

COUNTRY NOTE ON FISHERIES MANAGEMENT SYSTEMS -- AUSTRALIA

Introduction

1. In Australia, as elsewhere in the world, governments have a key role in fisheries management to address the fundamental economic and biological concerns that arise from open access fisheries. Australian, State and Territory Governments are responsible for the management of Australian fisheries within their relevant jurisdictions. Except where agreement is reached to the contrary, the Australian Government's jurisdiction extends from the three nautical mile limit to the 200 nautical mile limit of the Australian Fishing Zone (AFZ), while State jurisdiction is from the coastline to the three nautical mile limit.

2. In 2002-03, State managed fisheries accounted for 74 per cent (A\$ 1 200 m) of the gross value of fisheries production (GVP) in Australia (A\$ 1 617 m). Fisheries with annual GVP's near or above \$200 million include rock lobster, prawns, tuna, abalone and pearls. Nearly 20,000 people are employed in the Australian fishing industry, including in wholesaling and processing.

3. Fisheries management within the States is generally centralised within the relevant departments with responsibility for fisheries. At the Federal level, responsibility for domestic Commonwealth fisheries management has been passed to a statutory authority, the Australian Fisheries Management Authority (AFMA), which was established on 3 February 1992.

4. The jurisdictional allocation of fisheries responsibility in Australia has significant implications for the effective management of fisheries resources. This is particularly the case in a number of fisheries where stocks cross the boundaries of State and Australian Government jurisdiction. Some of these problems are addressed through agreements between the State and Australian Governments under the Offshore Constitutional Settlement (OCS). This is discussed further in the following section along with management arrangements for Commonwealth and State fisheries.

Management regimes in Australia

Offshore Constitutional Settlement

5. The Australian Government's responsibility for fisheries resources extends three nautical miles from the low water mark to the 200 nautical mile limit of the AFZ. State responsibilities for fisheries resources extend three nautical miles from the low water mark (coastal waters). There are, however, a number of instances where, through agreement under the OCS, the Australian and relevant State Governments, including the Northern Territory, have made arrangements where management of a fish stock or a commercial fishery, has been transferred to a single jurisdiction or is managed in partnership under a joint authority arrangement. Under the OCS there are presently four types of arrangements available for the management of fisheries resources:

Status Quo Management, where no OCS agreement has been reached between the Australian Government and the relevant State. Here the State controls fishing in the adjacent coastal waters with the Australian Government responsible for fisheries within the AFZ.

State Management, where an OCS agreement provides for the relevant State to manage a fishery located off only one State. Here management occurs under State law.

Commonwealth Management, where an OCS arrangement provides for the Australian Government to manage a fishery located off one State. Here management occurs under Commonwealth law.

Joint Authority Management, where an OCS agreement provides for the Australian Government and one or more States to form a single legal entity, which manages a fishery under a single law, either Commonwealth or State.

6. However, a more flexible approach is presently under consideration. This proposed approach, the Regional Joint Authority Management model, would provide that a single OCS agreement would enable two or more States, and the Australian Government as appropriate, to provide for the application of their laws in those areas of a region adjacent to their State.

7. The Australian Government, through *Looking to the Future: A Review of Commonwealth Fisheries Policy*, released in 2003, has recognised that the current arrangements are in need of refinement as in some instances they are overly complex and have split jurisdictional responsibility for the management of the same fish stock (For example, the Bass Strait Scallop resource, which comprises a single stock, is managed by the Australian Government and two State Governments). As a consequence the Australian Government is in the process of progressively reviewing OCS fisheries agreements and management arrangements with the States and Northern Territory with the aim of addressing:

- The lack of consistency in managing fish stocks that are shared between the Australian, State and Northern Territory Governments;
- The need for these arrangements to be consistent with the principles of ecosystem-based fisheries management;
- The increased cost to Government and fishers resulting from the duplication of management, compliance and data programs across jurisdictions; and
- The unresolved issue of the management of fish resources for different sectoral interests, including the management of recreational fisheries.

8. It is envisaged that this progressive review will lead to the development of more efficient and effective arrangements for the management of Australia's fisheries resources.

Commonwealth managed fisheries

9. Commonwealth fisheries in Australia are administered by three bodies with separate responsibilities for management, policy and research and development. It was established in 1992, under the *Fisheries Management Act 1991*, the *Fisheries Administration Act 1991* and related fisheries regulations, that AFMA manage Commonwealth fisheries. AFMA is a statutory authority, governed by an independent board. AFMA pursues a cooperative management approach to enable relevant stakeholders to take part in management processes alongside fisheries managers, but with management decision-making powers vested in the AFMA board. The establishment of AFMA removed day-to-day management

decision-making from the political arena and enables professional fisheries managers to base their decisions on scientific and economic analysis. Policy functions are undertaken by the Fisheries and Aquaculture Branch of the Australian Government Department of Agriculture, Fisheries and Forestry. AFMA is responsible for managing Commonwealth fisheries, while responsibility for domestic and international policy remains with the Australian Government Department of Agriculture, Fisheries and Forestry. The Department's functions include responsibility for fisheries policy development; international negotiations to ensure the management of, and continued Australian industry access to, high seas resources; engagement in international and regional fisheries and aquaculture processes; and the development of competitive and sustainable fisheries industries. The Department also commissions research and analytical work from other businesses and external suppliers to support these activities.

10. The principal responsibility for investing in fisheries research and development (both State and Commonwealth) lies with the Fisheries Research and Development Corporation (FRDC). The FRDC is a statutory authority funded jointly by the Australian Government (maximum of 0.75 per cent of the gross value of production for fisheries) and industry. Additional funds for fisheries research, not allocated by the FRDC, are provided by the Australian Government (through the Fisheries Resources Research Fund), State governments and a number of government research agencies (such as the Commonwealth Scientific and Industrial Research Organisation (CSIRO), the Australian Bureau of Agricultural and Resource Economics (ABARE) and the Bureau of Rural Sciences (BRS)).

11. The objectives which AFMA must pursue in its management of Commonwealth fisheries are set out in the *Fisheries Administration Act 1991* and the *Fisheries Management Act 1991*. The objectives of AFMA are:

- implementing efficient and cost-effective fisheries management on behalf of the Commonwealth;
- ensuring that exploitation of fisheries resources be conducted in a manner consistent with the principles of ecologically sustainable development and the exercise of the precautionary principle;
- maximising economic efficiency in the exploitation of fisheries management;
- ensuring that the exploitation in the Australian EEZ and the high seas of fish stocks, to which Australia has obligations under international agreements, is carried on consistently with those obligations;
- ensuring accountability of AFMA's management of fisheries resources to the fishing industry and the Australian community; and
- achieving government targets in relation to the recovery of costs of the Authority.

12. AFMA's functions, as defined under this Act, are:

- devising fisheries management regimes, fisheries adjustment and restructuring programs and exploratory and feasibility fishing programs for Commonwealth fisheries;
- consulting and co-operating with industry and members of the public on AFMA's activities;
- consulting and negotiating with foreign governments and foreign business interests on foreign fishing vessel access to Australian fisheries and Australian ports;
- consulting and exchanging information with overseas fisheries agencies;

- establishing research priorities for fisheries managed by the Authority and arranging for research to be undertaken;
- undertaking general consultation as specified in the legislation;
- developing Corporate and Annual Operational Plans and Annual Reports in accordance with the Act; and
- such other functions as are conferred on the Authority by or under this Act or an associated law.

13. The *Fisheries Management Act 1991* deals with management of fisheries plans, statutory fishing rights, granting of permits and licences, offences for the taking of certain marine species and bans driftnet fishing in the AFZ. AFMA may determine a management plan for a fishery after it has given public notice of its intention and both invited and considered representations. A plan must set out its objectives and the methods for achieving those goals, and may also include the amount of fish which can be taken, fishing concessions, procedures for selecting persons to whom concessions are to be granted, and the kind and quantity of equipment that may be used. The various levy Acts define the collection of levies from the fishing industry for cost recovery of management charges, charges on access by holders of statutory fishing rights, foreign fishing licence payments.

Use of management advisory committees in Commonwealth fisheries

14. AFMA manages Commonwealth fisheries in partnership with stakeholders, including the fishing industry and interested community organisations. AFMA has set up management advisory committees (MACs) for each of the major Commonwealth fisheries. While responsibility for determining management arrangements lies directly with AFMA, the *Fisheries Administration Act 1991* allows for the establishment of Management Advisory Committees, or MACs as they are more commonly known, to assist AFMA "in the performance of its functions and the exercise of its powers in relation to a fishery".

15. Each MAC has a maximum of nine members, comprising: a Chairperson; an AFMA member; up to seven other members, who may be drawn from the commercial industry, government agencies, environmental organisations, research scientists, or recreational interests; and permanent observers who may be appointed to provide additional expertise.

16. The MAC is AFMA's main point of contact with each fishery, providing the forum where issues relating to a fishery are discussed, problems are identified and possible solutions are developed. The Terms of Reference that AFMA has established to guide MACs are:

- 1) To provide a forum for the discussion of matters relevant to the management of the fishery and to act as a medium for the flow of information between all stakeholders.
- 2) To provide advice and make recommendations to the AFMA Board with respect to:
 - i. the management of the fishery;
 - ii. the development of fishery management plans;
 - iii. ongoing measures required to manage the fishery in accordance with the provisions of the management plan; and
 - iv. amendments to the management plan as required.

- 3) To provide advice and make recommendations to AFMA on research priorities and projects for the fishery. The MAC is to ensure that processes are in place for industry and other interested stakeholders to receive advice from researchers in a form that will be easily understood by the audience.
- 4) To establish sub-committees as required to ensure that the range of management issues is given proper attention.
- 5) To liaise with AFMA staff and provide assistance as necessary to ensure approved management measures are implemented.
- 6) To undertake additional functions on behalf of AFMA as determined by the Authority. These functions are to be undertaken in accordance with AFMA policies.

17. Fishery assessment groups (FAGs) coordinate the biological assessment of the status of fish stocks. The MACs are also responsible for preparing an annual budget for management of its fishery for consideration by the AFMA Board. The budget is used by AFMA as the basis for determining levies payable by those in the fishery. Membership of the MACs and FAGs is expertise-based and is drawn from commercial, recreational and charter fishers, fisheries managers, environmental or conservation representatives and fisheries researchers. Relevant MACs and the AFMA board consider FAG recommendations.

18. In coming to a decision about the recommendations received, AFMA must balance advice received from the MACs with other sources of advice. In trying to balance the range of competing interests, it is sometimes necessary for AFMA to make decisions that are not supported by the MAC advice.

Management instruments

19. Australian Government policy with respect to fishery management is based on the principle that fisheries are a community owned resource. While access rights to a fishery can be privately owned in Australia, marine resources remain the property of the community. Under the *Fisheries Management Act 1991*, AFMA may allocate four separate types of fishing concessions - statutory fishing rights; fishing permits; scientific permits; and foreign fishing licences.

- Statutory fishing rights are defined as a right to a specified quantity or proportion of fish; a right to use a boat in a managed fishery; a right entitling a person to use specified type or quantity of fishing boats or equipment; or any other right in respect of a managed fishery. These rights include fish quota and boats and/or gear units. They are freely transferable, unless otherwise specified in the management plan. The term of the right, if not otherwise specified in the management plan, will continue until it is surrendered, cancelled or the plan revoked (Meany, 1992). By allowing the right to be permanent, the owner of the right has a planning horizon that is relatively secure which provides better incentives to make efficient investments in harvesting techniques and in developing new markets.
- Fishing permits are defined in a similar manner to statutory fishing rights, but are used where no plan of management for a fishery exists. Fishing permits allow access to specific fisheries and to specific areas of the AFZ subject to certain conditions (such as equipment that can be used or species that can be taken).

- Scientific permits are granted to allow an agreed program of scientific research to be carried out. They may be granted to an Australian or foreign boat, but in each case they are only granted for a maximum of six months.
- Foreign fishing boat licences are fishery specific and have a maximum period of one year. The master of a foreign fishing boat is also required to hold a Foreign Master Fishing Licence.

20. A range of output and input based management techniques are applied to Commonwealth fisheries in Australia (see Table 1). Input controls include time based controls, such as seasonal closures; location based controls, such as area closures; entry based controls, such as licensing; and gear based controls, such as net limits and boat size limitations. Output controls include total allowable catches and individual transferable quotas (ITQs). ITQs are currently applied to the southern bluefin tuna Fishery and to 16 species in the south east fishery. In most fisheries a combination of management mechanisms are applied involving limited entry, time and area based controls and either gear and/or output based mechanisms. For example, in the Northern Prawn Fishery operators need endorsements (licences) to fish, are subject to seasonal closures and area limitations, and are required to hold a minimum number of units based on boat size and operating configuration.

Table 1. Management Arrangements in Commonwealth Fisheries

Fishery	Area	Principal Species	Principal Management Arrangements
Northern Prawn	Gulf of Carpentaria from Cape York to Cape Londonderry	Banana, tiger, endeavour and king prawn	Limited entry, seasonal closures, permanent area closures, gear restrictions and operational controls)
Torres Strait	Torres Strait waters	Prawn, rock lobster, Spanish mackerel, pearl shell, trochus shell, and reef fish	Limited entry, gear and effort controls, closed areas and seasons
South East Trawl	Commonwealth waters from Barrenjoey Point NSW, around Tasmania to Cape Jervis SA	Mixed fish species particularly orange roughy, ling, blue grenadier, flathead, and warehou	Limited entry, gear and area restrictions, ITQs, TACs
Gillnet, Hook and Trap Fishery	Commonwealth waters off south Queensland, NSW, Victoria, Tasmania and SA	Mixed fish species particularly pink ling, blue eye trevalla, gummy shark	Limited entry, size limits, gear restrictions, closures, TACs and ITQs
Great Australian Bight	Commonwealth waters between Cape Leeuwin WA and Kangaroo Island, SA	Deepwater flathead, orange roughy and Bight redfish	Limited entry, gear and area restrictions and TACs (for shark only)
Southern Bluefin Tuna	Commonwealth waters especially the southern and south eastern parts of the AFZ	Southern bluefin tuna	Limited entry, ITQs and TACs, area restrictions
Eastern Tuna and Billfish	Commonwealth waters off Queensland NSW, Victoria and Tasmania from Cape York to the SA/Victoria border	Yellowfin, bigeye, skipjack, and albacore tuna, and billfish species	Limited entry, vessel size and area restrictions, bycatch provisions, gear restrictions and closures
Southern and Western Tuna and Billfish	Commonwealth waters from Cape York around northern Australia to the SA/ Victorian border	Yellowfin, bigeye, skipjack, and albacore tuna, and some billfish species	Limited entry, gear and area restrictions, bycatch provisions
Bass Strait Scallop	Commonwealth waters off SA, Victoria and Tasmania	Scallop	Limited entry, closures, size limits and quotas
Small Pelagics	Commonwealth waters from north of the NSW/Queensland	Greenback, yellowtail and Peruvian jack mackerel	Limited entry and trigger TACs

	border along southern Australia to near Perth WA		
Southern Squid	Commonwealth waters Off SA, Victoria, NSW Tasmania and southern Queensland	Arrow or Gould's squid	Limited entry (gear-unit allocation and catch-triggers proposal)
Antarctic	Heard, McDonald Islands and Macquarie Island waters	Patagonian toothfish, and icefish	Limited entry, TACs and ITQs, closures, bycatch restrictions
Western Deepwater Trawl and North West Slope	Commonwealth waters off WA	Mixed fish species, Scampi	Limited entry
Coral Sea	Commonwealth waters, from Sandy Cape to Cape York	Reef fish, trochus, lobster, aquarium, fish, sea cucumber	Limited entry with a minimum operational commitment of 20 days per year. Catch limits for sea cucumber sector
South Tasman Rise	High seas adjacent to AFZ, south of Tasmania	Orange roughy, oreo dory	Limited entry and TACs

Cost recovery

21. Commonwealth fisheries are managed on a full cost recovery basis. This means that the commercial fishing industry pays for costs directly related to fishing activity while the Australian Government pays for activities that may benefit the broader community and satisfy a range of specific community service obligations.

22. Cost recovery has been part of Commonwealth fisheries since 1985. AFMA has recently reviewed its Cost Recovery Policy in line with the Australian Government's new Cost Recovery Guidelines, which were released in late 2002. Costs are recovered from industry for domestic fisheries management costs such as licensing and surveillance costs, and partially cost recovered for fisheries management research and verified data collection programs. The outcome is virtually no overall change to costs currently recovered from industry. The Government funds activities such as foreign fishing compliance, domestic fishing enforcement, and Torres Strait and non-commercial fisheries. None of these activities are cost recovered from industry.

23. At present a charge to provide a return to the community from the use of marine resources is not recovered from Commonwealth fisheries.

State managed fisheries

24. State Governments have the responsibility of administering Australia's fisheries within three nautical miles from the coast line. Most fisheries are managed using a variety of input controls although quota management systems are in place in a small number of fisheries. As mentioned above, the management of most commercial fisheries in State waters is under the control of the various State governments through their respective fisheries departments. In addition, there are varying degrees of community involvement in the management process between States. The States generally have responsibility for all recreational and charter fishing.

Western Australia

25. The Fisheries Department of Western Australia is responsible for the administration and management of fisheries in that State. Commercial fisheries are managed through a system of limited

entry licensing which aims to prevent the over-harvesting of fish stocks through a range of input and/or output controls. Controls are set out in the management plan for each fishery. In recent years this approach has been extended to include not only the major commercial fisheries, but also the State's smaller, regional fisheries. Individual transferable quotas are applied to the abalone fishery, the Shark Bay snapper fishery and the pilchard fishery. Integrated management through interaction with, and response to, the community, industry, other government agencies and other groups with an interest in the optimal use of aquatic resources is an important part of the management process.

26. The Department has four operational areas: Fisheries Management; Operations; Research; and Corporate Services. The key objectives of the Fisheries Management Division are to develop management arrangements that will provide for the conservation and optimum use of fish stocks as well as to facilitate the approval of aquaculture proposals by providing a framework for the dissemination of available information, and to encourage the development and use of appropriate fish farming technology. The Fisheries Operations Division aims to provide a field liaison with those engaged in the capture or sale of fish, to promote community understanding of fisheries management rules and ensure community compliance with fisheries and aquaculture legislation. The Research Division's objectives are to provide sound biological information on Western Australia's wild fish stocks and on species suitable for aquaculture and to provide sound scientific information relevant to the conservation of the State's aquatic environment and biological resources.

Queensland

Queensland's fisheries resources are managed by the Queensland Fisheries Service (QFS) for ecological sustainability in accordance with the *State Fisheries Act 1994*. QFS is a business group of the Queensland Department of Primary Industries and Fisheries. Commercial fisheries are currently managed under a variety of input and output control measures, including limited entry, area and seasonal closures, size limits and, in some fisheries, quota management arrangements. Controls are also applied to recreational fishing, including take and possession limits, size limits, restrictions on gear and seasonal and area closures.

New South Wales (NSW)

27. NSW Fisheries is the agency responsible for conserving and managing fisheries in NSW. The aim of the department is to manage the aquatic habitat and fish resources in order to conserve fish stocks and optimise the sustainable yield for commercial and recreational fishers, thus providing social and economic benefits for the wider community. In terms of commercial fishing, this is done through a variety of input control measures together with limited entry to all the State's commercial fisheries. Quota management measures are currently in place for rock lobster and abalone.

South Australia (SA)

28. The management of South Australia's aquatic resources are the responsibility of the Fisheries Group of the Department of Primary Industries and Resources South Australia (PIRSA). Research is undertaken by an associated research body - the South Australian Research and Development Institute (SARDI). All fishing resources in South Australia are now managed by Fishery Management Committees, made up of representatives from major stakeholder groups, including commercial and recreational fishers, scientists and fisheries managers. The goals of fisheries management in South Australia are to manage the living resources of the State so that their utilisation and development are ecologically sustainable. In addition, management aims to maximise long term economic and social benefits to the South Australian

community. Commercial operators are required to be licensed and possess the appropriate endorsements for the fisheries they operate in. These endorsements specify the type of gear to be used and regulate the quantity permitted to be deployed. Currently most fisheries are managed under a variety of input and output controls, with the Southern and Northern Zone Rock Lobster fisheries, abalone, blue crab, giant crab and pilchard fisheries subject to individual transferable quota regimes. Recreational fishers are also subject to regulations devised and implemented by the fisheries division.

Northern Territory

29. The Fisheries Group of the Department of Business, Industry and Resource Development is responsible for managing fisheries in the Northern Territory. The group has three main programs concerned with fisheries management, fisheries development and aquaculture. The group has developed or is in the process of developing management plans for all of its fishery resources to ensure sustainable development. These management plans and associated fisheries legislation and regulation, form the basis for Northern Territory fisheries management. In common with the other States, commercial fisheries management is by limited entry, with a variety of input controls. Recreational fishers are subject to area and bag limits, together with gear restrictions and area and seasonal closures.

Victoria

30. The management of Victorian commercial, recreational and aquaculture fisheries is administered by Fisheries Victoria, Department of Primary Industries under the provisions of the *Fisheries Act 1995* and subordinate regulations. Fisheries Victoria's aim is to manage and conserve Victorian aquatic resources and the habitats that support them. To achieve this aim, Fisheries Victoria works closely with industry, other Government departments, stakeholders and community groups.

31. Scientific research into aquatic resource sustainability is carried out by Primary Industries Research Victoria (PIRVic) which is located at Queenscliff. The Act and Fisheries Regulations 1998, require all commercial fishers and aquaculture operators to be licenced. Certain fisheries comprising abalone, rock lobster, giant crab and scallop are managed by quota allocations. Certain fisheries such as abalone and rock lobster are further regulated by management plans.

32. Recreational fishers in Victoria require a Recreational Fishing Licence (RFL) unless they are exempt. Recreational fishing is also regulated by provisions in the Fisheries Regulations 1998. The interests of Victorian recreational fishers are represented by VRfish, the peak body created under the Act. Recreational Fishing Licence fees appropriated into the RFL Trust fund to provide revenue to enhance recreational fishing opportunities in Victoria.

Tasmania

33. The Marine Resources Group of the Tasmanian Department of Primary Industries, Water and Environment manages the marine fisheries in waters adjacent to Tasmania. The major objective is to achieve sustainable use of the fishery whilst ensuring the proper protection of stocks and habitat, as well as generating an appropriate return to the community for the exploitation of the resource. The Marine Services group of Tasmania Police enforce the fishery regulations.

34. The main fisheries around Tasmania are abalone and rock lobster fisheries, which are controlled mainly by individually transferable quota management, supplemented by size limits, gear restrictions and seasonal closures. The minor fisheries include the giant crab, scallop and various scalefish fisheries.

35. The whole system is regulated by the *Living Marine Resources Management Act 1995*. Subject to this Act, the Minister for Primary Industries, Water and Environment has the responsibility for the development and control of the industry. Under a series of Offshore Constitutional Settlements, the major fisheries are solely under the authority of the State for all waters adjacent to Tasmania within the Australian Exclusive Economic Zone (i.e. out to 200 nautical miles).

Key management problems and issues

36. The major underlying problem in most Australian fisheries is excess fishing capacity. This leads directly to over fishing and considerably less than the maximum profitability in most fisheries. The majority of management arrangements are directed specifically at limiting fishing effort by one means or another. Initial efforts at fisheries management in Australia were in the form of limited entry arrangements. Such arrangements had little impact on fishing effort. Often fishers with only a limited history of involvement in a fishery gained access rights and so were able to increase effort in that fishery. Moreover, effective effort in a fishery could still be increased through technological improvements. As a consequence of these problems, in recent times more sophisticated input and output control mechanisms have been applied to most fisheries in Australia by the relevant fisheries managers (as discussed in the previous section).

37. The Bureau of Rural Sciences (BRS) produce annual Fishery Status Reports that provide an overview of the current understanding of the status of Commonwealth-managed fish stocks. The reports are a part of the evaluation of the performance of Commonwealth fisheries management. Through Fishery Status Reports, BRS aims to make information on Commonwealth-managed fisheries resources accessible to government industry and the community. The most recent report, *Fishery Status Reports 2002-2003*, draws attention to a worrying trend whereby the number of stocks classified overfished or uncertain is increasing, highlighting the need for more conservative approaches to risk and uncertainty.

38. A further issue, which has been raised in respect to fisheries management, is the appropriate role for industry and other user groups in decision making. This issue is discussed in more detail below. Other issues which still need to be addressed by Australian managers to improve the economic performance of fisheries and to meet conservation objectives include: identifying fisheries where output based management can be used; allocation of access rights; setting of total allowable catches; bycatch discarding and highgrading; and costs and priority setting in research. These issues are also discussed below.

The role of industry and other resource users in fisheries management

39. The MACs develop management recommendations for each fishery that then go to the AFMA board for approval. Australia's fisheries resources are community-owned and managed under Offshore Constitutional Settlement (OCS) agreements between the Australian, State and Northern Territory Government, either by single jurisdiction or jointly. There are more than 50 OCS agreements that allocate management responsibility between governments by species, by species within an area or by method of fishing, or a combination of all of these. The resulting management arrangements are often complex and in some cases may split jurisdictional responsibility for management of the same fish stock. The Australian Government aims to retain overall management responsibility for all highly migratory fish stocks and any species subject to regional or international agreements, the states and the Northern Territory having responsibility for day-to-day management of recreational, including charter, fishing and traditional fishing. The Australia, state and Northern Territory government have agreed a set of priorities and timetable for negotiations between on OCS agreement during 2003-04 and 2004-05 with a view to making the agreements more workable and practical in achieving sustainable fisheries.

40. The 2003 report, *Looking to the Future: A Review of Commonwealth Fisheries Policy*, highlighted a gap in Commonwealth fisheries policy resulting from the lack of an overarching framework that provides a transparent mechanism to support decision making on resource sharing between different fisheries user groups such as commercial fishing operators, and recreational and indigenous fishers. As competition for access to certain resources increases, this gap has become increasingly obvious as disputes between the sectors have increased over who has the most right to access certain fish stocks. The Review highlighted strong support for effective and transparent decision making to allocate access rights among all sectors using fisheries resources. The Australian Government is committed to establishing and implementing a Resource Sharing Framework. This Framework will allow for the fair and transparent allocation of shares between different sectors and for the effective management of those sectoral allocations.

Identifying fisheries where output based management can be used

41. The New Directions Policy Statement released in 1989 identified output-based controls in the form of individual transferable quota (ITQs) as the most effective way to deliver long-term sustainability for fisheries resources while maximising returns from the fishery. However, in recent years there has been a significant shift in AFMA's management approaches in order to best pursue all of its legislative objectives. Australian fisheries managers more broadly have sought to move to a more ecosystem-based approach to management. Nationally, this process has been given added impetus by the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). For Commonwealth fisheries, AFMA is moving from species-based to ecosystem-based fisheries management approaches.

42. The pursuit of ecosystem-based fisheries management requires a broader suite of management measures than is required for species-based management. AFMA has therefore been developing new and revised management plans that include a wide range of management measures. It is the Australian Government's view that management arrangements based on ITQ management, but complemented, where appropriate, by other measures, are best suited to achieve the broader range of objectives in contemporary fisheries management.

43. The Government maintains that ITQs provide the most effective mechanism to underpin management for ecologically sustainable and economically efficient fisheries. Importantly, ITQ-based management also provides the framework of market-based adjustment as the fishery changes over time. However, the Government also recognises there may be occasions where the nature of a fishery and of its broader ecosystem issues may mean that ITQs may not be the most appropriate management system. Under these circumstances, where the AFMA Board considers that a management system based on alternative management approaches, such as approaches based on individual transferable effort (ITE), will better pursue its legislative objectives, this form of management may be used.

44. Such decisions require a transparent analysis that demonstrates why non-ITQ approaches are preferred for a particular fishery, and how self-adjustment of fishing capacity would be achieved on an ongoing basis to counteract increasing fishing efficiency.

Allocation of access rights

45. While ownership of Australian fisheries resources is specifically vested in the Australian community, governments may provide preferential rights to access to individual members of the community to exploit those resources. A key issue in the management of both input and output controlled fisheries are how the rights to exploit the resource should be allocated.

46. There is a considerable literature on rights allocation in a range of resource based industries. Mechanisms which have been suggested include auctioning of rights, lottery type systems, finders rights systems, and systems based on the level of historical use or investment.

47. In Australia, the *Fisheries Management Act 1991* currently provides for rights to Commonwealth managed fisheries to be granted through auction, tender and ballot approaches or through other methods such as selection criteria. The auction, tender and ballot approaches would seldom if ever be used in an established fishery. The most likely use of these measures would be in the case of a new fishery. The Commonwealth Fisheries Policy Review recently recommended the removal of the ballot approach as, unlike the auction and tender processes, it fails to demonstrate a market based mechanism to value access rights. It also discourages fisheries exploration, industry development and undermines investment confidence.

48. Allocation, has generally been based on selection criteria such as historical use or investment in a fishery. However, the application of this mechanism in some fisheries has caused considerable disputes with industry. In particular, the initial individual quota allocations for some species in the south east fishery in Australia were believed to give insufficient weight to immediate past catch records relative to earlier catch records. This caused considerable dissension in the industry and impeded the establishment of effective trading arrangements for ITQs in the fishery.

49. In New South Wales, the government is currently in the process of issuing improved property rights in that State's fisheries. The arrangements include allocation of shares to commercial fishers in accordance with current fishing rights and previous participation in various defined fisheries. As part of the scheme, fishers are required to pay a community contribution, representing a return to the community for privileged access to a public resource.

50. The choice of appropriate allocation mechanisms represents an issue of considerable relevance to fisheries management in Australia and other countries.

Setting of total allowable catches

51. Integral to any output control management system is a total allowable catch (TAC). A number of difficulties have been experienced in setting TACs in Australia. These include the lack of appropriate biological information and harvesting strategies for recovering stocks. In the South East Fishery, quotas are in place for 16 species. For most species, total allowable catches are set on the basis of historical catch levels. For one species, the total allowable catch for the trawl sector is arrived at by negotiation with trawl and hook sector representatives. As some TACs are based on biological considerations, some on historic catch levels, and another on negotiations, the resulting set of TACs do not necessarily correspond with the usual catch ratios. As a consequence, over quota catches and discarding of some bycatch species has occurred.

52. A further difficulty in TAC setting has been harvesting strategies for recovering stocks. Where a fishery has been over fished in the past, TACs have been set low to enable the stock to rebuild. The harvesting strategy affects the speed with which the stock rebuilds and the flow of profits that can be earned. As there is uncertainty in most biological parameters, and as depleted stocks are highly vulnerable to environmental fluctuations, there are certain risks associated with the alternative harvesting strategies. Bioeconomic models are being developed to assess the potential profits of alternative harvesting strategies against the risk of stock collapse.

53. The issues faced by Australian fisheries managers include determining the appropriate means for setting of TACs and what type and amount of information is required for their setting. For example, TACs may be set to either maximise profits, maximise catch on a sustainable basis, or on some other basis. It can be argued that as long as the harvest level does not threaten the continuing existence of the stock, the level of harvest is largely an economic question. It is possible that TACs could be set within biological reference points, such as a minimum biomass, that ensure conservation objectives are met. For Commonwealth fisheries (consistent with AFMA's legislative objectives), TACs must be set with a view to maximising the economic efficiency of the exploitation of fisheries resources. The appropriate mechanism for setting the TAC within these reference points remains a relevant issue.

Bycatch and environmental impacts

54. With every targeted shot, a fisher is likely to also catch some unwanted species as bycatch, which may then be discarded. In an output-controlled fishery, discarding may occur for two reasons. First, species may be discarded if the operator does not hold quota to cover the catch. The second form of discarding relates to the unintentional bycatch of unprofitable fish, even though quota may be held, or species which are prohibited, for example threatened species. In the latter case, operators are required to record interactions with protected species in their onboard logbooks. Small sized fish (and in some cases, large sized fish) and damaged fish often receive a low market price relative to other grades. Since the operator is constrained on how much can be landed of a particular species, there are strong incentives to dump the low value grades in expectation of replacing them with higher value grades from subsequent shots. This is usually referred to as high grading. A form of high grading can also occur in situations where an operator unintentionally harvests a species for which quota is held, but decides to discard the bycatch because prices are temporarily low.

55. High grading and over quota discarding result in difficulties in biological analysis of the fishery, as the true catch is not known.

56. In 1999, a National Policy on Fisheries Bycatch was released whereby all Australian governments agreed to a bycatch policy that provides options by which each jurisdiction can manage bycatch according to its situation. The Australian Government subsequently released the Commonwealth Policy on Fisheries Bycatch in 2000 and Western Australia released the Western Australian Policy on Fisheries Bycatch in 1999. These policies require the development of fishery-specific Bycatch Action Plans (BAPs). The BAPs identify bycatch issues, data requirements, options and possible solutions for each fishery. BAPs need to take into account responsibilities under any relevant Recovery Plans or Threat Abatement Plans in place under the EPBC Act. For example, if the fishery interacts with a threatened species that has a Recovery Plan in place, for example, marine turtles, or if a fishery's activities have been deemed as a key threatening process to a species, for example, longline fishing on seabirds.

Further to this initiative, under the EPBC Act, environmental assessments must be carried out and approved by the Minister for the Environment and Heritage by 1 December 2005 for all Australian fisheries with an export component. These assessments will include an explanation on the form of data collection, assessment and management responses in place in each fishery for target, byproduct and bycatch species and the broader environment. The assessments are to outline interactions with species listed under Part 13 of the EPBC Act that are threatened, migratory or iconic. The relevant impacts on the marine environment of actions taken under a management plan for a fishery are to be assessed. The outcomes of the assessment must be addressed in the management plan or arrangements for each fishery. Similarly, State/Territory-managed fisheries that have or are likely to have a significant impact on a matter

of National Environmental Significance may require approval under the EPBC Act. This includes interactions with listed threatened, migratory or iconic species.

Costs and priority setting in fisheries research

57. Reliable information is one of the cornerstones of effective fisheries management (and any business decision). Information required for management could cover a wide range of topics including fish biology, fisheries economics or fish marketing. Detailed fishery specific information is often unavailable and governments often invest in fisheries research and development to encourage appropriate research and development to occur. In Australia fisheries research is funded partly by industry and partly by governments. The Australian Government currently contributes 0.5 per cent of the industry gross value of production to research funds held by the Fisheries Research and Development Corporation (FRDC). The industry contributes up to 0.25 per cent of GVP to the FRDC, which is matched by the Government. The Australian Government also provides a special fund for public interest research and research into collapsed or developmental fisheries (equivalent to 0.25 per cent of GVP minus A\$1 million). In addition, direct appropriations are made by the Australian and State Governments to a number of research institutes undertaking fisheries research.

58. The key issues in funding of research are whether there is an appropriate level (too much or too little) of funds going to fisheries research and whether the funds are being appropriately allocated to the highest priority areas. Where many research agencies and funding sources are available, there is a danger of duplication and research overlaps. If this happens, the community will not get the best value from scarce research funds. To help identify, organise and coordinate the most effective selection of individual research projects and research programs for Australia, research and funding agencies need to identify priority categories of research (problems or opportunities where research is needed) within a fishery and across fisheries.

59. A high level strategic review of fisheries research efforts across Australia is currently being undertaken by the Australian Fisheries Management Forum (AFMF). For this purpose, an AFMF working group was established to look at relationships between fisheries research organisations and agencies, how priorities are set, and how funding is attracted and allocated. This review also aims to identify opportunities for extending research findings to policy implementation and industry application and find out the effectiveness of fisheries research in steering policy directions.

60. A consistent set of research priorities across fisheries (and management jurisdictions) is, however, likely to be difficult to identify. The main difficulties arise when the base value of each fishery is not known or when the expected payoffs of research cannot be quantified. There is no common basis for comparing the relative merits of research since research priorities would need to be identified using qualitative and quantitative information about the magnitudes of expected payoffs of research in each fishery across different jurisdictional boundaries.

61. In such circumstances, a systematic approach is still needed to identify research priorities to reduce inconsistencies in allocations across both research areas and fisheries. For example, in Australia, research prioritisation at the national level by the Fisheries Research and Development Corporation is based on structured and coordinated input from each State and the Australian Government, who identify their own research issues of importance and provide a common set of information. No doubt there would remain a degree of subjectivity. Nevertheless, research priorities could be identified in a consistent manner across all fisheries using a common set of information.

Illegal, unreported and unregulated (IUU) fishing

62. Illegal, unreported and unregulated (IUU) fishing is fishing which does not comply with national, regional or global fisheries conservation and management obligations. IUU fishing can occur within zones of national jurisdiction, within areas of control of regional fisheries bodies, or on the high seas. With the increasing demand for fishery products and the decline of fishery resources, the increasing incidence of IUU fishing has been of great concern to responsible fishing nations.

63. Australia is a party to a range of conventions that establish global, regional and subregional management organisations that manage highly migratory, straddling, pelagic and demersal fish stocks. These instruments include the Convention on the Conservation of Southern Bluefin Tuna, which establishes the Commission for the Conservation of Southern Bluefin Tuna, the Agreement for the Establishment of the Indian Ocean Tuna Commission, which establishes the Indian Ocean Tuna Commission, and the Convention for the Conservation of Antarctic Marine Living Resources, which establishes the Commission for the Conservation of Antarctic Marine Living Resources. Australia plays an active role in these organisations. Australia has also signed the Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific.

64. Many of these organisations are now focussing on the problem of IUU fishing as a major threat to the effective management and conservation of regional fish stocks and are consequently seeking to identify vessels engaged in IUU fishing within respective areas of competence in order to combat effectively and eliminate these operations.

65. The Australian Government is taking a strong stance against illegal, unregulated and unreported (IUU) fishing because of serious concerns at the effect of increasing IUU fishing on the sustainability of fish stocks and the marine environment.

66. To deal with IUU fishing in the Southern Ocean, the Australian Government has developed a comprehensive strategy to tackle the problem which includes bringing strong pressure to bear on countries not meeting their international obligations and trading in illegal fish catches, strengthening international fisheries law, ensuring the sound implementation of existing international law and working with like-minded countries to negotiate cooperative agreements on enforcement and surveillance. This also includes increasing our patrol capacity by committing significant resources over two years for a full-time armed patrol vessel to conduct patrols year round of the Southern Ocean, especially in the waters surrounding Heard Island and McDonald Island (HIMI) waters.

67. Australia is also participating in the newly established Ministerial Task Force on IUU Fishing that is being hosted by the OECD. The Taskforce will prepare a definitive report on IUU fishing with prioritised actions that will be pursued by all members to bring about necessary change to minimise or eliminate IUU fishing.

68. At the national management level, Australia already applies a stringent management regime to vessels operating under its flag within the EEZ and on the high seas. The fishing operations of Australian-flagged vessels within the AFZ are controlled by Australian, State and Territory fisheries legislation. Fishing operations are authorised through the issue of licences and concessions that are subject to specific management rules that are directed towards ensuring the long-term sustainability of the fisheries resources. Risk-based fisheries monitoring and compliance regimes are developed and implemented by both the Australian and State Governments to ensure that the integrity of the fisheries management arrangements is maintained. The nature of each compliance program is dependent on the requirements for

each fishery and involves a mixture of physical surveillance both on the water and from the air, the monitoring of unloads of catches in port, the auditing of paper trails to determine catch landings and technical applications such as Vessel Monitoring Systems (VMS).

69. In December 1999, the Australian Government introduced legislation that requires Australian-flagged fishing vessels to be authorised to fish in waters outside the AFZ. Once the legislation is enacted, it will be an offence for an Australian-flagged fishing vessel to operate on the high seas without the appropriate authorisation. Amongst other things, operators using Australian-flagged vessels on the high seas are required to mark their vessels in accordance with the FAO standard specifications, facilitate the carriage of observers, complete catch and effort logs and operate a VMS which reports to AFMA. In addition, Australian-flagged vessels are required to operate in a manner that does not contravene Australia's obligations under international Agreements and other arrangements to which Australia is a party.

70. Australia is also reviewing its domestic fisheries legislation to ensure that its provisions assist the Government to deter IUU fishing by foreign fishers. In early 2004, Australia amended the *Fisheries Management Act 1991*, increasing the maximum fines for foreign fishing offences from AUD\$550,000 to AUD\$825,000. Australia also amended the Act to be able to include the costs of pursuit and apprehension in the bond set for apprehended illegal foreign fishing vessels.

Related Websites

The Australian Bureau of Agricultural and Resource Economics (ABARE) www.abare.gov.au

The Australian Fisheries Management Authority (AFMA) www.afma.gov.au

The Australian Government Department of Agriculture, Fisheries and Forestry www.daff.gov.au

The Bureau of Resource Sciences (BRS) www.brs.gov.au

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) www.csiro.com.au

Fisheries Research and Development Corporation (FRDC) www.frdc.com.au

State Fisheries:

Western Australia	www.fish.wa.gov.au
Northern Territory	www.fisheries.nt.gov.au
South Australia	www.pir.sa.gov.au
Queensland	www.dpi.qld.gov.au/fishweb
New South Wales	www.fisheries.nsw.gov.au
Victoria	www.dpi.vic.gov.au
Tasmania	www.dipwe.tas.gov.au

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