

CHAPTER 9

DESIGN AND IMPLEMENTATION OF MANAGEMENT PLANS

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The building blocks for good fisheries management have been presented in the previous chapters. The first few chapters covered the techniques that can be used to manage fisheries. Chapters 6 and 7 specified how fishing rights can be established to allocate fish resources to certain users and how participation of interested parties in the management process can improve the effectiveness of management. In Chapter 5 the information requirements to support good management were outlined. It is time now to show how everything can be put together into a single instrument that outlines how management is actually going to proceed for a specific

fishery. Such an instrument is what is called a fishery management plan (FMP) and is the subject of this chapter.

1. INTRODUCTION

Planning is an essential part of the management process regardless of whether one deals with the management of a fishery or the management of a car assembly line. The management plan is the main instrument that specifies how management is to be conducted in the future. In many fisheries, fishery management plans (FMP) are often also instruments not just for planning but also for operational management. These plans don't just document the way to reach management goals in the future (strategic), but also describe how to manage the fishery in the present (tactical). This dual purpose of fishery management plans is not recognised universally, in fact the only mention of an FMP in the FAO Code of Conduct for Responsible Fisheries appears in Paragraph 7.3.3 that states,

“Long-term management objectives should be translated into management actions, formulated as a fishery management plan or other management framework”.

The FAO Technical Guidelines for Responsible Fisheries (FAO, 1997), however, clarify that FMPs have a tactical component to them that defines day to day management:

“The management plan provides detail on how the fishery is to be managed and by whom. It should include a management procedure which gives details on how management decisions are to be made in accordance to developments within the fishery...”.

In fact these FAO guidelines give a very specific definition of an FMP:

“A fisheries management plan is a formal or informal arrangement between a fishery management authority and interested parties which identifies the partners in the fishery and their respective roles, details the agreed objectives for the fishery and specifies the management rules and regulations which apply to it and provides other details about the fishery which are relevant to the task of the management authority.”

In deciding upon a definition that acknowledges formal or informal arrangements, FAO draws attention to the fact that having a formal document describing an FMP may not be the only way to achieve the objectives of management. It acknowledges the fact that in some fisheries there are management arrangements that are successfully achieving the management objectives of specific fisheries but are not formally collated into a document called an FMP. Although such situations are discussed briefly below and in Section 4.1 of Chapter 6, the focus of this chapter remains the description of the process of how to develop a formal FMP. This is done by broadly following the FAO Guidelines (FAO, 1997) regarding the development, implementation and review of FMPs. Also, some examples are presented to highlight how components of those guidelines can be found in the FMPs developed for some important fisheries around the world. The examples are not meant to be comprehensive, but rather serve to highlight how FMPs have been developed and implemented in real fisheries.

2. DESIGNING A MANAGEMENT PLAN

2.1 What should a management plan contain?

The institutional arrangements pertinent to a fishery are essential in defining the contents of its management plan. The international, national and even regional context within which a fishery takes place (Section 9, Chapter 1) will influence the fishery policies and legislation that govern the fishery. In some countries, like the United States of America or Australia, there are specific references to the need to develop management plans in their fisheries legislation (e.g. Queensland, Australia: Fisheries Act; United States: Magnuson-Stevens Act). That same

legislation may specify the main sections that a management plan should contain. At a minimum, FMPs should contain:

- a description of the fishery especially its current status and any established user rights;
- the management objectives;
- how these objectives are to be achieved;
- how the plan is to be reviewed and/or appealed; and
- the consultation process for review and appeal.

More details on the exact contents of real FMPs can be found in the examples presented in Section 6 of this Chapter. For details on how to develop operational management objectives refer to Chapter 5. For an in depth presentation of tools used to achieve management objectives refer to Chapters 2 to 4 and Chapter 6. For a discussion on the type of scientific information that can be used to evaluate the biological, ecological, economical and social status of a fishery read Chapter 5, while Chapter 6 presents an in-depth summary of user rights.

2.2 International fisheries policy requirements

Nowadays one of the most basic requirements recognised in FMPs is the adherence to the, internationally sanctioned, United Nations Convention on the Law of the Sea of 10 December 1982 (LOS Convention), the FAO Code of Conduct for Responsible Fisheries and the precautionary approach to management. Such adherence tends to be recognised in the fishery policies of each State or in the statutes of international organizations in charge of coordinating fisheries management. For fisheries in the high seas and for those plans dealing with straddling stocks, the FMPs must clearly specify the international regulatory and institutional context within which the plan is applicable (e.g. UN Fish Stocks Agreement – see Table 2, Chapter 1). In such cases the FMP should have clear links to both the national fishery management policy and to the statutes of the Commission or international organization in charge of coordinating the management of the international fishery. For example the Australian FMP for Southern Bluefin Tuna has as a first objective:

“... to ensure, by appropriate management and in conjunction with the Commission (the Commission for the Conservation of Southern Bluefin Tuna), the conservation of the stock of southern bluefin tuna...”

A word of caution must be expressed in reference to national FMPs designed to manage fisheries for resources which, at least partially, are distributed in the high seas, or that are shared between two or more countries. Because these resources are not under the jurisdiction of a single nation the FMP, being a national instrument, will only be applicable within the EEZ of that nation. This does not mean that the FMP will be ineffective, but it does mean that the plan may have to define national objectives that are constrained by the objectives of other countries (see Code of Conduct, Paragraphs 6.12, 7.1.2 and 7.3.2). Chapter 4, particularly Section 5, provides a lengthier discussion on this point.

2.3 National/State fisheries policy requirements

National fishery policies should be supported by a legal and institutional framework so that FMPs can be the main instrument of management. In that respect, every national fishery policy should define the range of minimum requirements that a fishery management plan should fulfil. The national policy should therefore broadly determine the type of information required to be included in an FMP so that all FMPs achieve the goals of the national fishery policy. Because these goals are likely to be broad, the information requirements are likely to be general, however, it remains the responsibility of those preparing each FMP to make sure that the specific objectives of an FMP comply with the national fisheries policy.

2.4 Fishery-specific requirements

The minimum requirements specified by national fishery policies tend to still leave considerable leeway about the contents of an FMP. As a result even within a single fisheries jurisdiction there are large differences between the FMPs developed for different fisheries. This should be considered a strength of the policy, because it ensures that the FMP is developed so as to suit the specific needs of the managers of each fishery and is not just a bureaucratic requirement.

It is essential that the plan specify how the management objectives (operational objectives) of the plan are to be met. If possible each management objective should be examined individually and the management measures that are designed to help achieve that objective should be identified and explained. Here the plan needs to be very specific on how objectives and measures link up and which performance indicators are going to be used to measure the achievement of management objectives. This must be done by structuring the plan in a way that requires the development of performance indicators (Figure 2 of Chapter 1). The indicators must cover all objectives of the plan so in general there will be indicators of the biological status of the stock but also social and economic indicators of the health of the fishery.

These indicators will equally reflect the agreed reference points and, for example, measure how successfully the plan is achieving the target reference points and remaining within the limit reference points. In general, the plan will not specify the exact way the indicators are developed, but it must require their development. As an example, forecasts on the economic impact of fisheries management actions could be used as an indicator of the success of a plan in trying to achieve its objective of maximisation of economic returns. Section 3 of Chapter 5 discusses in detail examples of specific indicators that can be used in FMPs.

The FMP should specifically make reference to the characteristics of the natural environment within which the fishery takes place and to how changes in this environment may affect the management of the fishery. If there are traditional management structures or established rights that have been historically used, these should be recognised and included in the FMP (Chapter 6 discusses user rights).

Management objectives in an FMP often conflict (e.g. resource conservation vs maximising economic returns or promoting development). The plan must acknowledge this conflict and address it through requiring a process by which conflicts between objectives can be resolved, as discussed in Chapter 5. This could be achieved by specifying some of the indicators associated with conservation objectives as constraints, whereas indicators of economic performance might be identified as targets. This will result in the development of operational objectives and will lead to appropriate target and limit reference points. In this context development refers also to human resources, so it encompasses capacity building and enhancement of the quality of life.

2.5 Who should design a management plan?

2.5.1 Institutional arrangements

The development of the FMP is the responsibility of the authority in charge of fishery management, but such authority must make sure that all interested parties in the fishery should participate in its development (Code of Conduct, Paragraph 7.1.2; FAO, 1997). For a more detailed discussion on how to involve community organizations in the management process refer to chapter 7.

2.5.2 Participation of Interested Parties

As discussed in Chapter 7, all interested parties should be offered the opportunity to participate in the development of an FMP. The identification and consultation with interested parties should be one of the first steps to be conducted in the development of an FMP. The earlier the interested parties are involved in this development the greater the sense of ownership of the

final FMP they will have. By participating in the process they will be more aware of their rights and responsibilities towards resource management and will tend to comply better with management provisions. All steps in the consultation with interested parties (e.g. comments on discussion paper) should be formally structured and described within the FMP document. In cases where there are substantial differences in the capacity of interested parties to participate in this process, the plan should include capacity building. Chapter 6 (Section 3) discusses further the concept of “management rights” the right to participate in the management process and Section 7 of Chapter 7 details equity issues related to the capacity of different types of interested parties to participate in the management process.

Increasingly there is a requirement to attempt to coordinate the management plans of all marine resources, including fisheries. Other agencies are developing their own marine resource management plans and fishery managers increasingly recognise the need to influence the management of impacts on the ecosystem and protect those habitats and resources that are critical for the health of the fishery. This need to coordinate management leads to having to make sure that the groups included in the public consultation process include all management agencies that have responsibility for management of activities or resources that may be related to or affect fishery resources or to the environment that supports them (Code of Conduct, Paragraphs 10.1.2 and 10.1.5). Because these agencies are often developing management plans themselves this process of consultation can be difficult and lengthy. Often other marine management agencies have different perceptions about the importance of resources within the marine environment to those of the fishery agencies. This often creates differences between what conservation agencies think is achievable and what the fishery agency thinks is achievable. One way to resolve these differences is through well-structured negotiations established within the consultation process for the FMP.

2.5.3 Expert knowledge

The development of an FMP requires extensive information about the fishery and the social, economic and natural environments within which the fishery operates. The gathering of information, in the form of data or expert knowledge, is the responsibility of the management authority. More detail on which information should be collected and how it should be presented to those in charge of the development of the FMP is discussed at length in Chapter 5.

2.6 Timetable for developing a management plan

In theory, the development of a management plan is the first management action that any responsible fishery agency should take when it starts managing a fishery (FAO, 1997). In practice, however, management plans were only recently developed for even the most important fisheries of the world. The first step in the development of an FMP is usually to create a working group that develops a discussion paper. Public comments are then sought through meetings and letters and analysed and formally responded to. Next a draft management plan is developed and released. Public comments are again sought, analysed and formally responded to. After that the final management plan is developed and sent to the appropriate minister for approval before coming into effect. Below more details of each of these steps can be found.

2.6.1 Discussion Paper

When an FMP is about to be developed, it is best to put it out as an initial document for public comment that describes, in layman’s language, the reasons for developing the plan and the proposed contents of the plan. This document is similar to that of an FMP but must be easy to read and often will contain more background fishery information than the FMP. This document –often referred to as a discussion paper – should aim at two things, informing the public and interested parties about the plan and seeking their comments. Important information such as current legislation or summaries of the knowledge about the status of the fishery should be

included as appendices to the discussion paper. These documents can have a list of specific questions attached to each of the major issues identified by the group developing the FMP. These questions are often part of a formal questionnaire included with the discussion paper and designed to elicit comments by interested parties. General comments, other than those sought through the questions, should also be solicited in the questionnaire. It is important that the management authority encourages representatives of all interested parties to take time to review the discussion paper and make their comments to this authority. Participation of all interested parties is essential and should be facilitated by the management authority as much as possible. This is especially important because the group of people involved in the initial development of the discussion paper have the opportunity and responsibility to define the scope of the final plan. Initial investment in the consultation process will save a lot of resources later and will help the plan to have the highest possible initial acceptance when it is implemented.

2.6.2 Public consultation

Once the discussion paper is formally released, the public and interested parties should be given a set time to make comments, for example three months. During this time it is advisable to organise meetings between the management authority and interested parties (e.g. meetings in the major fishing ports) to seek comment and promote discussion. Transparency during this process will later help during the implementation of the plan. After the comments have been collated the management authority should formally answer these and revise whichever sections of the plan the authority deems appropriate.

The public consultation period is also a period of negotiation and the effort to be put by the developers of the plan in this process should not be underestimated. This is due to the fact that consultation inevitably leads to the presentation of opposing views about the management process. These opposing views must always be measured against the management objectives established for the plan and the national fisheries policy. The fishery management authority must therefore make sure that the special interests of some interested parties do not override the principles contained in the national fishery policy.

2.6.3 Draft Management plan

The first draft management plan is then released and new comments are sought, again specifying a time frame of a few months. The draft management plan is likely to be quite a different document to the discussion paper especially because of the legal language that is to be included in certain sections. It is therefore harder for people to understand and comment on this document. This highlights the benefits of releasing initially a discussion paper. The fishery management authority should, again, devote attention to ensuring that the draft management plan is understood and well-accepted by the interested parties. After the second period of comment is finished, and unless there are extraordinary circumstances that require another review of the plan and a third round of consultation, the final plan draft should be prepared and submitted to the ministry of fisheries, or equivalent, for approval. To ensure that delays in this process do not undermine the capacity of the fisheries authority to conduct good management, it should be at all times emphasized to the public and interested parties that FMPs are to be reviewed periodically and that it is not precautionary to delay necessary management actions when the status of resources requires conservation measures. The fisheries ministry must also be firm in this respect and should avoid political interference getting in the way of the implementation of a plan that has been developed through the appropriate consultation process.

3. IMPLEMENTATION OF MANAGEMENT PLANS

Once the FMP has been approved it is important to inform the public of its contents. A good strategy is to summarise the major points of the plan in easy-to-read leaflets or brief documents that can be distributed to interested parties. These documents will serve the purpose of

informing the public of the contents of the new plan and are likely to generate comments from the public that can be considered during future reviews of the plan. Hopefully these documents will also ensure greater compliance with the regulations by explaining the reasons why these regulations are in place.

Management plans have to consider the likelihood that they will be complied with and the enforcing requirements to ensure such compliance (Code of Conduct, Paragraphs 7.7.2 and 7.7.3). A management plan that cannot be properly enforced may damage the credibility of the management authority and therefore undermine the management of other fisheries (FAO, 1997). It is essential that during the development of the plan, fishers and other interested parties affected by plan rules are asked whether these rules are likely to be complied with (see Section 2.2.8 of Chapter 8). The plan should also emphasize the consequences of non-compliance and may often include a description of the penalties (loss of license, fines) when serious offences occur. In addition to the details on monitoring, control and surveillance provided in Chapter 8, Chapter 6 specifies how to implement a system of user rights, and how such system can help compliance. Chapter 7 describes how community groups can facilitate the implementation of the plan and help in the compliance of plan rules.

4. REVIEWING AND AMENDING MANAGEMENT PLANS

Factors of importance to fisheries change through time; therefore FMPs must be periodically reviewed (see Figure 10 in Chapter 5, and Chapter 4). If possible, during the development of the management plan, such changes should be predicted and included in the section of the plan that defines the review process. For example if it is known that a new management measure (e.g. establishment of a marine reserve) may take several years to have a detectable effect, the plan can call for a review of the measure after the required number of years have passed.

4.1 Mechanisms for review

The mechanism for review should be specified in the plan itself. In general the consultation process should parallel the initial process used to develop the plan, but is likely to be shorter in time and should only require one draft review document seeking comments from interested parties and the public, and a final draft to be submitted for approval. Major reviews may require public meetings where interested parties can air their views about the proposed amendments to the plan. Because of the need for public consultation, whenever possible, it is best to break down amendments to the plan into small and discrete components, rather than attempt to change all the shortcomings of the FMP in a single amendment. This strategy has been successfully used in the United States of America to modify management plans of complex multi-species fisheries such as the Gulf of Mexico Reef fish fishery or the South Atlantic Snapper-grouper fishery. In both of these fisheries an amendment has been prepared almost every year by the respective management councils. Some of these amendments are developed and approved within a few months but others may take longer. Sometimes the councils are considering more than one amendment at a time. By breaking down the process of review into small steps the management councils are successfully and continuously improving the plan. Chapter 7 details processes that can help the review process at community level, and provides useful concepts on how reviews may be implemented in artisanal fisheries.

4.2 Review strategy

Often, plan reviews are motivated by changes in the socio-economic status of the fishery or the biological status of the fish stock. It is to be expected that, after the initial development of a plan, it will take several years to close the information gaps that may have been identified at the time the plan was developed. Therefore a major review of an FMP is unlikely to happen until several years have passed and researchers and managers have had time to review and evaluate the need for and effects of possible new management regulations. It must be remembered,

however, that the lack of scientific information cannot be used as an excuse for inaction and that the precautionary approach calls for management action on the basis of the best information available (Code of Conduct, Paragraph 7.5.3). FMPs therefore must be reviewed whenever it is precautionary to review the plan, not just when new data become available. It is therefore recommended that within the FMP a regular schedule for reviews is defined. At a minimum, a plan should be reviewed every five years.

4.3 Changing management measures without amending the FMP

In some instances the process of review of a management plan takes too long for it to be an efficient way to make an urgent change of a management measure. This is often due to the fact that FMPs are often legislated documents that require a specific and lengthy procedure to change them. It is therefore advisable to build within the plan the facility to make changes that do not require amending the plan. In Australia, for example, regulations that have to change at short notice such as the start and end of the fishing season or annual changes to a TAC are introduced through executive rules (in Australia these are referred as “directions”) by the fishery management agency. These rules have legal standing but that do not require amendment to the plan. This is achieved by defining, within the FMP, the nature and conditions by which these rules can be introduced.

5. FISHERY MANAGEMENT PLANS WITHIN THE CONTEXT OF ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

Initially, fishery management was limited to the control of harvesting the target resource, without consideration of any effects of harvesting on other resources. Later, management of bycatch species was introduced into the fishery manager’s agenda. Finally, the management of indirect impacts on other marine species that depend on fishery resources as a source of food and the impact of fishing gear on marine habitat have now become an important part of fishery management (e.g. Code of Conduct, Paragraph 7.2.2.). All these issues must be considered during the development of a FMP. Section 5 in Chapter 2 considers the impact of different fishing gears on the broader ecosystem and Section 2.2 in Chapter 3 discusses ways to manage these impacts through the use of area and time restrictions.

In many countries, it is accepted that broad ESD considerations must be part of fishery policy. In practice, however, this has not always translated into operational changes to FMPs, partially because most issues relating to fishing impacts on non-target species or marine habitat are poorly understood and studied. There tends also to be few management measures that can alleviate negative impacts on the environment, e.g. habitat destruction produced by trawls, without severely disrupting fishing operations.

This lack of information does not mean that ESD issues can be ignored during the development of an FMP. It is essential that these issues be at least identified within the plan. If there is no information to quantify the importance of the impact or on the capacity of managers to control it, the plan should at least specify how such information will be obtained in the future and provide a timetable of actions to gather such information (See Article 12 of the Code of Conduct and Section 5 in Chapter 5).

In cases where the management of the coastal environment or non-fisheries marine resources is not the responsibility of the fisheries authority, it is essential to link the FMP to other management plans such as coastal zone management plans (Code of Conduct, Paragraph 6.9). At the minimum the FMP should clearly define the agencies responsible for management of the coastal and marine environment that may be affected or have an interest in the FMP. Ideally, the FMP should be developed to help reach the objectives of coastal zone management plans for the areas where the fishery is taking place. This might be achieved directly with instruments of management that are available through fishery legislation, such as prohibiting the cutting of

mangroves or damage to seagrass beds. Fishery agencies must be part of coastal area management processes in order to make sure that, when appropriate, the FMP becomes one more instrument to achieve the objectives of these processes. This will also help to ensure that other sectoral management plans developed within these processes help to achieve the objectives of the FMP. Section 3.2 in Chapter 3 discusses some of the difficulties found in integrating fishery objectives into the multiple-use framework of coastal area management.

6. EXAMPLES OF MANAGEMENT PLANS

In previous sections the overall framework of how to develop and implement an FMP has been presented. Four examples of existing FMPs are now briefly presented to help to put this in the context of current fisheries management. These examples were chosen to represent a wide spectrum of existing FMPs. The first example is for a single industrial fishery in a developed country; in contrast the second example corresponds to a mixture of industrial and artisanal fisheries in a developing country. The third example refers to a plan for a single species caught as part of a multi-species artisanal fishery. The final plan is meant to demonstrate how to plan for new developing fisheries.

6.1 The Australian Northern Prawn Fishery (NPF) Management Plan

The NPF is a fishery with only one species group as target, where the only gear used is the trawl and that operates offshore of a very remote part of the world, in Northern Australia. Although the FMP was only developed in 1995, the NPF has been closely managed since the 1980s. This plan is therefore an example of an FMP for a well-managed industrial fishery. This plan was made in accordance with the Australian Fisheries Management Act of 1991. Its purpose is to make sure that the policy objectives of the Australian Fish Management Authority are met in the Northern Prawn Fishery (NPF) and that bycatch in this fishery is reduced to a minimum¹. This is translated in the plan by specifying that the objective of the plan is “ensuring that the exploitation of fisheries resources and the carrying on of any related activities are conducted in a manner consistent with the principles of ecologically sustainable development and the exercise of the precautionary principle, in particular the need to have regard to the impact of fishing activities on non-target species and the long term sustainability of the marine environment; and maximising economic efficiency in the exploitation of fisheries resources” (Anon., 1995).

This plan is made under clear guidelines established in the Australian Fisheries Policy, and as a result the plan itself is limited to a description of the operational management details for the fishery and does not cover general fisheries policy.

The FMP starts with a list of legal definitions of terms that are used throughout the plan (Table 1). The next section covers the objectives, management measures and performance measures or indicators. Because the NPF is a fishery managed by input controls (see Chapter 4), including limited licenses, section two of the plan focuses on fishing rights (see Chapter 6). The section covers the types of rights that exist, how they are to be transferred and the obligations of fishing rights holders. The last section of the plan contains a detailed description of the managed area and a list of all amendments.

6.2 The Barbados fisheries management plan

The Barbados Fisheries Act (1993-96) required the Chief Fisheries Officer to develop a management plan for the fisheries of Barbados. In 1997 the Fisheries Advisory Committee, in consultation with the fishing industry and the general public, completed the FMP (Anonymous, 1997). Although the fisheries of Barbados, like those of many other developing countries, are

¹ Note how the objectives refer to those from an established national fishery policy, but also how special consideration is given to an ESD issue: the reduction of bycatch.

highly diverse, the government decided to develop a single management plan for all of them. This contrasts with many other countries where fisheries management plans are developed for individual fisheries. As a result, the fisheries management plan for Barbados has much broader goals than those found in other plans. These goals appear at the beginning of the FMP document (Table 2) and include meeting human-nutrition, social and economic needs, whilst integrating fisheries policy within coastal zone management and considering traditional knowledge of fisheries and the special interests of local (coastal) communities. Other goals of the Barbados FMP are more commonly seen in other plans, such as maintaining or restoring populations to the levels that can produce maximum sustainable yields, promoting the use of selective fishing gear to minimize wastage and bycatch, researching, monitoring and controlling fishing operations and fish resources, protecting endangered species and fragile ecosystems and finally cooperating with other nations in the management of shared, straddling and migratory stocks. The plan then contains an overview of the fishing industry which, obviously, includes the whole variety of fishing practices and resources found in the country: from shallow water trapping for reef fish and lobsters to oceanic gillnets for flyingfish, handlines and longlines for coastal and oceanic pelagics and hand gathering of sea urchins.

Table 1: Outline of the Australian Northern Prawn Fishery Management Plan of 1995

Part 1 Introductory Provisions

1. Name of Plan
2. Commencement
3. Interpretation
4. Objectives
5. Measures
6. Performance criteria

Part 2 Statutory Fishing rights

7. Gear statutory fishing rights
- 8-13. Types of statutory fishing rights (fishing licenses)
- 14-17. Who may fish in the NPF area
19. Boat nomination and replacement
- 20-24. Cancellation of statutory fishing rights
25. Directions by AFMA (length of fishing season etc.)
26. Transfer of statutory fishing rights
27. Expiry of statutory fishing rights

Part 3 Miscellaneous

- 28-35. Certificates, delegation, leasing arrangements of statutory fishing rights
- Schedule 1 Area of the Northern Prawn Fishery

There is then a description of the fisheries management process used to develop and implement the FMP, and the need to link the FMP to the coastal zone management plan is identified². The plan then describes the legislation that directly influences the plan, and includes a history of previous and existing bilateral fishing agreements with other nations. The next section of the plan defines the organizational framework of the fisheries sector in Barbados, including government and non-government fisheries related organizations and any fisheries programs administered by international organizations. The section ends with a description of the research, monitoring, surveillance, licensing and inspection activities conducted in Barbados.

Table 2: Outline of the Barbados Fisheries Management Plan

Guiding Principles (mission, goals, fisheries policy and country profile)

Fishing industry profile (overview of fisheries, fishing industry, intersectorial linkages)

Fisheries Management (fisheries planning process, coastal zone management, fisheries legislation, regional fishery agreements, organizational framework, research and statistics, monitoring control and surveillance, inspection, registration and licensing)

Fisheries Development (Visions from harvest, postharvest and State sectors)

Management and implementation for specific fisheries (one for each fishery)

Fishery management options

Glossary

The plan then presents an analysis of issues of importance to the harvest, postharvest and government sector. For each issue a series of optional management actions are identified and implementation strategies are proposed, including a description of resources required. An example of an important issue for the harvest sector is the lack of fisher and boat owner organizations. Possible actions to address this issue are to promote organizational development, provide incentives and training. Strategies to achieve these actions are for example to subsidise certain organizations and provide extension training in organizational development. Of course the plan notes that to carry these out, funds and trainers will be required. Although the goals of the plan are broad, an in-depth analysis of all issues allows the government to address them one by one within the priority order established by the policies of the government of Barbados and as a function of the resources available for its implementation. It is expected that as some of these issues are resolved they would disappear from future versions of the plan. Again the plan is a living document.

The final part of the FMP includes sub-plans for each of the eight major fisheries of Barbados. These sub-plans are brief, 2 to 3 pages long, and include concise descriptions of the target species, bycatch, ecology, fishery, management unit, resource status, catch and effort trends, specific management policies, objectives and approaches already in place for such fisheries and a list of development opportunities and constraints. This descriptive part is followed, as in the main part of the FMP, by a list of issues and the proposed actions identified to address them, together with the resources required. At the end the plan includes a list, with non-technical descriptions, of fishery management options used in the FMP and a glossary.

² Interestingly the FMP acknowledges that the link between the FMP and the coastal zone management plan has not been made, but at least by identifying the need, it highlights its importance. This also shows that FMPs are live documents that may not always have all the issues sorted out before they are adopted.

6.3 Queen Conch Fishery Management Plan for Puerto Rico and US Virgin Islands

The Magnuson-Stevens Act of the United States of America (USA) requires that Regional Fishery Councils develop FMPs for resources within each region. The Caribbean Fishery Management Council developed a plan for the management of queen conch within the waters of the USA Caribbean in 1996 (Anon. 1996). Other similar plans are in effect for Corals and Reef Associated Plants and Invertebrates, Shallow Water Reef Fish, and Spiny Lobster.

Queen conch are caught throughout the Caribbean, where they are a valuable resource for artisanal fishers. The resource seems biologically overfished in many countries, including the USA Caribbean. A fundamental problem of the management of this resource is that the stock is shared by many countries, therefore management may need to be coordinated across several countries. The Queen Conch FMP recognises that explicitly in its executive summary, highlighting the need for both local management actions and regional cooperation.

The FMP starts with a list of definitions of all technical terms used in the document and is followed by an introduction that defines the context (USA fishery legislation and Caribbean Fishery Management Council's management program) and scope of the plan (Table 3). The next two sections are the lengthier part of the plan where all the relevant information on the biology of conch and its fishery is summarised. These sections must contain whatever information is required to show that the best information available has been used to support the management plan. They present details on the life history, population parameters, conch habitats, history of the fishery, fishing fleet, processing sector and the most current assessment of the status of the fishery at the time the plan was developed.

The next chapter of the FMP discusses the most important issues facing the fishery, including the presence of overfishing, the limits on enforcement, the legislative setting, the limitations of current databases, the dependence on communication with and education of interested parties and the importance of habitat quality.

Section five of the FMP starts presenting the management objectives:

1. "to optimise the production of queen conch...
2. to reduce adverse impacts...such as harvesting immature and reproducing individuals....
3. to promote the adoption of functional management measures that are practical and enforceable....and the promotion of international cooperation in management...
4. to generate a data base that will contribute to the knowledge and understanding of queen conch biology....
5. to recommend habitat improvements to federal and local governments...
6. to provide as much flexibility as possible with the management..."

The rest of the section defines why conch has been assessed to be overfished and presents the rebuilding plan to recover the stock. The development of the rebuilding plan is a requirement of the USA Magnuson-Stevens Act.

The plan then details the alternative management measures that are to be used to manage the stock of conch. For each alternative the expected consequences of using the measure are detailed. The alternative of not doing anything is also presented including its consequences. Among the measures included in this list are size limits, sale restrictions, bag limits, seasonal closures and gear restrictions. This section also contains information on the process by which the above measures may get changed in the future.

Table 3: Outline of the Queen Conch Fishery Management Plan for Puerto Rico and US Virgin Islands

Executive Summary
Definitions
Introduction
Description of resource
Description of fishery
Problems in the fishery
Management objectives
Management measures and alternatives
Recommendations to local governments and other agencies
Related management jurisdictions, laws and policies

The final section of the plan includes information on all the USA federal and local (USA Caribbean) legislation and policies that impinge on the operations of the queen conch fishery. Examples of these are the Federal and Local Endangered Species Acts or the National Environmental Policy Act. For each of these policies or Acts a summary of its relevance to fishery management is provided.

6.4 Western Australia plan for developing new fisheries

Many countries still see fisheries development as one of the pillars of their fisheries policy. In developing countries, the need for creating socio-economic opportunities, generating employment and obtaining hard currency often creates even greater pressure for maintaining this “fishery development” agenda. Although FAO statistics have shown that the prospect for development of new fisheries is small (FAO, 2000), at small scales there will be an on-going need to have procedures in place that ensure the orderly development (or re-development) of new fisheries (Code of Conduct, Paragraph 7.5.4).

Several states in Australia have created management procedures specially designed for this. These procedures, whether in the form of a formal FMP (as it is often done in Queensland) or as a set of general principles, as done in Western Australia, can be a useful guide to how to proceed with developing an FMP for new fisheries in a responsible way (Halmarick, 1999).

Western Australia’s guide defines first what constitutes a new fishery:

“.. a fishery for which there is little or no exploitation, there is potential for development...”

Then it states an important principle that is:

“...there should be no assumption that the existence of a fish resource will guarantee that commercial access to this resource will be granted.”

This clearly establishes that the management authority has the responsibility to define which new resources are to be developed and which not. Whether a new fishery is developed or not

should be consistent with the national fisheries policy and should specially consider the possible interaction of this development with existing fisheries.

The next section of the guide then clearly defines the constraints under which development can take place:

- national fisheries policy;
- principles of ecologically sustainable development;
- precautionary principle.

Then the document sets the rights of developers, recognising that these “pioneers” should benefit from developing a new fishery. This should clearly establish what rights may be conferred to those engaging in fishing on fisheries that have not yet been brought under formal management (see Chapter 6 on user rights)

The rest of the document contains sections detailing the process for creation of a new fishery, seeking expressions of interest from prospective participants and establishing the conditions of operations (Table 4). The Western Australian FMP emphasizes that these conditions are to have a limited life of three years, after which an assessment of whether the fishery should continue will be made.

Table 4: Steps required for the development of a new fishery in Western Australia

Expression of interest – opportunity advertised

Ministerial decision – on whether to agree to the development or not

Application – people apply according to guidelines established by management agency

Assessment of applications

Notification of approval/refusal

Implementation – fishing starts

Review and assessment – permits are continued, modified or rescinded

7. CONCLUSIONS: HOW DOES A MANAGEMENT PLAN HELP TO ACHIEVE THE MANAGEMENT OBJECTIVES OF A FISHERY?

The previous section showed how plans have to be developed in a way that fits the capacity and needs of each country/fishery. In contrast to the plan for the Australian NPF, the Barbados FMP is a document which purports to describe the management of fisheries for a whole nation, so it includes elements of a national fisheries policy document as well as those elements describing the operational management that are the only ones covered in the NPF FMP. In countries like Barbados, where there is a need to develop both a national fisheries policy at the same time as operational plans for each fishery, it is clearly appropriate to develop an FMP with fishery policy elements in it. Waiting to develop the fishery policy first and the operational FMP later would have deprived the fisheries sector in Barbados of the opportunity to start addressing some of the important management issues that they already face. By contrast the FMP for the NPF or the Queen conch in the USA Caribbean was largely developed to comply with the established

policy of the Australian and USA Governments and most of the elements of the plan were already contained in management arrangements that had been developed through many years of management.

For developing countries, which may not have the resources to develop individual FMPs for all existing fisheries, it is unlikely they will be able to develop an FMP for new fisheries. A possible solution is to incorporate, in a special section of the national fisheries management plan, procedures similar to those developed by Western Australia for the development of new fisheries. By doing this the management agency will be able to create a structure through which proper development of new fisheries can occur and avoid the traps of unregulated development.

The lesson is a simple one: FMPs are documents that should first serve to address the most pressing fishery issues faced by each country or fishery. They should do that, however, by at least examining all other issues to ensure that the plan will ultimately encompass all aspects of the fishery to be managed. To achieve this they must be developed to fit within the available legislative and policy framework of each nation or state.

8. REFERENCES

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- Halmarick L. 1999. Developing new fisheries in Western Australia. A guide to applicants for developing fisheries. *Fisheries Management Paper*, **130**. Fisheries Western Australia, Perth, Australia. 40 pp.

8.1 Web resources

The following is a list of www links where copies of FMPs for several fisheries can be downloaded.

Australia

South Australian Government	www.pir.sa.gov.au
Tasmanian Government	www.dpif.tas.gov.au
Western Australian Government	www.wa.gov.au/westfish
Queensland Fish Management Authority	www.qfma.qld.gov.au

United States

Caribbean Fishery Management council	www.caribbeanfmc.com
Mid Atlantic Fishery Management Council	www.mafmc.org
North Pacific Fishery Management Council	www.fakr.noaa.gov
New England Fishery Management Council	www.nefmc.org

Western Pacific Regional Fishery Management Council

www.mar.dfo-mpo.gc.ca

Canada

Canadian Maritimes Region

www.mar.dfo-mpo.gc.ca