

**QUEENSLAND FISHERIES RESEARCH AND
DEVELOPMENT STRATEGY
(1995-2005)**

June 1996

Queensland Fishing Industry Research Advisory Committee

QUEENSLAND FISHERIES RESEARCH AND DEVELOPMENT STRATEGY (1995-2005)

Produced at the Fisheries Research Planning Workshop by Industry, Fisheries Managers, Researchers and Funders on 13-14 November 1995. Workshop and strategy development process chaired and facilitated by Kayt Raymond & Associates.

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June 1996

Copies of this Strategy are available from:

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INTRODUCTION

Need for a R&D Strategy

The need for R&D is increasing as the demands on Queensland fisheries resources and managers increase. Natural resources are limited and globally fishing effort is increasing to match demands for seafood and recreation. In this context better understanding of fisheries resources and their supporting ecosystems is needed to ensure sustainable resource use. And while there is an expectation that the aquaculture industry can complement and assist the fishing industry satisfy the demand for seafood, R&D is needed to ensure the continued growth of this emerging industry.

The development of an R&D strategy is necessary in order to have a holistic and prioritising framework in which to focus limited R&D resources in the form of qualified and skilled researchers, organisation infrastructure and funding.

The Strategy and its scope

The Queensland Fisheries Research and Development Strategy is comprised of two components. One is a long term direction setting component made up of a 2005 vision and four sets of objectives, strategies and performance indicators. The second component is short term priority areas (1995-1998) which translate the objectives into research activities. The Strategy needs to be reviewed and refined every two years with the long term component being refined as appropriate and new short term priority areas added as required.

This Strategy covers R&D on the cultivation of species by the aquaculture sector, the catching of species by the commercial, recreational and traditional sectors, fisheries habitat and environment, post harvest technology, seafood marketing and consumption, as well as the development and evaluation of alternative resource management options and arrangements.

The Strategy also covers the broad R&D areas of biology, technology, social, economic and environmental science.

Users of this R&D Strategy

A number of stakeholders will make use of this Strategy:

Fisheries managers, who require quality and timely information for making sound resource management decisions, have a major role in developing and updating the Strategy so that their priority information needs are met.

The Strategy will assist the Queensland Fishing Industry Research Advisory Committee (QFIRAC, see page 13) in its role of prioritising those R&D projects which best address the key R&D priorities (as specified in the objectives and strategies).

Research funders will use this Strategy to know where best to direct their limited research funds.

Researchers will find this Strategy useful in knowing where to focus their efforts in support of the goals and objectives of industry and resource managers.

Commercial, recreational and traditional fishers, the aquaculture industry and the general community, through participation in the development and periodic review of the Strategy, can ensure that their priorities are addressed.

The process of developing this Strategy

FRDC provided funding for a consultant and workshop while DPI provided additional resources for the initiation, coordination and development of the Strategy. A consultant, Kayt Raymond & Associates was appointed to design, chair and facilitate the development process. Stakeholders were asked to forward details of issues, research programs and priorities and the consultant integrated this material for use at a strategic planning workshop. A group of 18 key stakeholders attended the workshop on 13 and 14 November 1995, where the draft strategy was developed. The Draft R&D Strategy was forwarded to stakeholders for input and comment. These comments were integrated into the document by a small group of stakeholders at a one day workshop on 11 December 1995. The final draft was then forwarded to stakeholders for any additional refinement before being sent to the reconstituted QFIRAC for finalisation prior to consideration by Policy Council in June 1995. The strategy development and consultation process is outlined in the diagram on page 20.

Benefits of following an agreed R&D Strategy

A meaningful and effective strategy needs three things. One is quality content - it says the right things as the result of practical, sound and strategic thinking. Two, that it is agreed among those who will follow it and have a share in making it happen. And three, it is properly implemented.

When properly implemented the agreed R&D Strategy will allow a more cost-effective and timely use of R&D resources. It gives the community and stakeholders confidence in knowing that resource management decisions are based on the best available information and provides a focus for the development of new opportunities. Accordingly the consumer benefits in terms of seafood quality, availability and diversity.

Disclaimer

This strategy is intended to provide direction to the FRDC and other funding agencies with respect to R&D priorities for the Queensland fishing industry. However it is accepted that the R&D priorities of individual organisations or members of QFIRAC will vary according to their individual roles and responsibilities.

**QUEENSLAND FISHERIES RESEARCH AND DEVELOPMENT
STRATEGY(1995-2005)**

Vision

The acquisition and application of knowledge to support the achievement of:

- A sustainable resource.
- Clear and effective management.
- Optimum economic and social benefit.
- Equitable sharing of resources.

Long Term Objectives

- To understand the biological processes and environmental requirements of fish stocks (wild and farm).
- To understand the effects of all human activities on fish stocks (wild and farm).
- To improve fisheries management through R&D.
- To assess the relative community, economic and other benefits obtainable from fisheries and aquaculture resources.
- To identify and assess new fisheries and new species and technologies for aquaculture.
- To develop opportunities to add value to fisheries and fish products (wild and farm).
- To provide an informed basis for ensuring that access to fisheries resources is fair.

Long term objectives, strategies, performance indicators and short term R&D priorities (1995-1998)

Objective 1.1

To understand the biological processes and environmental requirements of fish stocks (wild and farm).

Performance indicators

Level of understanding of biological processes affecting fish stocks and farmed species.

Level of accuracy of predictions of the effects of environmental influences on fish stocks and farmed species.

Strategies

1.1.1 Establish biological parameters for harvested fish stocks.

1.1.2 Monitor state and health of fish stocks, farmed species and environment.

1.1.3 Identify environment variables critical to fisheries sustainability or production levels.

1.1.4 Monitor key biological and environmental variables.

Short term priority areas (1995-1998)

Determine a process for prioritising species to be investigated.

Commence identification of key biological processes.

Identify environmental variables critical to sustained production of different species (linked to priorities determined above).

Identify fish health issues with the potential to impact on fisheries and aquaculture resources.

Develop disease diagnosis and prevention techniques.

Acquire information to underpin contingency planning (eg., for control of disease and non indigenous species).

Objective 1.2

To understand the effects of all human activities on fish stocks (wild and farm).

Performance indicator

Level of accuracy of predictions of the effects of human activities on fish stocks.

Level of knowledge of the effects of human activities on fish stocks

Ability to influence management of human impacts that impact on fish stocks

Strategies

- 1.2.1 Establish and assess the direct and indirect human impacts on fish stocks.
- 1.2.2 Undertake assessment of capacity of stocks to withstand fishing pressure.
- 1.2.3 Assess relative impacts of different types of fishing methods, including new “green” harvesting methods, on target and non-target species and the environment.
- 1.2.4 Assess the relative impacts of different aquaculture methods on the environment.

Short term priority areas (1995-1998)

Undertake a literature review of previous research (Year 1).

Determine a process for prioritising which human activities and their impacts are addressed.

Quantify the human impacts in different fisheries.

Combine information gained in objective 1.1 and objective 1.2 to refine the prioritisation process (ongoing).

Objective 2

To improve fisheries management through R&D.

Performance indicators

Level of use of models of alternative management options by fishery managers.

Level of stakeholder acceptance of decisions.

Strategies

- 2.1 Provide a scientific basis for the objective evaluation of sustainable fisheries and aquaculture management options.
- 2.2 Provide R&D to underpin ecologically sustainable development in fisheries and aquaculture management.
- 2.3 Develop sustainability indicators for fisheries.
- 2.4 Develop 'fishery independent' assessment techniques (analysis of actual catch and remaining biomass).
- 2.5 Collate 'corporate fishery and aquaculture knowledge' and identify gaps.
- 2.6 Develop and refine decision support systems/models which evaluate fisheries and aquaculture management options.
- 2.7 Use case studies to identify both impediments/incentives to adoption of research outcomes.
- 2.8 Evaluate effectiveness of various compliance techniques.

Short term priority areas (1995-1998)

Identify R&D requirements for ecologically sustainable development of fisheries and aquaculture.

Description of 'case studies' to identify impediments/incentives to adoption of research/information (use of corporate fishery knowledge).

Identify alternative fisheries and aquaculture management options for evaluation.

Develop decision support model/s, test and refine pilot program.

Develop preliminary sustainability indicators.

Objective 3.1

To assess the relative community, economic and other benefits obtainable from fisheries and aquaculture resources.

Performance indicators

Level of stakeholder acceptance and confidence in models and outcomes.

Degree to which benefits can be quantified.

Level of influence of results on management strategies.

Strategies

3.1.1 Develop and review evaluation models in consultation with stakeholders.

3.1.2 Determine the value of direct, indirect and induced economic benefit of the recreational, commercial and traditional fishing, and aquaculture sectors.

3.1.3 Determine the value of the non-economic benefit (including human health) of recreational, commercial and traditional fishing, and aquaculture sectors.

3.1.4 Identify beneficiaries.

Short term priority areas (1995-1998)

Develop an accepted model for determining the economic and non-economic benefits of the commercial, recreational and traditional fishing, and aquaculture sectors.

Objective 3.3

To develop opportunities to add value to fisheries and fish products (wild and farm).

Performance indicators

Level of value added to existing fisheries.

Number of new products in market place.

Percentage increase in utilisation of:

- underutilised species
- incidental catches.

Reduction of waste products (eg., offal, frames, skins).

Number of companies with formal quality assurance (QA) system.

Strategies

- 3.3.1 Identify species and incidental catches with potential for value adding/product development.
- 3.3.2 Identify potential for utilising fish waste (eg., offal).
- 3.3.3 Undertake market research on species and products identified in 3.3.1 and 3.3.2.
- 3.3.4 Identify potential for value adding/increased efficiency in existing fisheries (catching, farming and processing).
- 3.3.5 Promote the adoption of quality assurance throughout Queensland fisheries.

Short term priority areas (1995-1998)

Undertake an audit of unutilised fisheries by-products and waste.

Undertake a study to identify issues raised in strategies 3.3.1 and 3.3.2.

Research the market and product development potential for these products.

Objective 3.2

To identify and assess new fisheries and aquaculture species and opportunities.

Performance indicators

Number of new fisheries and aquaculture species identified and assessed.

Number of new fisheries and aquaculture species established.

Level of gross value of production created by new fishery or aquaculture species.

Percentage of by-catch utilised.

Strategies

3.2.1 Undertake stock assessment and determine sustainable yield.

3.2.2 Assess the commercial viability of growing/harvesting the particular species.

3.2.3 Identify possible effects on non target species and the environment.

3.2.4 Assess market feasibility of new species.

Short term priority areas (1995-1998)

Identify potential new fisheries including non indigenous fisheries.

Determine commercial potential, stock assessments, appropriate fishing methods and likely impacts on target and non target species and the environment.

Undertake stock assessments of species and determine appropriate fishing methods, likely fishing effort and impacts on non target species and the environment.

Develop a methodology for assessing the potential of species for aquaculture.

Objective 4

To provide an informed basis for ensuring that access to fisheries resources is fair.

Performance indicators

Level of use of information in allocation decisions.

Quality and timeliness of information available.

Level of acceptance of information and allocation criteria by stakeholders.

Strategies

- 4.1 Determine status quo - degree of community, economic and other benefits from recreational, commercial and indigenous use.
- 4.2 Involve stakeholders in face-to-face planning and reporting of R&D.
- 4.3 Collect and evaluate historical information (including anecdotal information).
- 4.4 Investigate alternative allocation processes.

Short term priority areas (1995-1998)

On A Regional Basis:

Identify all of the groups with access and/or potential access to fisheries resources.

Document the patterns of use by different sectors with particular emphasis in the next three years on indigenous and recreational fishers.

Collate with existing information regarding commercial use.

Document the various values placed on fisheries resources by different sectors (in relation to objective 3.1).

Assess known status of fisheries and habitats.

Develop methods to collect, evaluate and validate historical information about resource use (including anecdotal information).

Develop mechanisms for effective inclusion of indigenous users in consultation.

QUEENSLAND FISHING INDUSTRY RESEARCH ADVISORY COMMITTEE

Role

The Queensland Fishing Industry Research Advisory Committee is to be the peak body responsible for setting Queensland Fisheries R&D priorities, updating the Queensland Fisheries R&D Strategy (1995-2005) and informing the Minister and stakeholders through the Queensland Fisheries Policy Council on fisheries R&D activities in Queensland.

Terms of Reference

- To determine R&D priorities for Queensland fisheries, regularly update the Queensland Fisheries R&D Strategy and ensure that the Strategy is readily available to stakeholders.
- To annually consider and prioritise R&D project proposals submitted by all research providers, advise funding bodies such as the Fisheries Research and Development Corporation of these priorities and provide feedback to researchers on decisions.
- To be proactive in brokering the development of R&D projects, including collaborative projects which address strategic priorities.
- To report annually to Fisheries Policy Council and all stakeholders on fisheries R&D activities in Queensland.

Membership

Independent Chair

Queensland Commercial Fishermen's Organisation (1)

Sunfish (1)

Queensland Fisheries Management Authority (1)

Queensland Aquaculture Development Advisory Committee (1)

Queensland Department of Primary Industries (1)

Seafood Marketers (1)

Great Barrier Reef Marine Park Authority (1)

Secretariat

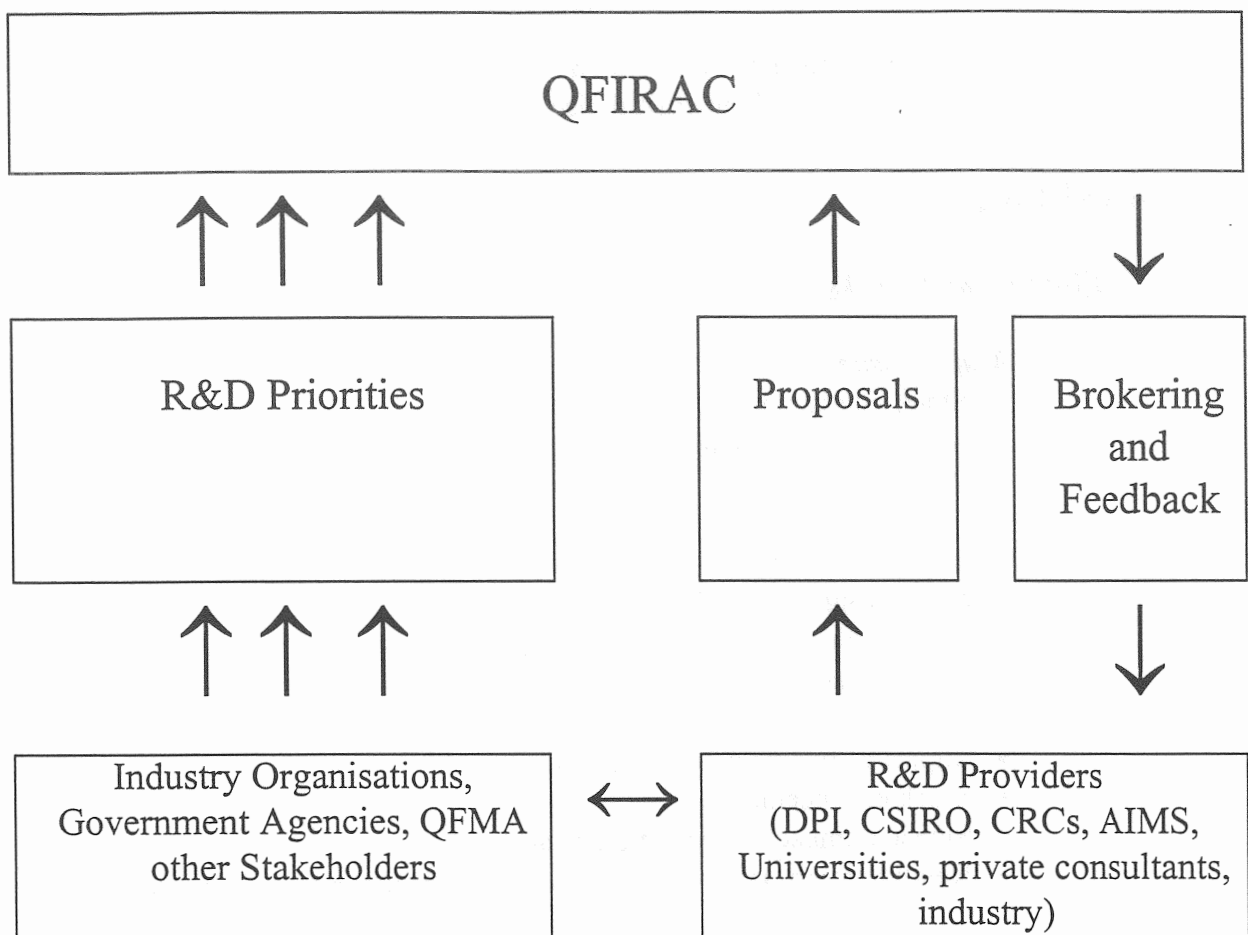
Funding support for secretariat to be negotiated between QFIRAC, the Minister and FRDC.

QDPI to continue to offer secretarial support in the interim.

Operating Procedures

Details to be determined by new QFIRAC at its first meeting early in 1996.

Queensland Fisheries R&D Framework



APPENDICES

Note: In the following two appendices on *Critical Issues* and *Trends to 2005*, the dot points were points of view expressed with no critical discussion by workshop participants.

Critical Issues

Fisheries and Stocks

Major Issues

1. Stock assessments.
2. Sustainability/sustainable catch levels/ indicators.
3. Allocation/access.

Other Issues

- Monitoring catch and effort.
- Developmental fisheries.
- Institutional arrangements.
- Legal and economic factors.
- Impact of fishing practices on stocks.
- Stock enhancement.
- Size and impact of recreational catch.
- Relative return from different uses of the fishery resource (economic data).

Aquaculture

Major Issues

1. Environmental impacts.
2. Productivity/profitability.
3. Disease and farm management.
4. Feeds/local sources of feeds.

Other Issues

- Chemical use.
- New species technology.
- Interactions with wild fisheries.
- Translocation.
- Allocation/planning for aquaculture use.
- Domestication/husbandry techniques.
- Cage farming of wild product (value adding).
- Closing life cycle.
- Genetic improvement.

Habitat and Environment

Major Issues

1. Natural variability in relationships between habitat and target species.
2. Integrated catchment management/total catchment concept/ecosystem approach.
3. Effects of fishing on habitats and non target species.
4. Effects of development/land use/water quality/nutrient impacts.
5. Critical habitats/habitat protection and preservation.

Other Issues

- Climatic change.
- Restoration and enhancement.
- Biodiversity issues.

Post Harvest Production

Major Issues

1. Post harvest technology/product development/new species/by-catch utilisation.
2. Quality Assurance (QA)/Total Quality Management (TQM).

Other Issues

- Codes of practice.
- Health and safety issues.
- Processing and handling technology.

Marketing

Major Issues

1. Consumer focus/satisfying consumer needs.
2. Quality.
3. Health benefits of seafood.

Other Issues

- Consumer access to seafoods.
- Availability of cheap/bulk supply/appropriate supply/price relationships.
- New products.
- Non-tariff barriers.
- Information systems.
- Consumer information and market analysis.
- Value adding.
- Maximising use of product.
- Codes of practice.

Other

Major Issues

1. Education/extension.
2. Funding for R&D.

Other Issues

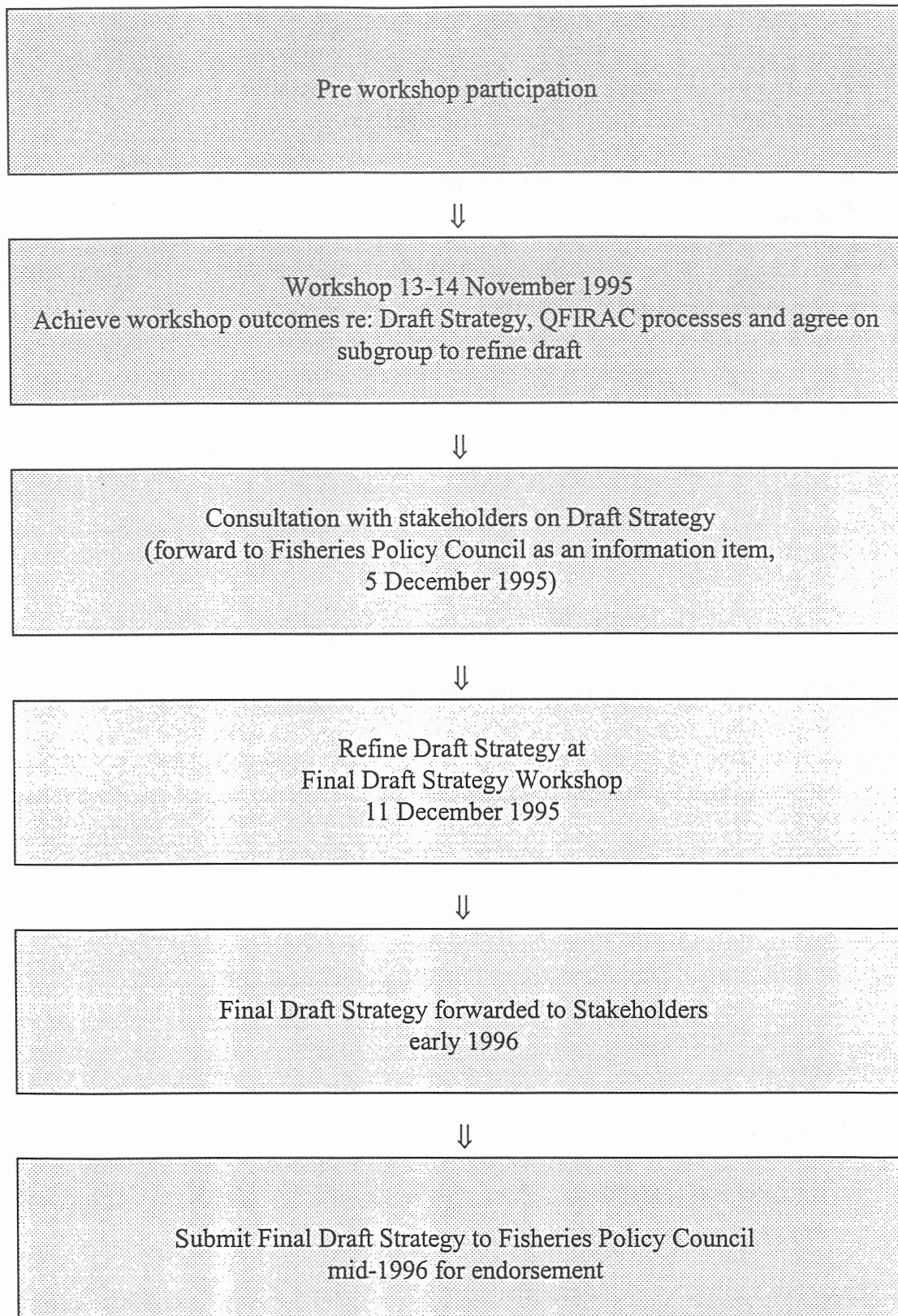
- Effects/value of fisheries compliance.
- Dissemination of R&D results.
- Skills gaps.
- Co-ordination.

Trends to 2005

- Increased demand for seafood (increased population and tourism) - health, convenience, variety, quality.
- Increased environmental awareness by community and industry in relation to:
 - fishing practices and their effects
 - impacts of other activities such as coastal development on fisheries resources
 - sustainable fisheries and their management.
- Increased recreational fishing effort and demand for resource access.
- Increased growth of aquaculture industry.
- Increased attention to needs of traditional fishers and native title issues.
- Increased use of technology applied to fishing practices.
- Increased demand for stock assessments.
- Improved stock assessments and computer modelling.
- Decrease in areas accessible to commercial fishing.
- More marine protected areas (MEPAs).
- Decrease in local supplies of wild caught product.
- Increased effort by industry to improve level of understanding and awareness.
- Increased prices for seafood.
- Greater disease risks (eg., ballast water).
- Increased competition between resource users.
- Greater emphasis on value adding.
- More short term tactical R&D.
- Decrease in emphasis on commercially caught wild fish.
- Decrease in fish meal imports.
- Greater loss of control of fisheries resources and their management to environmental legislation.
- Increased live fish exports.
- Increased accountability and codes of practice.

- Improved catch/effort data.
- Increased opportunities for alternative fishing possibilities.
- Greater utilisation of underutilised species.
- Increased user pays/cost recovery.
- Greater possibility of recruitment overfishing.
- Increased awareness of biodiversity and endangered species issues.
- Greater risk of political intervention in the short term v. long term R&D planning.
- Better and easier access to information.

Strategy Development and Consultation Process



Glossary

Anecdotal - unpublished observations and opinions

By catch species - species captured during fishing operations for which there is no market demand, and which are returned to the sea

By product species - species captured in fishing operations for which there is a market demand

Code of practice - A set of voluntary rules governing behaviour or the provision of products and services

Decision support system - A system for improving decision-making, not necessarily computer based

Environmental requirements - Includes both environmental and habitat requirements of fisheries resources

Farm fish stock - Fish stocks cultivated in an aquaculture enterprise

Fisheries - A class of activities by way of fishing, including aquaculture

Fisheries resources - Includes wild fish stocks, aquaculture species and fisheries habitats

Incidental catches - (as for by product species)

Induced economic benefit - Flow-on benefits to the non fishing sectors of the economy

Industry - Includes the commercial and recreational fishing sectors, the Aboriginal and Torres Strait Islander sector, and the aquaculture industry

Non indigenous species - fisheries resources not spawned, born, grown or native to Queensland

Non-target species - (as for by product species)

Noxious species - Species prescribed under a Regulation or fisheries management plan as noxious.

Quality assurance - All those planned and systematic actions necessary to provide adequate confidence that a product or service will satisfy given requirements for quality

Sustainability indicator - a measure used to monitor progress towards sustainable use of fisheries resources.

Total quality management - A management philosophy of continuous improvement through effective teamwork.

Underutilised species - Species captured in fishing operations for which currently there is minimal market demand

Wild fish stocks - Marine and freshwater fish stocks inhabiting rivers, seas and oceans

Workshop participants

David Bateman	industry
John Benzie	researcher
Colin Bishop	industry
Rosemary Clarkson	researcher
Dan Currey	manager
John Doohan	industry
Mike Dredge	manager
Peter Dundas-Smith	funder
Ted Loveday	industry
Bruce Mapstone	researcher
Peter Neville	manager
Peter Rothlisberg	researcher
Gary Russ	researcher
Peter Saw	industry
John Tanzer	manager
Neil Trainor	researcher
Robyn Heffernan	secretary
Bob Pearson	coordinator
Kayt Raymond	chair/facilitator
Unable to attend:	
Eddie Hegerl	conservationist
Ray Teh	industry
Justin Bender	industry
Chud Parker	industry

Other Stakeholders

Mr I Baulch, Chair, Queensland Seafood Marketers Association

Professor H Choat, Head, Department of Marine Biology, James Cook University

Mr B Colless, Executive Officer, North Queensland Land Council

Professor C Crossland, Director, CRC Reef Research Centre

Dr B Hill, Officer-in-Charge, CSIRO Marine Laboratories

Mr C Parker, Chairman, Fish Distributors Association of Queensland

Dr R Reichelt, Director, Australian Institute of Marine Science

Mr B Rogers, President, Queensland Charter Vessel Association

Mr J Robertson, Great Barrier Reef Marine Park Authority

Dr C Limpus, Manager, Marine Research, Conservation Strategy Branch
Department of Environment and Heritage

Dr P Montague, Director, Aquaculture-CRC

Associate Professor J Greenwood, School of Marine Science, University of Queensland

Professor L Warner, Department of Biology, University of Central Queensland

Dr P Mather, Biological Population Management Centre, Queensland University of Technology

Mr D Mahoney, Commercial Manager, National Seafood Centre

Professor A Arthington, School of Australian Environmental Studies, Griffith University

