FRDC: FISHERIES RESOURCE ACCESS AND ALLOCATION PROJECT

Principles and Guidelines in Support of Fisheries Inter-Sectoral Access and Allocation Decisions

REPORT OF THE SUB-COMMITTEE July 2012

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TERMS of REFERENCE

The Australian Fisheries Managers Forum (AFMF) has listed fisheries access and allocation as one of the top priority policy issues to be addressed and recently formed its own working group to further the development of more comprehensive and consistent approaches to this issue.

With this in mind, the FRDC agreed at its Board meeting on 23 November 2010 to assist this work by forming a "research oriented" working group to examine possible approaches to access and allocation issues which would be of assistance to fisheries managers as they undertook their associated policy development around allocation matters.

The terms of reference of the FRDC working group were as follows:

(i) work with AFMF to draft a report on the principles and guidelines for fisheries resource access and resource allocation;

(ii) provide guidance to the FRDC on the impediments to optimising fisheries resource access and allocation in Australia and the RD&E issues requiring investment.

To commence this activity, the Chair (Peter Neville) formed a Sub-Committee comprising the Chair, Dr Daryl McPhee, and Matt Barwick to prepare a preliminary research oriented paper for consideration by the AFMF. This work included a review of Australian and overseas case studies as well as discussions with fisheries managers.

This paper was subsequently adopted as a reference paper by the AFMF at its meeting of 10 May 2012 to be used by the AFMF working group. It also forms the basis of this report by the Sub-Committee to the FRDC Board.

FOREWORD

Issues surrounding access to fisheries resources and their allocation among competing parties go back to early feudal times in England where the Magna Carta was thought to be responsible for establishing the common law principle of the public right to fish in tidal waters, with fish being deemed to be wild animals and not able to be owned until capture. This remains acknowledged today, being reinforced through statute and case law as the basis of the right for persons in the community to undertake recreational fishing.

In those days, and throughout relatively recent history, it was considered that the fisheries resources were inexhaustible and incapable of over-exploitation through excessive fishing pressure by commercial, recreational and indigenous members of the community. Therefore there was no need to define and implement rigorous access and allocation "rights" throughout the community. However, history has shown this is not the case with over-exploitation of the fisheries resources a very real possibility without proper management.

A critical aspect of that management is the description and determination of the rights of those in the community who wish to access the fisheries - either for take or no-take purposes - and the basis of, and processes for, allocating use of the fisheries resource among all those who seek to do so for a range of different reasons and needs.

As nobody can "own" the free swimming fish in the rivers and oceans (until they are captured), it falls to government to manage access and allocation through fisheries management arrangements. Also as the resource is actually finite, but the demands on it can exceed its capacity, the access and allocation issues become akin to "re-distributing wealth" and this is properly a function of government. This also explains why this issue raises such conflict and passion and always generates emotional debates among many members of the community.

This report focuses on the fisheries access and allocation issues as they relate to sharing of the resource primarily among the principal "taking" sectors i.e. commercial, recreational (and charter), indigenous, and to a degree, the aquaculture sectors, but with reference also to the "no take" groups e.g. sports fishing tag and release, groups interested in the existence value of fisheries and their protection. In this sense, it relates primarily to the administration of fisheries legislation and the determination of access and allocation issues under the ambit of the objectives of such legislation.

Of course, there are wider considerations throughout the community which have impacts on fisheries access and allocation issues e.g. the declaration of marine parks, development of port and marine infrastructure, oil and gas exploration and development, coastal land use, regional developments etc.; but these are the subject of a much broader community, economic, social and political discussion. While many of the principles and processes of resource allocation can be applicable across such situations, these broader considerations are not the focus of this report.

SUMMARY

1. The need to discuss fisheries "rights", "access" and "allocation" has only arisen as a consequence of the recognition that fisheries resources are not inexhaustible resources but are finite and able to be seriously depleted. These concepts have arisen because of the need to sustainably manage fisheries as a "common property" resource and to share its benefits among the community.

2. Fishing rights are the form of access provided by government in individual cases, while allocation describes the level of access in individual cases. Fishing rights do not provide "ownership" of any fish, but allow access to the fishery to engage in different acts of fishing. Progressively, it has become necessary to improve on fisheries management through, in part, describing and limiting access and allocation (and fishing rights) based on an understanding of the very different characteristics and needs of each individual fishery.

3. Governments, as managers of the fisheries on behalf of the community, have progressively determined the nature of access and allocations among the various competing sectors engaged in taking fish - commercial, recreational and indigenous fishers - as well as providing marine parks, reserves etc. as no-take sectors, as they have proclaimed various fisheries management arrangements.

4. Further, governments have required that such access and allocation arrangements must satisfy the objectives of respective fisheries legislation; typically, such legislation requires primarily the maintenance of the fisheries resource, as well as the fair and equitable sharing of access, and the maximisation of benefits to the community from the use of the resource. Thus, the multiple objectives to be met have ecological, economic, social and cultural dimensions.

5. Because of the ever-changing pressures on the fisheries, and their widely different and changing characteristics themselves, there is continual pressure to re-assess the arrangements for their management and hence their access and allocation settings. The legislation however, does not prescribe specific allocation goals or outcomes across fisheries for the different sectors, nor the methodology to achieve re-allocations; rather these are to be determined by the differing fisheries management needs in each case, mindful of meeting the overall objectives of the legislation and the critical needs of management.

6. Thus, this is not primarily about stock conservation, which is largely a biological/ecological management issue, but about allocating a community resource among a range of potential users (and non-users) which is primarily a political/socio-economic issue - but always contained within a fisheries management framework. This will always involve government, in some form, as the key decision-maker in allocation issues.

7. For these reasons there is no single prescription for particular access and allocation outcomes across sectors, nor is there one methodology which would satisfy each case. Importantly, the

costs and benefits of each alternative approach, along with a risk assessment, will significantly influence the outcome.

8. Before an allocation question can be addressed, the objectives behind the allocation must be clearly stated; and, as all fisheries legislation has multiple objectives, both quantifiable and non-quantifiable ones, the allocation framework must be cognisant of this complexity and deal with it in a transparent manner.

9. There are, however, some common principles and guidelines which should be followed in dealing with each circumstance; these are documented under the following headings of:

- Natural Justice;
- Governance;
- Fisheries Legislation;
- Fisheries Management.

10. Further, prior to proceeding with an access or allocation question, there are a number of pre-conditions which should be met which assist and guide the process to ensure that scarce funding and resources are not used unnecessarily in cases where it is not warranted, or where much simpler processes would suffice to address the question. These are:

(i) establish government objectives;

(ii) establish objectives of other participants;

(iii) establish the underlying nature of the issue;

(iv) apply a risk assessment analysis to the issue;

(v) establish the availability of data;

(vi) determine the nature of existing "rights;"

(vii) determine the need for a formal process.

11. The range of alternative allocation methods or models for use in resource re-allocation is outlined, together with the strengths and weaknesses of each model. The approaches come down to two broad alternatives - administrative models or market based models. Variations of an administrative model, with the government ultimately making the final decision in each case, have been the preferred approach around Australia and internationally to date. The range of models are:

- Government Driven model;
- Negotiation based model;
- Administrative based model;

- Statutory based model;
- Market/Economic Evaluation based model.

12. A number of case studies are discussed involving both Australian and overseas examples of access and allocation decision-making frameworks. The administrative model, in one form or another is the predominant method used supported by various processes and analyses. Nowhere is there a freely operating market based system for inter-sectoral re-allocations across all sectors. The principal reasons for this are the lack of common "rights" across sectors and the lack of representative organisations, especially in the recreational/charter sectors, to be responsible for holding and dealing with collective rights for the sector.

13. It would possible, and even desirable in some circumstances, to construct a "rights" based market trading model for resource re-allocation. However, this would require a unique set of characteristics for the fishery (or part of the fishery), would have to be designed for each specific fishery, would have to be accompanied with stringent caveats on the extent of operation of the market, and be carefully assessed in terms of the costs and practicality of implementation and management compared with its benefits.

14. Similarly, the use of economic valuation models in their various forms to determine allocations have to overcome a number of complex measurement and interpretation issues and suffer from the perception of their inability to satisfy all of the legislative objectives set for fisheries management - namely those around equity and fairness and other social and cultural objectives.

15. There are a number of impediments to addressing access and allocation issues identified in the report; the major ones being:

- Lack of clear policy statements from governments defining their preferred principles and processes;
- Lack of the necessary data (and the high cost of collecting it) across sectors, particularly with the recreational and indigenous sectors; but in the case of economic and social data, this affects all sectors;
- Lack of sophistication in, and application of, analytical methodologies to support consideration of alternative outcomes;
- Lack of effective representative organisations which can act on behalf of the sectors in allocation discussions and their practical implementation;
- Lack of research into specific rights based market trading possibilities in allocation questions.

1. INTRODUCTION

1.1 Fisheries and Allocation Issues

In order to understand the issues surrounding access and allocation, it is necessary to understand that fisheries themselves comprise great variety and diversity in their structures, complexities, composition and relative attractiveness to the different sectors utilizing them. There is a great range of species themselves, giving rise to great variety in their life cycles, their bio-physical structure, their dependence upon their surrounding ecosystem and their capacity to absorb fishing pressure and remain resilient. This is why the management of fisheries is based on "species" (or linked groups of species) and why each management plan consists of different management mechanisms and controls appropriate to that species or fishery.

These management mechanisms and controls are the basis underlying access and allocation arrangements for the different sectors wishing to utilize the different fisheries. Further, the needs of each sector vary significantly, not only in their principal purpose and activities but also in how they relate to the different species and how they relate to different areas within the fishery.

It is this great diversity that means that there is no single prescription for particular access and allocation outcomes in fisheries legislation, and no one simple mechanism to resolve allocation issues across fisheries.

Further, as the nature of our management changes in response to various pressures on the fishery and/or new biological information on stocks, it also affects and changes the nature of the "rights" of access to the fishery among the sectors and even within a sector. This is a continuous process as new management plans are developed and existing ones altered in response to management needs at the time and has created "informal" allocation outcomes as a by-product of management requirements.

It needs to be borne in mind that some fisheries may never be suitable candidates for more precise allocation processes because of their seasonal variability, their small size, multiple species composition, inability to deliver sufficient funds, inability to set total catch levels, widely varying participation and geographic spread and a likely excess of costs over probable benefits from changed arrangements.

A further issue for Australia lies in the fact that fisheries management is spread across Commonwealth, State and Northern Territory jurisdictions. This means that legislation, management objectives and arrangements can vary across a particular species which straddles different jurisdictions, or where the Commonwealth may manage the commercial sector for a species and the States/Territory manage the recreational sector. Also if, for such species, the Commonwealth were to manage the recreational sector as well, any allocation arrangement would have to be spread across the various States/Territory jurisdictions and be managed and

cost recovered accordingly. This adds an additional layer of complexity to fisheries management and its associated access and allocation issues.

It is for these reasons that the various jurisdictions' fisheries legislation does not attempt to set specific objectives concerning access and allocation outcomes for fisheries, but establishes "higher order" objectives relating to the "fair and equitable" access to, and sharing of, fisheries, along with maximising, or optimising community benefits from the resources often within each respective jurisdiction but often between them.

1.2 Defining Access and Allocation

It is necessary to define our key terms for the purposes of this report.

"Access"

"Access" is the legally based right to take fish from the common property resource for particular purposes for example, for a commercial fisher, the access right is usually a commercial fishing licence or authority, for a recreational fisher it is the common law right to fish, for an indigenous person it is the customary or traditional right to fish for cultural, social or customary purposes.

"Allocation"

"Allocation" is the legally based level of access able to be exercised by an individual or class of individuals. This level of access, or allocation, is subject to a range of fisheries management laws and controls designed to protect the fishery and achieve the objectives of the legislation. Examples of these management controls include individual quotas, effort limits, bag limits, area or time restrictions etc., as required for management of the species.

Such allocation decisions have usually, but not always, been influenced by historical patterns of use and have been incorporated into legislation through management plans and regulations impacting on commercial and recreational fishers, charter operators and aquaculturists. Indigenous allocation issues have also been addressed, in part, by fisheries legislation but continue to be the subject of legal determinations and statute amendments.

1.3 The Allocation Issue

The principal issue is how, and on what basis, should access to an "un-owned" common property fisheries resource be allocated among a range of competing community users, each with very different objectives and needs, while ensuring that the fisheries remain sustainable and benefits to the overall community are maximised.

Thus, this is not primarily about stock conservation, which is largely a biological/ecological management issue, but about allocating a community resource among a range of potential users (and non-users) which is primarily a political/socio-economic issue - but always contained within a fisheries management framework.

However, stock status can be an important factor in determining whether competition for that particular species is important and detailed consideration of management changes are necessary. Of course we do not start addressing the question with a blank sheet. There is an established current pattern of access and allocation among all users arising from a history of government and fisheries management decisions taken over time in response to a variety of pressures - changes in fish stocks, environmental, economic, social and political pressures. The histories can differ in different jurisdictions, leading to different arrangements, even when the stock is shared. Similar pressures continue to manifest themselves today often necessitating a re-consideration of the previously determined sharing arrangements.

Thus allocation is really a re-allocation question contained within a framework of existing "rights" and practices of the principal sectors - commercial, recreational(and charter) and indigenous groups. It therefore gives rise to significant public policy issues that are politically challenging and, without accepted and transparent decision-making frameworks, continue to be nested in conflict and disputation with the sectors finding themselves inevitably in adversarial roles. This adversarial stance can significantly compromise the ability of the sectors to work collaboratively on issues of mutual concern (eg. habitat degradation and water quality issues).

Under certain conditions and, as is the case with other natural resources (minerals, forests, water), the allocation decision could be solved economically by allowing the purchase and sale of defined shares in the resources in the open market until everybody was content with their "share." However, in fisheries, there is no "right" of ownership of the fish stocks vested in individuals in the community which would allow the trading of a common unit or share/quota and such "rights" which do exist are limited in their character by statute and necessarily described very differently for each sector and even each fishery and cannot be compared. This is discussed further in this report.

Importantly, fisheries also have not only a commercial or economic value (to commercial fishers, charter operators and aquaculturists), but also a social value (in recreational activity) and a cultural value (in indigenous society). Thus the nature of "rights" and "values" are very different among the various sectors and stakeholder groups. For this reason the legislation governing fisheries management is careful to require multiple objectives so that the utilisation of the resource is in the context of satisfying all of the community's needs (and not just economic needs). This requires a balancing of these competing needs.

Finally, there is an important question of scale around access and allocation which influences the preferred approach. Allocation issues can arise at a very local level (access and use of a section of foreshore, a river, a headland), a broader area (part of a fishery itself or a species within a fishery), an apparatus level (use of a particular net etc.) or across an entire fishery (relative shares of the fishery). They can also occur across different Commonwealth, State and Northern Territory legal jurisdictions.

In each case, it is likely that the approach taken to these various examples will necessarily be different. Some can be addressed through normal fisheries management decision-making processes, while others may require a formal re-allocation process. However, there will be

common principles underlying the consideration in each case. This report will be primarily focussed on the allocation issue based on a "fishery" basis (or a significant part of a fishery) as this is the normal unit within which fisheries management plans operate. However, comment will be made about the impact and approaches resulting from the different scales and magnitude of the issues.

1.4 The Stakeholders

The different users, or stakeholders, concerned by the fisheries allocation process are many and varied and require access to fisheries for many different purposes. They fall into two broad categories - those involved in the direct take of fisheries resources, and those whose interests relate to the existence of a sustainable and viable fishery - and include the following significant interests:

- Commercial fishers - to operate profitable businesses taking and supplying seafood;
- Recreational fishers - taking (including releasing) fish for leisure, sport, relaxation and food;
- Charter fishers - to operate profitable businesses supporting recreational fishing activities;
- Aboriginal and Torres St. Islanders - taking fish for traditional, cultural and subsistence purposes; acknowledging that they may also engage in recreational and commercial activity;
- Aquaculture operators - to take fish from the wild as broodstock and to operate profitable aquaculture businesses supplying fingerlings and seafood;
- Politicians - to represent community interests and help develop legislation and policies;
- Conservation groups - to conserve and enjoy the fisheries and eco-systems for current and future generations; in part representing "no take" groups;
- Seafood wholesalers/retailers - to profitably sell seafood to markets and consumers;
- Restaurateurs/hoteliers - to provide a seafood dining experience;
- Researchers - to gain information, knowledge and understanding of fisheries;
- Consumers - who drive the need for seafood production through an expectation of purchasing and consuming locally caught fish;
- Community - representing a variety of interests, including "no take" interests requiring that fisheries are sustainably managed for the future.

The government itself - and fisheries managers - could also be considered a stakeholder in that they have an obligation to manage to meet the objects of the Act.

There are other groups who have an interest in fisheries such as Local Councils, regional development groups, service industries to fisheries related businesses etc., all of whom have an interest in fisheries allocation matters. This demonstrates how widely interests within the

community need to be engaged and heard in allocation debates, particularly where it is proposed to significantly alter the current allocation arrangements.

Thus, given the objective of allocation issues, as expressed commonly in fisheries legislation across Australia, is ultimately to "maximise community benefit", access and allocation processes must take place within the context of the concept of "community benefit" which encapsulates not only economic values but a range of social and cultural values, as well as issues relating to meeting "fairness and equity" objectives.

1.5 "Property Rights"

Given that "access" is the legally based right to take fish for each of the sectors, there is increasing interest in, and debate about, the legal basis of the "right," why it is defined differently for each sector (and indeed within a single sector) and why some rights are akin to "property rights" held by individuals and able to be bought and sold or traded in a market.

In the most basic sense, at common law, fisheries resources are "common property" and are not capable of private ownership (until they are captured). Nevertheless, it has become necessary for fisheries management to pass a range of laws which affect access to and allocation of fisheries, and individuals have seen this as giving rise to property rights as the resource is now taken in conformity with the law. This is particularly the case since the introduction of individual transferable quotas (ITQ's) in some commercial fisheries, which grants a "right" to access a defined quantity of fish to an individual (a similar arrangement exists for a limited number of recreational species with the allocation of individual "tags" for some recreational activities eg. Shark Bay Pink Snapper). Increasingly, some recreational/charter fishers and indigenous fishers wish to see themselves as having a similar "right" to those commercial fishers to take their "share" of fish stocks. In the case of indigenous fishing, the nature of this "right" is being progressively clarified by the Courts or through other mechanisms, for example, Indigenous Land Use Agreements (ILUA's) in association with native title claims.

Currently, however, fisheries law has defined these "rights" in very different ways purely as a result of needing to meet a different fisheries management requirement in each circumstance. The over-riding issue, however, is that "the resource is common property…. and there is no property vested in anyone in the resources of the sea….While a (commercial) licence may be seen as having characteristics of a proprietary nature, it is the creation of government, is controlled by government and may be revoked by government…. it is for government to determine who has access to the resource and on what conditions." (Toohey, J. 2000).

This issue is addressed in detail later in this report.

2. Legislation and Policy

2.1 The Requirements of Fisheries Legislation

Fisheries legislation requires that the government manages the "common property" fisheries on behalf of the whole community; this includes responsibility for determining access and allocation issues as the diverse drivers compel a reconsideration of access.

Over recent years, across all jurisdictions in Australia, fisheries legislation has come to reflect essentially a very similar set of objectives for fisheries management namely:

- Ensure sustainability of the fisheries resources;
- Ensure access to the fishery is "fair and equitable;"
- Manage the use of the fishery to maximize the benefit to the community as a whole.

These objectives are further expressed in legislation in terms of managing for Ecologically Sustainable Development (ESD), which encompasses biological, economic and social dimensions, but also includes objectives related to allocating fisheries resources or access to fisheries among users of the resource. For example, the South Australia *Fisheries Management Act 2007* specifies that "access to resources is to be allocated in a manner that achieves optimum utilisation and equitable distribution of those resources to the benefit of the community." Some legislation also separates the requirements of ecological, economic and social objectives to highlight particular needs, while other legislation asserts the primacy of the objective of ensuring the sustainability of the fisheries resources. However, beyond this, no explicit priority is accorded against the sets of objectives so as to provide a guide to access and allocation determinations.

The legislation, however, does not provide any guidance on the priority that should attach to dealing with the various sector's needs, and it is only by individual decisions in particular cases that such priorities are decided and become clear; but again these are based on fisheries management considerations (and socio- political ones) rather than a pre-determined requirement by government that fisheries be managed to achieve a certain inter-sectoral allocation objective (in terms of relative shares).

Thus management has focussed on the principal objectives of sustainability and economic returns to the community, while acknowledging that access and allocation are impacted by these continuous management changes in different ways. Provided that the objective of "fair and equitable" access to the fishery by all sectors is not compromised, or significantly impacted, all objectives could be addressed appropriately.

This approach has led to a concentration on management of the commercial sector which usually places the most pressure on the fishery (and which, until recently, has provided most of the revenue from among the sectors). This has led to tighter management of some commercial fisheries through a more restrictive definition of rights through limitations on individual catches via Individual Transferable Quotas (ITQ's) or tighter effort controls. However, this has not been driven by a philosophical desire, or legislative requirement, to grant "rights" across all sectors to

achieve equity in their treatment or, in fact, to base an allocation system on the issue of similar "rights" across all sectors. It has been driven by the need for improved management - and tighter control - of the sector via a cap on catch, to facilitate autonomous industry adjustment, to collect data more efficiently, to provide for a basis of cost recovery within the fishery and to encourage improved efficiencies in catching and overall stewardship of the fishery by the commercial sector.

This change in the legal base of access for some commercial fisheries does not apply to all commercial fisheries, nor to other sectors; however, because it does more clearly define the allocation and create the ability for individuals to trade that "property right" for money and adjust the allocations autonomously within the commercial part of the fishery, it has led to calls for this to be extended across other sectors. This however raises extremely difficult and complex legal and policy issues and is discussed further in this report.

In developing such new management arrangements, the other legislative objective of "fair and equitable access" is considered, but generally within the parameters of ensuring that the existing access arrangements allow all sectors to participate in the fishery. This is quite different to the legislative objective of ensuring that the access and allocation arrangements "maximise the benefits to the community as a whole." This is a more complex objective requiring different approaches, data sets and time frames. Finally, legislative objectives that require "maximisation of the returns (or value) from the fishery" pose another challenge in determining how to do so as this involves quantification of the various values derived from the use of the fishery. Economic theory and modelling can provide mechanisms to achieve this objective, but have their technical difficulties and limitations in that the "returns" to the community, or "community benefits", contain not only the "fairness and equitable" requirements above, but also aspects of cultural values and social values held within the community.

Thus, before an allocation question can be addressed, the objectives behind the allocation must be clearly stated; furthermore, as all fisheries legislation has multiple objectives - both quantifiable and non-quantifiable ones - the allocation framework must be cognisant of this complexity and deal with it in a transparent manner.

Under existing legislation, a wide range of fisheries management plans exist in most jurisdictions and fisheries which have generally incorporated, as a basis, the pre-existing historical patterns of access and use, certainly as between commercial and recreational/charter fishers. This has been done to minimize the economic or social disruption or conflict in introducing such plans initially, but there is usually an acknowledgement that the allocation issue needs to be more explicitly dealt with "at another time." This has led to recent policy development and legislative amendment across some Australian jurisdictions. In WA a statutory body - the Integrated Fisheries Allocation Advisory Committee (IFAAC) - has been created to determine allocation arrangements across fisheries in a more explicit manner, including allocations to the indigenous sector; while the S.A, *Fisheries Management Act 2007*, now requires that Management Plans must specify the share of aquatic resources to be allocated to each fishing sector, including the

indigenous sector, and the method for adjusting allocations between sectors so as to achieve the desired allocation. This provides greater clarity in the allocation but does not provide any greater security in the form of "rights" beyond what already exists in the specific fisheries.

Clearly this drives an imperative to consider allocation issues more explicitly at the same time as broader issues of management and sustainability are considered.

The particular issue of indigenous allocations is included in all legislation. This acknowledges the "rights" of indigenous persons to undertake fishing activities for customary, cultural and social purposes (without the need for any specific authority or licence), through a legislative exemption applying to such activities. However, where indigenous persons are engaging in recreational or commercial fishing activities, they are bound by the usual laws applying to all other persons. In this sense, this is not allocating a priority to indigenous peoples' take, nor allocating a share of the total take, as it is applying an exemption to such activities and treating the take as "outside" the formal catch and effort limits being set by fisheries managers for the fishery as a whole. This is clearly less than satisfactory from either point of view, but has arisen from a combination of on-going native title claims testing the law, a serious lack of catch and effort data in this area and a difficulty in achieving meaningful consultation and appropriate engagement on fisheries management issues to date with indigenous peoples across Australia.

2.2 The Policy Context

While the legislation contains direct references to the requirement to ensure that access to the fishery is shared in a "fair and equitable" manner, it is not prescriptive on how this is to be achieved; nor does it contemplate a particular inter-sectoral allocation outcome to be achieved or the creation of an all-encompassing rights based regime to support an allocation outcome. One of the principle reasons for this is that, as we have seen, the characteristics and circumstances of each fishery, or indeed of different geographic locations within a fishery, are very different in terms of the biophysical nature of the fishery, the economic, social and cultural aspects of the fishery and in the management needs of the fishery.

It then falls to the development of policy and a suitable fisheries management framework to address the many forms in which allocation issues arise within the context of the over-arching objectives of the legislation.

The history of allocation processes to date has shown that they are often based on vague criteria, heavily influenced by individual sector lobbying of the political process and often framed around protecting established positions. They are often driven by local or regional issues and generally lacking in detailed modelling or analysis of the costs and benefits of alternative allocations; nor has there been post-implementation follow-up of the expected outcomes. In this sense, they have often been ad hoc decisions in that not all participants have played an appropriate role in the process and the management of the fishery as a whole has not always featured significantly.

However, most jurisdictions do not have clear policies, or transparent decision making frameworks to assist with these issues. There are some exceptions, most notably WA which has a statutory framework of the Integrated Fisheries Allocation Advisory Committee 2004, Queensland which has a "Fisheries Resource Allocation Policy 2003" (under revision) and very recently, SA which has just adopted its policy of "Allocation of Access to Fisheries Resources between Fishing Sectors 2011". Other jurisdictions are working towards such policies. However, these policies currently tend to be "processes" designed to engage the allocation questions rather than statements of the preferred methods to reach allocation or re-allocation determinations themselves, or statements of the desired inter-sectoral outcomes.

This reinforces the findings that there is no "one size fits all" when it comes to allocation outcomes or indeed processes to achieve an outcome. Flexibility is necessary and driven by the nature of the fisheries.

In the absence of clear policies, the traditional response to dealing with allocation issues to date has been to implement a variety of intervention mechanisms which impact on allocations at the margin i.e. spatial or seasonal closures, temporal closures, size and bag limits, species separation, gear controls, area separation, buy-back schemes, but these are often too imprecise as intervention measures to meet particular allocation objectives. Further, they have often arisen as a result of a localised issue of conflict over an area or species or apparatus. With respect to indigenous fishers, allocations in terms of customary fishing , are separately defined in legislation, typically as "fishing in accordance with relevant indigenous laws and customs for the purpose of satisfying personal, domestic or non-commercial communal needs" (National Native Title Tribunal). However, while the legislation makes provision for such activity without the need of other licences or authorities, there is generally no specific, separate allocation made for customary fishing under fisheries management arrangements but such activities are usually "exempted" from these arrangements under the legislation.

Furthermore, under the endorsed National Indigenous Fishing Principles 2005, which all jurisdictions have agreed to, two specific principles are relevant here, namely:

(i) recognition of customary fishing will translate, wherever possible, into a share of the overall allocation of sustainable managed fisheries; and

(ii) in the allocation of marine and freshwater resources, the customary sector should be recognised as a sector in its own right, alongside commercial and recreational sectors, ideally within the context of future of integrated fisheries management strategies.

Policy development in a number of States (SA, WA) and the NT is moving to a more explicit recognition of the indigenous peoples as a sector in their own right requiring an allocation for customary purposes under sustainable management arrangements.

Justice Toohey summed up the current situation regarding allocation in these words, "the current management framework offers a number of options for implicit allocation of fish resources to various user groups….. However, the major gap in current policy…. is a lack of explicit definition of what the existing resource shares for each user group might comprise, both

in form and in quantity, and a lack of any explicit assurance of security of access….Under the present system, there are real concerns that political considerations at a local level may exert significant pressure on the decision-making process and impede objective decision-making." (Toohey, J. 2000).

Whilst fisheries management has, to date, dealt with these issues in an indirect way, there is an increasing view that perhaps such management can be improved in a number of ways. This was an outcome of a recent FRDC report as part of project 2006/071.20 "Evaluating the Performance of Australian Marine Capture Fisheries," July 2009 - that identified ten priority areas for improvement in fisheries management. One of those areas was the

- "efficient, transparent allocation of shares and associated property rights for all users - recreational, commercial and customary."

Clearly the existence of defined property rights can provide better management. An example of this is that under an ITQ system it is possible to quickly adjust catch, where necessary, in the commercial sector, but not so for the recreational/charter sector; further, effectively unrestrained total catches in the recreational/charter sector due to loosely defined "rights" may be able to undermine management strategies in the fishery and the commercial "right" itself. The existence of defined rights can offer additional opportunities for inter-sectoral management where proportional adjustments can be made in sector allocations rather than a complete sector exclusion or area exclusion or species exclusion.

A second finding was that

- "sustainable levels of recreational fishing be integrated with overall sustainability targets and the harvest strategy for the fishery."

This is reinforced by the requirement in the EPBC Act that **all** fishing mortalities be accounted for in sustainability targets, presumably in a more explicit way than has been the case to date.

Both of these represent opportunities for improved fisheries management, while the clearer definition of property rights also is seen by many as a precursor to introducing co-management arrangements into fisheries which offers further advantages in efficiencies in management. The question, however, remains as to whether this is the better approach to resolving management and allocation issues given the on-going concerns around the costs and benefits, the complexities, administration and compliance issues and the capacity to manage each sector to its allocation.

2.3 Property Rights

Property rights, also, are not a single uniform creation but can come in different forms and are usually created to serve a purpose in management of the particular fishery. They are "bundles of entitlements that confer both privileges and responsibilities" that relate to the management context for which they are created. Thus they are usually described differently for different sectors, different management plans or fisheries. Even today most fisheries are managed without the need to create any new form of "property rights."

This differential treatment and definition of "property rights" across sectors, whilst appropriate for fisheries management, currently prevents any automatic transfers of allocations across sectors through private trading to achieve resource re-allocation in response to on-going pressures throughout the community. However, the creation of a common rights regime across sectors would be difficult to justify on this ground alone because of the very significant resourcing needs and complexity in designing, administering, monitoring and enforcing such a system.

Also, to be effective in allowing allocation to be "resolved" through market trading, "rights" need to be of a very particular nature having the following key characteristics:

- Duration - a long tenure or held in perpetuity;
- Exclusivity - others cannot interfere with the right or any interference is regulated;
- Security - certainty in its legal prescription; cannot be arbitrarily removed;
- Transferability - can be transferred freely in the market, with or without conditions;
- Divisibility- flexibility in transferring all or parts of the right to others.

Of course, in the case of commercial fisheries, the underlying characteristics of some fisheries facilitate such an allocation of rights; namely there is a limited number of operators who are all individually licenced and/or identified through the licence, their area of operation is known, as is their type and distribution of catch, effective management and compliance programs are in place and usually they are represented by an industry organisation/s.

In other sectors, however, including the recreational sector, most of these attributes do not apply and this adds significant complexity to the question of the prescription of "rights" and who holds such rights; at least if they were to be similarly proposed as for the commercial sector.

Also, it also needs to be recognised that the motivations for undertaking recreational fishing are highly variable - ranging from take and no-take motivations - and fishers target a wide range of species which cross over a number of different management plans. "Rights can be in the eye of the beholder. Thus a number of differing "rights" may need to be prescribed for recreational/charter fishers to cover the different management issues and fishery requirements across different fisheries. It is unlikely that a single description of recreational rights would satisfy the management needs of every fishery just as a right described as an ITQ is not applicable, nor contemplated, for every commercial fishery. This represents a significant but real challenge for the development and use of a common rights system across sectors, certainly in the form of statutory rights. It does not, however, preclude in totality the use of a common rights system in appropriate specific circumstances.

From a policy perspective, it should be noted that, while there are calls from some recreational fishers for "rights" to be better prescribed for their sector to provide greater certainty and to enhance management opportunities, many other recreational fishers oppose this. This is based on a fear it will result in their catches being limited to a proportionate share of a fishery TAC, as opposed to the current "unlimited" catch for the sector as a whole, as well as exposing them to

higher costs in catch reporting and even cost recovery as managers need to ensure they are managed to their allocation as a sector.

The key questions are whether the current different specification of the different sector's user's rights can still be appropriate to satisfy the objects of fisheries legislation and management, whether fisheries management could be improved by a more precise definition of all rights among all users and whether appropriate allocation frameworks can be applied regardless of the "rights" specification.

3. Drivers for Change

As we have seen above, the implementation of management changes over time, together with a variety of government decisions both within fisheries and across the wider community, has led to the existing pattern of access and allocation arrangements across sectors. However, it is also true that there are continuing changes occurring both throughout the community and the fishery itself, which lead to pressures to re-evaluate the access and allocation issues and circumstances of the different sectors.

Thus the driver for change may come from the fisheries agency or may come from any of the sectors or indeed the community.

These can be summarised as follows:

Environmental factors:

- Threats (perceived or real) to sustainability of stocks from increased fishing pressure
- Reductions in the productivity of fisheries caused by the cumulative impacts of coastal development, port and infrastructure development in marine areas;
- Climate change and water quality issues;
- Marine park declarations;
- Environmental changes altering the state of fish stocks.

Economic factors:

- Changes in the relative economic importance/values of each sector;
- Commercial fisheries profitability changes;
- Industry adjustment, buy-back schemes;
- Rising incomes / population leading to increased recreational activity;
- Changes in the technology affecting the patterns of commercial and recreational fishing;
- Changing tourism and charter fishing activities;
- Changes in consumer demand for seafood.

Social factors:

- Changes in the relative social values of each sector;
- Changes in the distribution / age structure of population;
- Regional growth;
- Changing social opinions on commercial / recreational fishing;
- Changing social opinions on protection of the fisheries resources;
- Society's need for access to seafood;
- Legal decisions on indigenous fisheries rights and access issues.

Political factors:

- A change in government policy or direction impacting on allocation;
- Legislated change affecting fisheries management approaches;
- Legislative changes outside of fisheries law affecting fisheries management.

These drivers, and others, can lead to dissatisfaction with the existing allocation arrangements and, in fact many have been responsible for resource re-allocations over the years. They place demands on government to change the arrangements, which may manifest themselves on a whole fishery basis, or only in a limited, geographic part of the fishery. Further, there is often no "fisheries management" basis for such calls, but rather they are based on perceptions of "fairness and equity" in sharing of the resource. Nevertheless, governments, as the final arbiter of allocation, are required to have processes in place to consider such issues on an on-going basis.

There are more recent developments which are also driving the need to deal with inter-sectoral allocations in a more specific and transparent way. Firstly, in some fisheries the unrestrained increase in total recreational catch (including released catch), while catch limits exist for commercial catches, is undermining not only the value of the commercial right, but also the management arrangements for the fishery as a whole eg. Southern Bluefin Tuna. Secondly, the introduction of recreational fishing licences (and charter licences) in a number of jurisdictions has provided a source of funds which has enabled government to respond to recreational lobbying to change allocation arrangements through licence buy-backs from the commercial sector.

4. Allocation Objectives and Principles

4.1 Objectives Underlying Allocation

As discussed in this report, legislation governing fisheries management across Australia today contains the higher order objectives under which allocation policies can be developed. However, these objectives do not provide prescriptive outcomes or goals for inter-sectoral access and allocation, nor provide priorities among the sectors in dealing with access issues.

The higher order objectives in legislation are usually expressed as follows:

- fisheries to be managed for the benefit of present and future generations;
- ecological sustainability of the fisheries resources and the eco-systems on which they depend is paramount above all other considerations;
- fisheries resources should be managed to maximize the benefit to the community as a whole – i.e. to balance the needs of all users/stakeholders/consumers;
- access to the fishery is "fair and equitable."

Access and allocation principles and mechanisms then, need to be supportive of attaining these objectives and of achieving community confidence and support for the outcomes. It is important that the objectives of any allocation policy are clear as they impact upon the alternative processes and models that could be used to achieve such objectives.

For example, if the priority objective is to achieve the most economically efficient use of the fishery resource, then the allocation which maximises the total net economic value from use of the resource as determined by an economic benefit / cost analysis is the outcome desired. However, if the priority objective is to maximise or optimise the overall benefit to the community (and the equitable distribution of those benefits), through taking account of economic, social, cultural and environmental factors, then a different allocation outcome would prevail as value judgments around concepts of fairness, equity or other social considerations impact the outcome.

This balancing of the various objectives and priorities makes the process of access and allocation complex and difficult. Priorities change with time and governments ultimately seek to make a decision considered in the "best interests" of the community as a whole, where "best interests" are often driven strongly by the concepts of "fairness and equity" in sharing access to the fishery.

Also as governments do not have a pre-determined policy on allocation outcomes among the sectors, then it is more important for governments to agree on the principles and processes underlying access and allocation considerations. This cannot be left to the fisheries managers as they go about their roles in managing the fisheries.

It is important to identify and adopt underlying principles appropriate to supporting the different possible processes and approaches.

4.2 Principles Supporting Allocation

There are a number of necessary principles which should be satisfied with any allocation process in order for the allocation outcome to be understood and accepted as legitimate by stakeholders and the community. As the process is about distributing access to a common community resource, it is important that the community has the opportunity to engage in the process - accepting that only a concerned minority would do so and even then may choose to be involved through other stakeholders.

Community and stakeholder acceptance of an allocation process is dependent upon satisfying the following principles:

Natural justice principles:

(i) An open and transparent processes

The processes employed and the information used must be accepted by all stakeholders and supported by the community;

(ii) An inclusive and accessible process

Must allow for stakeholders and community input and participation involving all views and sharing information;

(iii) Recognition of existing rights

The process must recognise the existing rights of users; and where rights are impacted consideration needs to be given to compensation or adjustment measures;

Governance principles:

(iv) Merit and validity

There must be an opportunity to test for merit and validity of proposals and, as part of this, to confirm relevant information, collect missing data and undertake appropriate scientific and social analysis using the best available information as a basis for decision-making;

(v) An efficient and effective process

The process must use the most appropriate methods, balancing costs against benefits to all parties and be capable of timely resolution and implementation;

(vi) Independence

There should be appropriate independence of the process, along with ensuring there is an appropriate balance of expertise and skills;

(vii) Risk management

Decisions should be made on the basis of the best available information, even if it is not complete, and the precautionary principle applied to manage risk where applicable; such risk to be considered across the biological, economic and social dimensions;

(viii) Accountability

The ultimate decision maker (government) must be accountable for the outcomes, and their basis, to stakeholders and the community; participants throughout the process must satisfy, but not exceed, their accountability to their constituency.

Fisheries legislation principles:

(ix) Sustainable management of the fisheries, and related eco-systems, is the paramount consideration above all others;

(x) Access to fisheries resources should be based on the application of ESD principles and managed accordingly;

(xi) Allocations must reflect and be appropriate to the management objectives for the fisheries concerned;

(xii) Must be transparency in any trade-offs among the objectives, or in the balancing of the competing objectives;

Fisheries management principles:

(xiii) A harvest strategy should set a target catch level (accounting for all mortalities including recreational and customary) for each fishery (or part area of a fishery) and explicit allocations, based on catch or effort, designated to each user group;

(xiv) Fisheries management arrangements must provide users with the opportunity to access their allocation and also be capable of measurement and management of each user group within their allocation.

(xv)Allocations are "proportionate" of a total, as the quantum of allocation must be capable of alteration in line with natural variations or management changes;

(xvi) Where appropriate, it is desirable to consider a framework for autonomous adjustments through voluntary market trading, where this is feasible and doesn't compromise other government objectives;

(xvii) With the allocation or re-allocation of rights comes a responsibility on all sectors to collaborate in fisheries management and share the relevant costs appropriately;

The application of these principles can apply to different scales of allocation issues which might arise, although with appropriate adjustments to the particular circumstances of the case. They would also apply where the resource is shared across jurisdictions.

5. Essential Pre-conditions for resource allocation

As stated earlier, all allocation decisions take place within fisheries that themselves are highly variable with unique biological, environmental, economic and social characteristics giving rise to unique management arrangements for the fishery and sectors within the fishery. Furthermore the fisheries management environment is a dynamic one impacted by changes arising from many sources.

The need to consider an allocation question can itself arise from various sources which can also influence the process and the pre-conditions necessary to progress the matter. For example the basis for intervention might arise through ad hoc requests and lobbying by particular interest groups to exclude commercial fishing from particular areas - in which case usually very little data has been collected to support the process. However, it might arise because of the need to review, or develop, a management plan, where the government would be responsible for deciding on the process, collecting the data, considering the options etc.; finally, it might arise because of a government policy that, for example, requires that when there is a significant change in the relative economic valuations of sectors, a re-allocation review is commenced.

Further, the variation in fisheries themselves and the different scale at which allocation disputes can arise requires flexibility in approach and process, conscious always of the relationship between the costs and likely benefits of any change. Given this situation, it is still useful to consider a number of common issues which should necessarily be addressed as a prerequisite to the allocation consideration itself.

Pre-conditions to determining allocation issues

(i) Establish any government objectives - in legislation or in policy - which will guide allocation, including any determination of priority among sectors;

As the government will, in most cases, be the final decision-maker, it is critical that any policies or objectives of government are established early in the process. It is also critical to establish any government preferences towards possible alternative models or processes for considering the allocation issue, along with the scale of that consideration.

(ii) Establish any policy positions or objectives of the participants around allocation.

This will help to establish the breadth or scale of the issue and assist in deciding on the process. It requires the existence of entities which are legitimately able to engage in the allocation process.

(iii) Establish the underlying nature of the issue;

If the issue is a concern around sustainability or possible environmental damage, then the process will be driven by information around science and management; however,

if the issue is about "fairness and equity" in sharing the fishery, then it will be driven more by social/economic and political considerations. Often there is a combination of these factors.

(iv) Apply a risk assessment analysis of the issue;

Before committing to a potentially resource intensive process, it is useful to undertake an initial risk assessment around the issue and the likely impacts, costs and benefits on participants, as well as on management arrangements; this should include where the resources will come from, how costs will be shared, the potential for cost recovery associated with the feasibility of managing sectors to the new arrangements.

(v) Establish the availability of data;

Experience both across Australia and overseas has shown that the unavailability of appropriate data is the most common limiting factor in dealing with cross sectoral allocation issues in an objective and comprehensive way; further the necessary data is often expensive to collect and usually required over a time series. Early attention must be given to this issue to determine how to approach the allocation issue itself and the limitations that a lack of data may impose.

(vi) Determine the nature of existing "rights"

It is important to determine the nature and characteristics of existing "rights" which may be impacted and whether any requirement for compensation may be triggered by any re-allocation outcome; further, consideration needs to be given as to whether it might be appropriate to establish a new "rights" regime to facilitate an autonomous market based solution to allocation in particular circumstances.

(vi) Determine the need for a "formal" process

Given the likely extent of the re-allocation is it worth the expense and time to commit to a formal model or process, or is another, more flexible, "fit for purpose" approach more appropriate? Does it need to be considered as a formal re-allocation issue or can it be addressed under existing fisheries management arrangements? In such cases, the maturity of the fishery, management arrangements, relationships and markets will have an important bearing on the process. The related question is whether governments should have an established body to deal with allocation issues on an on-going basis - like the WA statutory model - or select the process to fit the scale of the issue at the time? This could involve a mediation process or simple negotiation process or other models discussed below.

6. Alternative Allocation Models

As indicated earlier, it is the responsibility of government to manage the fishery on behalf of the community and this includes determining allocation arrangements. Because of this any allocation model will involve the government in some way as even a market-based model will involve the government in establishing the pre-conditions for this to operate for example,

creating the necessary property rights and monitoring its outcomes and impacts. Thus it is critical that there is agreement by the government to the model chosen to address the allocation issue and that there is transparency in its functioning before, during and after the decision.

In many respects the challenge of resource allocation lies not with developing principles or models, but in developing cost-effective, timely and efficient ways to apply them as often "solutions" pose greater difficulties in collecting data, managing and enforcing re-allocations, particularly when cross sectoral transfers involve the recreational and/or the indigenous sectors.

One consideration to assist with these issues is to use the process or model to build a platform to better engage and inform all stakeholders so as to achieve improved collaboration, co-operation and co-management in fisheries management through reducing conflict, disagreement and adversarial approaches. All too often experience has shown that dispute and disagreement continue even after sound processes are utilised.

Ideally, allocation decisions should come from sound, transparent processes contained within an agreed and accepted decision-making framework that facilitates solutions accepted by user groups, the community and government.

However, given the different situations existing in different fisheries, the different expectations of user groups and the different physical and regional situations, there is no single allocation solution that will satisfy all circumstances. Certainly overseas experience has shown that there is not a "one size fits all" solution, but that allocation decisions are heavily influenced by the particular set of circumstances surrounding the fishery, its management issues and the community in which it exists.

Furthermore, given the critical role of government, the choice of model to be used is influenced heavily by the particular government's predisposition to the priority and weighting it places on environmental, economic or social drivers and goals.

Fundamentally, the types of models fall into government/administrative models or market / economic valuation models, noting, however, that there are a number of alternative constructs with administrative models.

The models are:

(i) Government Driven model - government "politically" sets the objective and drives the allocation outcome.

(ii) Negotiation Based model - the driver is a willing negotiation among parties to come to an agreed position.

(iii) Administrative Based model - an independent advisory committee of "experts" is used to drive the analysis and recommend on allocation.

(iv) Statutory Based model - a broad based statutory committee drives the process with a statutory responsibility and powers to recommend on access and allocation issues to government.

(v) Market/Economic Valuation Based model - the driver is either the trading of shares/rights in an established market, or the application (by administrative decision) of applying economic valuations to competing uses of the resource to maximize returns in an "implicit" market.

Of course, each of these are not mutually exclusive and they may be used in combination at different times. Further, with the exception of the actual market based model, these decision making approaches will usually be informed or assisted through certain analyses, for example benefit/cost analyses, input-output analyses and marginal value (willingness to pay)approaches as discussed later. The important role of the government can be seen to be involved across all of these options although in different ways.

A description of each of these models is contained in **Appendix A,** together with their advantages and disadvantages.

The critical decision is whether it is intended to have the process significantly driven by an economic valuation approach, a market driven approach or whether "fairness and equity" considerations will be given paramount consideration.

The case of allocation of shares to the indigenous sector needs some comment. Whilst this issue will be covered by some of the above models, some States already have processes in place to specifically address this requirement e.g. WA with its IFM process which seeks to accord priority to indigenous customary fishing and has administratively estimated its share in a number of fisheries allocations based on current usage; also SA proposes to use an ILUA (Indigenous Land Use Agreement) process involving negotiation by willing partners on allocations with the result registered by the Federal Court through the National Native Title Tribunal, as well as providing future recognition through various statutory fishery management plans. Should there be a need for a reallocation of shares to accommodate the outcomes of the SA ILUA process for indigenous purposes, that share is to come from the recreational sector where it is not possible to simply increase the overall take from the fishery. Any commercial fishing interests among indigenous communities must be dealt with within the existing commercial management framework. There are a number of on-going legal cases across Australia involving indigenous allocation issues and, as these are determined, fisheries managers will have to accommodate the outcomes into management arrangements. A recent example is the Blue Mud Bay case in the NT.

7. Australian and Overseas Case Studies

As part of this report, a review was undertaken of Australian and relevant overseas case studies relating to resource re-allocation among the various sectors in the fishing industry. These are discussed briefly in Appendix B and C. The principal issues which emerged from this are listed below.

- While there is a wealth of literature on general fisheries allocation issues, there is very little on the actual mechanisms as to how best achieve a particular determination or how to adjust allocations across different sectors.
- Experience has shown that there is not a "one size fits all" solution, but that allocation decisions are heavily influenced by the particular set of circumstances surrounding the fishery, its management issues and the community in which it exists.
- The government remains the central focus of allocation decision making, however, apart from a priority attached to "indigenous" needs in some overseas fisheries, the legislation is relatively silent on desired allocation outcomes or processes.
- Apart from a limited trial with the Canadian Halibut fishery, there are no examples of any fisheries in which all sectors (commercial, recreational, charter, indigenous) are integrated and quota is tradeable across sectors.
- Concerns about resource sustainability have been the major driver behind government's decisions to re-allocate access within the fishery, followed by fairness and equity considerations.
- The growing economic and voting power of recreational/charter fishers is increasingly driving issues.
- Most re-allocation outcomes have been designed to suit the particular circumstances surrounding the issue and have been very much a "case by case" approach. They have also generally used "blunt" instruments namely spatial separations, species separations or apparatus limitations, due to the costs and limitations currently of other possible approaches.
- To date the most common model used has been a combination of the Government Model in conjunction with the Administrative or Statutory models. The Negotiation Model has had very limited success (except in geographically small areas), while the Market Model has not been used except in very limited trials.

8. Impediments to Allocation Processes

From the foregoing it is possible to describe and explain a number of factors which are impeding the development and application of more transparent access and allocation approaches.

(i) The first of these is the limited cases of formal resource allocation policies by governments, including the lack of accepted principles, and, at times, transparent processes to guide a consideration of allocation and re-allocation matters.

While there are exceptions to this, and policy development is underway in some jurisdictions, allocation issues largely remain a by-product of the fisheries management process, rather than being a separate consideration in its own right with a recognised framework to address such matters.

(ii) The second impediment is the lack of appropriate data across all sectors to fully understand the current contributions of all sectors and how changes to allocations might flow through the community.

While there is reasonable catch/effort data from most commercial fisheries, it could be improved but there is also a lack of appropriate economic and social data from this sector. The recreational sector is worse off with the lack of timely catch/effort data at an appropriate scale (excluding some charter fishing information), as well as socio-economic data, participation rates etc. The indigenous sector is even worse off with data almost non-existent and no process in place to assist in its collection.

(iii) The high cost in collecting the necessary data discussed above, particularly as it would be required as a time series and at an appropriately comprehensive scale, means that few, if any, jurisdictions can allocate this a high enough priority to instigate its on-going collection and analysis.

Currently, very few fisheries in Australia are able to allocate shares to each sector as there are no reliable estimates of the total catch of all sectors and the costs of collecting such data are very high.

(iv) Associated with this is the current paucity in sophistication of development and use of modelling / cost-benefit analysis etc., which would provide greater transparency behind allocation processes. In its absence, there is a tendency to promote the "fairness and equity" objective as the basis for most decisions.

(v) The current use of economic valuation based approaches to establishing the optimum allocation based on maximizing the return from the resources, are limited as they currently require expensive and time-consuming socio-economic surveys on an on-going bases (even when just comparing two sectors) and, face perception problems in that they are not dealing with all the objectives of the legislation. Nevertheless, they can offer important additional information to assist with the allocation decision.

(vi) Similarly, there is a paucity of research and policy development into the role that could be played by an expanded "rights" based approach across sectors for autonomous resource re-allocation through market trading, on a permanent or temporary basis.

(vii) Research into modelling potential market based approaches, based on a rights framework, to elicit its advantages and disadvantages / costs and benefits, as well as the fisheries management implications is another current deficiency.

(viii) The lack of effective, representative organizations which can truly represent and act for the particular sectors - especially the recreational and charter sectors - militates against the potential advancement of some allocation considerations.

APPENDIX A: ALTERNATIVE ALLOCATION MODELS

(i) Government Driven model

Whilst it is recognised that government facilitation or decision-making is a necessary part of the process for any of the models, the emphasis in this model is that government comes to the process with a political "agenda" or policy driven position as to what it sees as the desirable outcome of how allocation within fisheries should be shared.

This places the initiative in the hands of the government and the Minister who drives the process to the desired outcome. This "top down" approach could be ideologically driven by conservation principles, or a pro-development stance towards commercial fishing and aquaculture, a bias towards fostering recreational fishing and tourism or a pursuit of expanding indigenous opportunity.

Under this model, the policy direction would be given to the bureaucracy to implement, with the fisheries managers advising on the issues arising from such a policy and how these are to be addressed.

Often there is little detailed analysis involved (particularly, for example, if it arises from an election commitment), other than a general discussion of the advantages and disadvantages, including some consideration of compensation issues.

An example of this model is the resource reallocation which occurred in NSW through the government's declaration of 30 "Recreational Fishing Havens" which were declared for the exclusive use of recreational fishers over areas previously shared by commercial and recreational fishers. This occurred following the implementation of recreational licence fees which provided substantial funds (around $20m at the time) for compensation payments to commercial fishers to allow the new government policy to be implemented.

Similar examples have occurred in Victoria and other States to a lesser degree.

Advantages:

- Government is able to act on behalf of the whole of the community;
- Model is responsive to social and community values and interests, as well as economic ones;
- Government is able to take account of all the objectives behind fisheries legislation and accord all parties the right to be heard;
- Government process can be quick and timely;
- Model has structural simplicity;
- Cost effective;
- Government decision provides certainty to the stakeholders and builds on existing processes.

Disadvantages:

- Model often may not be based on rigorous socio-economic or other analyses;
- Model does not seek to maximize economic value to the community;
- Model often lacks transparency as to its basis;
- Decision often not clearly based on scientific evidence;
- Decision generally undertaken without the benefit of pre or post evaluation of the consequences; and may not involve wide community involvement;
- Decision often requires the payment of compensation;
- Encourages competitive lobbying and reduces possible "win/win" opportunities through co-operation and collective decision.

(ii) Negotiation Based model

This model provides for the process to be driven by a formal negotiation or mediation arrangement involving all of the interested parties and overseen by an independent person until an outcome is achieved. The objective is to achieve an understanding among all the parties of each other‘s position and needs with a view to increasing understanding and respect for each position and hopefully an agreed outcome. Recent developments encouraging co-management arrangements may assist in this model. Failure to achieve this would mean a further process would follow from among the options discussed here.

An example of such an approach is the ILUA process in relation to Native Title claims in S.A which seeks to reach agreement on local allocation issues with indigenous customary fishers and all other fishing sectors within an overall fisheries management framework. This is based on negotiation among willing partners recognizing the rights of all users and seeking a legally binding agreement through registration of the ILUA in the Federal Court.

Advantages:

- Can provide for a "win/win" solution agreed by all parties;
- Encourages better understanding among parties of each party's positions;
- Cost effective and efficient to administer;
- Allows for great flexibility in the range of solutions;
- Provides a platform for improved collaboration and co-operation across sectors;
- Encourages the sharing of information on fishing practices and impacts.

Disadvantages:

- Difficult to achieve consensus within each sector itself, as well as across sectors;
- Outcome depends on willingness to engage by all parties;
- Success depends on the existence of "trade-offs" in sectors;
- Often frustrated by a lack of relevant and timely information;

- May not take account of the broader needs of fisheries management.

(iii) Administrative Based Model

In this model, an independent "expert" advisory committee would be established by the fisheries agency to undertake an investigation into the particular allocation question and report its recommendations to the Department and/or the Minister. It would normally be established in response to a particular conflict and be charged with reporting on that issue. It could also be given an on-going role in allocation issues, but this is not normally the case. This would not be a representative body but a skill based committee which would take representations from all interested parties, as well as commission any analysis of its own as part of the process. It would be advisory only and it would be a matter for the Department or Minister to accept the recommendation or otherwise and give effect to the decision.

The advisory committee recommendations would have to go through the political/government decision-making process to give effect to the decision through changes to legislation.

There are numerous examples throughout Australia where this approach has been adopted.

Advantages:

- Provides independence and transparency to the process;
- Provides structural simplicity;
- Provides confidence that scientific and socio-economic analyses can be used to inform the decision;
- Allows all interested parties to be heard in the process;
- The range of multiple expertise on the committee can address the range of objectives behind allocation decisions;
- Can commission any analyses required.

Disadvantages:

- It can be a costly and time-consuming process, particularly with public hearings;
- Socio-economic analysis can be expensive and technically complex to undertake;
- It still requires the distillation of multiple wants and expectations by a few "experts" with limited accountability;
- It doesn't prevent direct lobbying of government around the committee process;
- It only produces recommendations without any statutory backing for further consideration by government.

(iv) Statutory Based Model

The statutory model would go a step further than the administrative model. A committee would be created by government under legislation and be given the statutory powers to investigate, usually on an on-going basis, allocation issues across fisheries and report to the Minister. The legislation would shape the structure of the committee and require it to operate through a

public engagement process and be able to commission analyses where necessary. It would report in one of two ways - either be given advisory powers to provide recommendations to the Minister, or be given powers to decide the allocations on behalf of government, after going through appropriate due processes.

The latter example is not usually the case, but rather the advisory committee providing detailed recommendations to the Minister is more commonly adopted, as ultimately it is the responsibility of government to manage the fishery, including access and allocation arrangements.

An example of this model is the Integrated Fisheries Allocation Advisory Committee (IFAAC) which is a statutory body established in 2004 under the *Fish Resources Management Act 1994* of Western Australia. This was created to provide recommendations to the Minister on resource allocation across all sectors and selected fisheries in WA. It operates by first establishing the need for a formal allocation process in a particular fishery (or area of a fishery) and then proceeds to examine all the available information surrounding the matter, including taking public submissions and publishing a "draft allocation paper" for public comment before making recommendations to the Minister. It has provided recommendations in a number of fisheries to date, including the metropolitan abalone fishery and the west coast rock lobster fishery which have been accepted by the Minister.

Advantages:

- It operates in a transparent way involving all the community interests;
- It can consider all the objectives of the legislation;
- Its on-going nature means that it can build up expertise in allocation issues over time and across fisheries;
- It can commission research and surveys where necessary;
- It can utilize scientific and socio-economic research to assist;
- It can express independent views from the Department;
- It has statutory under-pinning and standing;
- It is ultimately accountable, through the Minister, to the Parliament.

Disadvantages:

- It can be seen to be "captured" by the Department which provides its support and budget;
- It does not provide an avenue for productive cooperation among the parties, but can intensify competitive behaviours;
- It can be a costly and time-consuming process, through public hearings or draft public documents;
- It requires significant servicing in terms of collecting all the necessary data and undertaking analyses.

(v) "Market"/ Economic Valuation Based Model

This model essentially encompasses two processes using either actual market trading of allocation shares, or using economic valuation of allocation shares in an "implied" market when no actual market is operating.

- The first is where defined common property rights exist for the various sectors and market trading of rights occurs autonomously through market prices;
- The second is where it is not possible to trade through a market for various reasons, and an "implied" market is used whereby economic values for the sector's preferences are constructed through various valuation processes and the government uses this analysis as the basis to decide the preferred allocation outcome.

The model uses an economic valuation approach to maximize the return (ie. the total net economic value or benefit) to the community from the use of fisheries resources; it does so through the re-allocation of shares between sectors (through market trading or by government decision based on the analysis) until it is allocated between the commercial and recreational sectors so that the marginal net economic values or benefits for the competing uses are equal. This is based on the established economic framework which allows for "values" to be determined (based on "willingness to pay") for activities which do not occur in a market, followed by a comparison of the marginal net benefits associated with the various competing activities (which may be more than just commercial and recreational uses).

This requires some explanation as it is not a model in widespread use. However, market based approaches are widely used for a number of purposes within the environmental field, and can be used for the allocation of resources between competing users.

The rationale behind market based approaches is that a value can be placed on a good (whether it is traded in a market or not), with the exact value being determined by the market. The conceptual challenge for resource allocation in fisheries is estimating the value of the recreational fishery, or other activities, that do not occur in a market. The amount of money spent by a recreational fisher in pursuit of the activity, however, is not a true recognised measure of economic value.

With the exception of charter fishing, a recreational fisher does not "buy" a day's fishing, and the value an individual places on that day is related to both catch and non-catch related motivations (eg. being with friends in the outdoors). The value of commercial fishing is relatively easy to determine as it is an activity that occurs in a market. In the absence of traded market prices, determining the value of recreational fishing will involve seeking to establish indirectly the willingness of recreational fishers to pay for the opportunity to fish, noting that this willingness is likely to vary significantly between individual fishers and, between the type and location of the fishing activity and also over time. Fortunately, there are a range of methods for estimating the willingness of people to pay for goods and services such as recreational fishing that do not occur in market (see Appendix C).

When the value of recreational and commercial fishing can be estimated, in theory, these values can be used by government to estimate the optimal allocation between recreational and commercial fishing that overall maximizes the economic benefits from harvesting fisheries resources. This gives a comparison, at a single point in time, between the current allocation and what it should be to achieve an optimal allocation. The research undertaken by Hundloe, T.2003 and McLeod & Nicholls 2004 provide the framework for these valuations and models in a static sense, while the approach was also used in the case of the economic valuation of Victorian Bays and Inlets study (Marsden Jacob Associates 2006). Further research by Linder, B. et.al., 2003 takes this research and develops dynamic models which can estimate the necessary changes over time to this optimal allocation solution through focusing on the key variables that drive changes in the relative marginal net benefit values over time. These models also provide the likely future direction of allocation changes necessary to yield the socially optimal allocations for the community allowing managers to plan for such changes over time (the models incorporate three fishery case studies - WA abalone, rock lobster and Demersal finfish).

However, in practice, there are a number of significant practical challenges that need to be considered. Firstly, there is the requirement to define a total allowable catch for the fishery as a whole (or however defined). Also, there is the significantly high cost (and complexity) of obtaining high resolution survey estimates of the economic value of recreational and commercial use. Linked to this point, is that for ongoing adjustment (by government) to occur, surveys will need to be undertaken regularly (eg. every three or five years) as the relative values will change through time. If the cost of obtaining estimates is high, it can negate any overall economic benefit that can be obtained from optimally allocating the resource to maximize economic benefits. The other issue is whether the magnitude of any adjustment required for optimizing allocation from an economic perspective is of a meaningful magnitude to make the process worthwhile and meaningful in terms of translation into practical management arrangements.

The dynamic models of Linder, B et.al., 2003 above were designed only to develop a "methodology" which could be used to determine allocation changes over time. Further research would be needed to overcome the existing data deficiencies to provide the necessary rigor and socio-economic data sets needed to determine an actual resource allocation decision.

On the other hand, the allocation approach utilizing an actual market is where the recreational and commercial sectors autonomously trade a proportion of a commonly described TAC in the marketplace with the optimum outcome being determined by the actual value (in real monetary terms) that each sector places on a unit of the resource. This in effect leaves the allocation arrangement at the total discretion of the market and not with the government. While theoretically sound, there are some important practical issues that need consideration. For example, would the recreational sector as a whole collectively (through a "peak body") purchase an overall portion of the total catch to be then allocated as equal shares to all its members (e.g. an increased bag limit). Or alternatively, would each individual recreational fisher need to obtain, through a broker, the right to a certain amount of fish, through a tag system, that they would

want to catch over a time period (eg a year), or would another body eg. government hold the recreational shares in trust?

Also, it needs to be remembered that fisheries legislation has several objectives, and the market process may lead to an outcome that is not desired from an overall fisheries management objective (eg. the entire rights may be purchased by one sector only or monopolistic behaviour by a group), or may offend social or equity issues or goals. Caveats would need to be in place to ensure any market based approach does not lead to outcomes that are deemed inconsistent with the overall intent / objectives of the legislation and fisheries management needs. For example, unfettered transfers in allocations between sectors may change the level of environmental impacts in a fishery and require interruption of the market forces by fisheries agencies to avoid unintended consequences. It would also be impossible for management to continually react to changes in market shares and in their enforcement.

Currently, however, there is no common rights based regime which extends to all sectors in Australia (or overseas), particularly the recreational and charter sectors, but also the conservation sector and indigenous sector. It would be possible to construct a common rights regime and permit market trading across sectors, however this would be "at the margin" of re-allocation and have to be carefully constructed by government with appropriate caveats. The further one goes down this path, however, the more complex the issues become, the more difficult and costly the transaction costs (including valuation surveys etc.) and the more one faces difficult social value and equity driven issues.

The introduction of a market based system to operate, even in a partial sense, would need to be predicated on a management need and be justified in terms of its costs compared with the likely benefits. An example of such a limited market trading "experiment" is the case of the Canadian Pacific Halibut Fishery involving the limited leasing of shares on a seasonal basis among commercial and recreational fishers as discussed in Appendix B.

A theoretical Australian example could be a case where a recreational peak body, or recreational trust fund, buys the underutilized seasonal quota from commercial fishers in a particular fishery and sells it to either clubs or individuals via a tag quota basis to recoup monies. Fishers then are able to fish beyond their current recreational "share" ie. their bag limits/charter fishing limits up to the limit of their new allowances. These concepts are developed further by Chris Reid in an FRDC research report discussed below.

It should be noted that even under a market based system, the government needs to play some critical roles. "Firstly, establishing a clear and comprehensive framework of policy and administration within which those who depend on fish can conduct their affairs efficiently and with certainty…(and) maintaining the legal and institutional framework…(secondly) to articulate and enforce the public's long-term conservation objectives and standards of performance to be achieved." (Pearse, P.H. 2006).

In relation to the possible operation of the market itself, a recent research report by Chris Reid (FRDC Project 2007/050) examines seven options for inter-sectoral transfers in the rock lobster

fishery in WA and SA using either an administrative approach or a market approach. The options cover situations where either ITQ's or ITE's exist and consider the issues surrounding the need to allocate shares to individuals in the recreational sector through tags or individual quotas. The analysis outlines the necessary conditions and assumptions for such markets to operate; it also raises the difficulties with the timeliness of changes in management arrangements in the recreational sector in response to changes in catch share, the need for a representative body to act for all recreational fishers (and commercial fishers), the costs of monitoring catch in the recreational sector and the costs of implementation and enforcement of constantly changing catch shares across sectors in response to the operation of such markets.

This research was undertaken to assist the WA IFAAC to develop mechanisms to re-allocate changes in allocated catch shares across sectors.

Finally, the economic evaluation models, even if not used to determine allocations, can be used to compare other outcomes based on equity, fairness or other social goals, with lesser levels of net economic value.

Advantages:

- With common property rights it is possible to bring all sectors within a common management framework which assists fisheries management.
- Flexibility to respond to changing circumstances simply on the basis of price information and/or survey results.
- Decrease in the burden of regulation.
- Reduced transaction costs once processes are developed.
- Pursue ESD goals in an economically efficient manner.
- Reduces conflict and political debate.
- A basis for compensation exists with re-allocations.

Disadvantages:

- Only those with financial power can engage in the market;
- Financial power is not distributed evenly in the community;
- Players may have short-run goals/speculative goals and not a concern for the long-run;
- Concurrent estimates are required of the marginal net economic value schedules of each competing use of the fishery, or part of a fishery.
- The high cost of obtaining estimates of the value of the recreational (and other sectors) fisheries.
- The high cost and lengthy time period to collect the necessary socio-economic data sets which drive the determination of the commercial and recreational values.
- Often data is not available and various assumptions are required concerning relationships integral to the value schedules and economic curves which limit their applicability to real allocations.

- The paucity of information particularly on the drivers behind recreational fishing behaviours.
- The analysis becomes much more difficult with more than two sectors involved.
- Government significantly abrogates its responsibility for allocation under the legislation to a market outcome.
- Outcomes could run counter to "fairness and equity" objectives as well as other social objectives of government.

APPENDIX B: Australian and Overseas CASE STUDIES

AUSTRALIAN CASE STUDIES

1. Shark Bay Pink Snapper, Western Australia: Government Driven model

The fishery consists of three separate stocks - the Eastern Gulf, Denham Sound and Freycinet Estuary - which all suffered from depletion from over-fishing by both commercial and recreational fishers and the fishery was closed in 1998. It re-opened in 2003 with TAC's being implemented in each zone and the fisheries resources allocated between commercial and recreational fishers. Currently the TAC's are distributed as follows; Eastern Zone - TAC 15 tonnes with recreational to commercial of 95:5; Denham Sound - TAC 15 tonnes with recreational to commercial of 68:32; Freycinet Estuary - TAC 5 tonnes with recreational share of 100%. These allocations were based largely on historical catch and the sustainability needs of each fishery The fishery is slowly recovering.

The method of allocating shares among individual recreational fishers is a government quota tag system which is distributed through a lottery with fishers paying for each tag. Only one tag is able to be used per day and attached to the legal sized fish. The tags are not transferable and they provide a means of measuring total catch, as well as allocating the fishing rights within an overall catch limit. There is no trading between sectors.

2. Metropolitan Abalone fishery, Western Australia: Statutory model

Allocation within this fishery (and a number of other fisheries in W.A) is through a statutory model with the Integrated Fisheries Allocation Advisory Committee (IFAAC) formed in 2004 under the *Fish Resources Management Act 1994* to investigate allocation issues and make recommendations to the Minister.

The fishery is accessed by commercial fishers at around 270 tonnes (with limited entry and individual units of effort), recreational fishers (under a recreational licence) and indigenous fishers. A TAC is set for each of the eight zones of the fishery, with commercial operators able to take a proportion of the zone's TAC according to the number of units held.

Within the Perth metropolitan zone for roe abalone, the IFAAC recommended recreational fishers be allocated a notional quota of 40 tonnes which is managed by a recreational licence and input controls (size limits, spatial, temporal and seasonal closures). Commercial fishers were allocated 36 tonnes; both were consistent with historical catches.

Resource sharing is also facilitated through closures affecting commercial fishers and designed to avoid inter-sectoral conflict in high population areas near Perth.

However, it was not possible to allocate a proportionate share of a total catch in this case because of the lack of appropriate data on total catch across the fishery in question.

The IFAAC have also recommended an allocation of 0.5 tonnes for the indigenous sector.

It is important to note that as recreational effort was increased then increasingly restrictive management measures would be needed to manage their catch within the 40 tonne limit, with

the probable result that the amenity of the fishery would be severely impacted. Thus the IFAAC is now considering mechanisms to allow re-allocation from the commercial sector to the recreational sector within the zoning arrangement for the fishery.

The IFAAC has similarly made allocations to commercial (95%), recreational (5%) and indigenous (0.1%) fishers in the Western Rock Lobster fishery based on proportional catch shares; however, currently there is no mechanism agreed to allow future adjustments across sectors to these initial allocations which were largely historically based.

3. Finfish Fishery, Torres St.: Government Driven Model

All fisheries in the Torres St. area, as defined under the Torres Strait Treaty, are managed under the Treaty and with complementary fisheries legislation for Australia and PNG.

The intention of the Treaty is the protection of the traditional way of life and livelihood of the Islanders including, particularly, the use of fisheries resources as a contributor to their economic development and well being.

In the case of the finfish fishery - a multi gear, multi species fishery concentrating on reef species - the initial allocation of commercial licences went to those who demonstrated a history of fishing in the fishery, resulting in allocation largely to non-Islanders. Islanders demonstrated a low level of participation and used the fishery mainly for customary fishing, preferring to engage in other fisheries for commercial purposes (eg. tropical rock lobster where returns were higher).

Tensions and conflict have arisen relating to the encroachment of non-Islanders into "traditional community" fishing areas. This resulted in a government buy-back of non-Islander licences and the re-allocation of the fishery, as a government initiative, to the Islanders (encompassing both commercial and customary fishing). Non-Islanders may still lease back licences from the Torres St. Regional Authority to fish, while a notional TACC exists (for Coral Trout and Spanish Mackerel) based on historical catches. This is used to monitor how much leasing of licences occurs. Small quantities are taken by recreational fishers who are managed under Queensland law.

However the re-allocation of resources has not resulted in improved economic development for Islanders as participation rates remain low, catches are down and the fishery remains under-utilised.

4. Inshore fisheries, NSW and Victoria: Government Driven Model

There are numerous examples around Australia where regulations have excluded commercial fishing operations in particular geographic locations for a variety of reasons - whether historical, social, scientific or management. However, with the recent introduction of recreational fishing licences in NSW and Victoria, governments have chosen to intervene directly in allocation issues and use such funds to proclaim "recreational fishing areas" and compensate commercial fishers for the loss of access to such areas. Such decisions have been based on a conscious policy of government to re-allocate a greater share of the resources from the commercial to the recreational sector.

In a slightly different context, arrangements exist in WA where the legislation allows for the declaration of "designated fishing zones" for commercial fishers (eg. for salmon fishing) which are used to prevent unnecessary interference with lawful commercial fishing activities; while a similar arrangement exists in NSW where "recognized fishing grounds" can be declared under the legislation to prevent interference with commercial beach hauling activities.

5. Barramundi Fishery, Northern Territory: Government Driven Model

In order to further encourage the development of the recreational/ charter fisheries, along with the tourism industry, the government decided to reduce access by commercial fishers in the barramundi fishery in favour of recreational fishers. It achieved this by a spatial separation approach which involved closing a number of river systems to commercial activity, thus encouraging the further development of fishing tourism for the NT as well providing enhanced recreational/charter fishing opportunities.

6. Tailor Fishery, Fraser Island, Queensland: Government Driven Model

Fraser Island has been an extremely popular tourist and recreational fishing destination for many years with its visitations increasing annually. It has also been an important commercial net fishery for tailor and other inshore species to supply fresh fish to local and interstate markets. Following many years of political lobbying by mainly recreational fishers, the government decided, as a matter of policy, to reallocate access to the fishery away from commercial fishers

to provide greater access to recreational fishers based on the increasing popularity of the destination. This was done by reducing the number of commercial fishers (based on historical dependence criteria) who could continue to access the area, limit the time they could access the fishery through seasonal closures and hence limit the total take by commercial fishers.

7. Blue and Black Marlin, Longtail Tuna Fishery, Commonwealth: Government Driven Model

The Blue and Black Marlin species have long been very important species for the game fishing/charter industry, while of minor importance to the commercial industry. The commercial fishers had a voluntary ban on their taking since 1998 as there was no real market for these species, however the government intervened to legislate for these species to be non-commercial species and effectively re-allocate them entirely to the recreational sector based on the relative economic and social importance of the species to the two sectors.

Similarly, with the Longtail Tuna species across northern Australia, the government intervened following pressure from the recreational sector and re-allocated the species entirely to the recreational sector making them non-commercial species in 2006, again based on the relative economic and social importance of the species to the two sectors.

8. Abalone, Crab and Demersal Finfish Fishery, WA: Economic Valuation / Market Model - Research Case Studies

The above three fisheries were the subject of two FRDC projects by Linder, et.al. 2003 and McLeod, P. and Nicholls, J. 2004 as previously mentioned. The research applied economic theory

to create both a comparative static and dynamic model of the allocation outcomes between commercial and recreational fishers designed to maximize the economic values to the community of the use of the three fisheries resources in question.

The research was essentially aimed at establishing the methodology and not to define the specific allocation outcome, but did demonstrate the likely future direction of changes in allocation for these species ie. towards the recreational sector.

OVERSEAS CASE STUDIES

A search of the published international literature, particularly as it relates to applied - as opposed to theoretical - case studies on resource access and allocation, reveals that there is not a significant amount of such literature and that each case study generally contains different approaches driven by the particular circumstances of each situation.

These may be driven by:

- The nature of the fishery;
- The political inclinations at the time;
- The availability/unavailability of organizational structures;
- The presence of sufficient data and information;
- The costs of implementation of different proposals.

A summary of the approaches from the more relevant case studies is presented below.

1. Florida Inshore Fisheries, U.S.A.: Government Driven Model

Following a state-wide campaign by Florida's recreational fishers against commercial mesh netting and other netting in near-shore and inshore waters of Florida, the issue was put to a community vote in 1994. The voters passed a constitutional amendment prohibiting the use of all such nets with the aim of protecting their sea life, and effectively being a resource re-allocation decision by the community in favour of recreational fishers.

It was accompanied by funding of commercial buy-backs, business assistance packages and retraining opportunities, however it resulted in significant negative social and economic impacts on the commercial sector and a transfer of effort to other commercial fisheries. There have been legal appeals against aspects of the ban but most have been unsuccessful. Anglers have claimed positive benefits from the bans, however their on-going concerns now rest with inappropriate development and run-off issues negatively impacting their fishing activities.

2. Pacific Halibut Fishery, Canada: market based model

The Pacific Halibut fishery is managed by an international Commission as it operates across the USA, Canada and international waters. The Commission sets a TAC for the fishery which currently stands at 88% for the commercial sector and 12% for the recreational sector (including charter and guided fishing); First Nation bands and tribal councils hold 16% of the commercial licences. At times, when it is estimated that the recreational sector has not caught their 12%, the commercial sector can purchase quota through the Department of Fisheries and Oceans for use

by commercial operators in the following year. The monies are held in trust on behalf of the recreational sector until decisions are taken as to how they should be expended.

The Commission is interested in having both sectors develop a market-based mechanism for future allocation adjustments between sectors; because of strong property rights in the commercial sector any adjustment by government to the recreational sector would otherwise involve compensation. The market-based system would allow the recreational sector to purchase or lease quota from the commercial sector (or vice versa) should this become available from time to time. Two problems arise however - the lack of a legal organizational structure for the recreational sector as a whole prevents the sector from collectively trading catch quota between the sectors (the commercial sector has formed its trading body - the Pacific Halibut Management Assoc.) and catch data collected from the recreational sector is poor and not timely. This lack of a collective market based method of adjusting allocation has meant that the recreational sector has faced further restrictions when its quota has been reached, including seasonal closures, while the commercial sector continues fishing and may not even catch its quota.

To overcome the impediment of the recreational sector being unable to enter into collective market-based trading, a trial has commenced in 2011 and continued for 2012, called the "recreational halibut experimental fishery." This trial allows individuals, or individual recreational fishing businesses (eg. charter fishing), to purchase an experimental licence to purchase quota from the commercial sector and also to trial enhanced catch monitoring arrangements. The allocation of 12% to the recreational sector remains unchanged but those individuals who have purchased quota can continue fishing (under the purchased or leased commercial quota) and provide certainty for their businesses. Alternative proposals are for the government to purchase or lease quota from the commercial sector, funded by monies held in the trust fund or increased recreational licence fees, to allow the recreational sector to fish over its limit or to expand.

The trials are being evaluated with a view towards a more permanent arrangement. Such a model could also allow conservation groups to purchase quota and leave it uncaught for conservation purposes.

3. Pacific Salmon fishery, Canada : Government Driven model

The pacific salmon fishery is primarily a commercial fishery managed by a TAC for the industry as a whole. The recreational sector accounts for a very small proportion of the catch of particular species of salmon but are concerned with maintaining a quality fishing experience all year round. The opportunity to harvest Chinook and Coho Salmon is the mainstay of the recreational fishery and a major contributor to the local tourism industry.

In 1999 the Government adopted an allocation policy (based on the advice of independent advisors) which prioritized salmon species between the sectors. Thus the recreational sector was provided a priority allocation for Chinook and Coho Salmon as this was considered to represent the best economic use of the resource, following a rigorous economic value

framework by consultants. The commercial harvest of these two species only occurs when abundance permits ie. when harvestable surpluses are high (allowing for recreational fishers to easily catch their bag limits), these species may be taken only in "directed" commercial fisheries; when abundance is low, the species may be caught commercially on a non-retention basis only to allow commercial fishers to undertake their "directed " fisheries on other salmon species. For other species - Sockeye, Pink and Chum Salmon, the recreational catch is limited to a maximum average of 5% of the combined commercial and recreational catch, with the commercials allocated 95% - after first allowing for First Nations and conservation needs.

The salmon allocation policy also provides for an impartial Board to advise the Minister on allocation issues.

4. Inshore Fisheries, Japan: Negotiation based model

There are a number of examples where access and allocation of inshore fisheries has been determined by geographic separation of recreational and commercial fishers. Often this has been done on the basis of the history of fishing in each area, but it has also been based on a negotiation by interested parties. Thus not only are recreational only fishing areas agreed upon, but also commercial only fishing areas. Mugi Town is an example where, through a participatory negotiation process, the Mugi Sea Utilization rules were agreed which set the spatial boundaries of the recreational only fishing area. At Matsudashise, conflict over access to a small reef species fishery was resolved by the formation of a consultative body - the Extended Coastal Waters Utilization Council - which eventually developed a system of exclusive zoning for either recreational or commercial fishing following a participatory negotiation process.

5. ITQ Managed Fisheries, New Zealand: Government Driven Model

Soon after the N.Z. Quota Management System was introduced - setting catch limits for each fish stock and allocating these through ITQ's - a legal challenge by Maori peoples against their exclusion from the system was upheld. As a result the government was forced to legally re-allocate part of the quota from commercial fishers to Maori interests (initially 10%), followed by the purchase by government and transfer to Maori interests of interests in commercial fishing companies etc., so that Maori owned or controlled 50% of commercial fishing quota.

It was also originally envisaged that inter-sectoral sharing would occur and that a satisfactory recreational fishery would be preserved. Currently, in setting the TAC's, an implicit allocation is made to account for recreational fishing, however, the rights of recreational fishers remain the least developed of all user groups. The two major problems remain the disaggregated nature of this sector (ie. no single representative organization and no way of distributing the quota among individuals) and the lack of regular monitoring to establish the recreational harvest with accuracy.

Another impediment is the lack of a transparent and secure process for inter-sectoral allocations to occur. The legislation is silent on the matter simply giving the Minister discretion in allocating between sectors. Discussion is occurring about possible opportunities when such allocations

may occur, for example when changes to TAC's occur, or when changes are detected in the relative "value" between commercial and recreational sectors.

These issues are still under debate in NZ.

6. Inshore Fisheries, Pacific Islands: Government Driven Model

Most of the Pacific Islands approach resource allocation issues on area-based exclusion zones, particularly as it applies to their major fisheries. In PNG commercial tuna fishers and artisanal fishers are spatially separated through the implementation of 12 nautical mile exclusion zones which apply to commercial operators; The Marshall Islands also exclude commercial tuna fishers from operating within 50 nautical miles of major atolls. These buffer zones minimize inter-sectoral conflict while still allowing for the development of their major fisheries.

7. Recreational Only Species, USA: Government Driven Model

In many examples in the USA, there have been re-allocations of access to resources from the commercial sector to the recreational/charter sectors based on the use of a particular species. This has been common in cases where species have been important for their sporting value, including catch and release activities, than for their commercial value. In these cases governments have declared such species as "recreational only" species and these include Atlantic sailfish, Atlantic blue marlin, white marlin, bonefish and tarpon.

APPENDIX C: Methods for Estimating Values of Non-Market Goods

There are a number of techniques available for valuing non-priced goods and services, and the methods are obviously important for valuing recreational fishing as it is activity that, in an economic sense, does not occur in a market. The premise underpinning all non-market valuation techniques is that preferences expressed by individuals, as measured by monetary terms, provide the basis for measuring the benefits derived by the individuals involved. Broadly, non-market valuation techniques are categorised as:

- Revealed preference techniques;
- Stated preference techniques.

Revealed preference techniques rely on observations of people's actions in buying and selling goods or services, which in some way, relate to the non-market good or service under consideration. For example, the amount of time and money spent travelling to a recreational fishing destination is a measure of the value a recreational fisher puts on a specific fishing location. Stated preference techniques seek to determine the preference of people for a non-market good or service through a questionnaire. That is, a respondent, may state their preference and reveal how much they are willing to pay for a good or service. For example, a day's fishing.

Within the two categories of non-market valuation techniques, there a number of specific tools that can be applied. No tool is "right" or "wrong", they all have their uses, advantages, and limitations. Studies can involve the use of more than one technique. The main tools of relevance to the allocation of fisheries resources are described throughout this report.

Revealed Preference Techniques			
Technique	Description	Advantages	Limitations
Travel Cost Method	The method assumes that the money spent on travelling to a recreational fishing location is the key measure of value for a fishing day or days. Estimation is focussed on determining the amount of money spent on travel to and	Based on estimates of money actually spent. Conceptually simple. Individual estimates can be validated if it is known where the	May not be a good measure of value for a local fisher using a local location. Does not capture the total economic value - only the travel component.

	from the fishing location.	angler is travelling from.	Many "trips" may involve more than one activity with fishing only being a component of such a trip.
Hedonic Pricing	The method has its basis in determining the value of housing based on environmental attributes. It does so by controlling the non-environmental features of the housing (e.g. floor area, the number of bedrooms and bathrooms). Despite its origin, it can be used to value recreational fishing by treating recreational fishing as the environmental attribute.	Potentially valuable in determining the impact of change (environmental or management) on recreational fishing.	Limited use, meaning that a number of assumptions are not well tested in a fisheries context. Does not capture the total economic value. Computationally complex.
Random Utility Modelling	A commonly used extension to the Travel Cost Method.	Based on estimates of money actually spent. More closely reflects how decisions are actually made by recreational fishers in terms of deciding	Complex in terms of survey, analysis and interpretation. Many "trips" may involve more than one activity with fishing only being a

		between a range of alternative fishing locations - directly addresses trade-offs in individual decision making. Can examine specific site attributes (e.g. fish abundance and diversity), marine infrastructure (e.g. boat ramps), and weather that lead to choosing a fishing location.	component of such a trip. Does not capture the total economic value
Stated Preference Techniques			
Contingent Valuation	Long established technique focussed on assessing the willingness to pay (WTP) for a good or service or willing to accept (WTA) a change to that good or service. Surveys are used to elucidate the WTP or WTA value.	Able to provide information on total economic value. Can be used to determine the expected changes in satisfaction with a recreational fishing experience derived from a change in key parameters as a result of changing policy settings.	WTP or WTA does not necessarily equate to what a person would actually pay or accept in a real life circumstance. Open to a range of biases (including deliberate respondent bias), and careful planning and analysis needs to be undertaken to ensure that the effects of these biases do not compromise precision or accuracy. In

			particular, the technique has the potential to calculate higher values for an activity than revealed preference techniques.
Choice Modelling	Allows for the valuing of attributes of a good or service, together with the changes in value from marginal changes in the attribute. Participants are presented a "choice set", one of which is status quo, the other a different outcome (e.g. two more fish per fishing trip) and are asked how much they are willing to pay for the alternative outcome selected.	Can be used to assess behaviours based on different (but realistic) scenarios. Information is highly beneficial in determining cost-benefit of policy options.	Can be computationally complex, and surveys can be potentially difficult for respondents to understand and complete logically. Can be expensive to undertake. Does not capture the total economic value.

APPENDIX D: An Example - Appraising the Benefits and Costs of Allocation

A multi-account benefit-cost framework for increasing the transparency of evaluating and assessing the implementation of inter-sectoral re-allocation programs was proposed by Dominion Consulting, 2002. This is a more general Benefit and Cost approach than the "economics of who should fish the resource", in that it deals with economic, environmental and social impacts as well as the traditional economic efficiency issue in a reasonably transparent "account framework". It was proposed as being "more useful to decision-makers in that it presents its results under five different headings". These "accounts" are summarised below:

The Financial Account: summarized the effects of the proposal on the public sector budget. For example, if recreational fishers were to displace commercial fishers, revenues might be obtained from the issuing of recreational fishing licences, but compensation might have to be paid to commercial fishers, and expenditures made on public facilities to allow recreational access to the fishery.

The Industry/Consumer Account: summaries the net gains and losses which occur in the private sector of the economy. For example, recreational fishers may gain to the extent that they value the increased access to the fishery by more than the extra costs they incur. Similarly, commercial fishers may find that their revenues decline relative to their costs, and the net fall in revenue is a loss to them. It should be noted that these gains and losses are measured net of costs. A common misconception, particularly in valuing recreational fisheries, is to argue that the value of the fishery is represented by the sum of expenditures on travel, bait, equipment and so forth. It is true that the gross value of the fishery includes these costs, but the net value is the gross value less the costs incurred, and it is the net value that belongs in the Industry/Consumer account. The expenditures by recreational (and commercial) fishers are analysed in the Economic Impact Account. The commercial industry may have low profitability and may make little economic contribution to the economy in efficiency terms. As noted above, this contribution is measured by the difference between the revenue and the economic costs associated with effort applied to the fishery.

The Economic Impact Account: summaries the effect of the proposal on economic activity in the State. For example, if the recreational sector expands there will be increased expenditure on fuel, bait, supplies, fishing gear, and boats and these will result in an expansion in activity and employment in the retail sector. However, if the commercial sector contracts, there will be a reduction in expenditure on similar inputs by commercial fishers, with a resulting contraction in activity by, and employment in, enterprises which supply the fishing industry.

The Environmental Impact Account: summaries the environmental effects of the proposal. For example, increased access by recreational fishers may result in more litter

and more bush fires, whereas reduced access by commercial vessels may result in less damage to underwater strata; fish stocks may be affected in various ways.

The Social Impact Account: summaries the social impacts of the proposal. These could include the effects of declining coastal communities, pressures of relocation, and effects on family cohesion. The analysis of social impacts is more extensive than the economic impact analysis and may appraise people's no monetary values and feelings about community and lifestyle. There is little published material on social aspects of fishers of any kind.

The political process tries to reflect values and opinions and struggles when policies impact one section of the community disproportionately, or where a significant number of voices are not heard. There are always demands to change allocation of any scarce resource, and fisheries access is no exception. The decision to examine allocation of fishing access comes with these political background factors.

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