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TRADERS

AFMA Strategic Research Plan 2017-2022



Australian Government
Australian Fisheries Management Authority



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About this Plan

This plan specifies the research strategies that AFMA intend to pursue in Commonwealth fisheries, and provides background to the processes used to call for research proposals.

The plan sets out a framework for each fishery to review its information and development needs and to plan and develop its individual five-year research programs. This plan also responds to the need for flexibility to accommodate the requirements of the different fisheries and to be responsive to the development and information needs of industry and other stakeholders. It does not specify the priority research programs within the individual Commonwealth fisheries, which vary considerably with the circumstances and history of the individual fisheries. While the main focus of previous Plans has been on commercial harvesting and associated issues, this Plan will also focus on the need to consider the impacts of commercial harvesting on other stakeholders, including recreational and Indigenous fishers.

There is a strong synergy between the research interests of the Australian Fisheries Management Authority (AFMA) and the Fisheries Research Development Corporation (FRDC), with each organisation's research investment complementing the other, in the interests of profitability, economic efficiency and sustainability of Commonwealth fisheries. The plan also seeks to facilitate continued identification and coordination of the organisations' research investment.

This plan will be reviewed by the AFMA Research Committee (ARC) as needed, but at least every three years with the ARC to develop a one year rolling research plan identifying priorities for potential AFMA and other funding (FRDC, CSIRO).

AFMA

AFMA is the Australian Government agency responsible for the efficient management and sustainable use of Commonwealth fisheries resources on behalf of the Australian community. AFMA manages commercial fisheries generally from three nautical miles out to the extent of the Australian Fishing Zone (AFZ), on the high seas, and in some cases by agreement with the States, inshore to the low water mark.

Figure 1: The Australian Fishing Zone



AFMA also provides fisheries management services to the Torres Strait Protected Zone Joint Authority (PZJA). The PZJA is responsible for management of commercial and traditional fishing in the Australian area of the Torres Strait Protected Zone and designated adjacent Torres Strait waters.

Current drivers of fisheries research

The relative priority placed on research varies across the Commonwealth fisheries, depending on the information requirements of the fishery and the particular issues that each fishery face. Significant environmental issues may in some fisheries weigh more heavily on the future than fine-scale tuning of stock assessments. Research is a high cost area and in an economic environment of competing pressures there is greater emphasis placed on AFMA's Committees/Groups for strategic planning to derive the highest long-term return on research investment.

In addition to AFMA's governing legislation, a number of associated plans and policies shape how AFMA will invest in research during the five years, 2017-2022. These are outlined in Appendix B to this document.

How AFMA invests in fisheries research

One of AFMA's functions is to establish priorities for research relating to fisheries managed by the Authority, and to arrange for such research to be undertaken.

AFMA is responsible under the *Fisheries Administration Act 1991* (the FA Act) and the *Fisheries Management Act 1991* (the FM Act) for implementing management arrangements for Commonwealth fisheries. Under that legislation, AFMA is accountable to the fishing industry and the Australian community for the success of its management arrangements in pursuing the objectives set out in the legislation.

Under section 7 (e) of the FA Act, a function of AFMA is to:

“establish priorities in respect to research relating to fisheries managed by the Authority and arrange for the undertaking of such research”.

For this purpose, AFMA defines fisheries research as an investigation to establish facts or principles relating to fisheries. This includes work to monitor and assess fish stocks, broader ecosystems impacts of fishing, and the economic performance of fisheries. AFMA has limited in-house research capacity and therefore contracts external agencies to carry out research.

AFMA considers research as a contestable service, and seeks to purchase research from a range of providers based on the capability of the provider and value for money of the programs offered. Where possible, AFMA will identify funding arrangements to derive better leverage of research investment and maximise return on investment.

Principles for research investment in Commonwealth fisheries

Individual fishery research plans

Researchers should use the following principles as a guide for the development of their applications. Resource advisory groups/scientific panel and the ARC should consider these when developing their research plans and priorities, and in ranking and assessing research proposals.

To ensure that research proposals are of high quality and structured to deliver the best outcomes for Commonwealth fisheries, the following principles for research investment apply:

Researchers

1. Research contributes to the knowledge that underpins ecosystem based fisheries management (EBFM) and improves the quality of the decisions made.
2. Research projects must include appropriate plans (for example, adoption, communication and/or commercialisation plans) to ensure that the full potential of the research is realised through adoption of research outputs by end-users.
3. Research projects must demonstrate value for money.

RAGs / Scientific Panel / MACs

1. Research contributes to the knowledge that underpins ecosystem based fisheries management (EBFM) and improves the quality of the decisions made.
2. Research priorities are to be identified for all major Commonwealth fisheries, and research arranged and commissioned where appropriate.
3. The processes for identifying research priorities and commissioning research must be transparent and undertaken in line with approved procedures, priorities and budgets, including peer review of research.
4. Research projects are to be prioritised and funded in accordance with the need, risk, cost and expected benefits of the research to the fishery, ecosystem, industry and broader community.
5. Research projects must include appropriate plans (for example, adoption, communication and/or commercialisation plans) to ensure that the full potential of the research is realised through adoption of research outputs by end-users

ARC

4. Research contributes to the knowledge that underpins ecosystem based fisheries management (EBFM) and improves the quality of the decisions made.
5. To maximise the benefits from research, an appropriate investment in both strategic and applied research areas should be made and, where applicable, the outputs from research should be applied across fisheries.

6. The processes for identifying research priorities and commissioning research must be transparent and undertaken in line with approved procedures, priorities and budgets, including peer review of research.
7. Periodic assessment and review of the research program is to be undertaken to determine the effectiveness of the research investment.
8. Research priorities are to be identified for all major Commonwealth fisheries, and research arranged and commissioned where appropriate.
9. Research projects are to be prioritised and funded in accordance with the need, risk, cost and expected benefits of the research to the fishery, ecosystem, industry and broader community.
10. Research projects must include appropriate plans (for example, adoption, communication and/or commercialisation plans) to ensure that the full potential of the research is realised through adoption of research outputs by end-users.

These principles are intended to guide the operation of the AFMA research area and the operations of the key Committees and Groups participating in the process. They aim to ensure that the research application and prioritisation process is transparent, that the standard of proposals is maintained and that proposals address research priorities of the fisheries.

Funding of Research

AFMA has allocated on average \$3.7 million for research over the last seven years and will commit to maintaining funding at levels to ensure essential research is undertaken over the life of the Plan.

Research funding considered by the ARC is allocated through AFMA's Cost Recovery Implementation Statement 2017 (CRIS 2017) which is based on a 75% cost recovered: 25% government funded split.

AFMA will continue to endeavour to reduce fisheries budgets to offset any increase in research cost to ensure levies remain within the agreed cap. Where possible, negotiation with applicants to provide best value for money is encouraged.

Role of this Plan and fishery research plans

This Plan provides a framework for fishery resource assessment groups/scientific panel to review their previous research investment and to develop priorities to plan for their future information and research needs. Priorities and strategies vary between fisheries, depending on the information requirements of the fishery and the particular issues that face each fishery. The fishery MAC has responsibility for developing its fishery research plan to achieve the priority outcomes for that fishery. Fisheries research plans highlight research areas of importance and provide a structure for the deliberations of MACs in their prioritisation of research.

In developing five year strategic fishery research plans, MACs should address the four research programs outlined below. Each year, when identifying priorities and considering proposals, MACs should assess whether they address the fishery research plan; how the proposals address the information needs of the fishery; and whether the project conforms to this Plan's principles for research investment.

Where research projects from different fisheries compete for limited funds, such as AFMA's research funds, the ARC will review the competing projects against the principles for research investment in Commonwealth fisheries and will support the project that best delivers against these principles.

The four research programs

AFMA has four research investment programs that directly align with its objectives and legislation.

The planned outcome for all four research programs is the overarching AFMA planned outcome: “ecologically sustainable and economically efficient Commonwealth fisheries”

Many research projects produce outputs spanning more than one of the following programs and interact with other projects (for example, stock monitoring and impact monitoring, and vice versa). Similarly, many projects address, interact with and produce outputs for more than one national research priority or Australian Government priority for rural Research and Development (R&D).

Program 1 – Fishery stocks, biology and the marine environment

Aim

Effective management of Commonwealth fishery stocks based on an understanding of the stock and its biology.

Legislative source: Section 6(b) *Fisheries Administration Act 1991* (FA Act)
“ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development and the exercise of the precautionary principle, in particular the need to have regard to the impact of fishing activities of non-target species and the long term sustainability of the marine environment”.

Research strategy 1a – collect appropriate information to support stock assessments

Continue to collect appropriate information to support stock assessments and to acquire further knowledge on stock biology, bycatch, discarding and the marine environment.

Various characteristics of fish stocks are monitored and basic data is collected. This data is used to model the fish populations and to generate stock assessment reports to:

- Support the management of Commonwealth fisheries,
- Inform policy development, and
- Meet information commitments made in fishery management plans and international forums.

Deliverables

Examples of activities under this strategy are monitoring programs and stock assessment work (such as ageing and length measurement), data compilation and analysis, and stock assessments.

Research strategy 1b – explore alternative species assessment methods and models

Explore species assessment methods such as close kin genetics that would be more cost-effective including integrated stock assessment models. Develop ecological risk assessment (ERA) tools and support the move towards effective Ecological Risk Management (ERM).

Deliverables

Activities under this strategy are discrete projects that produce new techniques and/or technologies to support the management of fish stocks. An example is the fishery-independent estimate of spawning biomass of Southern Bluefin Tuna through identification of close-kin using genetic markers developed by CSIRO.

Research strategy 1c - assess the impacts of fishing on the marine environment

Assess the cumulative impacts of fishing on the marine environment, particularly on habitats and communities.

Deliverables

Activities under this strategy include projects that consider the implications of commercial fishing on the marine environment, for example development of cumulative impact analyses.

Program 2 – Economic and Social

Aim

Development of the Australian fishing industry to ensure that the maximum economic, environmental and social benefits from the sector are realised.

Legislative Source: FA Act section 6(c): “Maximising net economic returns to the Australian community from the management of Australian fisheries”

Research Strategy 2a – Development of underutilised fisheries resources

This strategy seeks to explore further options to facilitate the development of underutilised and incidentally caught quota species; thus reducing discards of fisheries resources.

Deliverables

Activities under this strategy include projects that investigate the potential for a fishery to reduce discards requiring the retention of all catch and the exploration of marketable uses (such as potentially converting to fish meal or silage).

Research Strategy 2b – Develop the social and economic aspects of commercial, recreational and Indigenous fishing

This strategy relates to the Government's election commitment to manage Australia's fisheries to ensure that both commercial and recreational fishers can co-exist and share the resource. This includes a commitment to amend the FM Act to ensure AFMA takes into account the interests of all fisheries users – commercial, recreational and Indigenous fishers in accordance with the Fisheries Legislation Amendment (Representation) Bill 2017 passed on 26 October 2017 and due to commence on Royal Assent on or before 9 November 2017.

Deliverables

Activities under this strategy include projects that 1) develop the capacity of recreational and Indigenous to engage with and participate in a range of fisheries management, policy and research and development processes; and provide fisheries managers and researchers with experience in understanding indigenous fishing and culture; and 2) Review relevant fisheries harvest strategies to account for recreational and indigenous interests; and 3) provide education and information for recreational and Indigenous sectors and the public.

Research Strategy 2c – Develop coordinated approach on major fishery and cross fishery economic issues

This strategy will ensure provision of expert advice on economic issues across fisheries as well as individual fisheries to support the AFMA Commission and Management, Management Advisory Committees (MACs), and Resource Assessment Groups (RAGs) to meet their objectives and other legislative requirements.

Deliverables

Activities under this strategy include projects that consider 1) developing fishery wide maximum economic yield (MEY) targets in multi-species fisheries, 2) operationalising risk-catch-cost framework, 3) developing efficient quota markets through a double blind concession trading system, and 4) developing economic risk assessment framework.

Program 3 – Development

Aim

Development of the Australian fishing industry to ensure economic, environmental and social benefits from the sector are maximized including investment in processes and technologies that result in more cost effective fisheries management and compliance arrangements.

Legislative source: FA Act section 6(c): “maximising the net economic returns to the Australian community from the management of Australian fisheries”

Research strategy 3a – management development

This strategy aims for more cost effective fisheries management arrangements to reduce complexity and promote economic certainty. It also aims to invest in business processes and technologies that match the core needs of AFMA and its stakeholders such as e-monitoring and e-logs.

Deliverables

Examples of activities under this strategy include projects that develop scientific tools to support ecosystem-based fisheries management (EBFM), that provide digital business solutions to reduce costs and improve the quality of data from Commonwealth fisheries; and that provide a fully integrated digital system for fishery information capture, processing, storage and use.

Research strategy 3b – compliance methodologies

This strategy aims to develop better methods to effectively deter illegal fishing in Commonwealth fisheries and the Australian Fishing Zone including investment in processes and technologies that result in more cost effective compliance arrangements.

Deliverables

Examples of activities under this strategy include projects that better identify offenders including through advancements in monitoring, data collection and analysis techniques as well as improvements in the delivery and targeting of education programs to address known domestic and international compliance risks.

Program 4 – Evaluation

Aim

Improved ecosystem based fisheries management (EBFM) through review and development of management strategies.

Legislative source: FA Act section 6(c): “implementing efficient and cost-effective fisheries management on behalf of the Commonwealth.”

Research strategy 4a – management indicators

This strategy aims to monitor and evaluate the effectiveness of existing management strategies.

Research is undertaken to monitor and evaluate the effectiveness of current management arrangements in Commonwealth fisheries and to feed into future management decision-making processes.

Deliverables

Examples of activities under this strategy are development and monitoring of economic indicators and other indicators of fishery performance, and reviews of fishery management approaches.

Key participants in AFMA's research activities

A single committee – the ARC – advises the AFMA Commission and the FRDC (via ComRAC) – on research requirements for Commonwealth fisheries.

The Committee's role is to:

- advise the AFMA Commission on the strategic directions, priorities and funding for monitoring and research relevant to meeting AFMA's information needs and objectives, and review finalized research projects in terms of delivery of outputs, and outcomes, adoption/impacts and required adjustment to AFMA processes; and
- advise the FRDC on priorities, applications received and funding relating to research and development opportunities for Commonwealth fisheries via ComRAC.

The committee comprises 5 members drawn from AFMA's Commission and executive management.

AFMA Research Committee (ARC)

As part of its role described above, the ARC:

- reviews and advises on research, monitoring and assessment priorities for Commonwealth fisheries, developed by management in conjunction with the management advisory committees and resource assessment groups;
- develops, maintains and approves AFMA's Five Year Strategic Research Plan. This includes balancing tactical short term needs and strategic long term needs to identify research gaps and priorities;
- reviews individual five-year fishery research plans for Commonwealth fisheries managed by AFMA;
- advises the AFMA CEO on the allocation of AFMA research funds;
- provides advice to FRDC on priorities for ComRAC consideration for potential FRDC funding;
- assesses research and monitoring investments for Commonwealth fisheries to ensure they fit with management needs. This includes the assessment of final research project outcomes to ensure the research conducted achieved intended objectives and meaningful outcomes;
- works with AFMA management to identify research providers, collaborators and funding agencies in pursuit of AFMA's priority research, monitoring and assessment needs;
- provides advice to the AFMA Commission on fisheries research in a risk management context; and
- monitors biological and economic indicators in AFMA-managed fisheries, with emphasis on sustainability indicators and economic efficiency; and

- liaises with research providers and funding agencies with the aim of establishing Memoranda of Understanding to ensure AFMA's research priorities are given appropriate weight in the wider allocation of research funds.

Commonwealth Research Advisory Committee (ComRAC)

ComRAC (previously the Commonwealth Fisheries Research Advisory Body (ComFRAB)) was established to facilitate the delivery of more efficient and effective research and is the primary planning and entry point for research proposals for Commonwealth fisheries research funding.

The FRDC supports a network of Research Advisory Committees (RACs) located in each state and the Northern Territory (including ComRAC), and Industry Partnership Agreements (IPAs) between FRDC and particular sector bodies including the Australian Southern Bluefin Tuna Industry Association Ltd (ASBTIA).

COMRAC will invest up to \$8 million through the life of its RD&E Plan to ensure a healthy marine ecosystem; and efficient, productive and profitable fisheries (including commercial, Indigenous and recreational). COMRAC has developed four key research goals:

1. Ensure that the Commonwealth fisheries and aquaculture industries are sustainable and acknowledged to be so,
2. Improved productivity and benefits for Commonwealth fisheries and aquaculture,
3. Develop new and emerging growth opportunities and other benefits with the Commonwealth,
4. Inform and respond to community values in relation to Commonwealth fisheries.

Resource Assessment Groups

RAGs are actively involved in AFMA's research planning process across all AFMA fisheries. The main function of RAGs is to peer review scientific data and information and provide advice to AFMA on the status of fish stocks, sub-stocks, species (target and non-target species) and the impact of fishing on the marine environment. This advice assists AFMA in its role to regulate commercial fishing of Commonwealth fisheries.

Membership comprises a chair, an AFMA member, an industry member, an economic member and at least two scientific members, covering relevant scientific disciplines (including biological, ecological, and related sciences). Where relevant to the fishery, RAGs may also have a conservation member and a recreational/charter fishing member on the Committee.

Specifically, each RAG, in close liaison with the relevant MAC (see below), should take a leading role in the preparation of the following two plans that underpin AFMA's five year Strategic Research Plan (SRP):

- fishery-specific strategic research plans (5 year) developed and costed as part of the research process, that translate the broad requirements of the SRP into fishery-specific plans (fishery research plan)
- fishery-specific annual research statements, developed as part of the research process, which identify the fishery-specific research needs for potential funding the following financial year.

RAGs and MACs need to ensure that research plans include prioritised, cost-effective economic research and information required to support management towards maximum economic yield (MEY) targets under the *Commonwealth Fisheries Harvest Strategy Policy* (the Harvest Strategy Policy) and broader fisheries management.

RAGs are required to provide advice that is consistent with Australian Government fisheries policy, including the Harvest Strategy Policy (and associated guidelines) and the Commonwealth Policy on Fisheries Bycatch.

Management Advisory Committees

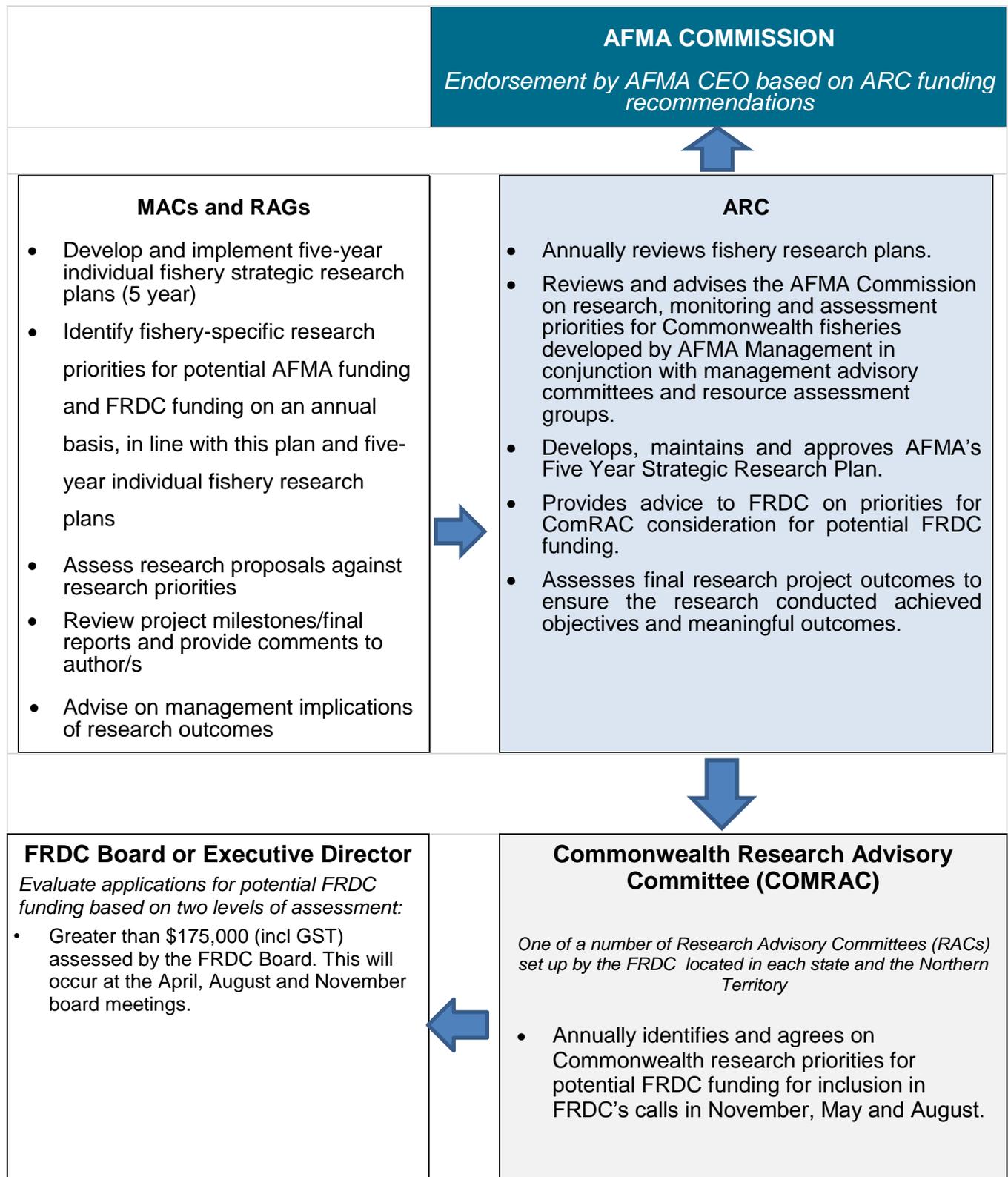
MACs play a vital role in helping AFMA to fulfill its legislative functions and effectively pursue its objectives by acting as the principal source of advice on fishery-specific management issues and the link between AFMA and those with an interest in the fishery. In this role, MACs have specific research-related functions that support the decision making process.

In addition, MACs may consider advice from RAGs, established by the AFMA Commission for each major fishery group or individual species concerning information required to improve confidence in fish stock assessments and ecological risk assessments.

MACs advise the ARC (and in turn COMRAC) on fishery objectives, strategies, reference points, risk profiles and management arrangements for achieving fishery-specific goals. MACs also provide technical expertise to determine the research and data requirements for effective management decision-making and endorse the fishery research plan (5 year). These committees also endorse annual fishery-specific research priorities identified by individual RAGs and assess the relative returns on investment in research and data collection.

The ARC makes recommendations to the AFMA Commission on funding decisions for research proposals after these have been assessed by the RAGs and MACs. The ARC also provides comments on priorities and research proposals for potential FRDC funding prior to COMRAC consideration. These relationships and the roles of key participants are outlined in Figure 2.

Figure 2. Roles and responsibilities of key participants in AFMA’s annual research cycle for Commonwealth fisheries



AFMA's annual research cycle

Commonwealth fisheries research follows an annual cycle structured around a call for proposals, a review and prioritisation of proposals and the exchange of contracts. This cycle is shown in Figure 3. Further information on each of these steps is also provided below.

1. Call for proposals

In late October each year, researchers are publicly notified of the fishery research priorities as part of the ARC's annual call for research and are invited to submit [full](#) research proposals to address these priorities.

The relevant fishery RAG and MAC review research proposals directed at both AFMA and FRDC. The RAG and MAC may request changes to proposals to better meet the needs of the fishery.

2. Prioritisation of research proposals

RAGs and MACs review proposals and make recommendations on projects. The ARC and ComRAC review those recommendations against the fishery research plans and the AFMA Strategic Research Plan (the Plan), determine the appropriate funding source for the project, and recommend support for projects to the appropriate funding agency.

As specified in a Memorandum of Understanding between AFMA and the FRDC, the FRDC is guided in its funding of research by the ARC and ComRAC recommendations on Commonwealth fisheries research.

3. Research contracts

AFMA funded research projects are commissioned through the issue of research contracts, which specify the outputs of the project, milestone reports, communication and extension activities and final publication requirements. Payments for research projects are contingent on milestones being met in a timely manner.

Figure 3. Commonwealth fisheries annual research cycle

Annual AFMA Research Cycle
October – ARC agrees on research priority scopes for its call for applications based on MAC/RAG identified research needs
Late October – ARC publishes its annual call for research – for <u>full</u> applications
End January – ARC call closes
February – AFMA management, MAC & RAG consultation on applications received in response to ARC call
Early March – ARC meets to consider full proposals for AFMA funding and endorses the final AFMA research budget
May – AFMA budget handed down
June – Budgets approved within AFMA
July – Contracts drafted for new research to commence in that financial year. RAGs commence review of their fishery research plans & identify gaps in their fisheries annual research plans for both AFMA and FRDC potential funding. July - ARC meets to consider/recommend priorities for potential FRDC funding for COMRAC consideration at its July meeting.
End September – Fishery annual research plans and research gap forms due to be submitted to the Research Section.

Annual FRDC COMRAC Cycle
October – COMRAC meets to recommend research priorities for potential FRDC funding based on stakeholder identified priorities; and to evaluate applications submitted for FRDC funding.
November – FRDC opens first call for research proposals for FRDC funding.
February – FRDC’s first call for research closes
March – COMRAC meets to evaluate applications submitted and provide feedback to applicants; and identify any further priorities for potential funding.
April – FRDC opens second call for research proposals for FRDC funding (as required)
May – FRDC Board considers applications and COMRAC recommendations
June – FRDC’s second call for research proposals closes
July – COMRAC meets to evaluate applications and provide feedback to applicants; and identify any further priorities for potential funding.
August – FRDC Board considers applications & COMRAC recommendations. FRDC Stakeholder Planning Meeting end August. FRDC opens third call for research proposals (as required)

Appendix A - Avenues of investment in Commonwealth fisheries

Research investment in Commonwealth fisheries is funded from two primary sources: AFMA and the FRDC. Targeted investment is also available from a number of other funding avenues including CSIRO and the National Environment Science Program (NESP).

Research investment through AFMA's research funds

AFMA research funds are used to support research into Commonwealth fisheries at the discretion of the AFMA Commission, based on recommendations of the AFMA Research Committee. The ARC considers research proposals in the light of research plans and priorities for each of the Commonwealth fisheries.

Research investment in Commonwealth fisheries by the FRDC

FRDC¹ is a statutory authority within the portfolio of the Federal Minister for Agriculture and Water Resources, jointly funded by the Australian Government and the commercial fishing industry. It is responsible to its stakeholders to:

- plan, invest in and manage fisheries RD&E throughout Australia; and
- facilitate the dissemination, adoption, and commercialisation of RD&E results.

The FRDC is the sole Australian agency with this role.

Stakeholders in the FRDC include the fishing and aquaculture sectors; the Federal, State and Territory governments; the research community; and the people of Australia.

The FRDC has a 'whole-of-chain' approach to the fishing industry, which it defines as including:

“any industry or activity conducted in or from Australia concerned with taking, culturing, processing, preserving, storing, transporting, marketing or selling fish or fish products”.

The FRDC distinguishes between three principal fishing industry sectors: the commercial, recreational and Indigenous sectors.

Detailed information on the FRDC's business environment and R&D program is contained in the FRDC's RD&E Plan 2015-2020².

The FRDC does not itself conduct RD&E, but instead engages research providers through project agreements and other arrangements.

The FRDC has five RD&E investment programs that directly align with its governing legislation, the PIRD Act. The programs include RD&E investment that contribute to outcomes in five ways.

¹ www.frdc.com.au

² http://frdc.com.au/research/Documents/FRDC_RDE-Plan_2015-20.pdf

Environment

Support 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

Assist the production and value of seafood and recognise and develop the economic benefits and opportunities of recreational fishing. 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

Maintain 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

Attract and advances 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

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.

COMRAC RD&E Investment Framework

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. It is important to note that some of these priorities areas overlap multiple investment programs.

Other investment opportunities

In addition to AFMA and the FRDC, many organisations invest in Commonwealth fisheries research, including Australian Government agencies such as:

- the Department of Agriculture and Water Resources (DAWR),
- the Australian Bureau of Agricultural and Resource Economics and Sciences (ABARES),
- the Department of the Environment and Energy (DoEE),

These entities are responsible for developing their own research plans and research priorities, the focus and priority of which will vary over time.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) undertakes more strategic research and co-invests in such research initiatives identified such as operationalisation of EBFM and implementing Fisheries Management Standards.

Rural R&D for Profit Program

The current Rural R&D for Profit Program established by DAWR implements a government election commitment to boost funding to the rural research and development corporations (RDCs) and fund nationally coordinated, strategic research that delivers real outcomes for Australian producers. Under the program, all 15 rural RDCs can apply for funding but to be eligible they must partner with one or more researchers, research agencies, funding bodies, businesses, producer groups, or not-for-profit organisations and provide a contribution (cash or cash/in-kind) at least equal to the requested Commonwealth grant funding. The total funding available for the program has been increased to \$200 million over eight years, ending on 30 June 2022. Two rounds have been completed to date with a third round underway.

Prospective researchers should contact relevant organisations directly for information about research proposal processes and the organisations' interests in research. Where the research interests of AFMA and the FRDC or any other research investors overlap, there may be opportunities for co-investment to leverage better research outcomes.

Industry Partnership Agreements

FRDC has established Industry Partnership Agreements (IPAs) between the FRDC and relevant sector bodies to manage a suite of sectoral projects over a specified period against an agreed industry strategic plan. This arrangement provides the industry body with greater control over the identification of RD&E priorities and investment into projects specific to its needs.

Applications for IPA funded research are carried out via an open process (similar to that of the Annual Competitive Round) that ends with funding approval from both the industry body and FRDC Board. Researchers looking to undertake IPA research must contact the relevant industry body³.

The National Environmental Science Program

The scope of the DoEE's National Environmental Science Program (NESP) is to deliver applied environmental science, particularly focused on biodiversity and climate systems research. The NESP is an ongoing program that funds environmental research to inform Australian decision makers. The NESP funding, amounting to \$25.5 million per calendar year, commenced in January 2015 and initial investments will be for six years.

³ http://frdc.com.au/research/advisory_groups/Pages/default.aspx

The NESP grants program is competitive and merit-based. The grant program is delivered primarily through six thematic hubs, some of relevance too fisheries research:

- Clean Air and Urban Landscapes
- Earth Systems
- Marine Biodiversity
- Northern Australia Environmental Resources
- Threatened Species Recovery
- Tropical Water Quality

The NESP is a potential source of funding for fisheries research with an environmental focus.

Appendix B – Current drivers of fisheries research

AFMA's Corporate and Annual Operational Plans

AFMA's *Corporate Plan* and *Annual Operational Plan* influence the research agenda. AFMA's *Corporate Plan* has a five year focus and provides a strategic view of how AFMA will pursue its outcome:

Ecologically sustainable and economically efficient Commonwealth fisheries, through understanding and monitoring Australia's marine living resources and regulating and monitoring commercial fishing, including domestic licensing and deterrence of illegal foreign fishing.

The *Corporate Plan* provides details of AFMA's principal goals, broad strategies to be pursued, main factors affecting operations and indicators to measure performance. AFMA's *Annual Operational Plan* provides a more detailed look at the actions AFMA intends to take to give effect to, or further, the goals set out in the *Corporate Plan* and indicators to measure performance.

AFMA's *Corporate Plan* and *Annual Operational Plan* are available on AFMA's website⁴.

Research drivers in individual fisheries

Within the over-arching framework established by this Plan, each Commonwealth fishery also has its own five-year fishery research plan in which priority areas for research in the fishery are outlined, based on the fishery's individual research priorities and information needs. Fishery research plans are used to prioritise the calls for projects by the fisheries.

Prospective research providers should obtain a copy of the appropriate fishery research plan and ensure that applications for research funding are relevant to the plan's priority areas. They should also ensure that they consult the relevant fisheries research advisory bodies when developing an application.

Commonwealth fisheries policy developments

Since the release of the preceding AFMA strategic research plan, there have been a number of key policy developments that have shaped, and will continue to shape, the management of Commonwealth fisheries and future information and research needs. The impetus for many of these developments came from the Australian Government's *Securing our Fishing Future* package announced in November 2005 and the Ministerial Direction (the Direction) issued to AFMA in

⁴ <http://www.afma.gov.au/about/corporate-publications/>

December 2005. The purpose of the Direction was to improve the sustainability and profitability of fisheries by:

- managing target species under a harvest strategy policy
- minimising TEP species interactions
- managing the broader impacts of fishing on the marine environment.

Commonwealth Fisheries Harvest Strategy Policy

In response to the Ministerial Direction, in September 2007 the Australian Government released the Harvest Strategy Policy. The Harvest Strategy Policy articulates acceptable levels of risk to the Australian Government in AFMA's management of Commonwealth fisheries and provides guidance on how to manage fish stocks sustainably and profitably through harvest strategies. Consistent with this policy, AFMA has now implemented a total of 13 harvest strategies. These shape the information and research needs for Commonwealth fisheries and influence fishery research plans.

Commonwealth Government Policy Reviews

The following reviews undertaken by the Australian Government over the past three years will also shape future research investment:

- The review of the Commonwealth Policy on Fisheries Bycatch announced by the then Minister for Agriculture, Fisheries & Forestry, Senator the Hon Joe Ludwig in March 2012 with the report released on 27 May 2013.
- The review of the Commonwealth Fisheries Harvest Strategy Policy and Guidelines, occurring concurrently with the review of the Commonwealth Policy on Fisheries Bycatch.
- The third review of the Commonwealth fisheries legislation (the Fisheries Management Review) announced in September 2012. Mr David Borthwick AO PSM was appointed to undertake this review and consulted widely in the last quarter of 2012. He delivered his report *Review of Commonwealth Fisheries: Legislation, Policy and Management* to the then Minister for Agriculture, Fisheries and Forestry, Senator the Hon. Joe Ludwig, in late December 2012.

In the Fisheries Management Review, Mr Borthwick emphasised the importance of the Harvest Strategy Policy as the primary driver of fisheries policy, the need to update and expand the bycatch policy and the importance of managing the impact of fishing on ecosystems. Mr Borthwick recommended that the Australian Government set an overarching fisheries framework, capitalising on the review of the Harvest Strategy Policy and bycatch policy reviews and developing a 'third' policy pillar that addresses ecosystem impacts in a fisheries context.

The Fisheries Management Review identified potential high level policy gaps that could or should be addressed. Submissions were made that raised the need for an ecosystems policy, greater clarity on where species sit on the policy continuum from key commercial to bycatch and highlighting the role of ERA/ERM in ecosystems based fisheries management.

These policy gaps could be addressed with the development of a broader, overarching fisheries policy where high level objectives and principles for Commonwealth fisheries management could be described. This would complement the individual policy components for Harvest Strategy Policy and bycatch policy in a broader fisheries policy framework. This framework could illustrate how the policies and procedures interact and relate with one another in a way that is clear to fisheries managers, users and the general community. In considering a new framework, DAWR agrees that it is also likely that a new policy may be required on ecosystem impacts of fishing.

The Fisheries Management Review report noted that the integration of all policy elements (harvest strategy, bycatch and a potential new ecosystems policy) should be fundamental to fisheries management planning and decisions.

Fisheries Bycatch Policy Review

The May 2013 *Report on review of the Commonwealth policy on Fisheries Bycatch* released by the then Minister for Agriculture, Fisheries & Forestry, Senator the Hon Joe Ludwig, noted that the bycatch policy would most effectively be revised and further developed within a framework of policy instruments for fisheries management, which address all relevant aspects of fisheries management (including commercially targeted species, byproduct, bycatch, bycatch of TEP species and ecosystems) and its effect on the marine environment. Application of the policy instruments should be regularly reviewed and updated, preferably every five years, based on the best available information. A revised bycatch policy would form part of this overarching fisheries management approach which would better reflect today's operating environment and society's expectations about how fisheries are managed.

In Commonwealth fisheries, there has been substantial investment in responding to bycatch issues, developing tools for ERA and moving towards effective ERM. There is recognition by DAWR, AFMA and CSIRO of the need to build on the current ERA/ERM approach and effectively implement a risk-based approach to bycatch management that is cost-effective and has transparent performance monitoring and reporting. The framework would integrate the current assessment tools (such as ERA) and the associated management responses that relate to the level of interaction, understanding and risk.

An FRDC funded project *Guidelines on a risk-based approach to bycatch management* is currently underway will build on the current risk-based AFMA ERA/ERM approach by developing guidelines describing a framework for a risk-based approach to bycatch management. These will contribute to the Government's revised bycatch policy guidelines and fisheries management standards to provide greater certainty for industry, potential third party certification and confidence for consumers and the general public.

AFMA's science quality assurance policy

AFMA will develop a *Fisheries Research and Science Quality Assurance Policy* that will strengthen existing processes and mechanisms by which AFMA ensures that fisheries research and scientific information used in management decision making processes is of a high quality. Once developed, AFMA will bring the Policy to the attention of all relevant staff, research providers, stakeholders, peer review participants and advisory groups/committees. The policy will require research providers, in designing, conducting and reporting their research, to meet relevant and specified requirements for quality assurance. Relevant to AFMA's research processes, it will also specify requirements for appropriate peer review of fisheries research (from proposals to final reports) and scientific information, and require the maintenance of the integrity of scientific advice (generally based on research) throughout management decision making processes.

The Fisheries Legislation Amendment (Representation) Bill 2017

The *Fisheries Legislation Amendment (Representation) Bill 2017* (the Bill) agreed by the Senate on 10 August 2017 which was passed on 26 October 2017, amends the *Fisheries Management Act 1991* and the *Fisheries Administration Act 1991* to strengthen the engagement of recreational and Indigenous fishers in the management of Commonwealth commercial fisheries and ensure that the interests of these stakeholder groups are appropriately taken into account in Australian Government decision-making processes.

The Bill provides for explicit recognition of recreational and Indigenous fishers in Commonwealth legislation. It requires AFMA, who is responsible for the management of Commonwealth commercial fisheries, to have regard to ensuring that the interests of all fisheries users are taken into account in Commonwealth fisheries management decisions. Other minor amendments in the Bill allow for increased opportunities for membership of AFMA advisory bodies and extend the eligibility criteria for serving on the AFMA Commission to include expertise in matters relating to recreational and Indigenous fishing.

Recognition of Indigenous and recreational fishers is not currently explicit in Commonwealth fisheries legislation, which primarily regulates commercial harvest of fish stock in Commonwealth fisheries. As users of Commonwealth fisheries resources, it is important that the interests of recreational and Indigenous fishers are considered in Commonwealth fisheries management.

The Bill inserts an additional objective that will require AFMA, the Minister and the Joint Authorities to have regard to ensuring that the interests of commercial, recreational and Indigenous fishers are taken into account in the context of managing Commonwealth commercial fisheries. The context will dictate whether they are or are not the only relevant considerations to take into account.

The new objective will impose an obligation for AFMA to have regard to ensuring that the interests of commercial, recreational and Indigenous fishers in the performance of its functions. It will not alter AFMA's ability to pursue existing objectives, or to extend AFMA's powers to regulate the recreational

and Indigenous fishing sectors. AFMA will continue to balance its pursuit and prioritisation of all the objectives, including the new objective, in exercising its functions.

AFMA will continue to use the best available science and evidence to account for the interests of all users in its management of Commonwealth commercial fisheries. Fisheries management decisions will continue to be made using evidence based science and will be enhanced by formalising and strengthening the representation of non-commercial fishers and their interests on AFMA's advisory bodies

Australian Government priorities

The Australian Government has identified priorities for research that are significant in shaping fisheries research effort and its reporting, namely:

- Global trends
- National Research Priorities
- Rural Research and Development Priorities

Global Trends

The five major trends that are expected to influence primary industries globally during the next 20 years, as identified by the Rural Industries Research and Development Corporation in its report *Rural Industry Futures – Megatrends impacting Australian agriculture over the coming twenty years*, include:

A hungrier world: Population growth will drive demand for food and fibre

A bumpier ride: Globalisation, climate change and environmental change will reshape the risk profile for agriculture

A wealthier world: A new middle class will increase food consumption, diversify diets and eat more protein

Transformative technologies: Advances in digital technology, genetic science and synthetics will change the way food and fibre products are made and transported

Choosy customers: Information-empowered customers of the future will have expectations for health, provenance, sustainability and ethics

National RD&E Strategy for Fishing and Aquaculture

The National Fishing and Aquaculture RD&E Strategy 2015-20 provides direction to improve the focus, efficiency and effectiveness of RD&E to support Australia's fishing and aquaculture industry.

The identified goals and key strategies are:

- Australia's fisheries and aquaculture sectors are managed, and acknowledged, to be ecologically sustainable

- Security of access and resource allocation
- Maximising benefits and value from fisheries and aquaculture resources
- Streamlining governance and regulatory systems
- Maintain the health of habitats and environments upon which fisheries and aquaculture rely
- Aquatic animal health, and biosecurity (inclusive of pests) Aquaplan 2015-2019

Linking the national and the regional will require stakeholders' continuing commitment to the Research Providers' Network where researchers are able to discuss cross-jurisdictional matters, and continue to support those collaborative projects that have already been undertaken. FRDC has agreed to continue to facilitate such collaborations and to implementing a financial incentive for organisations to develop research around either regional or national collaborations. The FRDC sets and maintains strategic national priorities that the State and Territory RACs are encouraged to co-invest in.

FRDC's Research Development and Extension Plan 2015-20

The FRDC's RD&E Plan 2015-20⁵ is focused on maximising impacts by concentrating on knowledge development around three national priorities:

1. Ensuring that Australian fishing and aquaculture products are sustainable and acknowledged to be so.
2. Improving productivity and profitability of fishing and aquaculture.
3. Developing new and emerging aquaculture growth opportunities.

Ecosystems-based fisheries management

The move from species-based fisheries management towards EBFM has placed large demands for information on the fishing industry and AFMA.

The FM Act and the *Environment Protection and Biodiversity Conservation Act 1999* require AFMA to pursue Ecologically Sustainable Development and as one part of this, ensure the ecological sustainability of commercial and bycatch species populations and ecosystems with which its fisheries interact. AFMA pursues ecological sustainability through the implementation of:

- An ERM Framework which provides for the monitoring and management of risks to ecological sustainability;
- A scientific risk assessment process (within the ERM framework) referred to as the Ecological Risk Assessment for the Effects of Fishing to identify and quantify fishery risks

⁵ http://frdc.com.au/research/Documents/FRDC_RDE-Plan_2015-20.pdf

to ecological sustainability. This includes stock assessments undertaken as part of fishery harvest strategies.

The ERM framework is the primary vehicle by which AFMA pursues an EBFM approach. AFMA's ERM framework relies significantly upon data and information derived from fisheries research and fisheries monitoring, both of which will continue to play an important role in providing information to address key data/information gaps and uncertainties. These include a lack of biological information for many species, a lack of fishery impacts (catch) data for interacting (non-Commonwealth) fisheries and a need to improve risk assessment methodologies. Properly directed research will help improve fisheries risk assessments and subsequent risk management responses into the future.

Information requirements to support ERM can vary between fisheries. ERAs (including fisheries stock assessments) conducted on Commonwealth fisheries are used to help identify and prioritise research work on fishery impacts and to guide research investment. These research priorities should be captured in 5 year fishery research strategies and annual research statements.

AFMA's ERM framework operates according to risk-catch-cost principles, such that decisions to invest in further research (to support decision making processes) are weighed up against the risks of not achieving sustainability (and other) objectives, the costs associated with the research or other management actions, and the implications for catch that might be allowed to be taken.

It should also be noted that ecological sustainability is just one of a number of legislative and policy driven objectives that AFMA pursues. In making management decisions, AFMA also takes into account economic objectives (e.g. maximum economic yield), cost efficiency considerations and social/environmental values (e.g. the need to avoid interactions with TEP species).

The pursuits of all of these are also supported by research. The increased demand for Commonwealth fisheries to meet higher social and environmental reporting standards has contributed to an increasing demand for supporting science. It is likely that this will continue to have a significant impact on the management of Commonwealth fisheries.

Monitoring and assessment

There will be a continued demand for monitoring and assessment work to support effective and transparent decision-making. AFMA supports RAGs groups to coordinate assessments and monitoring of the fisheries; fishery MACs and the AFMA Commission consider the groups' advice and implement appropriate management arrangements. Monitoring and assessment activities are costly, and opportunities to reduce these costs through new and improved techniques are constantly being investigated.

Triple bottom line outcomes

Reporting of environmental, social and economic outcomes ("triple bottom line" reporting) is now well established as the required basis for performance reporting. Further research is required to

develop appropriate social and economic indicators that can be used to monitor and report on the performance of Commonwealth fisheries.

Appendix C – FRDC Strategies

Strategies under FRDC legislative objectives in the *Primary Industries and Energy Research and Development Act 1989*

FRDC Research strategy – sustainable Australian fishing products

In addition to addressing AFMA's overarching planned outcome, this Program addresses one of the FRDC's National Research Priorities:

1. *Ensuring that Australian fishing and aquaculture products are sustainable and acknowledged to be so* (page 26, RD&E Plan 2015-2020).

Aim:

By 2020, the community has effective access to, and understanding of, RD&E that supports fishing and aquaculture sustainability and improves perceptions of Australian seafood.

Strategy

Build understanding of the drivers of social licence to operate and respond to community concerns and needs for information with science-based evidence.

Continue to prioritise investment in RD&E that contributes to the sustainability of fishing and aquaculture, including consideration of target species; bycatch species; threatened, endangered and protected (TEP) species; and the broader marine environment.

Deliverables

- Increased knowledge about how community values align with the values of Australian fishing and aquaculture sectors, with the aim of improving community perceptions.
- An Australian fisheries management and/or technical standard that addresses all fisheries and can be adopted by any management agency in Australia.
- A scheme for responsible fisheries management that can specifically be applied to small-scale, data-poor Australian fisheries.
- Bycatch performance metrics.
- Community net benefit metrics.
- An increased number of commercial species assessed in the national Status of Key Australian Fish Stocks Reports.
- A reduction in the percentage of species classified as 'undefined' in the national Status of Key Australian Fish Stocks Reports.
- Expanded capacity to connect with seafood consumers and markets in Australia and abroad, and use of these channels to understand community perceptions to tell the Australian fishing and aquaculture story across the sectors.

FRDC Research strategy – improving fishing productivity and profitability

In addition to being directed towards the AFMA planned outcome, this strategy addresses the planned outcome of the FRDC's RD&E Plan 2015-20 which focuses on

“investing in RD&E to understand the drivers of, and impediments to productivity and profitability growth in all fishing and aquaculture sectors; research means of increasing sustainable production and profitability; link these to business education; encompass the needs of Indigenous communities”.

Aim:

By 2020, deliver RD&E for fishing and aquaculture to increase productivity and profitability consistent with economic, social and environmental sustainability.

Strategy:

Invest in RD&E to understand the drivers of, and impediments to productivity and profitability growth in all fishing and aquaculture sectors; research means of increasing sustainable production and profitability; link these to business education; encompass the needs of Indigenous communities.

Deliverables

Efficiency improvements along the entire supply chain to improve market access, through strategic market intelligence and knowledge that will ultimately influence profitability. More sustainable and profitable use of underutilised and undervalued species. New technology solutions to improve productivity and profitability, where these can be feasibly implemented. Habitat rehabilitation to improve productivity and profitability for the fishing and aquaculture sector. Social contribution is supported by the fishing and aquaculture sector so it can capture the non-monetary value of activities across sectors. The gross value of production of Australia's fishing and aquaculture resources is increased.

Source: FRDC RD&E Plan 2015-2020

PIRD Act section 3(a)(i) “increasing the economic, environmental and social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries”

FRDC Strategy: Continue to invest in leadership capacity building

Source: FRDC RD&E Plan 2015-2020

PIRD Act section 3(a)(i) “increasing the economic, environmental and social benefits to members of primary industries and to the community in general by improving the production, processing, storage, transport or marketing of the products of primary industries”

