



The Queensland Research Advisory Committee RD&E Plan provides a framework to identify the key strategic research needs of the fisheries and aquaculture sector under its jurisdiction from 2016 – 2019

Queensland Research Advisory Committee RD&E Plan

Research, Development and
Extension Plan 2016 – 2019

October 2016

Contents

Contents	2
1. CONTEXT	3
1.1 FRDC RD&E INVESTMENT PROGRAMS	3
1.2 CO-MANAGEMENT INVESTMENT MODEL	3
2. OPERATING ENVIRONMENT.....	5
2.1 OVERVIEW	5
2.2 DRIVERS, CHALLENGES AND OPPORTUNITIES.....	6
3. RD&E PLAN 2016 – 2019.....	3
3.1 PURPOSE	3
3.2 FRAMEWORK OVERVIEW	3
3.3 GOALS	4
3.4 STRATEGIC RD&E INVESTMENT PRIORITY AREAS.....	4
3.5 FORECAST INVESTMENT ACROSS STRATEGIC RD&E PRIORITIES	0
4. RD&E PLAN Guidelines.....	1
4.1 INVESTMENT COLLABORATION	1
4.2 EXTENSION.....	1
4.3 EVALUATION OF PROJECTS	1
4.4 REVIEW OF THE RD&E PLAN	2

1. CONTEXT

1.1 FRDC RD&E INVESTMENT PROGRAMS

The FRDC has five RD&E investment programs that directly align with its governing legislation, the PIRD Act. RD&E investments across these program areas will be assessed to ensure the FRDC maintains a balanced portfolio that meets the short and long term needs of its stakeholders, including the Australian Government and the Australian community. The programs include:

Environment

This program relates to RD&E that supports natural resource sustainability in managing fishing and aquaculture activities in Commonwealth, state and territory waters. Many components of FRDC-funded RD&E focus on improving the sustainable use of Australia's aquatic resources.

Industry

This program relates to RD&E that assists the production and value of seafood. It could be in the form of business profitability, international competitiveness, opportunities for productivity increases, resource access and experience or wellbeing benefits. This program aims to help all sectors improve their overall performance.

Communities

This program relates to RD&E that maintains the long-term sustainability of the commercial sector by understanding the interactions and co-dependence between fishing and aquaculture, and the wider community. It is enhanced by knowledge about the social importance of fisheries.

People

This program relates to RD&E that is needed to attract and advance people who will lead fishing and aquaculture towards a sustainable and profitable future. The FRDC has taken a strong role in this area, from employing and developing young researchers, through to facilitating access to leadership development for all sectors of fishing and aquaculture.

Adoption

This program relates to how project outputs are delivered so they can be easily adopted and support stakeholder decision making and practices. The FRDC continually works with researchers and end users to determine and implement the best way of extending these results. In addition, the FRDC is continuing to develop its systems to ensure its 'knowledge bank' is widely accessible.

1.2 CO-MANAGEMENT INVESTMENT MODEL

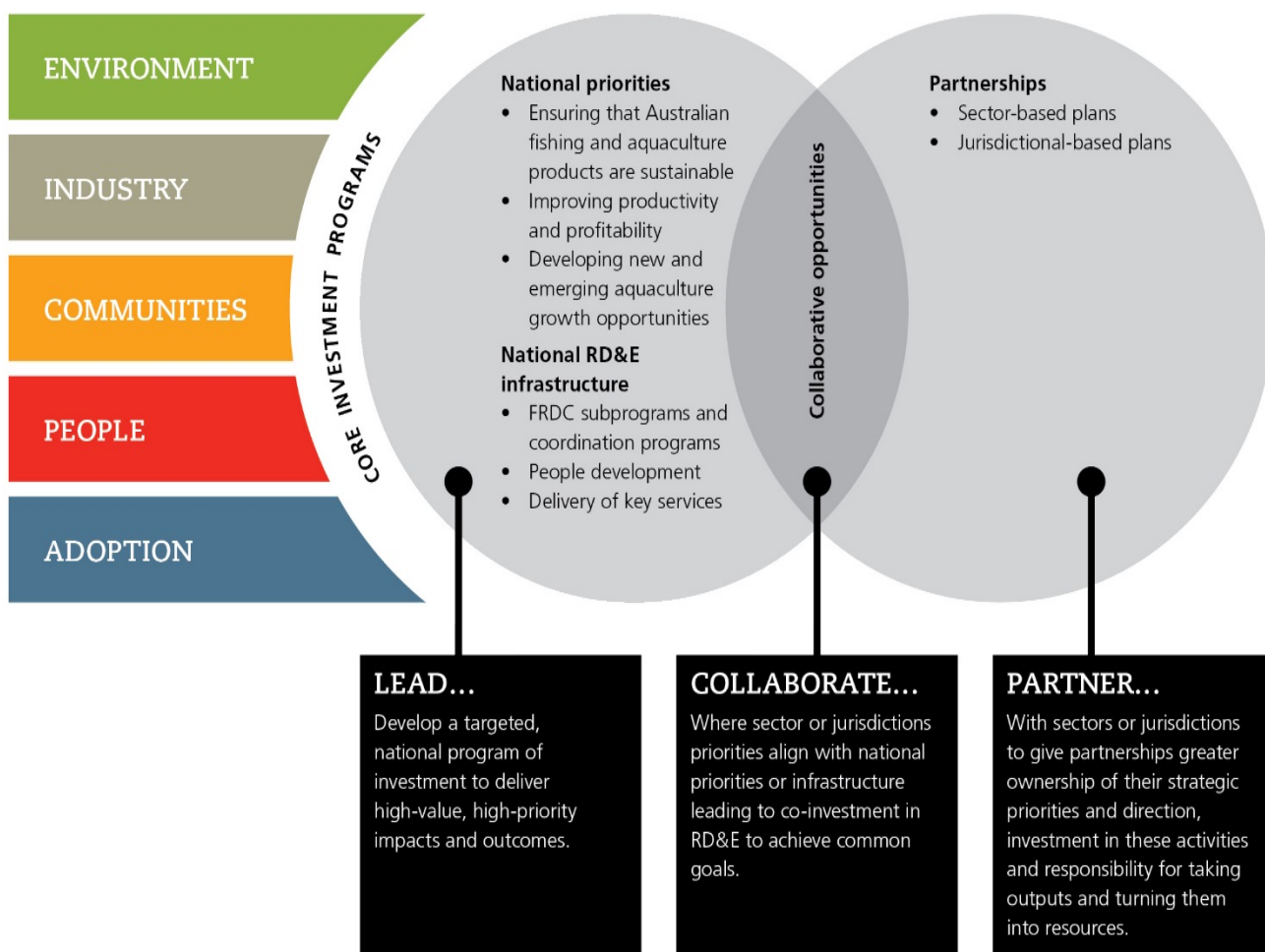
Under the FRDC's RD&E Plan 2015 - 2020, the FRDC provides greater ownership and authority to industry sectors in developing RD&E priorities, through Industry Partnership Agreements (IPAs) and to jurisdictions through Research Advisory Committees (RACs) - formerly Fisheries Research Advisory Bodies (FRABs).

Queensland Research Advisory Committee RD&E Plan

A key component of this investment model is the development of a multi-year RD&E Plan for each IPA and RAC¹ aligned with the FRDC's 5-year RD&E Plan. This will assist in developing a tailored RD&E program that:

- meets both jurisdictional and national strategic RD&E priorities
- is balanced across FRDC programs (environment, industry, communities, people and extension)
- focusses on short, medium and longer term RD&E outcomes
- is supported by a consistent RD&E planning framework across all RACs.

The framework for RD&E investment by the FRDC for 2015–20.



2. OPERATING ENVIRONMENT

2.1 OVERVIEW

Queensland's fisheries extend from southern temperate to northern tropical climates, with a diverse range of ecotypes, aquatic habitats and ecosystems. There is a corresponding diversity of fisheries—trawl, line, net, pot and collection — distributed along the east coast, Torres Strait and the Gulf of Carpentaria. In marine waters there is a mix of commercial, recreational and indigenous fishing, while recreational fisheries predominate in inland (freshwater) regions. About 1500 licensed commercial fishing boats operate in Queensland fisheries. The gross value of fisheries production in 2015 was about \$180 million.

Table 1. Queensland Commercial Catch with estimated value² of crustaceans, fin fish and molluscs together with catch of key species.

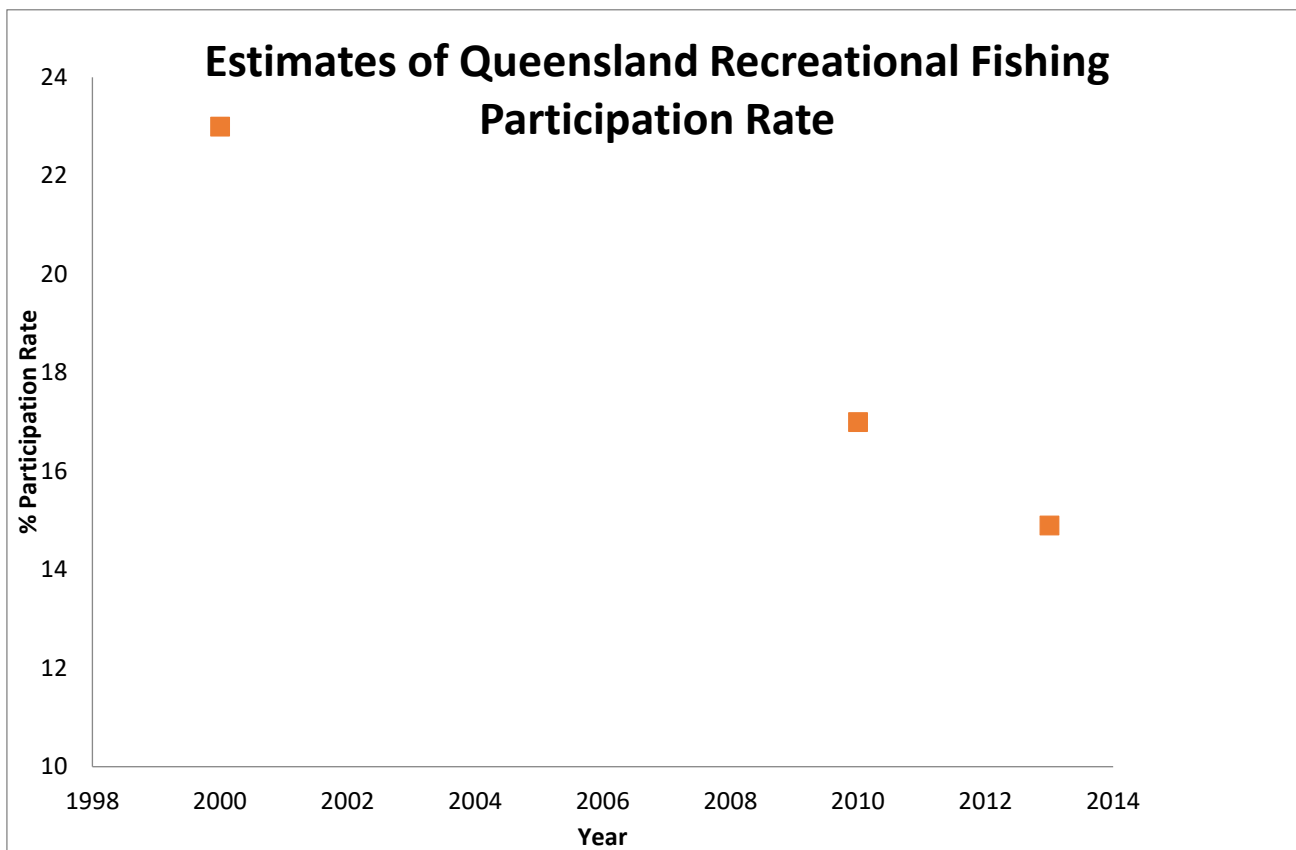
	2012		2013		2014		2015	
	Weight (t)	GVP (\$ '000)	Weight (t)	GVP (\$ '000)	Weight (t)	GVP (\$ '000)	Weight (t)	GVP (\$ '000)
Crustaceans	8 792	109 338	10 188	122 753	9 265	117 906	9 184	110 441
Bugs	574	11820	573	11794	662	13633	605	12447
Crabs	2947	31446	2716	29182	2707	29172	2776	27263
Lobster	161	5982	191	7039	195	6981	143	4640
Prawns	5107	60077	6698	74689	5693	68082	5658	66081
Fin Fish	9 897	70 347	9 362	68 071	8 398	61 694	9 165	63 768
Barramundi	1375	12607	918	8421	763	7000	684	6271
Coral Trout	752	24599	863	28220	760	24872	753	24620
Mullet	1784	4461	2153	5382	1573	3932	1991	4977
Redthroat Emperor	213	1435	240	1614	213	1434	167	1128
Molluscs	981	12 363	636	7 786	502	5 856	359	3 920
Scallop	824	11577	509	7155	369	5191	235	3302

* This table includes commercial fisheries catch information (otter trawl, beam trawl, net, pot, line and rock lobster collection). It does not include catch and GVP for harvest or charter fisheries.

Although the participation rate of recreational fishers continues to fall, recreational fishing continues to be a very popular outdoor recreational activity, particularly in the north of Queensland. Approximately 15% of Queenslanders 5 years or older were estimated to be recreational fishers in 2014. This represents approximately 642,000 Queenslanders.

² Queensland's fish price series data have not been updated since 2010. The potential difference between GVP values presented in this table and the current market value of individual species is unknown.

Table 1. Queensland total Recreational Fishing participation rate over time



In addition to the wild caught fishery, Queensland has an active freshwater stocking, grow-and-take recreational fishery based in 63 freshwater impoundments. Recreational fishers who are over 18 years must hold a permit issued under this scheme with approximately 75% of the monies received from the sale of permits being returned to local stocking groups to grow their local impoundment fishery. Approximately 50,000 permits are sold each year.

2.2 DRIVERS, CHALLENGES AND OPPORTUNITIES

Fisheries

Compared to most Australian jurisdictions, Queensland has a large number of fished species and fisheries. This in turn leads to a busy schedule of detailed fishery assessments each year to meet statutory obligations to manage Queensland’s fisheries sustainably. The number of fishery assessments completed over the past 10 years is high compared to most other jurisdictions (Dichmont et al., in prep.). The delivery of reliable, high-quality fishery assessments is dependent on the information and data available; and therein lies a challenge: to obtain sufficient, reliable and accurate data for each of the fisheries to be assessed.

To underpin decision-making in this area, there is a need to understand the value (economic, social and environmental) of each of the fishing sectors (commercial, aquaculture, recreational, indigenous) so that discussions and decisions regarding allocation of fish resources to these sectors are fully informed. There is also a need to evaluate and demonstrate patterns and trends of the impact of fishing, on both target and non-target species and the broader ecosystem. Increasingly, there is also a need to incorporate environmental and climate change into fishery RD&E to increase the preparedness of fishers to emerging and future challenges.

Queensland Research Advisory Committee RD&E Plan

A commissioned review of Queensland fisheries management, undertaken in 2014, proposed a series of recommendations³. The Queensland Government as part of its election commitment to review fisheries regulatory framework and in response to the 2014 review and public comments released a Green Paper⁴ on 21 July 2016. The Green Paper identifies 10 areas of reform so a clear strategic direction can be determined about how the State's fisheries are managed for both current and future generations.

The proposed reforms relate to the following areas of fisheries management:

- Ensuring long term sustainability and resilient stocks
 1. Managing target stocks
 2. Managing impacts on the ecosystem, including non-target species
- Economic return to the community and access for all users
 3. Resource sharing arrangements between sectors
 4. Access to the resource
- Clear and unambiguous regulatory framework
 5. Decision-making framework
 6. Harvest strategies
- Enhanced systems to support fisheries management
 7. Data and information
 8. Consultation and engagement
 9. Fisheries compliance
- Investment in fisheries management
 10. Contributions to the costs of management

The Green Paper recognises the need for higher standards of management in the world heritage-listed Great Barrier Reef, and the RD&E required to support this.

Aquaculture

Australian Barramundi Farmers' Association and Australian Council of Prawn Fisheries have agreements (Industry Partnership Agreements) with FRDC and develop industry strategic plans. The priorities and projects selected are generally identified by the industry body and are specific to its needs.

The primary aquaculture commodities in Queensland are prawns and barramundi. Evaluation of other species as commercially viable candidates for aquaculture is also under way, in particular cobia (*Rachycentron canadum*) and species of grouper (or grouper: *Epinephelus* species).

The public perception of aquaculture is not a major constraint to its expansion in Queensland, but the proximity of the Great Barrier Reef is a challenge. The assimilative capacity of waters in the Great Barrier Reef Region to accept the discharge of aquaculture wastewaters (particularly sediment and nutrient loads) must be considered. This provides a driver for the aquaculture sector to help meet these conditions; some of the problems will require RD&E to address.

In response to a Queensland Competition Authority review of aquaculture in Queensland, the Queensland Aquaculture Policy Statement⁵ was released in April 2016. The initiatives listed therein provide direction for actions by the aquaculture industry, regulators, managers and research providers.

³ MRAG (2014). Taking Stock: Modernising fisheries management in Queensland. 132 pp.

⁴ Anon (2016) Queensland Government's Green paper on fisheries management reform in Queensland 28 pp.

⁵ Queensland Government (2016). Queensland Aquaculture Policy Statement.
<https://publications.qld.gov.au/dataset/queensland-aquaculture-policy-statement>

Queensland Research Advisory Committee RD&E Plan

The challenges and opportunities of the aquaculture sectors in Queensland relate to: limiting disease impacts; improving operational efficiencies, nutrition and selective breeding; and reducing the aquaculture environmental footprint.

Queensland Research Advisory Committee RD&E Plan

Driver	Challenge	Opportunity
Addressing Social license and community perception		
Social license and public perception of the wild-caught and aquaculture sectors	<ul style="list-style-type: none"> • Community understanding of sustainable fisheries management • Community support for commercial fishing • Overcoming disinformation • Community recognition of certification systems • Community understanding of sustainable fisheries management 	<ul style="list-style-type: none"> • Third-Party Certification (such as MSC/ASC) • Communication through the supply chain and broader community to increase social license • Valuing the supply of local seafood at the fish and chip shop. • Communication management tools to maximise message in mainstream and social media – direct input • Improved data gathering and information gap analysis • Partnerships with community/sector groups • Improve image of aquaculture during the development of the aquaculture zones process
Ensuring long term sustainability and resilient stocks		
Managing target stocks	<ul style="list-style-type: none"> • Data poor fisheries • Diverse number of species caught by commercial and recreational fishers • A number of species have never had formal stock assessments conducted • Practical implementation of limits to fishing effort and catch 	<ul style="list-style-type: none"> • Improved data gathering and information gap analysis • Examine other options to monitor the take and effort of key species by recreational fishers. • Improved information on priority species to support management needs.
Managing impacts on the ecosystem, including non-target species	<ul style="list-style-type: none"> • Queensland has an extensive coast line • Lack of independent observations (fisheries Observers) • Implementing specific research to measure impacts 	<ul style="list-style-type: none"> • Use of new, efficient and economically viable technology • Partnerships with community/sector groups
Economic and Social return to the community and access for all users		

Queensland Research Advisory Committee RD&E Plan

Driver	Challenge	Opportunity
Resource sharing	<ul style="list-style-type: none"> • To reduce false perceptions of poor fishing activities and management, when they are unjustified • Resource access conflicts in inshore regions • Low priority for management and research • Change gear and practices developed over long periods of time • Data-poor fisheries • Mixed-species fisheries • Conflict within and between sectors 	<ul style="list-style-type: none"> • Improve image of aquaculture during the development of the aquaculture zones process • Education – voluntary stewardship and compliance • Dissemination of stock assessments and research findings • Fishery improvement programs • Indicator species approach • Clearer allocation processes • Strengthened access rights • Clearer allocation processes through thorough research and input from all sectors • Inclusion of resource users in working groups and research project steering committees
Clear and unambiguous regulatory framework		
Develop decision-making framework	<ul style="list-style-type: none"> • Designing a workshop that enables industry sectors to develop a framework to facilitate stewardship alongside government in decision making 	<ul style="list-style-type: none"> • opportunity to rethink institutional approaches and legislation in management • Transparency in management process
Develop Harvest strategies	<ul style="list-style-type: none"> • Developing and achieving consensus on new Harvest Strategy process • Harvest strategies for multi-species and multi-sector fisheries 	<ul style="list-style-type: none"> • Strengthened access rights • Clearer allocation processes • Investment security improved • Improved resource and environmental sustainability
Enhanced systems to support fisheries management		
Data and information	<ul style="list-style-type: none"> • Many fisheries are data poor • Lack of independent validation of most of fisheries information • Reluctance to use eLogs to obtain near real time data. • Cost of collecting 	<ul style="list-style-type: none"> • Electronic technology is making apps more user friendly • Use of technologies to validate fisheries information. • Co-management • Understanding current practises better as well as to explore further methods and mechanisms for data collection

Queensland Research Advisory Committee RD&E Plan

Driver	Challenge	Opportunity
Consultation and engagement	<ul style="list-style-type: none"> • Identification of emerging leaders • Strengthening relationships between Peak representative bodies, government agencies, NGOs and individual stakeholders • Diverse range of fisheries • Extended coastline. • Appropriate skills training 	<ul style="list-style-type: none"> • Building relationships • Educational opportunities for upskilling
Confidence across fisheries and aquaculture Sectors	<ul style="list-style-type: none"> • Resource access conflicts in inshore regions • Low priority for management and research • Change gear and practices developed over long periods of time • Data-poor fisheries • Mixed-species fisheries 	<ul style="list-style-type: none"> • Education – voluntary stewardship and compliance • Fishery improvement programs • Indicator species approach
New fisheries legislation	<ul style="list-style-type: none"> • Building understanding of opportunities provided by the new legislation • Moving fisheries to a formal rights-based framework 	<ul style="list-style-type: none"> • Resource-based approach in legislation provides opportunity to rethink current institutional approaches in management • Strengthened access rights • Clearer allocation processes • Investment security improved • Transparency in management process for improved social licence aspirations • Increased focus on aquaculture
Environmental impact on habitats and resource	<ul style="list-style-type: none"> • Understand difference between climate shift vs environmental change • Inadequate research / Cost of this research • Lack of skills sets to carry out research • Lack baseline data • Adaptation of industry to findings • Managing biosecurity risk 	<ul style="list-style-type: none"> • Build partnerships – national and international • Apply learnings from other jurisdictions • Create, enhance and protect habitats • Improved assessments and predictions • Adaptation to findings

Queensland Research Advisory Committee RD&E Plan

Driver	Challenge	Opportunity
Improved productivity and profitability of commercial fishing operations	<ul style="list-style-type: none"> • Increasing efficiencies in fishing operations, while maintaining or increasing employment • Balancing sustainability with economic efficiency • Understanding return on investment vs catchability (i.e., profit vs kg) • Complex regulatory framework and inflexibility • Understand the balance between commercial and social aspirations of commercial fishers • Underutilised species with poor market acceptance • Prospectively build the biomass of key fish stock 	<ul style="list-style-type: none"> • Diversification in fishing operations • Product, technology and market development • Use Maximum Economic Yield to drive behaviours • Greater commercial outcomes from underutilised species • New legislation to provide improved risk-based management framework • Collaboration in investment and fishery management decisions • Post-harvest planning and investment • Use technology to increase efficiency
Market Access	<ul style="list-style-type: none"> • Ensure long-term supply chain certainty • To better understand markets / consumer trends / risk • Food safety – To ensure that market product consistently meets high quality standards • Biosecurity – pests, diseases, cost shifting 	<ul style="list-style-type: none"> • International Free Trade Agreements • Explore utility of new FTAs, i.e., EU • Certification programs • Ethical programs in industry practices • Market promotion activities • Smart technology (eg App) for identification of provenance to link consumer with producer • Develop better tools for biosecurity • Refine cost-sharing models
Aquaculture development and profitability	<ul style="list-style-type: none"> • Surviving the ‘pioneer period’ • Secure seafood as protein source in government policy • Production impediments • Pick winners (i.e. determining the next economically viable species) • Retention and acquisition of skills base (people) • Minimising effluent impacts 	<ul style="list-style-type: none"> • Understanding aquaculture nutrition and management • Improving product quality • Disease management and fish health capability • Increased investment • Northern Aquaculture Development program • Targeted research aligned to industry needs

Queensland Research Advisory Committee RD&E Plan

Driver	Challenge	Opportunity
Human-induced impacts on fishing and aquaculture	<ul style="list-style-type: none"> • Poor State marine planning consultation, collaboration and decision-making process • Data gaps leaving fishing vulnerable • Agreed science on impacts 	<ul style="list-style-type: none"> • Closing gaps • Determining acceptable impact thresholds • Improve process for consultation and transparency
Fisher health/wellbeing	<ul style="list-style-type: none"> • Awareness / acceptance • Fishing pressures • Enact significant change 	<ul style="list-style-type: none"> • Toolbox, app • Support network • Improve communication, engagement, acceptance • Capitalise on the Fisheries
People development	<ul style="list-style-type: none"> • Identification of emerging leaders • Appropriate skills training 	<ul style="list-style-type: none"> • Bursaries, scholarships, grants etc. • International exposure • Educational opportunities for upskilling
Trust	<ul style="list-style-type: none"> • Industry does not trust the department, both research & management • Industry does not trust the current state government. • Industry does not understand the science behind management responses 	<ul style="list-style-type: none"> • Create fisheries agency/ombudsman with an independent person or panel deciding on fisheries allocation issues. This would remove the political pressure felt by politicians and perhaps for the first time ever industry might have an independent umpire.

3. RD&E PLAN 2016 – 2019

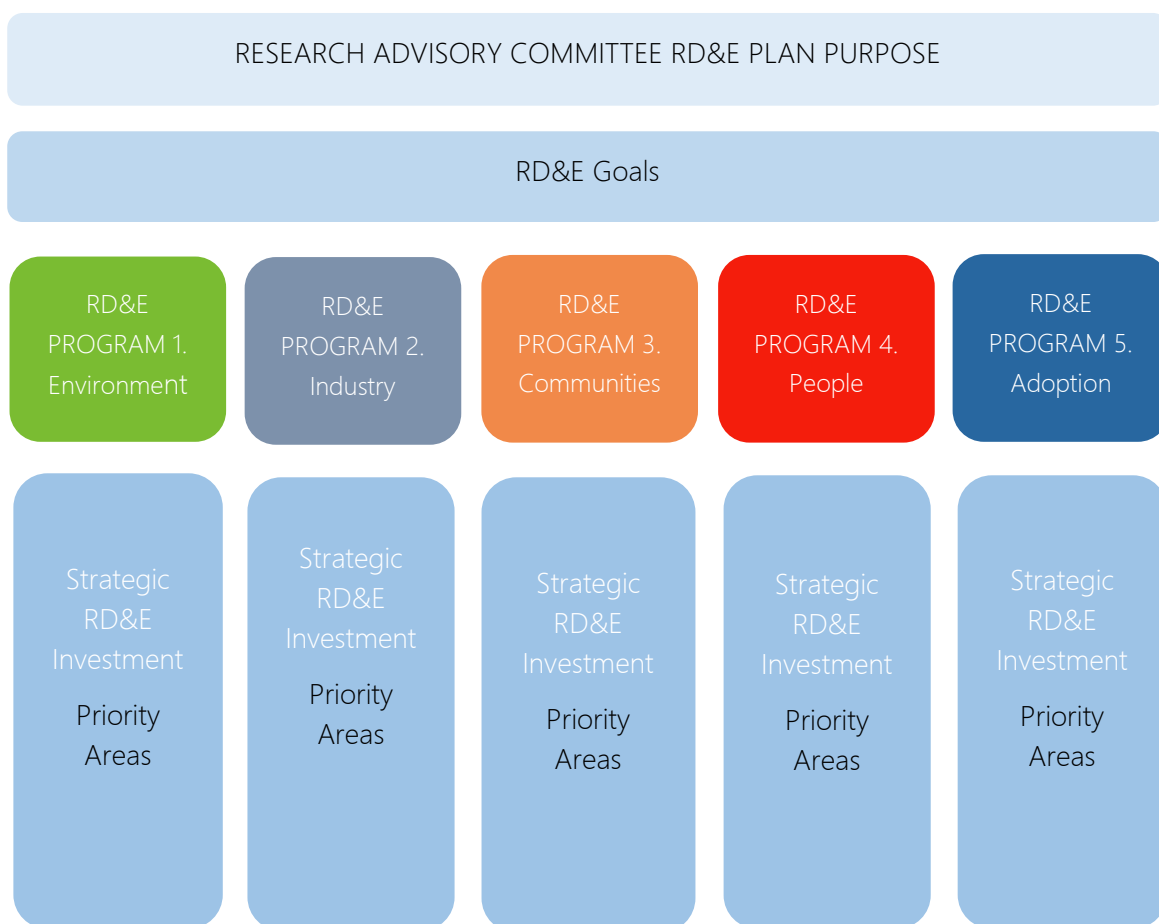
3.1 PURPOSE

The Queensland Research Advisory Committee RD&E Plan provides a framework to identify the key strategic research needs of the fisheries sector under its jurisdiction for the three-year period from 2016 – 2019.

The RD&E Plan aims to ensure that the research program meets both jurisdictional and, where appropriate, national strategic RD&E goals and addresses the major challenges facing fisheries in Queensland, including the commercial, aquaculture, recreational and indigenous sectors.

Where possible, this plan will link with other related strategies to enable efficiency and leverage opportunities e.g. other RACs, FRDC subprograms, FRDC coordination programs, FRDC sector based program.

3.2 FRAMEWORK OVERVIEW



3.3 GOALS

By 2020

- fishing and aquaculture will have demonstrably greater environmental sustainability
- fishing and aquaculture will be more resilient to social, environmental and economic change
- fishing and aquaculture businesses will be more productive and profitable
- recreational fishers will have improved opportunities for better fishing experiences and will play a greater role in the stewardship of fisheries resources
- more Indigenous people will derive benefit from fishing and aquaculture activities and will play a greater role in the stewardship of fisheries resources
- Scientific and management information on the sustainability of fishing and aquaculture in Queensland will be more accessible

3.4 STRATEGIC RD&E INVESTMENT PRIORITY AREAS

The Queensland Research Advisory Committee RD&E plan incorporates the research and development needs across fisheries, aquaculture, recreational, indigenous and post-harvest, with the aim to embody research priorities across all sectors.. The plan aligns with the [Queensland Sustainable Fisheries Strategy 2017-2021](#) and the [Science Strategy and Information Needs 2014-2019 \(GBRMPA 2014\)](#).

In addition, the RD&E plan will be balanced across the 5 FRDC programs (environment, industry, communities, people and extension). There is not a requirement for each jurisdiction to have research investments that fit into each of the program areas but the plan should consider the overall balance.

The plan also considers the overall balance of:

- Short and long term projects
- Low and high risk projects
- Strategic and adaptive research needs
- Regional variations and needs
- National, jurisdictional and sector focused projects.

FISHERIES

The following four high-level priorities for research into Queensland fisheries are:

1. Informing best-practice management
2. Management systems and frameworks to support the reform of fisheries management in Queensland
3. Understanding environmental risks and developing solutions including refining fishing gear and techniques to optimise effectiveness/reduce impacts and emerging issues
4. Understanding and minimising external impacts to fisheries – allow for adaptation across 1 and 3

The purpose now is to develop lower-level, more prescriptive priorities under these in order to provide guidance to research providers in the particular research needs. These need to be developed for the coming year, as well as for following years; priorities post-Year 1 may be identified during Year 1.

The purpose of this document is to identify clear project objectives to address Priorities 1 and 2. The projects that address Priorities 1 and 2 will need to be completed within 12 months, with a draft report due in 6 months, so the results can inform future years' priorities. In addition, Priorities 3 and 4 will be addressed in years 2 to 5.

AQUACULTURE

The major aquaculture sectors in Queensland are barramundi and prawn farming (both pond-based). Through their peak bodies (the Australian Barramundi Farmers Association and the Australian Prawn Farmers Association) these two sectors have an Industry Partnership Agreement (IPA) with FRDC; negotiations and decisions on RD&E funding allocation for these two sectors is generally via direct communication between FRDC and the peak body, rather than through the QLDRAC. Similarly, RD&E on new or emerging species will, from 2016/17, be funded through the New and Emerging Aquaculture Species Subprogram. Cobia fishery development will be covered under this subprogram.

Aquaculture – Prawns

The marketing, research, development and extension priorities of the Australian Prawn Farmers Association were provided to the FRDC on 21 June 2016. The first of these priorities, marketing, is not addressed through the RD&E process. The first three RD&E priorities are described further in the next section.

1. Continued support in the development and growth of a marketing levy
2. Reduce disease impacts on farmed prawns
3. Minimise nutrient discharge from prawn farms
4. Apply advanced technologies to improve production and profitability of prawn farms
5. Increase early survival of post larvae
6. Assess the prevalence of chemical contaminants in incoming waterways, and assess their potential impact on larval prawn production

Aquaculture – Barramundi

[From a meeting of the Australian Barramundi Farmers Association, 5 July 2016]

Key areas:

1. Feed management
2. Disease and pest management
3. Mechanisation
4. Harvest methods
5. Genetics

Aquaculture – Other

This will include development-associated RD&E of Cobia and other species. [Not addressed further here]

RD&E Program 1. Environment

Priority Area 1. Informing best-practice fishery management
[Fisheries]

Outcomes:

- Identify types and sources of fishery, environmental, social and economic data required to inform best practice fisheries management
- Identify gaps in the current data collection
- Data is collected consistently and can be compared at appropriate spatial scales, through time and between sectors, including recreational

Priority Area 2. Reduce environmental risks of fishing
[Fisheries]

Outcomes:

- Improved knowledge and understanding of the environmental risks of fishing, and of the technology and practices to minimise these
- Adoption of best practice to maximise social acceptability while minimising the impacts to target and non-target species and the environment

Priority Area 3. Minimise nutrient discharge from Aquaculture sites

Outcomes:

- A review and cost-benefit analysis of physical and biological options to remediate pond farm effluent
- A decision tree to guide individual farms in adoption of most suitable system [An Output]
- Improved production and industry expansion through adoption of industry best practice
- Reduced nutrient discharge rate from farms through greater removal of algal and particulate load

RD&E Program 2. Industry

Priority Area 1. Understanding and minimising external impacts to fisheries [Fisheries]

Outcomes:

- Improved understand of economics of commercial and recreational fisheries
- Develop sound models for the development of a fisheries resource allocation policy which maximises economic value

Priority Area 2. Reduce disease impacts on farmed products

Outcomes:

- Improved understanding of the prevalence, frequency and types of diseases in aquaculture
- Development of early-warning systems for disease incursions on farms
- Effective biosecurity control measures adopted throughout the industry

Priority Area 3. Improved production and profitability of Aquaculture farms through advanced technologies

Outcomes:

- Reduced feed costs and improved feed conversion rates through advanced feed delivery and feeding enrichment and monitoring systems
- Reduced cost of production through lower aeration energy demand aeration
- Increased production rate and predictability through enhanced algal bloom management
- Increased production rate through enhanced control of post-larval growth and survival during the early post-stocking period

RD&E Program 3. Communities

Priority Area 1. Optimising allocation of fisheries resources [Fisheries] Isn't this an outcome in the first box above?

Outcomes:

- Improved understanding of the economic, social and indigenous values of Queensland fisheries
- Queensland fisheries resource management decisions well-informed by this information
- Maximised economic profit, social wellbeing, indigenous values and environmental outcomes from Queensland's fisheries

Priority Area 2. Engagement of communities & stakeholders in resource management

Outcomes:

- Increased involvement of communities & stakeholders
- Better understanding of resource structure
- Increased trust in management of fisheries
- Better understanding community/stakeholder expectations

Priority Area 3. Assessing the potential of communities of artificial structures in fresh & saltwater

Outcomes:

- Value adding of existing opportunities
- Enhancement of the quality of recreational fishing experiences
- Increased visitation & expenditure to local communities

RD&E Program 4. People

Priority Area 1. Developing leadership and resilience within industry

Outcomes:

- Develop greater leadership within all sectors of the fishing community
- Develop a greater understanding of the fishing industry needs
- Ensure quality advice from stakeholders
- Better communication with user

Priority Area 2. Develop engagements strategies in all fishery and aquaculture sectors

Outcomes:

- Improved engagement with all fishing and aquaculture sectors
- Ensure an informed fishing community

Priority Area 3. Develop a skills based training program for Fisheries managers involving industry

Outcomes:

- Better informed management decisions
- Better stakeholder confidence in Fisheries managers
- Staff are better informed & gain experience and insight into specific fisheries

RD&E Program 5. Adoption

Priority Area 1. Adoption of research findings by community & stakeholders

Outcomes:

- Integrated extension program to ensure a well-informed fishing community
- Improved adoption of research findings

Priority Area 2. Dissemination of research findings

Outcomes:

- Better informed community & stakeholders
- Awareness of research being undertaken across the jurisdiction by the Queensland RAC
- Encouragement to other researchers to become involved
- Encouragement of others to utilise and extend on results

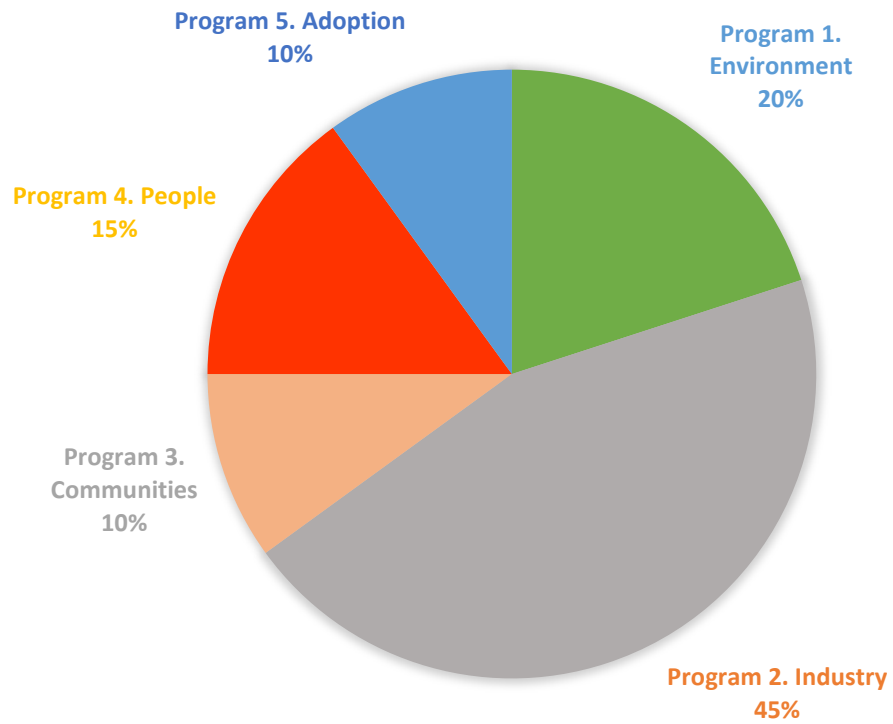
Priority Area 3. Adoption of research findings by government

Outcomes:

- Users confident that government supports practical and useful research
- Users more conducive to support research
- Government is seen to support research that is needed

3.5 FORECAST INVESTMENT ACROSS STRATEGIC RD&E PRIORITIES

**ESTIMATED ALLOCATION OF FUNDING ACROSS PROGRAM AREAS
2016 - 2019**



4. RD&E PLAN Guidelines

4.1 INVESTMENT COLLABORATION

The RACs are to be mindful of collaborative opportunities with external funding sources (other than the FRDC) as well as collaboration between the jurisdictional RACs, IPAs and FRDC subprograms. This collaboration occurs through the sharing of RD&E Plans as well as the results of priority planning processes. The annual planning workshop provides a forum for the sharing of these priorities to promote collaboration.

Collaboration provides the opportunity to share investment across common areas of interest and promote RD&E execution efficiency.

4.2 EXTENSION

Extension processes are embedded into all FRDC-funded RD&E. How results can be extended begin when a project is approved for funding, are considered in the design and proposal phase where priorities for end users are determined, continue during the project's execution through to the final published report. This is often easier for short-term applied research but needs to be more considered for longer-term, blue-sky research.

On 23 April 2010, the Primary Industries Ministerial Council (PIMC) approved a National Strategy for Fishing and Aquaculture Research, Development and Extension (RD&E) which establishes the future direction to improve the focus, efficiency and effectiveness of RD&E to support Australia's fishing and aquaculture industry.

The FRDC have adopted these as key principles with regards to encouraging and promoting Extension and Adoption. They are:

- Principle 1: All stakeholders to value extension and adoption activities in the same way as research activities.
- Principle 2: Extension will be a key focus in research project development
- Principle 3: Project knowledge and outputs are actively managed
- Principle 4: Effectiveness and impact of project extension activities are evaluated
- Principle 5: Extension and adoption capacity is maximised and built upon.

It is best practice for project managers to have given some thought to how the project outputs will be used and adopted by end users while developing the application. It is a FRDC requirement that an Extension and Adoption Plan is developed and submitted for each project.

4.3 EVALUATION OF PROJECTS

The FRDC has adopted the Commonwealth input, output, outcome reporting framework policy. The Department of Finance and Deregulation has determined that the FRDC's planned outcome is *Increased knowledge that fosters sustainable economic, environmental and social benefits for the Australian fishing industry; including indigenous, recreational, commercial and aquaculture sectors, and the community; through investing in research, development and adoption.* The FRDC's performance is measured against its ability to deliver this outcome.

The success of the RAC's planning, investment, management and adoption is measured by an evaluation framework that is based on adaptive management. The structure of the evaluation framework is as follows:

- A planning process that ensures investment is made against priorities where research can contribute to a significant improvement.
- An annual report evaluating the performance of individual projects against the targets in the RD&E Plan.

Queensland Research Advisory Committee RD&E Plan

The FRDC has implemented the Rural RD&E Corporation Evaluation Framework methodology to achieve the total portfolio evaluation assessment. This is based on a rolling series of cost benefit analysis of project clusters (based on previous 5 years investment). The results of the project cluster assessments links to the agreed KPIs that are relevant to that cluster. This process ensures that the investment decisions are continually being adjusted to ensure optimal investment performance. In this ongoing evaluation, the FRDC will measure the performance of RAC investments after the life of its RD&E Plan.

During the life of the RD&E Plan, the RAC should self-evaluate its performance against its identified Priority Areas as well as monitoring investment to ensure balance in investment across the FRDCs five programs. This is to be aligned with the prioritisation and RD&E Plan review processes undertaken in the October RAC meeting.

4.4 REVIEW OF THE RD&E PLAN

Annually, the RAC will review the RD&E Plan. This will occur at the October RAC meeting. The Plan will be reviewed to:

- assess performance against the identified Priority Areas of the Plan
- identify gaps against the Priority Areas of the plan
- determine priority areas for investment against these gaps

These annual plans will be circulated to all FRDC subprograms and partnership agreements unless it is deemed that there are areas of sensitivity, IP protection or commercial advantage that require protection.

At the beginning of December each year, the FRDC will hold an annual workshop for all RACs, Industry Partnership Agreements and National Initiatives to provide updates on priority areas for investment and any potential overlap and collaborative opportunities for the coming financial year.

The RAC, at each meeting, should also undertake a situational scan of the jurisdiction to identify any tactical or immediate areas of RD&E need that require short term or immediate remediation.