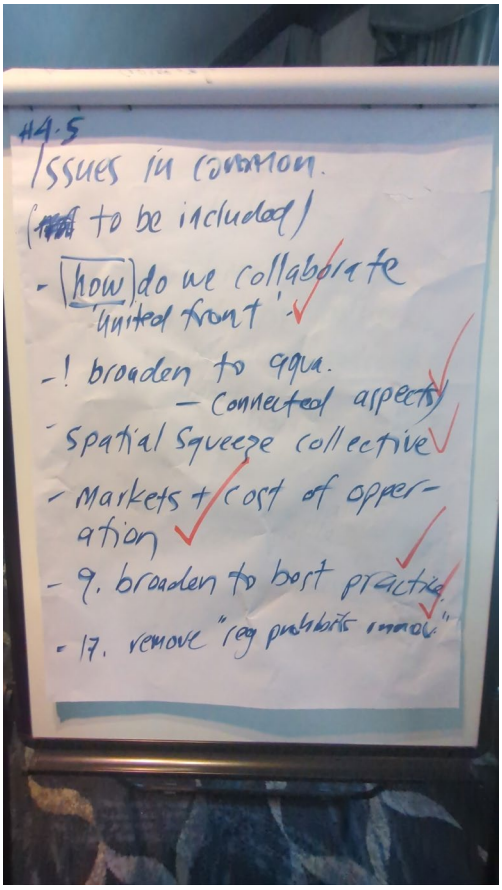
#4 Research & Fishery Management - Online Discussion	• Post harvest
	• Oceanography (data link)
	• Food safety
	• Competing government priorities
	• Separate R from fish management
	• Link R&D and end-user
	• First of research
	• Credit (credential)? Of research science
	• "second class" ? why?
	  ○ How to address?
	• Research (approval to operate)
	• Building exten./capacity into every project
	• Leverage/how/partners
	• Lack of resources
	• Indigenous incorporating value/knowledge and research into management
	• Pathway to impact / co-design "farmer"
	• Supply-chain view of science government -> applied
	  ○ Link to impact
	• Stock assessment vs special squeeze
	• IP ownership/manage
	• Baseline social/economic data
	• Regulation for change does not equal political will

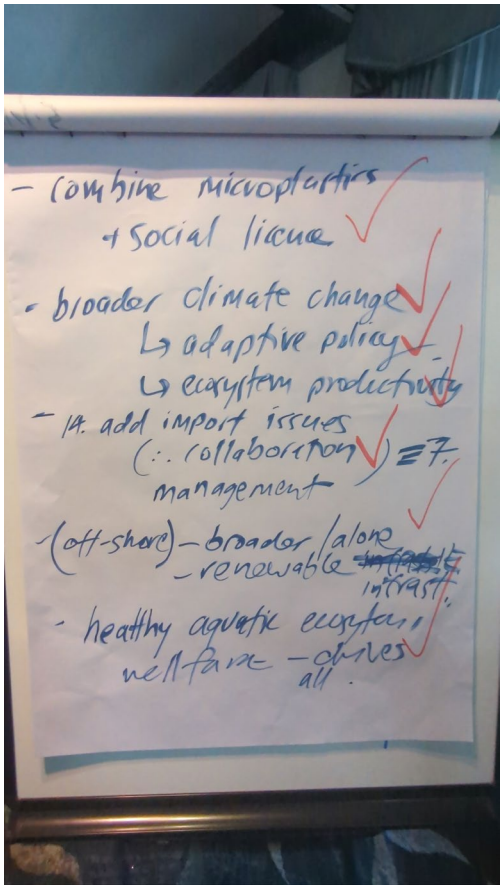
#4 Youth - Online Discussion	• Sexism/poor behaviour • Skills/training (line -> others) • Psychological/physical safety • Cost (barrier to entry) (skipper/equipment/cap.) • School's education – single message (high school) • Ocean literacy • Shaking resource (TISI) • Careers/pathways, awareness/opportunity • Status, measure of success (e.g. lifestyle not $?) • STEM qualifications into industry • Flexibility?

#4 Aquaculture - Online Discussion	• Inconsistent policy across jurisdictions
	  ○ On ground policy not functional
	• Biosecurity (farm and boarder) O/S
	• Emergency disease response
	• Coastal conflict/sea cages
	• AI/agtech/machine learning
	• Welfare
	• Increase in energy cost/input costs
	• Skilled staff shortage and government
	• Potential for growth
	• Public perception/environment
	• Change food safety risks in change landscape
	  ○ Climate

	○ Staff ○ Management ○ Consumer demand ○ Regulation market • Sea ranching • Regional, remote – logistics staff/skills • Diversification (product/species) ○ Integration – more efficiency ○ Multi – species (policy) • Market disruption • PR better approach • International trade
#4 Other Aquatic Users	• Biosecurity (exotics) • Environmental compliance • Responsible use of recreational vehicle (e.g. jetski) • Theft and vandalism • Illegal activity and data sharing • Cumulative impacts of all – no one has oversight ○ Need collaboration ○ Map/model (use data) (“digital twin” AC) • Data and innovation in forecasting • Other land based risks (run-off/pesticides) • Impacts of fishing on other users ○ Perception ○ Reality
#4 – General	• AI across all groups

7.5.1 Issues in Common (Raw Data)





A digtal version of the images above are provided below, in case FRDC requires it for further development and analysis.

4.5 Issues in common, not on slides, from floor. Text in red was incorporated.	

Issues in common (across the areas): (To be included)	• How do we collaborate 'united front'
	• 1. Broaden to aqua – connected aspects
	• Spatial squeeze collective
	• Markets and cost of operation
	• 9. Broaden to best practice
	• 17. Remove "reg prohibits innovation"
	• Combine microplastics and social license
	• Broader climate change
	  ○ Adaptive policy
	  ○ Ecosystem productivity
	• 14. & 7. Add import issues (therefore collaboration management)
	• (off-shore)
	  ○ broader/alone
	  ○ Renewable infrastructure
	• Healthy aquatic ecosystem and welfare – drives all

7.6 Theory of Change Impact Maps

7.6.1 Theory of Change Impact Map 1 (Raw Data)

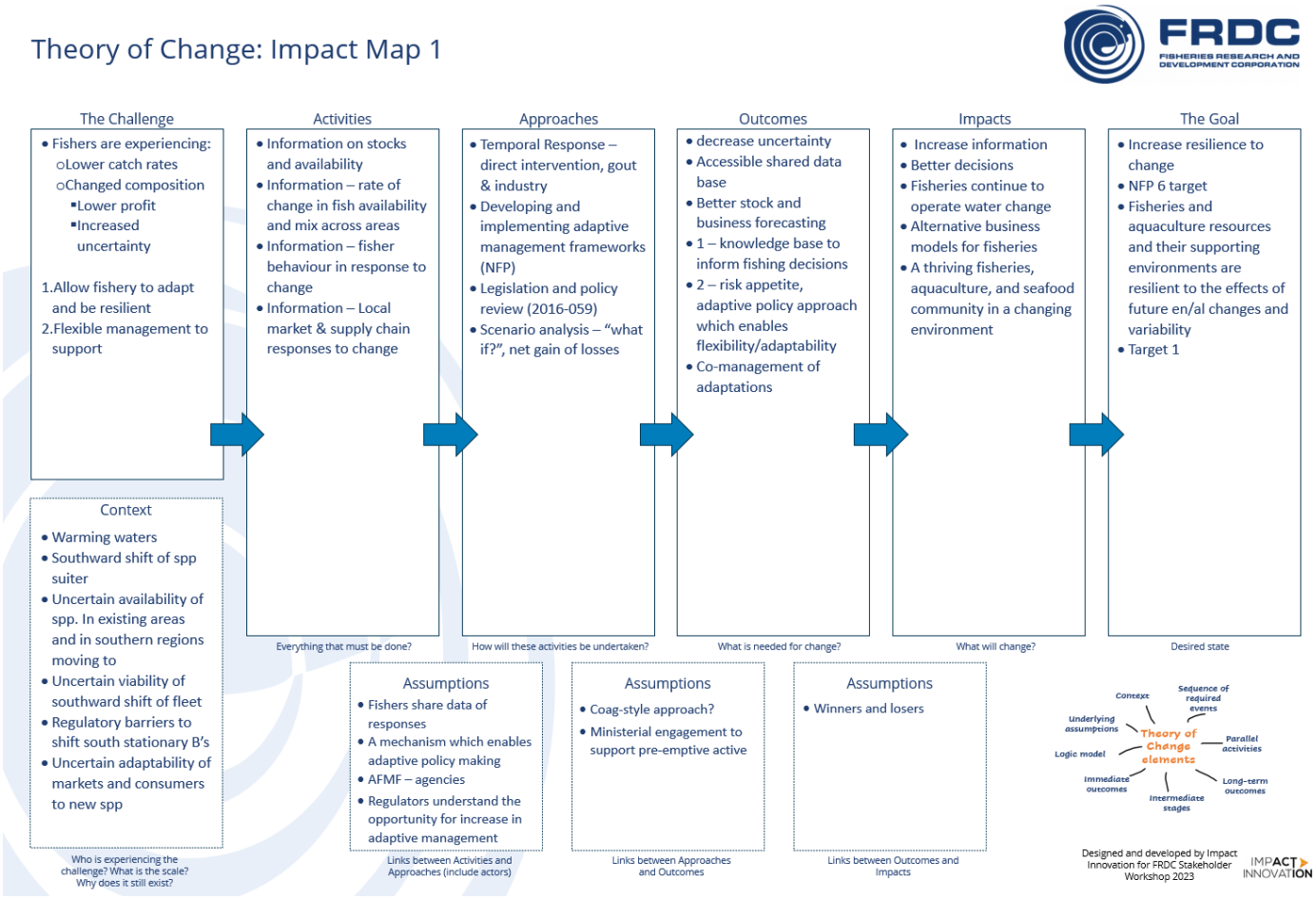


Figure 16: TOC Map 1 raw/unedited data.

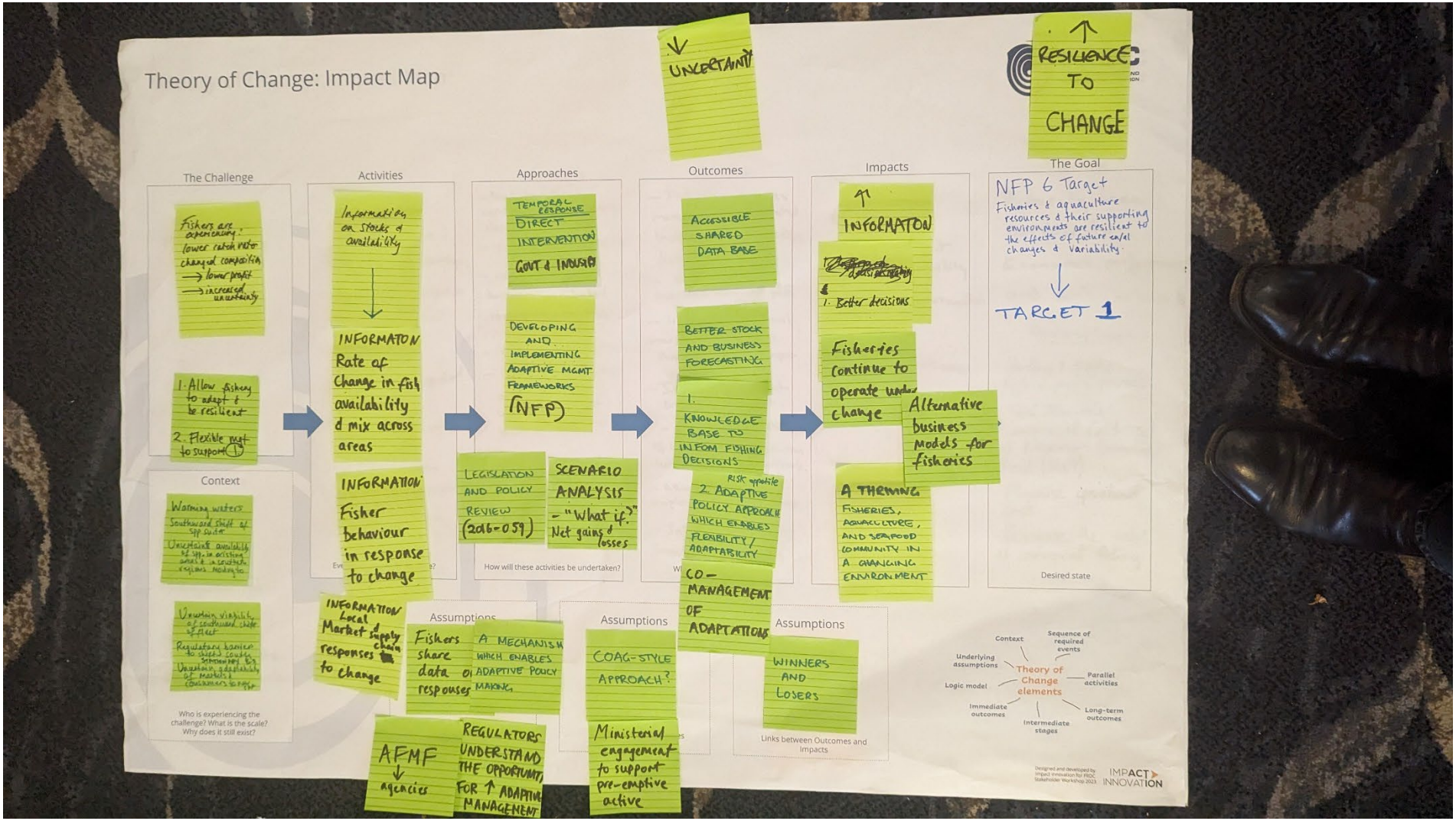


Figure 17: Photo of TOC Map 1 taken from the Stakeholder Workshop

Below is the cleaned/edited data in case needed by FRDC for further development:

1. The Challenge:
    a. Fishers are facing several challenges, including lower catch rates and a changed composition of fish species, resulting in lower profits and increased uncertainty. The challenge is to allow the fishery to adapt and become resilient while supporting flexible management.

2. Context:
    a. The context for this challenge includes factors such as warming waters, a southward shift of species suitable for fishing, uncertain availability of species in existing areas and southern regions, and uncertainty about the viability of the southward shift of the fishing fleet. Regulatory barriers to shifting southward and uncertainties related to market adaptability and consumer preferences for new species are also part of the context.

3. Activities:
    a. To address the challenge, several activities are proposed, including:
    b. Providing information on stocks and availability.
    c. Gathering information on the rate of change in fish availability and species composition across different areas.
    d. Collecting data on fisher behaviour in response to these changes.
    e. Gathering information on local market dynamics and supply chain responses to these changes.

4. Approaches:
    a. Various approaches are suggested to achieve the desired outcomes, including:
    b. Temporal response through direct intervention, government, and industry collaboration.
    c. Developing and implementing adaptive management frameworks (into the National Fisheries Plan).
    d. Conducting legislation and policy reviews (2016-059).
    e. Scenario analysis to understand potential impacts and net gains or losses.

5. Outcomes:
    a. The anticipated outcomes of these activities and approaches include:
    b. Decreased uncertainty in the fishing industry.
    c. Accessible shared databases for stakeholders.

d. Improved stock and business forecasting.
e. Enhanced knowledge base to inform fishing decisions.
f. Increased risk appetite and an adaptive policy approach that enables flexibility and adaptability.
g. Co-management of adaptations in the fishing industry.

6. Impacts:
    a. The ultimate impacts of these outcomes are expected to be:
    b. Increased availability of information.
    c. Better decision-making in the fishing industry.
    d. Continuation of fisheries operations despite environmental changes.
    e. Development of alternative business models for fisheries.
    f. A thriving fisheries, aquaculture, and seafood community in a changing environment.

7. The Goal:
    a. The overarching goal of this Theory of Change map is to increase resilience to change in the fishing industry, aligning with NFP 6 targets. The specific target is to ensure that fisheries and aquaculture resources and their supporting environments are resilient to the effects of future environmental changes and variability.

8. Assumptions:
    a. The assumptions underlying this Theory of Change include:
    b. Fishers will be willing to share data about their responses to changing conditions.
    c. A mechanism for adaptive policy-making will be established.
    d. Collaboration with AFMF agencies will be successful.
    e. Regulators will recognise the opportunities for increased adaptive management.

9. Links between Components:
    a. The map also highlights the links between various components:
    b. Fishers sharing data is essential for adaptive policy-making.
    c. Collaboration with AFMF agencies is required for successful implementation.
    d. Ministerial engagement is necessary to support proactive actions.

e. The transition to adaptive management may result in both winners and losers in the industry.

In summary, this Theory of Change map outlines a comprehensive strategy to address the challenges faced by fishers in a changing environment. It highlights the importance of data collection, adaptive management, policy review, and collaborative efforts to ensure the resilience and sustainability of the fishing industry.

7.6.2 Theory of Change Impact Map 2 (Raw Data)

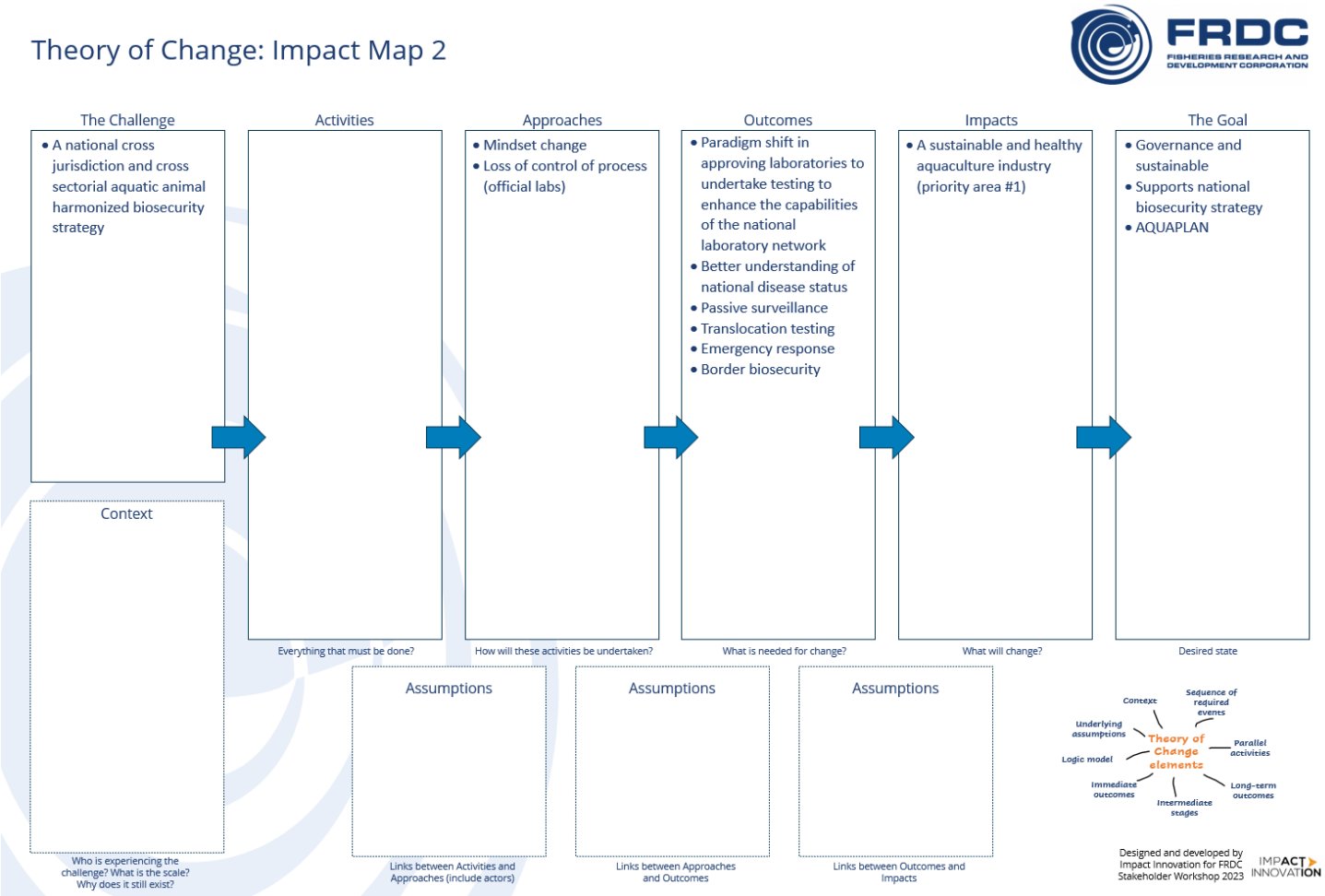


Figure 18: TOC Map 2 raw/unedited data.

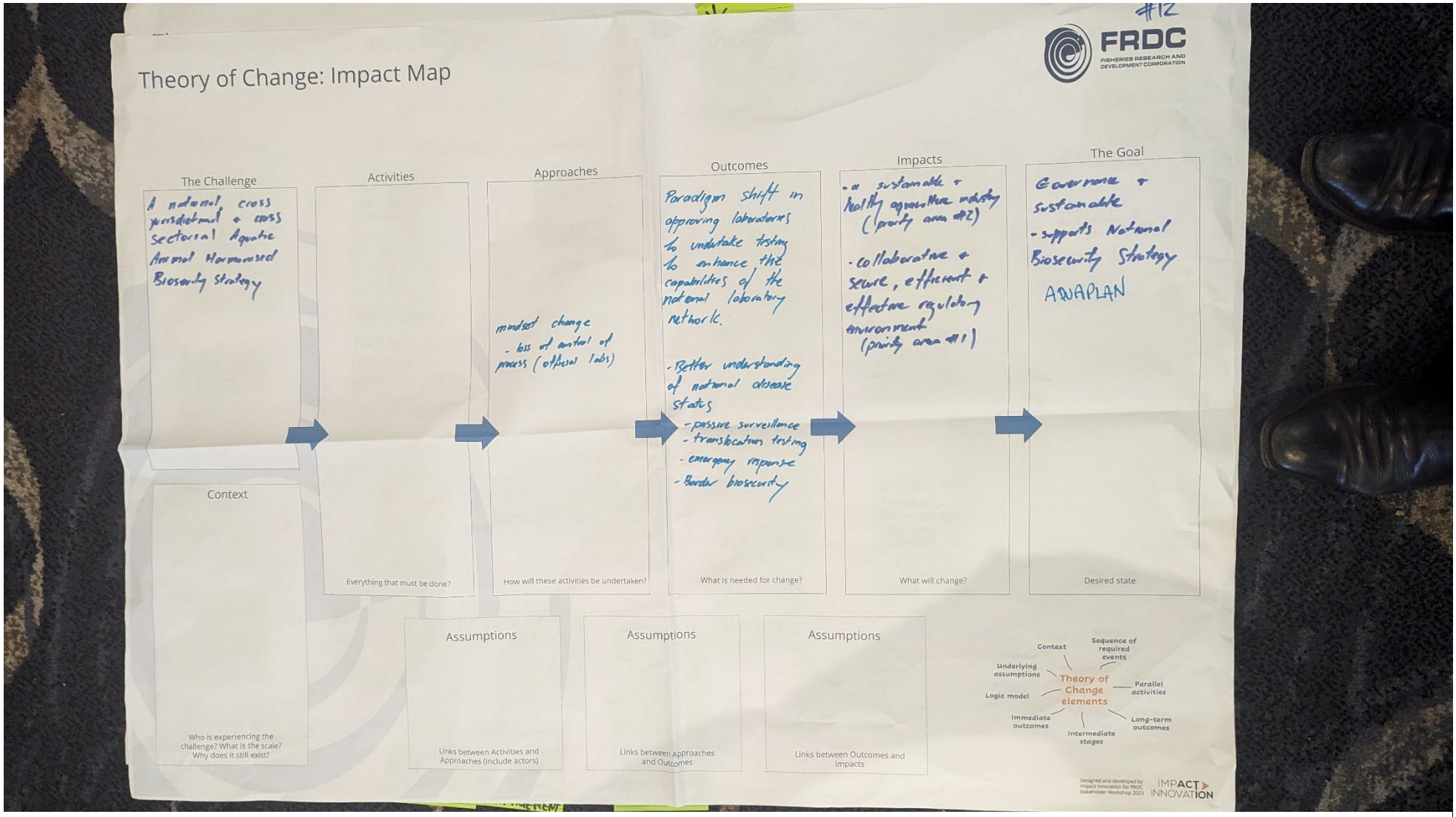


Figure 19: Photo of TOC Map 2 taken from the Stakeholder Workshop

Below is the cleaned/edited data in case needed by FRDC for further development:

1. The Challenge:
    a. The primary challenge addressed in this Theory of Change is the need for a national, cross-jurisdictional, and cross-sectoral aquatic animal harmonised biosecurity strategy.

2. Context:
    a. The context for this challenge is not explicitly mentioned in this map. However, it is implied that the challenge arises from the complexity of harmonising biosecurity efforts across different jurisdictions and sectors.

3. Activities:
    a. The map does not specify any particular activities required to address the challenge. It focused more on the approaches and outcomes.

4. Approaches:
    a. The approaches outlined in this map include:
    b. Mindset change: A change in the mindset of stakeholders involved in biosecurity.
    c. Loss of control of the process by official labs, suggesting a shift in how biosecurity testing and approval are managed.

5. Outcomes:
    a. The anticipated outcomes of these approaches are:
    b. A paradigm shift in approving laboratories to undertake testing, enhancing the capabilities of the national laboratory network.
    c. A better understanding of the national disease status.
    d. Implementation of passive surveillance.
    e. Conducting translocation testing.
    f. Establishing emergency response mechanisms.
    g. Strengthening border biosecurity.

6. Impacts:
    a. The ultimate impact of these outcomes is expected to be:
    b. A sustainable and healthy aquaculture industry, which is identified as priority area #1.

7. The Goal:
    a. The overarching goal is to achieve governance that supports a national biosecurity strategy in alignment with AQUAPLAN.

8. Assumptions:
    a. The map completed by this group does not explicitly state its assumptions, leaving this aspect undefined.

In summary, this Theory of Change map emphasises the need for a significant shift in mindset and control mechanisms to establish a national aquatic animal biosecurity strategy. It outlines specific outcomes related to laboratory testing, disease monitoring, and emergency response, all aimed at ensuring a sustainable and healthy aquaculture industry. The goal is to align governance with the national biosecurity strategy, although specific assumptions are not detailed in this map.

7.6.3 Theory of Change Impact Map 3 (Raw Data)

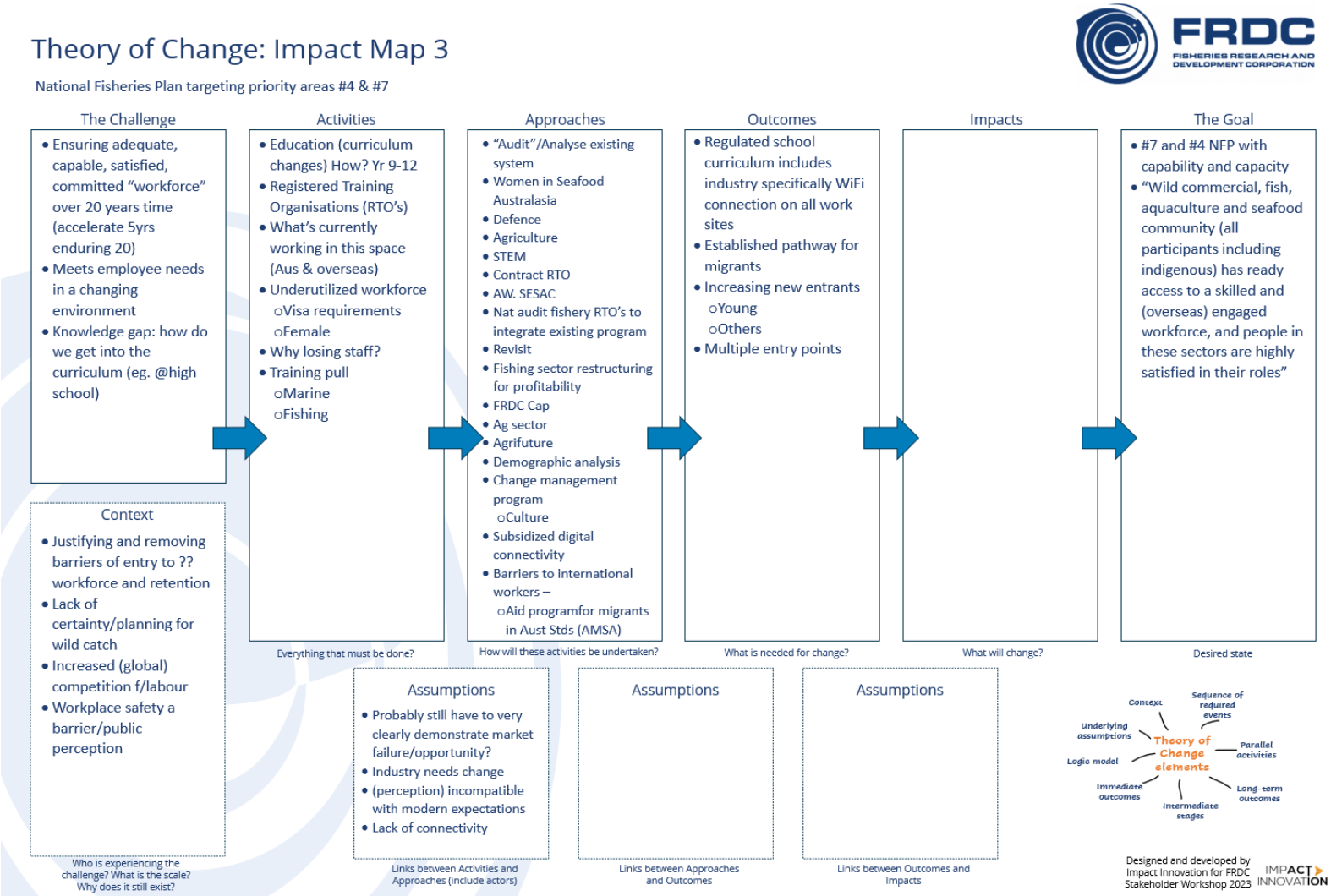


Figure 20: TOC Map 3 raw/unedited data.

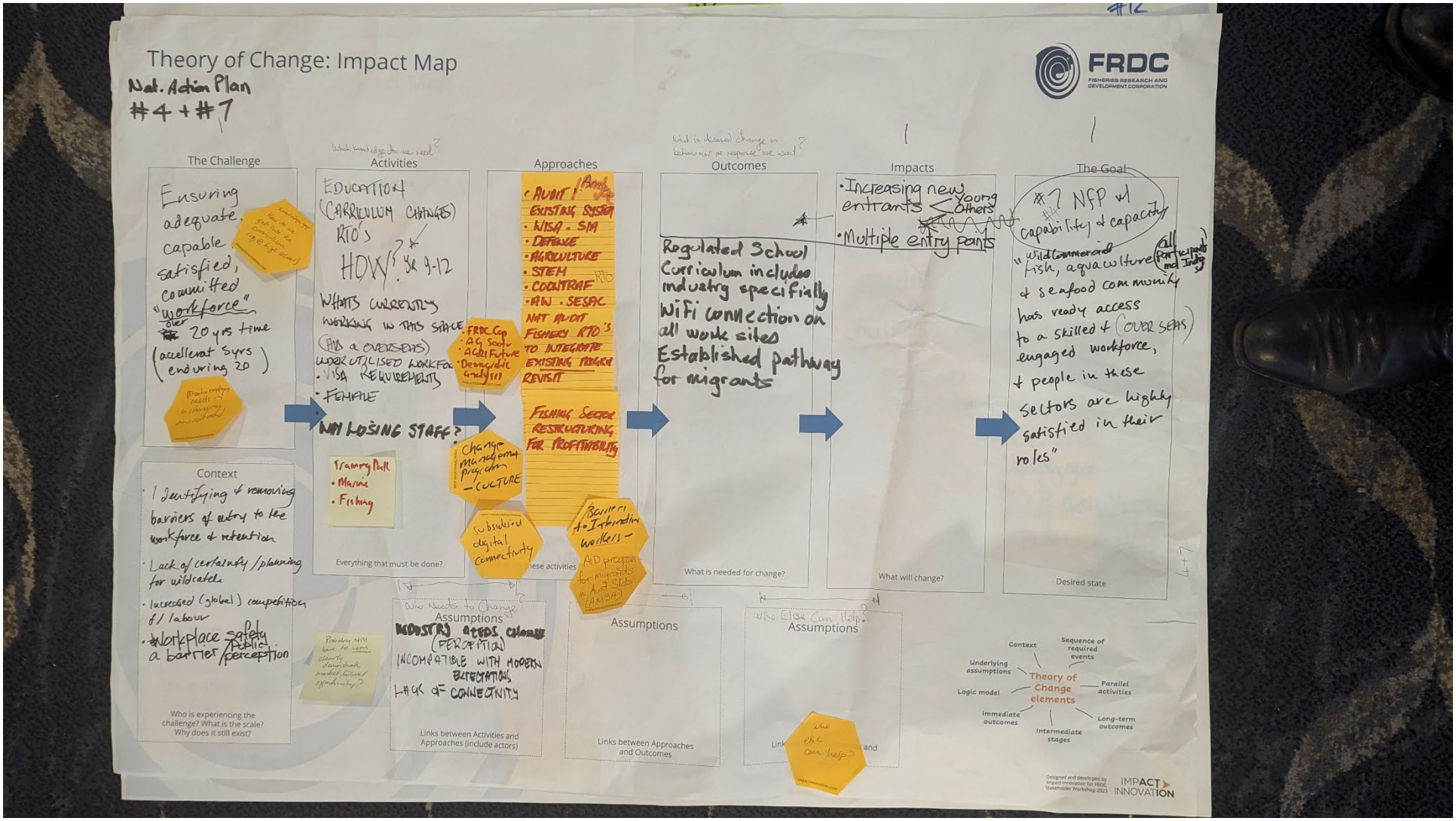


Figure 21: Photo of TOC Map 3 taken from the Stakeholder Workshop

Below is the cleaned/edited data in case needed by FRDC for further development:

1. The Challenge:
    a. The primary challenge addressed in this Theory of Change is ensuring the availability of an adequate, capable, satisfied, and committed workforce for the fisheries sector over the next 20 years, with an acceleration of progress over five years. This challenge involves meeting the needs of employees in a changing environment and addressing knowledge gaps in integrating fisheries education into the curriculum.

2. Context:
    a. The context for this challenge includes the justification and removal of barriers to entry and retention in the workforce. It also highlights the lack of certainty and planning for the wild catch sector, increased global competition for labour, and workplace safety concerns affecting public perception.

3. Activities (what knowledge do we need?):
    a. The map outlines several activities and areas of knowledge needed to address the challenge, including:
    b. Educational curriculum changes, particularly in years 9-12.
    c. Engagement with Registered Training Organizations (RTOs).
    d. Examination of what is currently working in this space in Australia and overseas.
    e. Consideration of underutilised workforce segments, such as those affected by visa requirements and gender (female workforce).
    f. Analysis of reasons for staff turnover.
    g. Training related to marine and fishing industries.

4. Approaches:
    a. The approaches identified in the map include:
    b. Auditing and analysing the existing system.
    c. Collaboration with organisations such as Women in Seafood Australasia, Defence, Agriculture, STEM, and Contract RTOs.
    d. Conducting a national audit of fishery RTOs to integrate existing programs.
    e. Consideration of fishing sector restructuring for profitability.
    f. Engagement with FRDC Cap and Agrifutures.
    g. Demographic analysis and change management programs.
    h. Subsidised digital connectivity.

i. Addressing barriers to international workers through an aid program for migrants in Australian standards (AMSA).

5. Outcomes:
    a. The anticipated outcomes of these approaches include:
    b. Inclusion of industry-specific content in regulated school curricula, with Wi-Fi connection on all work sites.
    c. The establishment of pathways for migrants to join the workforce.
    d. An increase in new entrants, both young and from other sectors.
    e. Creation of multiple entry points into the fisheries workforce.

6. Impacts:
    a. The specific impacts resulting from these outcomes are not detailed in the map.

7. The Goal:
    a. The overarching goal is to align with National Fisheries Plan priority areas #7 and #4, with the aim of creating a skilled and engaged workforce that contributes to a thriving and satisfied fisheries and aquaculture community.

8. Assumptions (Who needs to change?):
    a. The map mentions several assumptions without specifying which entities or groups need to change. These assumptions include:
    b. Demonstrating market failure or opportunity.
    c. The need for industry change.
    d. The perception of the fisheries sector as incompatible with modern expectations.
    e. The lack of connectivity.

In summary, this Theory of Change map emphasises the importance of addressing workforce challenges in the fisheries sector through a combination of educational reforms, collaboration with various organisations, and addressing barriers to entry and retention. The ultimate goal is to create a highly satisfied and skilled workforce that contributes to the success of the fisheries and aquaculture community, with specific impacts left somewhat open-ended in the map.

7.6.4 Theory of Change Impact Map 4 (Raw Data)

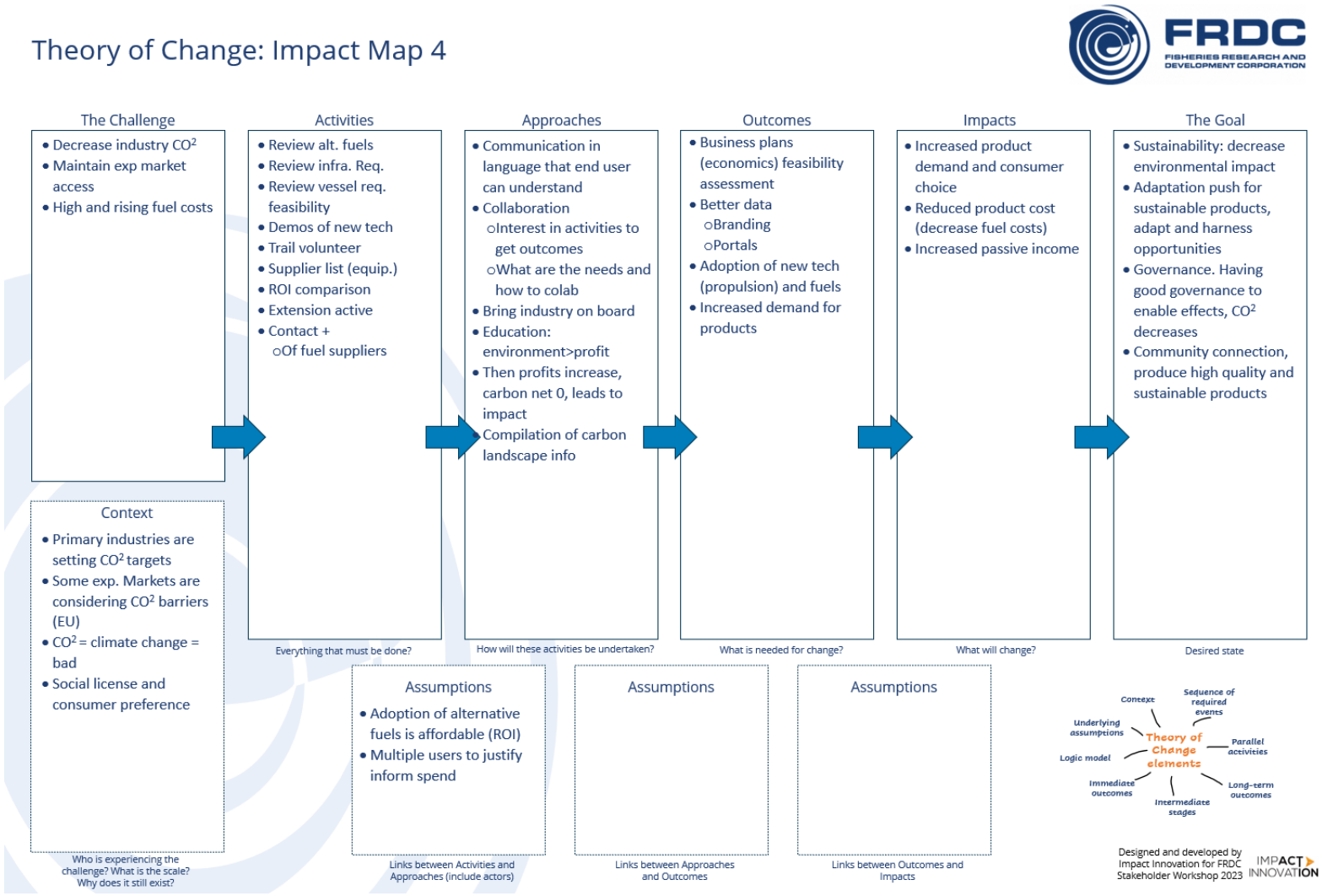


Figure 22: TOC Map 4 raw/unedited data.

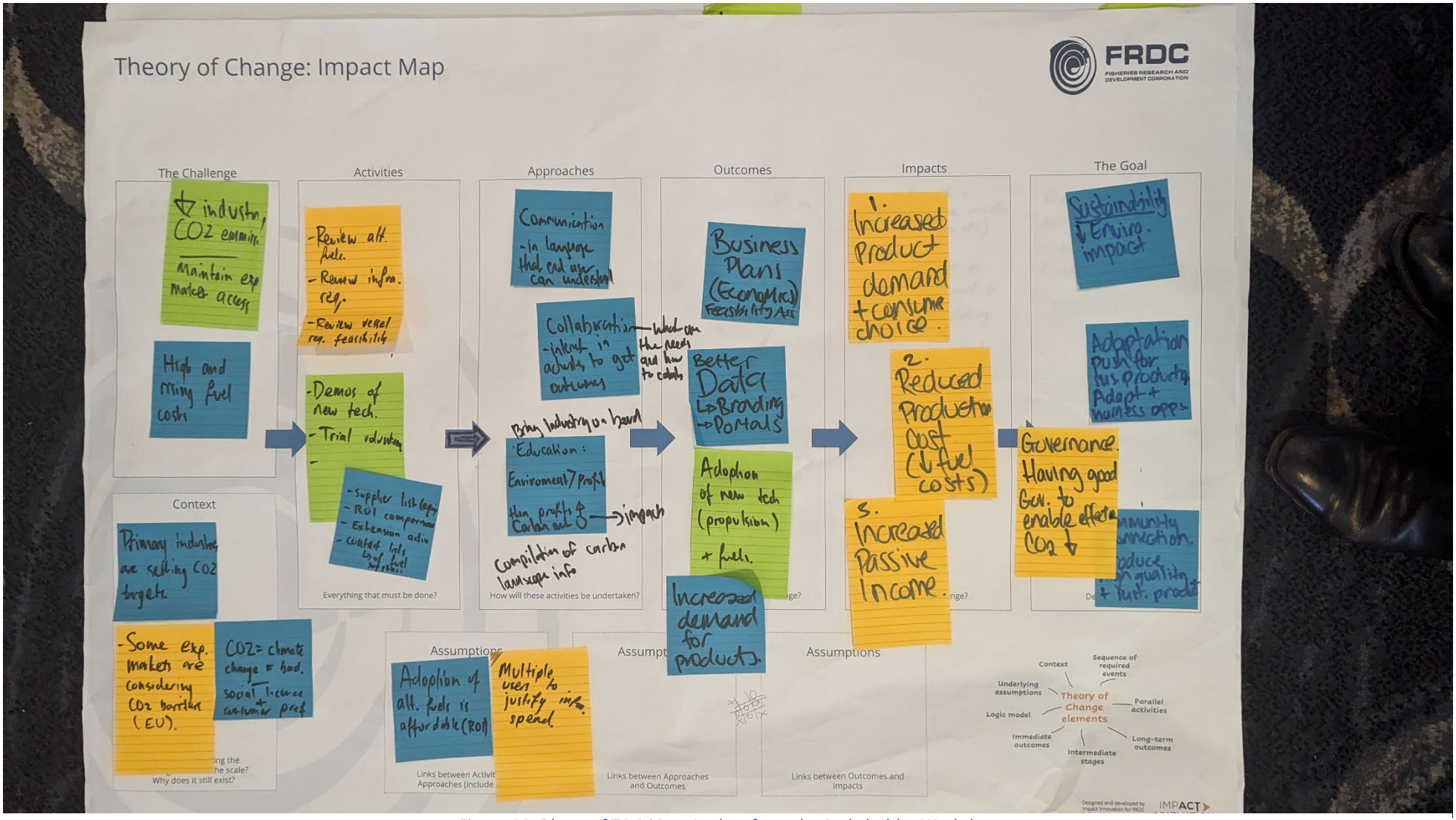


Figure 23: Photo of TOC Map 4 taken from the Stakeholder Workshop

Below is the cleaned/edited data in case needed by FRDC for further development:

1. The Challenge:
    a. The primary challenge addressed in this Theory of Change is a threefold objective:
    b. Decrease industry CO2 emissions.
    c. Maintain and expand market access for exports.
    d. Address the challenge of high and rising fuel costs.

2. Context:
    a. The context for this challenge includes:
    b. Primary industries setting CO2 emission reduction targets.
    c. Consideration of CO2 emissions as potential barriers in some export markets (e.g., EU).
    d. The understanding that CO2 emissions contribute to climate change and can negatively affect social license and consumer preferences.

3. Activities:
    a. The map lists various activities aimed at addressing the challenge, including:
    b. Reviewing alternative fuels.
    c. Evaluating infrastructure requirements.
    d. Assessing vessel requirements for feasibility.
    e. Conducting demonstrations of new technologies.
    f. Implementing volunteer trials.
    g. Compiling a supplier list for equipment.
    h. Performing ROI (Return on Investment) comparisons.
    i. Active extension efforts.
    j. Contacting fuel suppliers.

4. Approaches:
    a. The proposed approaches include:
    b. Effective communication in a language that end-users can understand.
    c. Collaboration with industry stakeholders, emphasising the need for activities to yield meaningful outcomes.

d. Engaging the industry to understand their needs and promote collaboration.
e. Educational efforts to emphasise the environmental benefits leading to increased profitability.
f. Compilation of information related to the carbon landscape.

5. Outcomes:
    a. The expected outcomes of these activities and approaches encompass:
    b. Business plans that consider economic feasibility.
    c. Improved data quality, which can enhance branding and accessibility via portals.
    d. Adoption of new technologies for propulsion and alternative fuels.
    e. Increased demand for products.
    f. Impacts:
    g. The identified impacts are:
    h. Increased product demand and consumer choice.
    i. Reduced product costs due to decreased fuel expenses.
    j. Increased passive income.

6. The Goal:
    a. The overarching goal is sustainability, which encompasses:
    b. Decreasing the environmental impact, particularly CO2 emissions.
    c. Promoting adaptation efforts that lead to sustainable products and harnessing related opportunities.
    d. Ensuring good governance to facilitate environmental impact reduction.
    e. Fostering a strong connection with the community to produce high-quality and sustainable products.

7. Assumptions:
    a. The assumptions in the map include:
    b. The affordability and positive ROI of adopting alternative fuels.
    c. The existence of multiple users justifying informed spending on emissions reduction efforts.

In summary, this Theory of Change map highlights strategies to address CO2 emissions reduction, high fuel costs, and export market access in the context of climate change. The plan involves a combination of activities, approaches, and educational efforts to achieve sustainability and economic benefits for the industry.

7.6.5 Theory of Change Impact Map 5 (Raw Data)

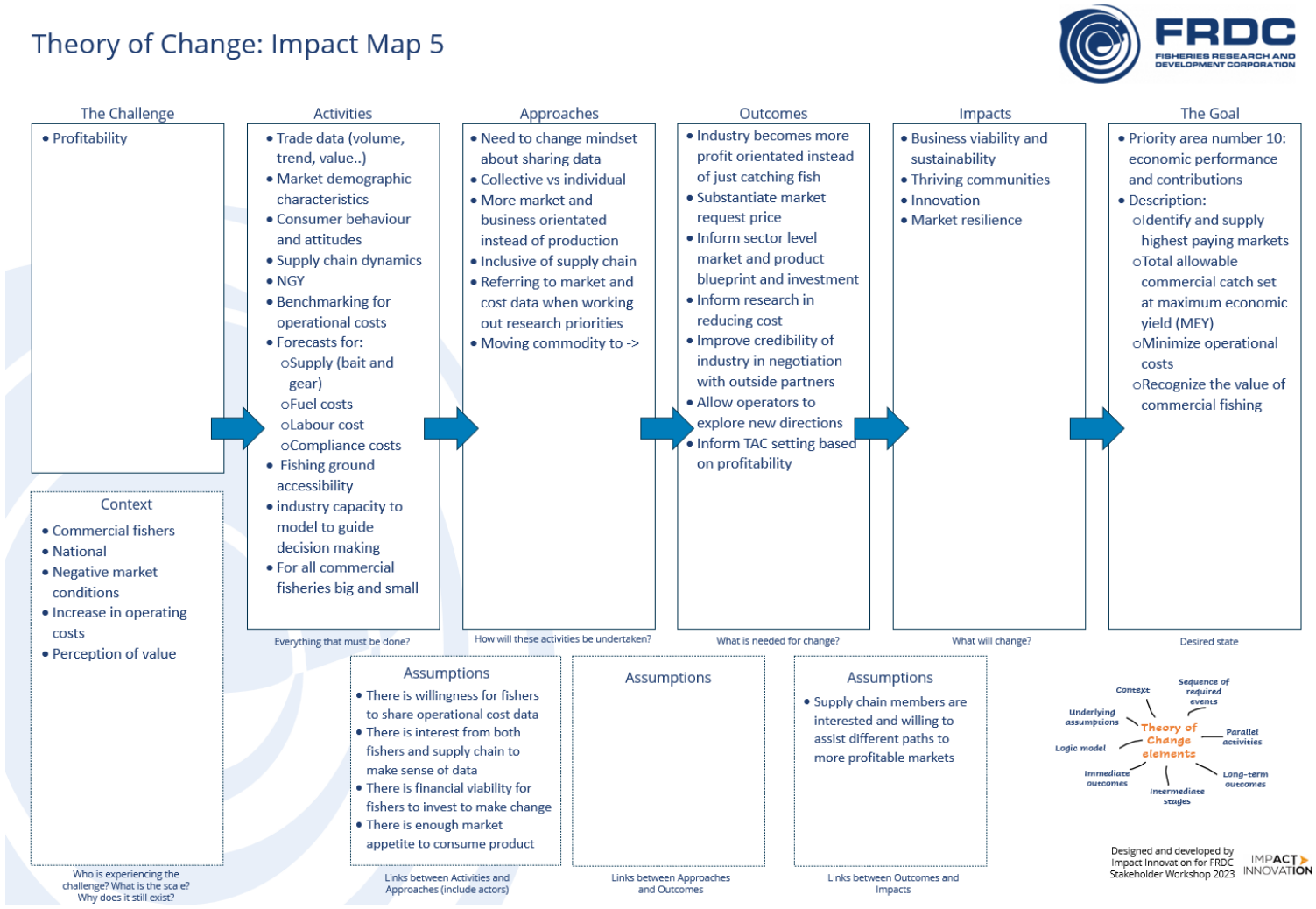


Figure 24: TOC Map 5 raw/unedited data.

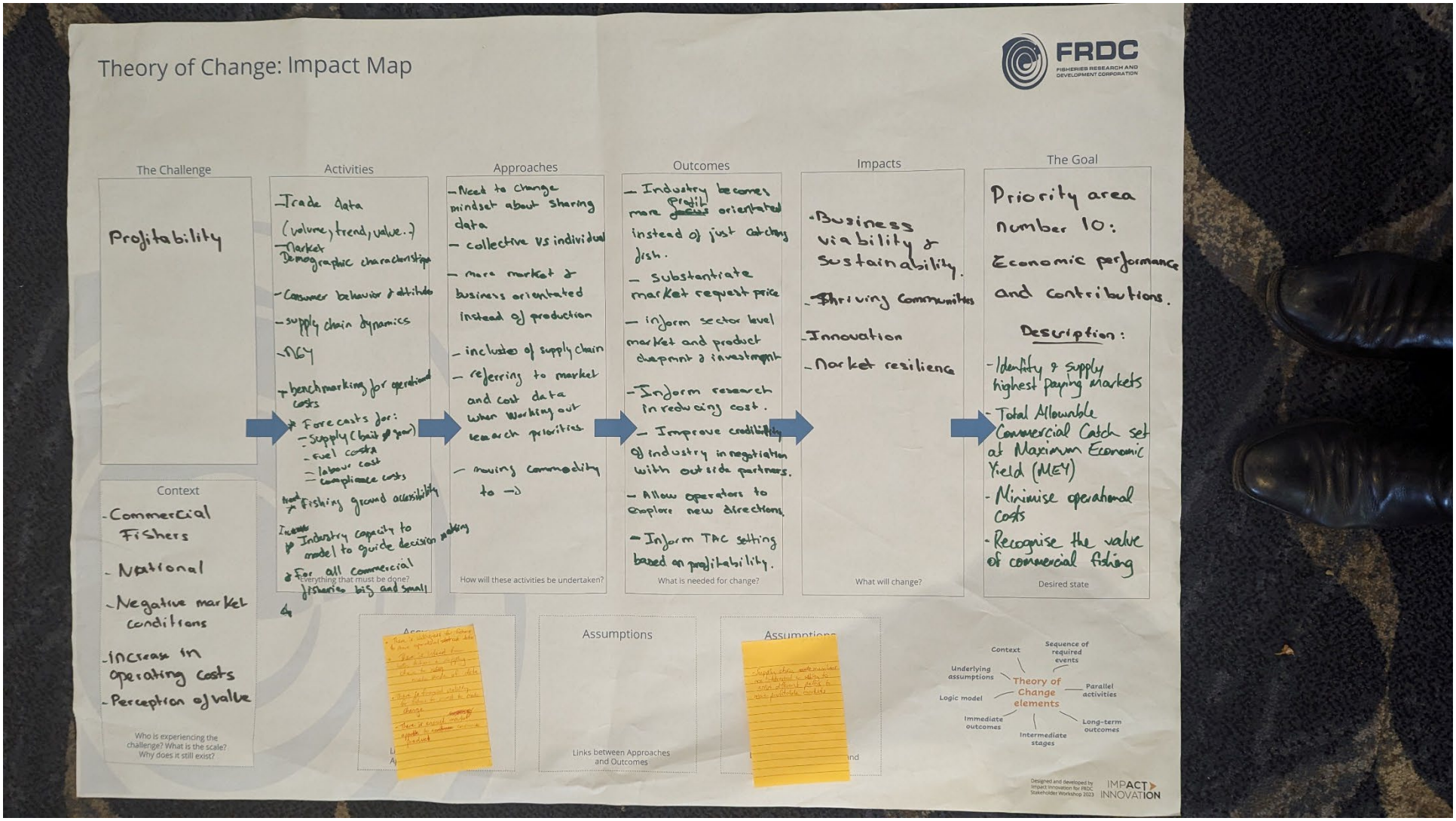


Figure 25: Photo of TOC Map 5 taken from the Stakeholder Workshop

Below is the cleaned/edited data in case needed by FRDC for further development:

1. The Challenge:
    a. The primary challenge addressed in this Theory of Change is to enhance the profitability of commercial fishers.

2. Context:
    a. The context for this challenge includes:
    b. Commercial fishers operating on a national scale.
    c. Negative market conditions.
    d. An increase in operating costs.
    e. Perceptions of value within the industry.

3. Activities:
    a. The map lists various activities aimed at addressing the challenge, including:
    b. Collecting trade data (volume, trend, value).
    c. Characterising market demographics.
    d. Studying consumer behaviour and attitudes.
    e. Analysing supply chain dynamics.
    f. Assessing benchmarking for operational costs.
    g. Generating forecasts for various cost factors (e.g., fuel, labour, compliance).
    h. Exploring fishing ground accessibility and industry capacity for decision-making.

4. Approaches:
    a. The proposed approaches include:
    b. Changing the mindset about sharing data within the industry.
    c. Promoting collective actions over individual efforts.
    d. Shifting the focus towards being more market and business-oriented rather than solely production-focused.
    e. Referring to market and cost data when determining research priorities.
    f. Transitioning from commodity-based thinking.

5. Outcomes:

a. The expected outcomes of these activities and approaches encompass:
b. Commercial fishers becoming more profit-oriented rather than solely focused on catching fish.
c. Substantiating market request prices.
d. Informing sector-level market and product strategies and investments.
e. Guiding research efforts to reduce costs.
f. Enhancing the industry's credibility in negotiations with external partners.
g. Empowering operators to explore new directions.
h. Informing Total Allowable Catch (TAC) setting based on profitability.

6. Impacts:
    a. The identified impacts are:
    b. Improved business viability and sustainability.
    c. Thriving communities.
    d. Increased innovation within the industry.
    e. Enhanced market resilience.

7. The Goal:
    a. The overarching goal is aligned with Priority Area Number 10: economic performance and contributions, which includes:
    b. Identifying and supplying the highest-paying markets.
    c. Setting the Total Allowable Commercial Catch (TAC) at Maximum Economic Yield (MEY).
    d. Minimising operational costs.
    e. Recognising the value of commercial fishing.

8. Assumptions:
    a. The assumptions in the map include:
    b. Willingness among fishers to share operational cost data.
    c. Interest from both fishers and the supply chain to make sense of data.
    d. Financial viability for fishers to invest in making changes.
    e. Sufficient market appetite to consume products.

In summary, this Theory of Change map highlights strategies to enhance profitability within the commercial fishing industry, emphasising data-driven decision-making, market-oriented approaches, and increased business viability. The ultimate goal is to ensure the industry's economic performance and contributions while fostering sustainability and innovation.

7.6.6 Theory of Change Impact Map 6 (Raw Data)

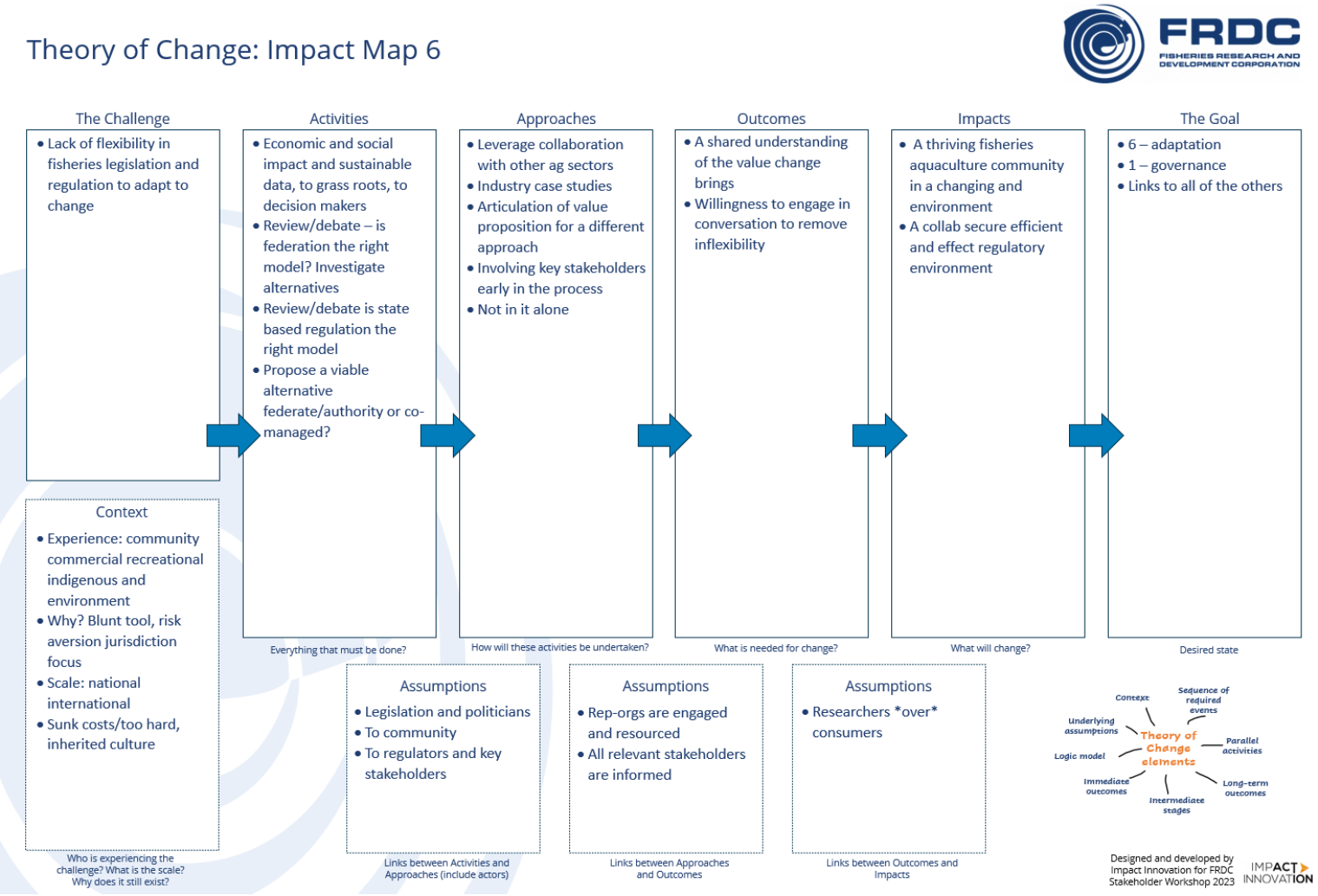


Figure 26: TOC Map 6 raw/unedited data.

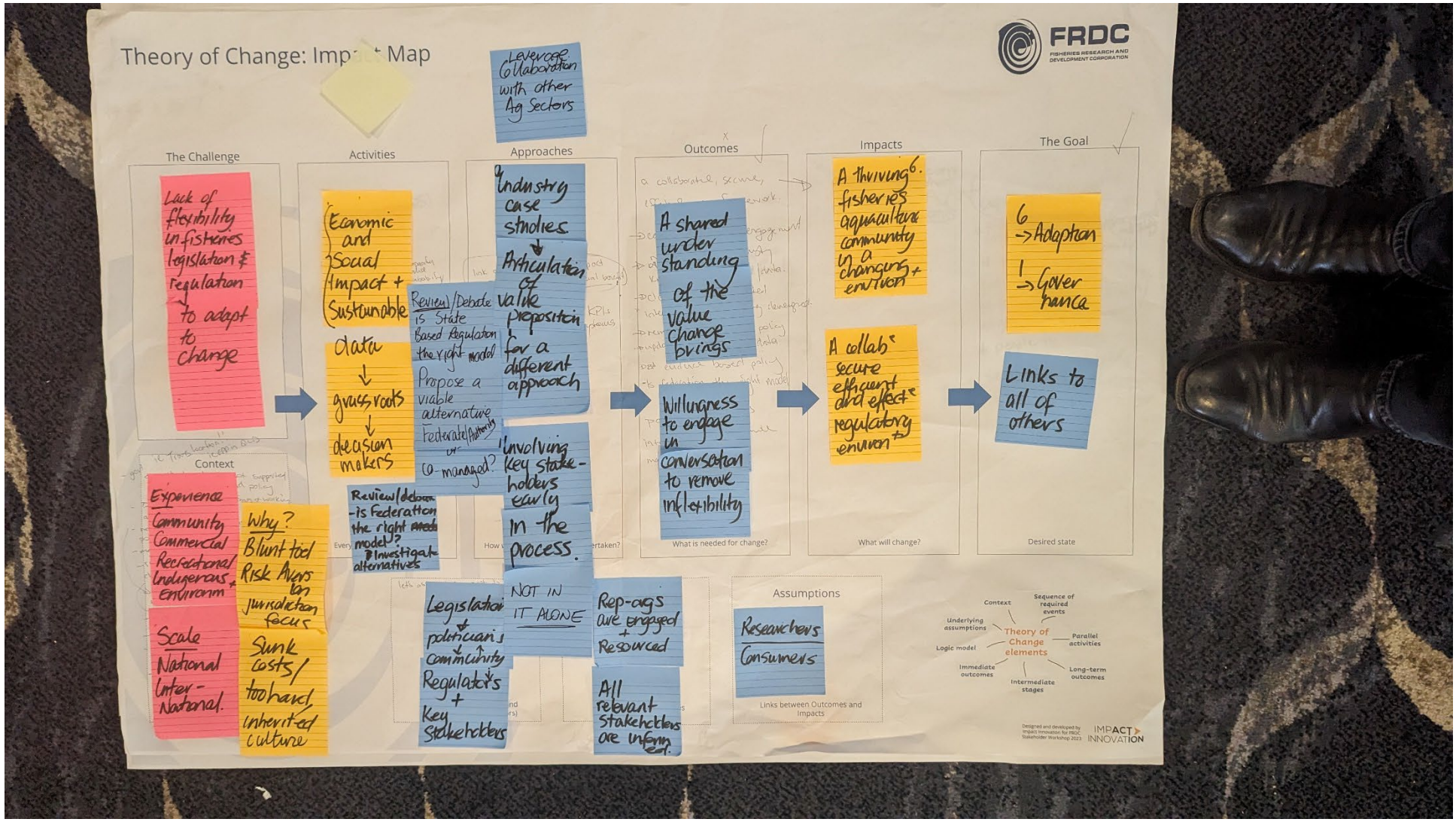


Figure 27: Photo of TOC Map 6 taken from the Stakeholder Workshop

Below is the cleaned/edited data in case needed by FRDC for further development:

1. The Challenge:
    a. The primary challenge identified is the lack of flexibility in fisheries legislation and regulation to adapt to change.

2. Context:
    a. The context in which this challenge exists includes:
    b. Experiences from various perspectives, including community, commercial, recreational, indigenous, and environmental.
    c. Reasons for the challenge, such as the use of blunt tools, risk aversion, and a jurisdiction-focused approach.
    d. The scale of the challenge that spans national and international levels.
    e. Factors contributing to the challenge include sunk costs, the perception that change is too difficult, and inherited cultural norms.

3. Activities:
    a. The map outlines various activities to address the challenge, such as:
    b. Collecting economic and social impact data, from grassroots to decision-makers.
    c. Reviewing and debating whether the federal model is suitable and investigating alternatives.
    d. Reviewing and debating the appropriateness of state-based regulation.
    e. Proposing viable alternatives, such as a federated authority or co-management approach.

4. Approaches:
    a. The proposed approaches to address the challenge include:
    b. Leveraging collaboration with other agricultural sectors.
    c. Conducting industry case studies to understand the implications of inflexibility.
    d. Articulating the value proposition for adopting a different regulatory approach.
    e. Involving key stakeholders early in the decision-making process to ensure broad support.
    f. Emphasising the importance of collective action rather than pursuing change alone.

5. Outcomes:
    a. The expected outcomes include:
    b. Developing a shared understanding of the value that regulatory change can bring.
    c. Fostering a willingness among stakeholders to engage in conversations aimed at removing regulatory inflexibility.

6. Impacts:
    a. The identified impacts are:
    b. The emergence of a thriving fisheries and aquaculture community that can adapt to a changing environment.
    c. The establishment of a collaborative, secure, efficient, and effective regulatory environment.

7. The Goal:
8. The overarching goal aligns with Priority Area Number 6: adaptation and Priority Area Number 1: governance. It also links to various other priority areas, emphasising the importance of regulatory adaptability and governance in all aspects of the fisheries sector.

9. Assumptions:
    a. The assumptions in the map include:
    b. The involvement of legislation and politicians in the process.
    c. Effective communication from the community to regulators and key stakeholders.
    d. Engagement and resourcing of representative organisations (representative organisations).
    e. Informed participation of all relevant stakeholders, including researchers and consumers.

In summary, this Theory of Change map outlines a strategy to overcome the inflexibility in fisheries legislation and regulation. It emphasises the importance of collaboration, early stakeholder involvement, and a collective approach to fostering regulatory adaptability. The ultimate goal is to create a thriving and adaptable fisheries and aquaculture community within an effective regulatory framework.

7.6.7 Theory of Change Impact Map 7 (Raw Data)

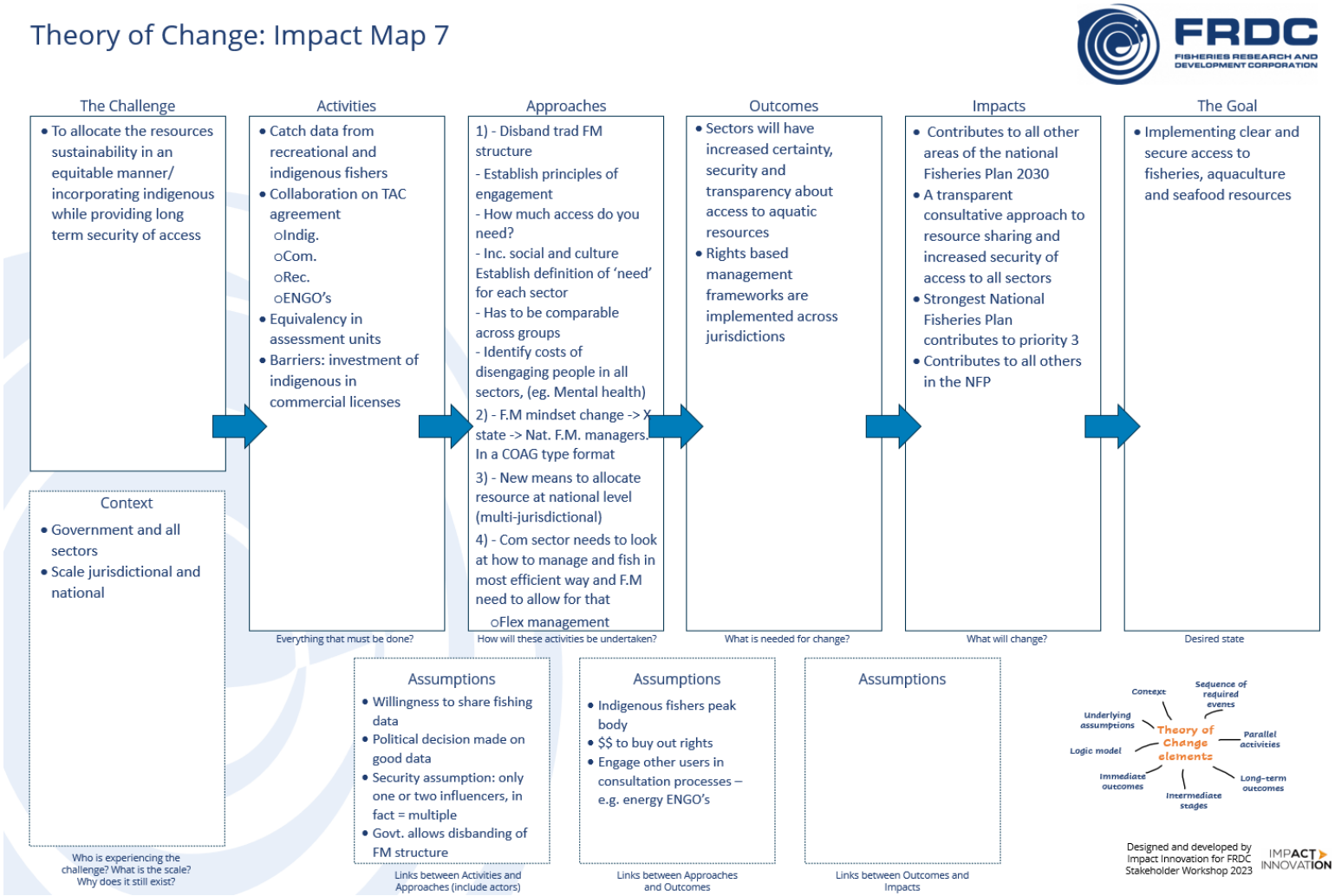


Figure 28: TOC Map 7 raw/unedited data.

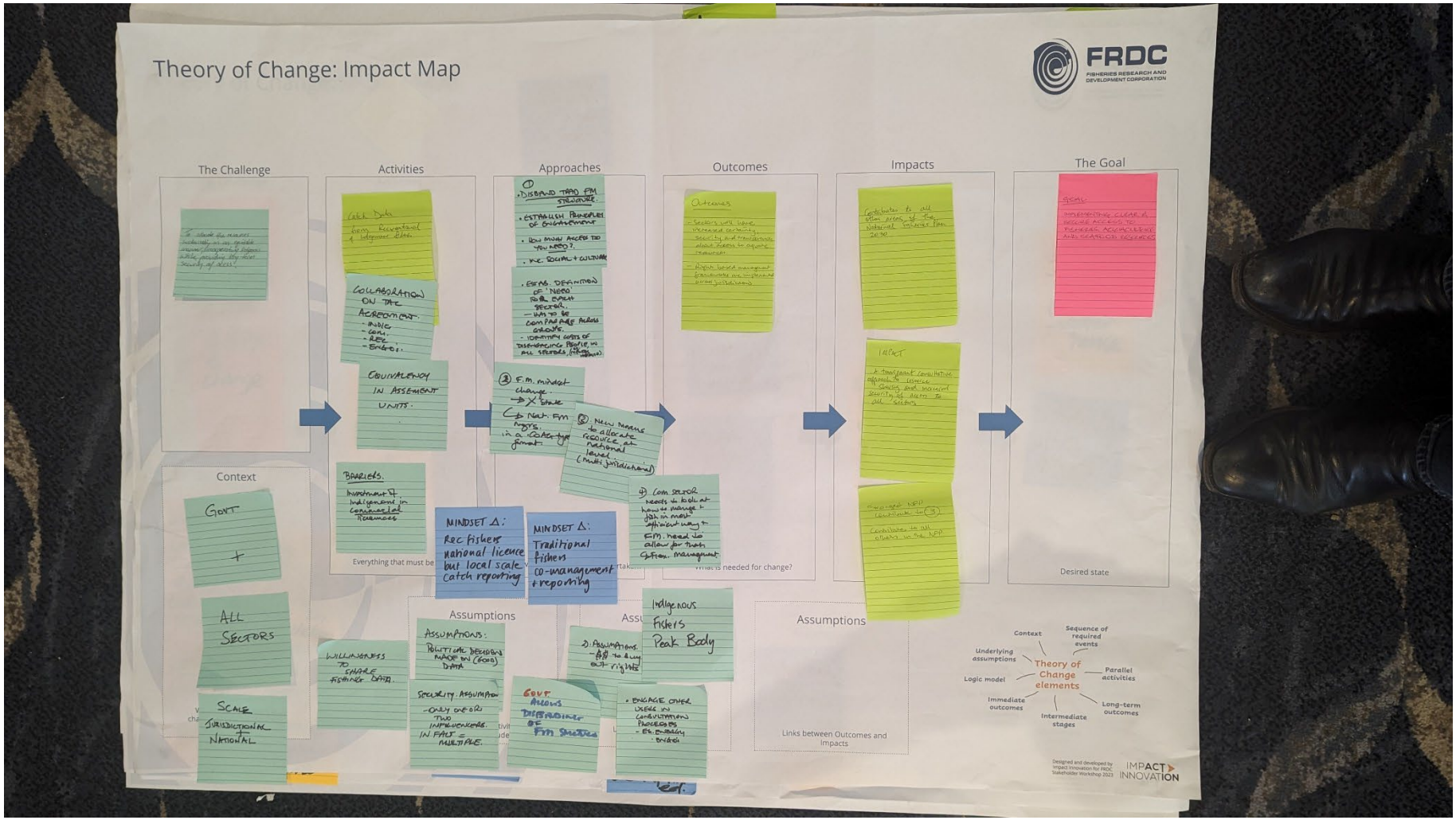


Figure 29: Photo of TOC Map 7 taken from the Stakeholder Workshop

Below is the cleaned/edited data in case needed by FRDC for further development:

1. The Challenge:
    a. The primary challenge identified is the allocation of resources in a sustainable and equitable manner, considering indigenous perspectives and providing long-term access security.

2. Context:
    a. The context in which this challenge exists includes:
    b. Government and all sectors involved.
    c. The challenge spans both jurisdictional and national scales.

3. Activities:
    a. The map outlines various activities to address the challenge, such as:
    b. Gathering catch data from recreational and indigenous fishers.
    c. Collaborating on Total Allowable Catch (TAC) agreements among indigenous, commercial, recreational, and ENGO (Environmental Non-Governmental Organisations) sectors.
    d. Achieving equivalency in assessment units.
    e. Identifying barriers, such as the investment of indigenous people in commercial licenses.

4. Approaches:
    a. The proposed approaches to address the challenge include:
    b. Disbanding traditional fisheries management (FM) structures and establishing principles of engagement.
    c. Assessing the access needs of each sector.
    d. Ensuring inclusivity of social and cultural aspects.
    e. Defining 'need' for each sector in a comparable manner.
    f. Identifying the costs of disengaging individuals in all sectors, including mental health.
    g. Initiating a mindset change within fisheries management, transitioning from state-based to national FM management in a COAG (Council of Australian Governments) type format.
    h. Developing new means to allocate resources at the national level with multi-jurisdictional collaboration.
    i. Encouraging the commercial sector to explore efficient fishing practices while fisheries management allows flexibility in management.

5. Outcomes:
    a. The expected outcomes include:
    b. Increased certainty, security, and transparency regarding access to aquatic resources for all sectors.
    c. Implementation of rights-based management frameworks across jurisdictions.

6. Impacts:
    a. The identified impacts are:
    b. Contribution to all other areas of the National Fisheries Plan 2030.
    c. A transparent consultative approach to resource sharing and increased security of access for all sectors.
    d. Strengthening the National Fisheries Plan and contributing to priority 3.
    e. Contribution to all other priorities in the National Fisheries Plan.

7. The Goal:
    a. The overarching goal is to implement clear and secure access to fisheries, aquaculture, and seafood resources, ensuring sustainability and equity.

8. Assumptions:
    a. The assumptions in the map include:
    b. Willingness among stakeholders to share fishing data.
    c. Political decisions are made based on good data.
    d. The security assumption is that only one or two influencers exist, while, in reality, there are multiple.
    e. Government approval to disband the traditional FM structure.

In summary, this Theory of Change map outlines a comprehensive strategy to address the complex challenge of resource allocation in the fisheries sector. It emphasises the importance of inclusivity, transparency, and collaboration among all stakeholders, with the ultimate goal of achieving clear and secure access while ensuring sustainability and equity.

7.6.8 Theory of Change Impact Map 8 (Raw Data)

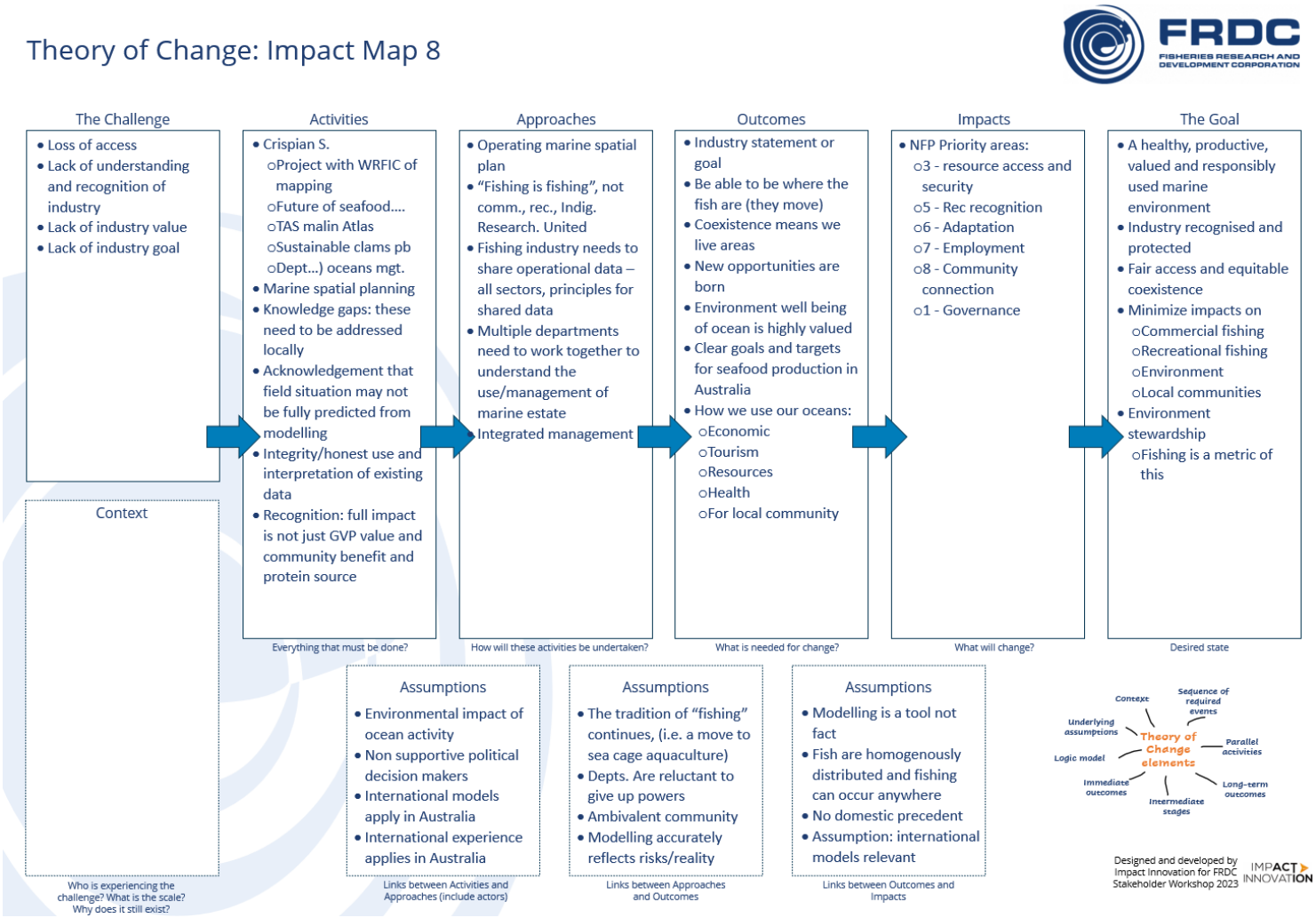


Figure 30: TOC Map 8 raw/unedited data.

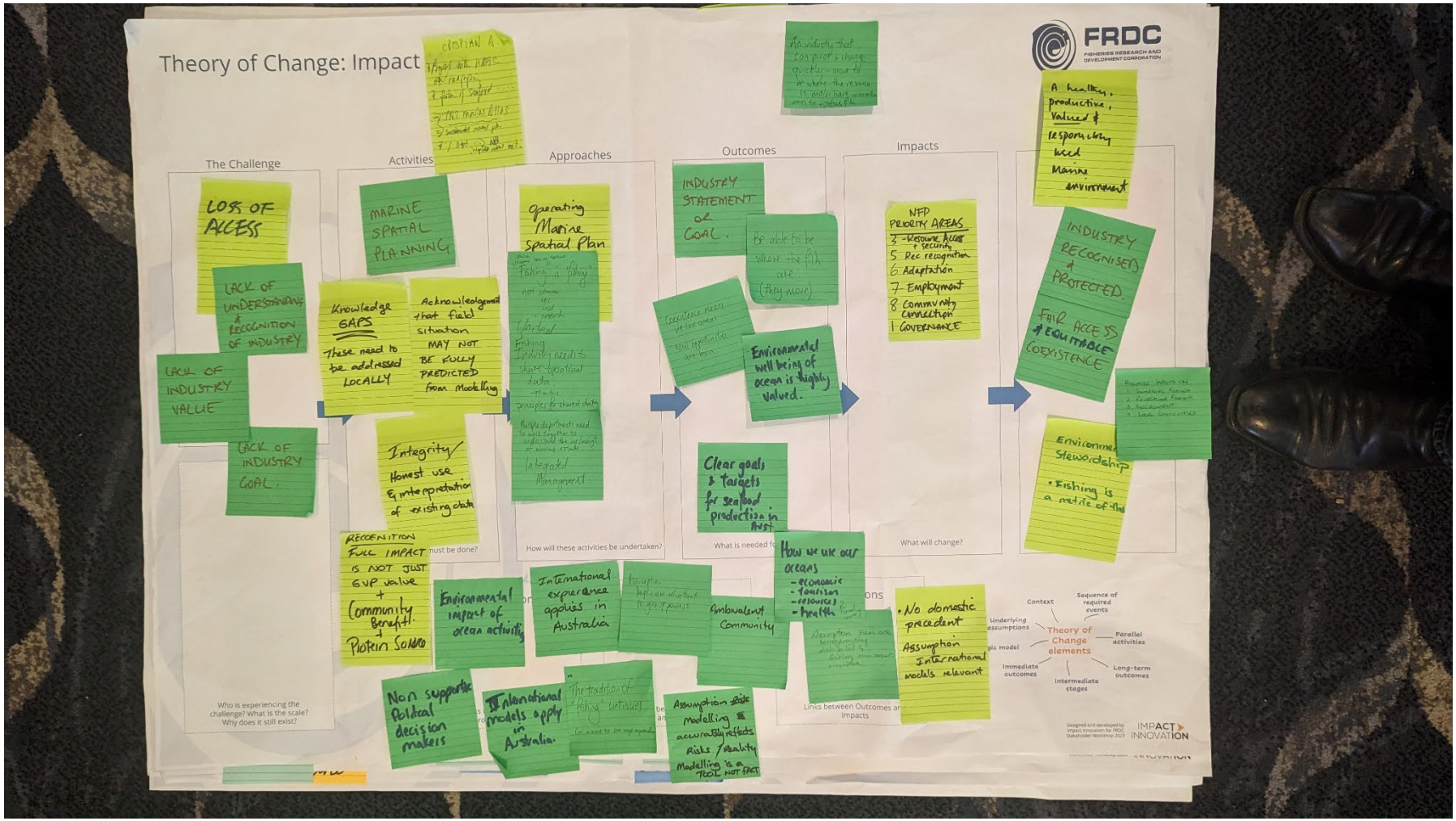


Figure 31: Photo of TOC Map 8 taken from the Stakeholder Workshop

Below is the cleaned/edited data in case needed by FRDC for further development:

1. The Challenge:
    a. The challenges identified include:
    b. Loss of access.
    c. Lack of understanding and recognition of the fishing industry.
    d. Lack of industry value.
    e. Lack of industry goals.

2. Context:
    a. The context in which these challenges exist involves various activities and factors, including:
    b. Specific projects and initiatives like mapping projects, sustainable clams, and marine spatial planning.
    c. Knowledge gaps that need to be addressed locally.
    d. Recognition that field situations may not be fully predicted from modeling.
    e. The importance of integrity and honest use of existing data.
    f. Recognition that the full impact of the industry goes beyond Gross Value of Production (GVP) value and includes community benefits and its role as a protein source.

3. Activities:
    a. The map lists several activities related to addressing the challenges, including specific projects, initiatives, and efforts to address knowledge gaps and ensure the integrity of data.

4. Approaches:
    a. The proposed approaches include:
    b. Operating marine spatial plans.
    c. Treating fishing as a unified activity, rather than dividing it into commercial, recreational, and indigenous sectors.
    d. Encouraging the fishing industry to share operational data across all sectors.
    e. Promoting collaboration among multiple government departments to understand and manage the marine estate.
    f. Emphasising integrated management.

5. Outcomes:

6. The expected outcomes include:
    a. The development of an industry statement or goal.
    b. The ability to adapt and be where the fish are, recognising that they move.
    c. Coexistence and the creation of new opportunities.
    d. High value placed on the well-being of the ocean environment.
    e. Clear goals and targets for seafood production in Australia.
    f. Consideration of multiple uses of oceans, including economic, tourism, resources, health, and local community benefits.

7. Impacts:
    a. The identified impacts align with various priority areas of the National Fisheries Plan, including resource access and security, recreational recognition, adaptation, employment, community connection, and governance.

8. The Goal:
    a. The overarching goal is to achieve a healthy, productive, valued, and responsibly used marine environment, with the fishing industry recognised and protected, fair access, equitable coexistence, minimised impacts, and a focus on environmental stewardship.

9. Assumptions:
    a. The map includes several assumptions related to environmental impacts, political decision-makers, international models, the continuity of fishing traditions, departmental powers, community attitudes, modelling accuracy, fish distribution, domestic precedent, and the relevance of international models to Australia.

In summary, the final Theory of Change Impact Map 8 outlines a comprehensive strategy to address the challenges facing the fishing industry, emphasising collaboration, integrated management, and the recognition of the industry's value and role in ocean stewardship. The map also acknowledges various assumptions and their potential impacts on the proposed strategy.

7.7 The Utility of Workshop Activities and Concepts (Mentimeter Raw Data)

7.7.1 Useful Workshop Resources for Future Collaboration (Raw Data)

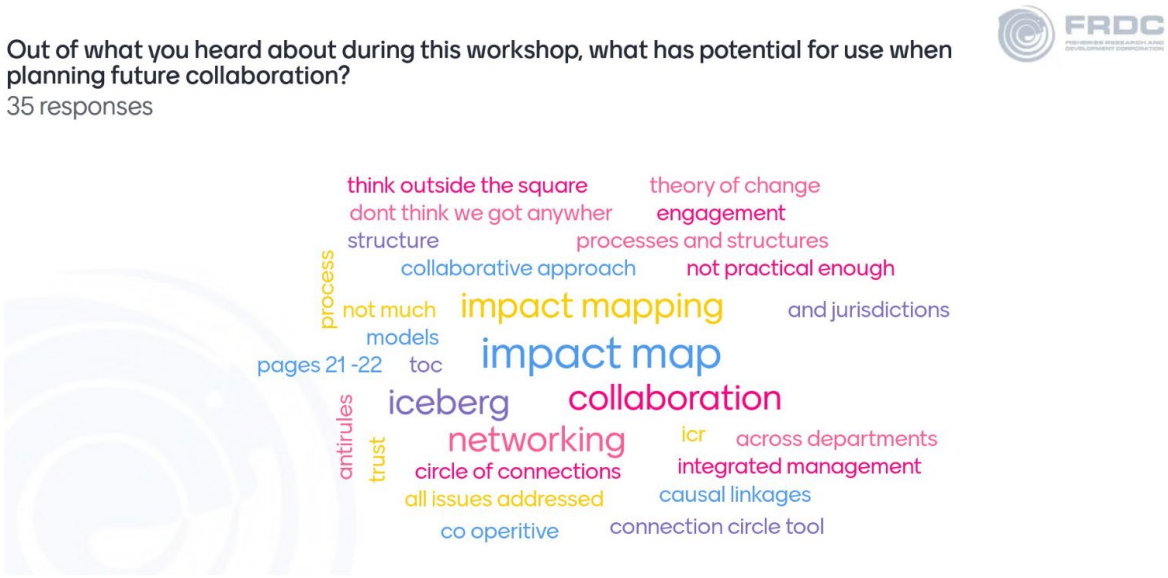


Figure 32: Word cloud of all responses when participants were asked what they heard during the workshop, which has potential for use when planning future collaboration.

Out of what you heard about during this workshop, what has potential for use when planning future collaboration? (35 responses)		
Collaborative approach	Dont think we got anywher	Networking
Impact mapping	Antirules	Think outside the square
Impact map	Iceberg	Collaboration
Models	TOC	Structure
Circle of connections	And jurisdictions	Causal linkages
Connection circle tool	Across departments	ICR
Co operitive	Iceberg	Not much
Impact mapping	Trust	Pages 21 -22
Impact map	Not practical enough	Collaboration
Integrated management	Processes and structures	All issues addressed
Impact map	Engagement	Theory of change
Networking	Process	

7.7.2 Observations of Enhancing R&D Impact (Raw Data)

What did you see/hear that you think is needed in the future that would make achieving impact from R&D better? (39 responses)		
Stakeholder consultation	Get rid of States	Partnering with other industries
Identify other activities that need to coccus for adoption	Collaboration with multiple stakeholders	Collaboration with other sectors and industries

Collaborative co-design	End user involvement	Collaboration
Focus on commonality across all sectors	Research levy from rec fishers 😉	Greater stakeholder project steering committees
Value both tangible and intangible	Data sharing and data sharing principles	More collaboration
Stare assumptions about what enabling conditions and changes in behaviour by whom are needed	Commitment by different sectors/groups/depts, up front to their role in activating research	Adaptive management Re policy would be the biggest game changer
Buy in from politicians	More outcome focus	Integrated ocean management
More open forum sessions similar this, even if they are virtual	Agreement of Alignment of goals between sectors	Think about the end users
Strong rep orgs	Realistic	Understanding the problem
Diverse group	Partnership approach	Collaboration
Uptake by Government in policy setting	Strengthen communication of outcomes	Better cross-jurisdictional collaborations
Sector wide collaboration	Facilitated Conversations	Collaboration is key
Focus	Collaboration	Prioritise projects

7.7.3 Obstacles to Collaboration and R&D Impact (Raw Data)

What are the current roadblocks for collaboration and impact in the future? (53 responses)		
Regulation	Jurisdiction	Aliens
Mindsets	Bureaucracy	AI
Jurisdictions	Capacity	Vested interests
Governance structures	Political will	Each sector doesn't know each other
Jurisdiction	Silo thinking	Trust
Lack of policy direction for marine sectors and areas	Patch protection	Currently political, legislative and policy settings
Sheer scale and number of roadblocks	Ourselves	Traditional mindsets
State jurisdictions.	Grassroots	Seafood industry is too broad for strong impactful collaborations.
Diversity of systems	Lack of Indigenous peak body representation	Resourcing time & money
State jurisdictions	Lack of time and resources for cross sectorial	Offshore Constituional Settlement

	consultation to collaborate together effectively	
Fight for survival	Lack of profit	Slow pace of regulation
Fear of how input will be used	Unrealistic expectations	AFMF
End user involvement	Red tape	Lack of Engagement across sectors
Jurisdictions	Overwhelmed bodies	Egos
Management	Self-interests	Cats
Jurisdictions	Diverse interest	Lack of investment
Processes	Inability to properly collaborate	Lack of data
Time and resources to drive collaboration	Government priorities and election cycles	

7.8 Workshop Survey (Excel Raw Data)

Were you able to communicate the key points you wanted to share with the FRDC? 1 = I was unable to communicate any of the points that were important to me, 5 = yes, I was able to communicate...	
ID	**Score**
1	2
2	5
3	3
4	5
5	4
6	5
7	5
8	3
9	5
10	5
11	3
12	5
13	4
14	2
15	3
16	4
17	5
18	4
19	5
20	4
21	4
22	4
23	3
24	2
25	4

26	5
27	5
28	4
29	4
30	4
31	3
32	4

Did you feel heard and respected? 5 = yes, 1 = no	
ID	**Score**
1	5
2	5
3	3
4	5
5	4
6	5
7	5
8	4
9	5
10	5
11	4
12	5
13	5
14	2
15	3
16	4
17	5
18	4
19	5
20	4
21	5
22	4
23	4
24	2
25	4
26	5
27	4
28	5
29	5
30	5
31	4
32	4

Do you have a clear understanding of how key points will be addressed by FRDC? 1 = I have no idea, 5 = yes, it's clear what will happen next	
ID	**Score**
1	1
2	4
3	4
4	3
5	4
6	5
7	4
8	3
9	3
10	3
11	2
12	5
13	4
14	3
15	2
16	4
17	4
18	2
19	4
20	4
21	4
22	5
23	4
24	1
25	4
26	4
27	5
28	2
29	2
30	3
31	3
32	3

Can you please tell us a bit more about your experience, for example:

- Do you have any suggestions for how the FRDC can generate more value for our stakeholders during these strategic workshops?...

ID	**Response**
1	
2	Awesome
3	
4	

5	Long day means less effective engagement and energy/thought to our "innovative advice"
6	Felt that it was really well and responsively developed and facilitated workshop - thank you
7	I look forward to assisting FRDC where I can.
8	Yes, process development
9	The table collaboration sessions were really useful in learning everyone's ideas and thinking through the issues.
10	Stimulated thought
11	I found impact assessment to be overly wordy and complicated. I didn't feel satisfied with the process.
12	More upfront explanation of the process
13	An extremely well organised and informative session. And a very supportive and collegiate approach.
14	Very hard for minority stakeholders to have meaningful contribution. Issues of commonality were not common to all sectors but focussed more on the commercial sector
15	Absolutely did not need to spend a whole day on that dang exercise.
16	Less time on theory, more discussion of meeting objectives and processes to be followed to reach these. Last afternoon best alongside FRDzc updates
17	No suggestions. Great mix of stakeholders and Gov reps
18	Look for an even more diverse group, youth, gender, sectors.
19	Next year is it worth getting AFMA participating? Is there merit in expanding invites to jurisdiction?
20	1. More time on the shared priorities- they felt rushed in how the list of 15 was agreed to. Also, an activity involving some time outside would be great. 2. What worked well was Mixed groups working on a priority
21	Found the workshop informative and helpful. Not sure how you would streamline things for the better
22	Participant list distributed before the workshop would be helpful. The networking value is high and knowing who's coming and being able to connect names with faces would be useful.
23	Little less tool discussion and more WG time. All up over two days only around 2 hours spent in WG discussions. Felt rushed.
24	Far too much theory during the workshop Expertise in the room re R&D planning not leveraged Tasks were too simple and allocated too much time The workshop could focus more on providing actual recommendations for content to be included in the R&D planning process Facilitators with fisheries management or research background may be helpful
25	I think these Workshops are always very useful. In future, maybe less theory and more time developing things in groups. Kylie really should get an arm for her glasses too

26	I thought it was excellent although perhaps a little too much theory early on
27	1. Needed a better understanding at the start who was in attendance. 2. Generally well structured with sufficient breaks.
28	Energy and guidance by FRFC staff was excellent. Impact Innovation presenters not engaging, talked too much. Group work most interesting and productive.
29	Workshop was disjointed. Expectations unclear
30	The workshop was an introspective look at issues from our point of view. The view of 'External' stakeholders on horizon issues is always appreciated (eg 2022 forum). It seemed there was pushback on last year's summary of FRDC actions & activities - that's the highlight of the forums as it's that info that we need to tap into so that individual sectors & IPAs don't have to 'do it all' and can leverage other investments
31	- noted an imbalance of sectorial representation at the workshop. Specifically lack of aquaculture representation. This may or may not bias responses and feedback - there was a lot of 'on the spot' ideation and feedback. Perhaps a bit of pre-workshop participant planning may help generate more considered responses. - I think collaboration needs to be addressed a bit more throughout the year and not just at this workshop.
32	Welcome to country was fab. Interactions with others fab. Learnt most from talking to others and group work. Group tasks were not clearly explained or linked to best value for research investment. Impact well covered and collaboration using systems approach useful for some analysis but does lead to unrealistic design but good overall process. Would have liked more time open discussion and introduce weighting exercises on issues, solutions/ ideas. Really enjoyable couple of days. Good investment of my time. Well done FRDC team.. you rock

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