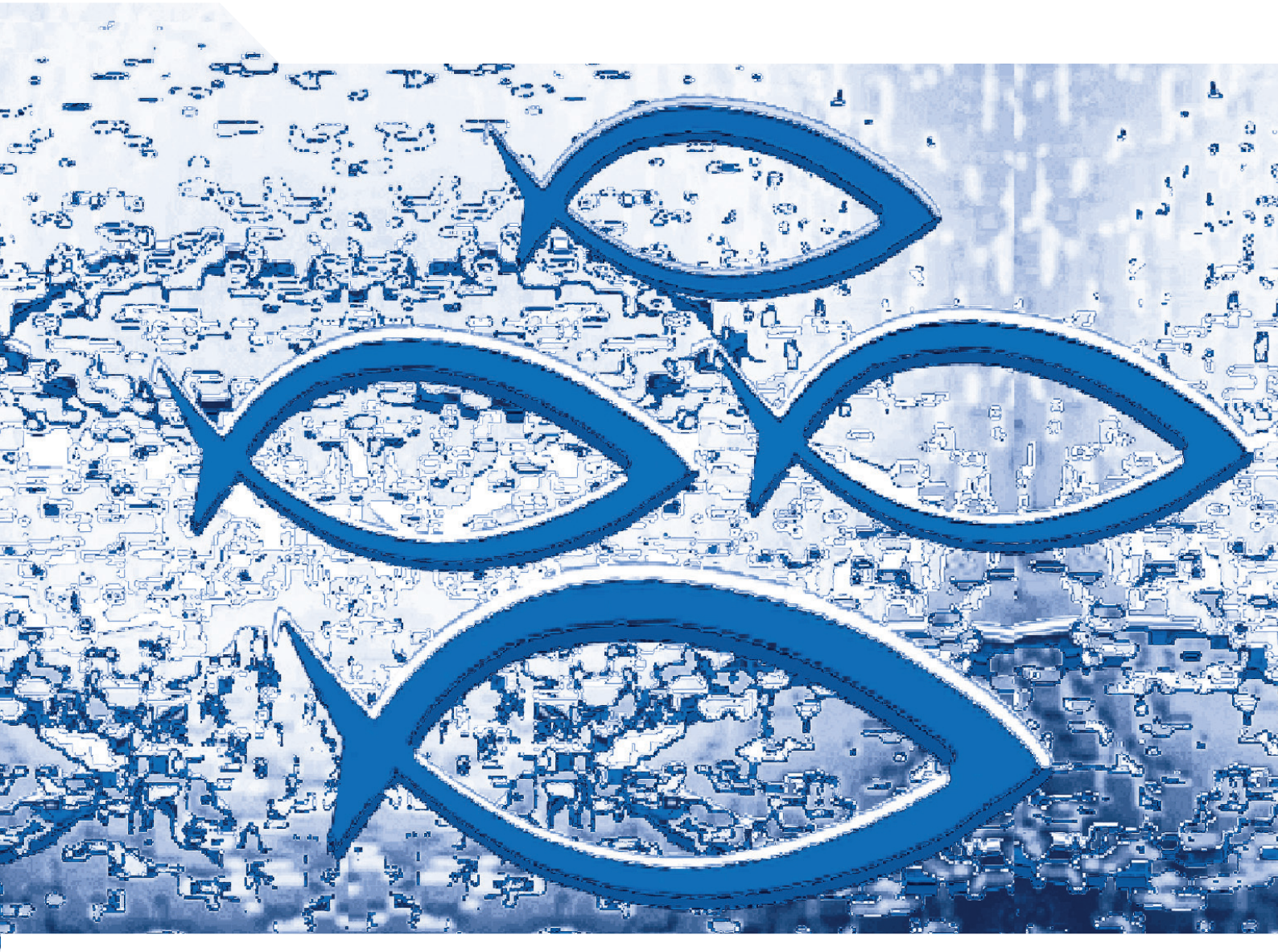
Fisheries Policy Reform

NATIONAL EXPERIENCES



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FISHERIES POLICY REFORM

NATIONAL EXPERIENCES

OECD

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Foreword

This report presents five case studies of fisheries policy reform experiences in OECD countries: Iceland, Korea, Mexico, Norway and New Zealand. The draft report was prepared as part of the Committee for Fisheries project on "Fisheries Policy Reform". The aim of the case studies is to review the reform experiences in selected OECD countries in order to identify the key features of the reform processes and elicit general lessons on reform in the fisheries sector.

In 2008, the Committee for Fisheries agreed to the release of this report under the responsibility of the Secretary General.

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Executive Summary

The ingredients of successful fisheries management have been known for many years. Well-defined access and use rights, a sound scientific basis for decisions of catch and effort levels, effective enforcement, and stakeholder involvement in decision-making form the core attributes of effective fisheries management regimes. While much has been done to improve fisheries management performance across OECD countries, the scope, depth and timing of reform towards profitable and sustainable fisheries has varied considerably. There is broad consensus that further reform in the fishing sector is necessary to respond to the ongoing problems of over-fishing, overcapacity and poor economic performance that persist in many parts of the sector and in many OECD countries. However, there is less analysis and guidance on the process by which reforms can be undertaken and sustained.

This study focuses on the factors that hinder or assist the process of reform in the fisheries sector in a number of OECD countries. Focusing on the political economy issues underlying fisheries policy, the reform experiences of Norway, Mexico, Iceland, New Zealand, and Korea are reviewed. The purpose of the case studies is to provide an overview of domestic reform experiences in the fisheries sector of these countries and to highlight the lessons learned from the experiences. While the reform experiences reflect a range of national resource endowments, political systems, economic, social and cultural backgrounds, and fisheries policy objectives, and highlight the different challenges and approaches in the countries' experiences, there are sufficient common elements that enable a structured review of the ingredients that underlie successful reform.

The case studies

The case studies focus on: the policy context in which reform is undertaken; the drivers for reform (including the role of different groups in developing and implementing reform); key features of the policy reform and impacts on the sector; the sustainability of the reforms; and key lessons learned from the reform experiences.

The case study of ***Norway*** reviews the process of introducing market-based reforms to manage over-capacity in the Norwegian fisheries sector. The fisheries sector is a politically important sector in Norway due in large part to the high regional concentration of the industry and the organised influence of the fishers' organisations. These factors played a significant role when it was decided to introduce market-based management reforms into the sector to help address the problems of overcapacity, low profitability and depleted stocks. The process of reform, which essentially began in the 1990s, was strongly influenced by distributional considerations, a fear of privatisation of the commons through the use of ITQs, and the diverse views of the different fleet segments. The establishment of the vessel-based quota system was a reaction to this and issues surrounding the system's design, allocation keys for the quota and the longevity of the system were strongly debated. The Norwegian case study highlights the important role of strong stakeholder involvement, varied compensation strategies, and the demonstration effect in contributing to successful reform.

Mexico underwent a period of reform in the decade prior to 2006, although of more limited ambition and scope. The key reform challenges facing the Mexican fishing sector were the lack of institutional stability, a degree of legal uncertainty surrounding the sector, the highly disparate nature of the industry (ranging from modernised commercial tuna and shrimp fleets to artisanal subsistence fleets), and conflict between resource users. The reforms were successful in improving the institutional structure of the governance arrangements for the sector, coordination amongst government agencies, and strengthening the legal framework surrounding the access of commercial fishers. Factors which helped to underpin the reform process included the decentralisation of decision making which, while limited, represented a fundamental shift in the relationship between government and the industry. Better targeting of support programmes and the use of vessel decommissioning payments helped to facilitate support for reforms in key segments of the industry.

The process of fisheries policy reform in ***Korea*** has been driven by depletion of commercially important stocks and poor economic performance of the country's fishing industry due to a continuous decline of inshore and offshore fisheries catches since the mid-1980s and, at the same time, an increase of costs. Korea has developed a number of policy responses to address the challenges. A permit system has been used as a framework to control fishing effort and ceilings of the number of permits have been gradually established for different fishing types since the 1980s. Other policy measures include area/time closures and mesh size and gear restrictions, and the introduction of the Total Allowable Catch to control catches of important species. There has also been a broad implementation of a community-based fisheries management scheme. High level political support from the President's office was a key factor in driving the reforms forward. The use of financial incentives to facilitate support for reforms and to compensate the potential losers from policy changes also played a key role. The demonstration effect helped to engender a momentum for reform from fleet segments outside the initial reform push.

The case of ***Iceland*** as one of the leading countries to adopt Individual Transferable Quotas (ITQs) provides good insights for fisheries policy reforms at the national level. While the Iceland experience is often characterised as having been a revolution in fisheries management, it was in fact, more of an evolution with an emphasis on continuous improvement in the design and application of ITQs. Driven by economic and environmental crisis, the introduction of ITQs has had to address stakeholder concerns over distributional issues, by catch management, and the more fundamental question of the use of exclusive access rights to manage common property resources. The endurance and strengthening of the ITQ system over time reflects an open and transparent institutional structure governing the sector, and the strong profitability in the ITQ managed fisheries which generates considerable support for sustaining and building upon the initial policy initiative.

Finally, the case of ***New Zealand*** represents a "big bang" approach to the introduction of ITQs to the sector. While there was a dawning economic crisis in the sector, the introduction of market based reforms was primarily driven by a more general, economy-wide reform agenda to modernise New Zealand's economy. While the top-down introduction of ITQs occurred fairly rapidly, the New Zealand experience highlights the important role of continuous improvement in ensuring that the reforms were fine-tuned and adjusted in order to maximise economic efficiency in the sector. Time-limited and targeted structural adjustment assistance helped to facilitate the reform process, and the pay-off to those who stayed in the industry was in the form of strong rights-based

management instruments coupled with a high degree of meaningful stakeholder involvement built into the governance arrangements for the sector.

Key insights

The case studies in this report provide a review of the process of reform in selected OECD countries. While the ambition, effectiveness and sustainability of the reforms differs from country to country, there are sufficient common insights that can be generalized to the process of policy reform in all OECD, and indeed many non-OECD, countries. The key insights focus on: identifying the need for reform; the factors driving reform; building support for reform; and sustaining reform.

Before reform can take place, it is necessary to ***identify the need for reform*** to take place. Without such a trigger, there is unlikely to be any support amongst key actors (fishers, politicians, even the general public) for policy change from the status quo to take place, nor any agreement on what the policy change should even be addressing. The experience from the case studies demonstrates that poor environmental performance is not generally sufficient to prompt governments to undertake significant reform efforts. In each of the case studies, it was economic crisis rather than environmental crisis that provided the key trigger for reforms to be contemplated and acted upon.

One of the consequences of this observation is that the economic costs to the fishing sector, and to society more generally, that result from poor environmental performance will tend to be larger than would be the case if reform efforts had been started earlier. It is, therefore, necessary to ensure that the institutional frameworks governing fisheries provide greater scope for an "early warning" system to forestall environmental and economic crisis, thereby supplying the necessary information and risk analysis to trigger changes in policy or course corrections to management arrangements. A greater focus on the economic consequences of policy and management decisions than is currently the case is a central ingredient in such an early warning system. Such data are fundamental to determining the economic and, in conjunction with biological data, the environmental health of a fishery and can provide important signals to decision makers about the need to undertake policy reform.

The ***driving forces behind reform*** help to raise pressure to place the reform needs on the political agenda. While the key driving force is generally economic crisis affecting the fishing sector, the case studies have demonstrated that there are other drivers, both external and internal to the sector, which can also be harnessed to help drive the process of reform. First, there are often policy reforms that occur more generally within the economy that have a flow-on effect to the fishing sector. Such general policy reforms can often bolster and accelerate existing pressure for reform in the sector. Second, pressure for reform can be driven by events outside the domestic economy altogether (for example, commitments under the GATT or the WTO to liberalise trade restrictions or under international environmental commitments).

Third, pressure for reform can be driven by groups within the fishing sector. This may be the result of a perception that the returns to particular groups can be increased from a change in some aspect(s) of government policy (classical "rent-seeking" behaviour). The potential beneficiaries of policy change have a strong interest in seeing particular reform agendas pursued. Individual fleet segments in the countries studied lobbied for reforms that had been introduced in other fleet segments, largely as a result of the demonstration effect of the benefits of specific policy changes. Finally, a fundamental ingredient for driving reform is political will. Strong and effective leadership is essential to seeing

reform initiatives be developed and implemented. Often, this is the outcome of key personalities in leadership positions in the government or in the fishing industry. This will also be influenced by the strength of stakeholder involvement.

The case studies have also demonstrated that reforms are generally a long-term process and that careful ***building support for policy reform*** is essential to the eventual success of the reform. Central to achieving this is the identification of the costs and benefits of reform both between groups and over time. The costs of fisheries policy reform are generally highly concentrated in specific groups while the benefits are diffused across the community as a whole. In addition, the benefits of reform may accrue over the longer term (for example, through stock rebuilding or responses to changes in management policies), creating a transitional burden that may reduce support for change. Identifying the potential winners and losers from reform enables the government to better target compensation and transitional measures, and to build support for reform.

Compensation strategies to address distributional concerns arising from policy reform proposals plays a central role in building and maintaining support for reform amongst key stakeholders. The case studies highlight the fact that there is a range of forms that the compensation can take: the use of adjustment payments (such as vessel decommissioning and license buyback programmes, temporary and targeted social support schemes); and stronger rights-based management regime for those who remained in the sector, in order to provide for more profitable and sustainable sectors.

The organisation and representation of fishers' interests is a key to gaining support for reform. It is clear that the reforms would have been much more difficult to implement if there had not been a strong institutionalised approach to ensuring stakeholder involvement in decision-making. In addition, the demonstration effect proved to be a major factor in ensuring that there was a steady build-up of support for reforms in the countries studies.

One of the major challenges in all policy reform efforts, not just in fisheries, is ensuring that ***reforms are sustained over time***. The pressure to wind back reforms can be significant, especially if particular interest groups have retained sufficient power or cohesiveness following the reforms to influence the future course of policy. Withstanding such pressure can require significant political commitment and may need to be coupled with further measures to gain the support of remaining disaffected groups (through, for example, compensation strategies).

The case studies have demonstrated the fact that successful reform is generally not a one-off event, but is actually a result of a process of continuous improvement over time that fine-tunes and adapts policies to evolving policy realities and external circumstances. Reform can also be made more sustainable by ensuring that the policy settings in place provide for autonomous adjustment that improves the flexibility and adaptability of the sector to changing natural and economic circumstances.

Finally, the study demonstrates that there is no "one size fits all" approach to policy reform in the OECD fishing sector. The reform experiences reviewed in this study reflect a range of national resource endowments, political systems, economic, social and cultural backgrounds, and fisheries policy objectives. The case studies also highlight the fact that successful reform is possible and can create a profitable and sustainable fishing industry. However, reforms must be underpinned by strong political commitment, sound economic analysis, appropriate distributional and compensation strategies, and a high degree of stakeholder involvement in the institutional framework within which reforms are developed and implemented.

Chapter 1

Introduction

Over the past decades, a broad consensus has developed on the key features that characterise sustainable and responsible fisheries in the OECD countries. Well-defined access and use rights, a sound scientific basis for decisions of catch and effort levels, effective enforcement, and stakeholder involvement in decision-making form the core attributes of effective fisheries management regimes. Manifestation of this consensus can be found in the FAO Code of Conduct for Responsible Fisheries and associated technical guidelines, and the OECD's reports on sustainable fisheries, the transition to responsible fisheries and the use of market mechanisms (FAO 1995, 1997; OECD 1997, 2000, 2006).

There has also been a broad consensus that reform in the sector is crucial to respond to the problems of over-fishing, overcapacity and poor economic performance that persist in many parts of the sector. This consensus is reflected in the domestic reform agendas for the fisheries sector in many OECD countries (such as the ongoing reform of the EU's Common Fisheries Policy) and at international levels (for example, the commitments to restore fish stocks by 2015 and discipline fisheries subsidies under the WSSD Plan of Implementation and Doha Declaration, respectively). While much has been done across OECD countries, the scope, depth and timing of reform towards sustainable fisheries have differed considerably across countries. These cross-country differences generally reflect two distinct factors. First, the reforms that have been undertaken reflect different national starting points and national preferences. Second, they reflect the different political economy issues in creating the necessary consensus for reform and overcoming opposition to reform by distinct groups within the sector.

This study focuses on the factors that hinder or assist the development of consensus for reform in the fisheries sector in a number of OECD countries. The study is part of the broader OECD project on "Fisheries Policy Reform". Other components of the project focus on the social effects of fisheries adjustment, capacity adjustment, and reform in regional fisheries management organisations. The next section in this study presents a simple exposition of the key elements of the framework. The framework provides insights into the factors that influence the possibility and pace of reform. Case studies of fisheries sector reform in Norway, Mexico, Iceland, New Zealand, and Korea are then presented in the following chapters. The purpose of the case studies is to provide an overview of domestic reform experiences in the fisheries sector of these countries and to highlight the lessons learned from the experiences.

The reform experiences reviewed in this study reflect a range of national resource endowments, political systems, economic, social and cultural backgrounds, and fisheries policy objectives. Nevertheless, while there are different challenges and approaches in the countries' experiences, it is the intention of this paper to elucidate the common elements that underlie successful reform and the lessons learned from reform efforts that fall short of their intended outcomes. The case studies will focus the following issues:

- the policy context in which reform is undertaken;
- the drivers for reform (including the role of different groups in developing and implementing reform);
- key features of the policy reform and impacts on the sector;
- ensuring that reform is sustainable; and
- lessons learned.

The motivation for the study lies in the relatively large amount of information that is available on failures of fisheries management compared to management successes. As observed by Cunningham (2005) in a recent review of successful fisheries management, "[t]here is an overwhelming concentration on bad news with innumerable studies demonstrating disaster, failure and human-error" (p.9). This is perhaps understandable given that it is widely acknowledged that fisheries management tends to have been characterised more by failures than successes. In addition, it often seems more pressing for commentators, academics and politicians to highlight management problems and to offer solutions. It can also be argued that, in many cases, accusations of management failure have been used to disguise a debate between stakeholders about management practices and priorities (Cunningham, 2005).

There have, however, been many examples of successful reform in the fisheries sector that can provide just as valuable insights to the policy process as those from policy failures (although, as noted below, success is often difficult to measure with multiple policy objectives). Successful reform tends to be taken for granted in the policy debate and also by the general public. This review will seek to draw out the key messages from a selected number of case studies of reform in the OECD fisheries sector. It is not intended to be a comprehensive review of reform in the sector, but will provide positive examples of successful reform and illustrate pertinent insights.

Defining "successful" reform

In this study, reform is defined simply as a change in policy settings from the status quo. Reform can therefore refer to major sectoral policy changes, or to smaller policy initiatives focused on a particular fishery or even segment of a fishery.

While the concept of reform is fairly straightforward, defining "successful" reform is more contentious. From a theoretical perspective, successful reform should result in an improvement in total social welfare. This requires that the magnitude of gains and the magnitude of losses from a policy change are such that the gainers can fully compensate the losers for the losses and still be better off themselves.[1] The compensation is purely hypothetical and does not necessarily have to be paid for a policy reform to be considered welfare-enhancing for society. The actual distribution of the gains and losses between different groups in society, and the associated compensation strategies, depends on political economy factors such as the relative bargaining strength of the groups and the economic and political institutions in particular countries.

In practice, success also needs to be measured in terms of outcomes against the objectives. The fisheries management problem revolves around the constraint of needing to maintain the renewable resource base, while accommodating a range of objectives of governments in relation to economic and social policy. All these dimensions are inextricably linked within the fisheries system and changes to policy settings in one dimension will have a flow-on effect to the other aspects of the system (Charles, 2001).

The ecological and economic objectives are relatively straightforward: to maintain the harvest at a sustainable level so as to maintain the fish stock; and to maximise economic potential of the fishery sector (measured as resource rent) (FAO 1997).

The social objective in fisheries management is arguably the hardest to define or identify because it can encompass so much and has a direct impact on politically difficult distributional issues. In OECD countries, the social dimension tends to revolve around employment opportunities, income distribution, regional development, food security and community resilience. It can also encompass issues of participation, empowerment, cultural identity and social cohesion.

Successful reform will result in successful management and there is a considerable literature on what constitutes successful fisheries management. The principles of successful management have been articulated in international forums such as FAO, (through Code of Conduct for Responsible Fisheries (FAO 1995)) and the OECD (through its work on sustainable fisheries (OECD 1997)), as well as in numerous academic publications (see, for example, Crutchfield, 1965; Charles, 2001; Cunningham and Bostock, 2005, Grafton *et al*., 2007). The key principles include (but are not limited to) the establishment of well-defined rights of use and access, sufficient institutional capacity for management, research and enforcement, meaningful stakeholder participation in decision making, generation of resource rent, and a holistic approach to management. Incorporation of these features into fisheries management frameworks will help ensure a sustainable and profitable fisheries sector.

In practice, however, objectives may be mis-specified (for example, as a result of inadequate information, a misunderstanding of the nature and causes of the problem, through manipulation of the policy process by interest groups, as a result of diverse pressures on politicians, etc.) and implementing such reforms may not necessarily lead to an improvement in fisheries management and hence in social welfare.

Can this situation be classed as successful reform even though the stated objectives of the policy change were met? In this study the answer is definitely "no": if the particular reforms do not lead to an improvement in social welfare, then the reform cannot be considered to be successful. Mis-specifying the objectives to the extent that they result in a lowering of fisheries management performance indicates a systemic failure in the policy process itself. To some extent, this definitive response depends on who establishes the objectives and the criteria for success: objectives may differ considerably between groups so that a reform that is regarded as a success by one group may well be regarded as a failure by another group (Bennett, 2005). It also depends on the measurability of success (it is generally easier to measure biological and economic outcomes than social outcomes) and if the success (however measured) is sustainable over time.

In summary, therefore, successful reform requires both the achievement of the stated reform objectives and an improvement in social welfare (broadly defined to include environmental, social and environmental aspects)[2].

Notes

1. These criteria are based on the concepts of Pareto-improvement and Kaldor-Hicks compensation. See Hausmann and McPherson (1996) for a summary of these concepts and their use in welfare economics.

2. It should be noted that there are considerable measurement difficulties in trying to develop a composite indicator of total social welfare and that the concept of social welfare is used for illustrative purposes in this study.

Chapter 2

The political economy of fisheries reform

This chapter provides a basic overview of the key issues surrounding the political economy of fisheries reform. In broad terms, a political economy framework describes how citizens or stakeholder groups and government interact in a hypothetical political market (Box 2.1). Governments are likely to be motivated by a number of factors such as ideological objectives, social welfare, the pursuit of economic efficiency, and the desire to retain office, and government policy decisions will reflect these complex objectives. Citizens (or stakeholders groups) signal their policy demand or preferences through various channels such as lobbying or voting choices. Political, legal and economic institutions will determine the limits and effectiveness of each stakeholder in achieving its objectives.

The chapter discusses the key factors that inhibit policy reform in the sector as well as the factors that influence the reform process. These factors are then illustrated in the context of the fisheries sector, from a general perspective, in order to provide a framework for the country case studies.

Factors inhibiting policy reform

At a general level, resistance to reform is reflected in a tendency toward favouring the status quo and can be ascribed to a number of factors: perceived unequal distribution in the potential gains and losses from reform; the differential organisational ability between groups; the timing of cost and benefits of reform; and uncertainty regarding the gains and losses from reform. The political economy literature also highlights the problems of sustaining policy reform in the face of pressure from social actors to reverse some or all of the policy changes once they have been implemented.

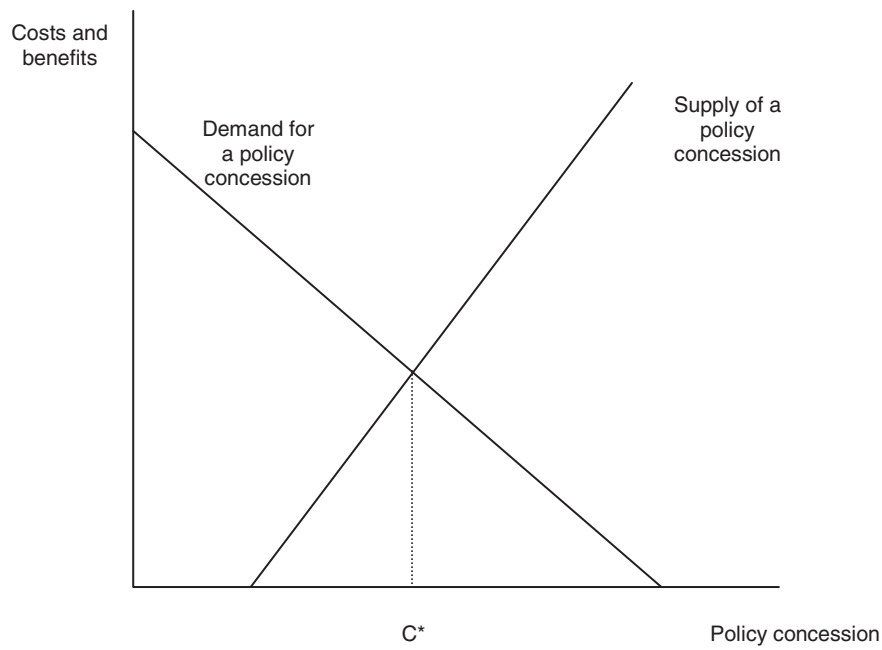
Distribution of gains and losses from change

It is well recognised that the implementation of government programs can result in different groups in society gaining or losing from the change (Becker, 1983). Government programmes can be broadly or narrowly targeted. Education and health are examples of broadly targeted programmes. They provide goods, generally public goods, which cannot be easily tailored to specific groups. As they concern a large portion of society they are usually intensively debated in the political process (in particular, in electoral contests) and the gains and losses tend to be relatively evenly distributed across society.

Box 2.1. The basic political economy framework

Since government policies are ultimately a consequence of political choices, it is necessary to examine the political incentives and motives of policy makers and other agents in the economy in order to better understand the influences on particular policy choices. The political economy literature provides a general framework that captures the key tensions and conflicts that are likely to influence policy making in a democratic system. The literature begins with the general presumption that self interest is the basic behavioural driver for individuals (including politicians) (Damania, 2005). This does not preclude altruistic motives or enlightened leadership by policy makers. It is recognised that individuals care about the well-being of their fellow citizens and the environment, and that politicians derive satisfaction from pursuing socially beneficial policies. The self interest assumption therefore captures the concept that behaviour is governed by attempts to maximise well-defined objectives, which may include both altruistic and egoistic motives.

In a political economy framework citizens or stakeholder groups and government interact in a hypothetical political market. Governments are likely to be motivated by a number of factors such as ideological objectives, social welfare, the pursuit of economic efficiency, and the desire to retain office, and government policy decisions will reflect these complex objectives. Citizens (or stakeholders groups) signal their policy demand or preferences through various channels such as lobbying or voting choices. The higher the costs involved in signalling this demand the lower the level of effective demand. Likewise the government's willingness to supply the policy favour will increase with increasing political benefits that would accrue to the government. Equilibrium is found at the point where the demand for a concession matches the willingness to supply it given the respective perceptions of costs and benefits. Political, legal and economic institutions will determine the limits and effectiveness of each party in achieving its objectives. This is illustrated in the figure below where the equilibrium level of policy concessions is depicted by the intersection of the policy supply and demand curves (point C*).



The real world political market is, of course, a lot more complex than the relatively simple framework outlined here. Political, legal and economic institutions will determine the limits and effectiveness of each group in achieving its desired objectives within the political market. Well organised and cohesive political pressure groups are usually more successful in translating their policy preferences into political demands than unorganised individuals. Similarly, in democracies, voter resistance may act as a constraint on the ability of a government to deliver narrowly targeted policy concessions. Nevertheless, this simple framework can go a long way towards explaining the difficulties in moving from the status quo and how those difficulties might be addressed.

Fisheries programmes are different in that they are narrowly targeted to a specific group within society. This means that while the costs are thinly spread over society as a whole, the gains are concentrated in a relatively small section of society. This difference between broadly and narrowly targeted programmes is important as the latter give the beneficiaries much higher stakes in defending a policy that a member of the broader community considers largely irrelevant. As a result, the group which gains from the status quo is seen as politically "strong" while the losers are regarded as politically "weak". This unequal distribution of gains and losses from change serves to prevent the adoption of reform and reinforce the status quo. In addition, distributional consequences across individuals may mean that the median voter may prefer the status quo to a reform that would increase aggregate real income (Stevens, 1993, p. 151).

Differential organising ability

If the gains from the status quo are concentrated in a small number of individuals and the losses are diffuse, the two groups will have significantly different abilities to organise resistance to policy reform. This "collective action" problem in generating consensus for reform reflects the fact that, when the benefits are thinly spread over a larger and less organised electorate, free-riding hampers the lobbying ability of the second group to significant extent (Olson, 1965). This will be particularly the case where the losses from status quo are so thinly spread across the electorate, that they may have difficulties in even observing the losses.

Timing of costs and benefits

The costs of implementing policy reform tend to be upfront, while the associated benefits may take time to materialise. Therefore, politicians are hesitant to implement reforms where there is a risk that the electorate will not benefit from the policy reform, but may only experience the costs of reform during the term of the political legislature. A good example is the implementation of stock rebuilding programs, such as those being undertaken in the EU for cod and hake. Such programs impose short term costs on the fishing fleets but are intended to provide long term gains in terms of a sounder resource base for the industry in the future. Moreover, the individuals who gain from the investment in stock rebuilding may not necessarily be the same who bore the initial costs as some are likely to have left the industry in the intervening period.

Uncertainty regarding the distribution of gains and losses

The uncertainty surrounding the benefits of reforms is often larger than the uncertainty surrounding their costs, even when the expected aggregate gains are substantially larger than the expected aggregate losses. Fernandez and Rodrik (1991) demonstrate that there is a bias towards the status quo (and hence against efficiency-enhancing reforms) whenever some (or all) of the individual gainers or losers from reform cannot be identified beforehand. Glazer (2003) points out that once the reform has been implemented, the pattern of beneficiaries becomes clear and there may be support for the new status quo, despite initial opposition due to the uncertainty surrounding the distribution of benefits (next section).

Some evidence suggests that people care more about changes in consumption or wealth rather than the levels of consumption or wealth, and that they care more about losses than gains (Kahneman and Tversky, 1979). Empirical estimates of such loss aversion find that losses are weighted about twice as strongly as gains (Kaheneman,

Knetsch and Thaler, 1990). Loss aversion can therefore help to create a status quo bias, making it difficult both to introduce a policy (and also to reverse a policy once it is adopted).

Sustaining policy reform

The previous discussion assumes a static policy world whereas in reality there is the prospect of reforms, once introduced, being altered or reversed over time. However, the long term durability of reforms cannot be taken for granted. In a dynamic policy environment, it is possible that the losers from reform can organise to lobby for beneficial changes, especially if the losers are relatively concentrated and if the losers are joined by other groups who might benefit from the reforms' unravelling. This is more likely to be the case when general-interest reforms are introduced, where policy changes eliminate or curb existing special interest benefits in order to promote economic efficiency or equity objectives (Patashnik, 2003). There is some evidence of a trade-off between the cost of a policy and its permanence. Opposition to a policy will likely be lower the less costly the policy. However, a policy change that induced investment by some economic agents would make reversal of the policy impose large capital losses on those who made the investment, and may result in ongoing political support for the policy.

There may also be concerns among economic agents about the credibility of policy, as current decisions of economic agents depend, in part, on their expectations of future policy. Indeed, Shaviro (2000) suggests that measures such as compensation schemes and side payments may undermine the credibility of the policy by making special interests sceptical that the policy will continue. While such payments are often advocated to smooth the initial introduction of reforms, they may be counterproductive if they are not tied to the reforms' future maintenance (Glazer and Rothenberg, 2001).[1]

Factors influencing the implementation of policy reform

From a theoretical perspective, there is a wide range of factors that might influence the implementation of policy reform in the fisheries sector. The political economy literature is replete with the theory underlying these factors (see Rodrik 1996 for a survey). There is also a well-developed body of empirical analysis focusing on economy-wide structural reform, agricultural reform, trade liberalisation, airline deregulation, tax reform, to name but a few. In contrast, relatively little work has been done in relation to the fisheries sector. This section seeks to summarise the key insights from the literature illustrated with examples from the fisheries sector.

Initial conditions

The initial conditions within an economy or a sector will determine the scope for reform to enhance economic performance. The wider the potential for economic improvements for some or all actors, the more likely that there will be pressure for reform and consensus for reform may develop. However, it may also serve to strengthen the resolve of beneficiaries from the status quo to resist reform. The outcome will depend primarily on the distribution of gains from policy change. Recent empirical work by the OECD and IMF suggests that the starting point hardly affects labour market reforms, but is significant in the case of product market reforms (OECD 2006; IMF 2004).

In the fisheries sector, scope for reform may be wider in those fisheries where there is currently very low or zero resource rent being earned by participants. Such fisheries are

generally characterised by overfishing, excess capital and an over-abundance of fishers and their prevalence in OECD countries is well-documented (OECD 2005; FAO 2004). The gap between current and potential resource rent can provide fishing industry groups with sufficient incentives to push for sectoral reforms in order to reap the benefits. Gates (2005) highlights the role of the fishing vessel owners in pushing for the introduction of an individual vessel quota program in the Canadian Pacific halibut fishery in the early 1990s. The fishery had suffered from excess capitalisation and low returns under the open access (olympic-style) fishery prior to the reform, and fishers' expectations about the prospect for increasing the profitability of the fishery played a major role in the push for reform.[2] The success of the Canadian reform provided the neighbouring US Pacific halibut fishery with a demonstration of the potential for earning increased rents from the fishery under a system of individual quotas and, in 1995, Alaska adopted an Individual Fishing Quota system for the fishery.

Determining the scope for reform is probably more easily achieved in fisheries with fewer numbers of participants and where the biological and fishing interactions are less complex, such as single species fisheries. Newby *et al.* (2004) point to the example of the Australian southern bluefin tuna fishery where the introduction of individual transferable quotas was made considerably easier because the fishery was a single species fishery with a single breeding stock and had been the subject of many years of intensive research. There were also a relatively small and concentrated number of fishers located in South Australia, and a small number of market outlets from which to monitor catch information. These features made the introduction of reform much easier as the fishers were able to more accurately assess the potential gains from the reform and could identify with the post-reform fishery.

Economic or environmental crises

Economic crises can promote reforms because poor economic conditions make it clearer to the constituency that the existing policies are no longer sustainable for either individuals or the economy as a whole. This introduces a degree of urgency in the decision making process, weakening opposition to reform, and raising the costs of continuing existing policies (Drazen and Easterly, 2001). Olson (1982) notes that severe economic crises appear to weaken strong redistributional coalitions, which were up to that time able to block fundamental reforms. There is some empirical evidence that poor economic performance tends to induce market-oriented structural reforms (Duval and Elmeskov, 2005; Pitlik and Wirth, 2006) although Drazen (2000) notes that poor economic performance is not enough; conditions have to become really bad to encourage a market-friendly policy change.[3]

The crises-induce-reform hypothesis is certainly reflected in the reforms to the New Zealand fishing sector which were largely a response to the economy-wide financial crisis in the country in the 1980s (Bess and Harte, 2000; Dalziel, 2002; Bess, 2005). Poor profitability and excess capitalisation in the sector also played a significant role in the push for reform, but can be regarded as a facilitating factor in garnering consensus amongst industry participants rather than the key driving force (Sharp, 1997).

Environmental crises are also often seen as a factor influencing the momentum and consensus for reform (Hurrell and Kingsbury, 1992). As with economic crises, the costs associated with the environmental policy under the status quo may grow sufficiently large to provide a groundswell of support for change, reshape the political landscape and allow governments to undertake reforms that would have been politically difficult to enact

without such an event. The classic example of such a crisis in the fisheries sector is the closure of the Newfoundland cod fisheries in 1992, which forced the Canadian government into a complete overhaul of their fisheries management approach (Cashin, 1993).

In other cases, however, the presence or prospect of an environmental crisis has not necessarily been sufficient to galvanise consensus for reform, particularly where government policy towards the fisheries sector encompasses other objectives in addition to resource sustainability. This may reflect the environmental corollary to Drazen's observation noted above: poor environmental performance may not be enough; things have to get really bad to induce policy change. In the European Union, for example, repeated warnings from the International Council for Exploration of the Sea about the state of cod and hake stocks in the North Sea have not been matched by significant cuts in the total allowable catches of the species at risk (Lequesne, 2004). Stokke and Coffey (2004) point to a sudden change in ICES advice in 1998 which introduced precautionary reference points coupled with poor communication with parts of the fisheries sector as the main factors behind the inability of the European Union to build a consensus around the benefits of adopting new management strategies.

Economy-wide reforms

Economy-wide structural reform may have a flow-on effect to the fisheries sector, influencing the appetite and drive for reform within the sector. This has been particularly evident in the broad-based deregulation that has occurred in a number of OECD countries over the last two decades as a result of a combination of factors such as strong electoral mandates, fiscal crisis, and the ideological stances of some governing parties. Whatever the motivations, the flow-on effects to the fisheries sector have, in some cases, been profound and the example of New Zealand has already been noted where the broad-based changes resulted in a dramatic shift towards property rights, stakeholder involvement and cost recovery in fisheries management. Many countries have begun to outsource the provision of some government services in an effort to increase the efficiency of government service provision as budgets have come under pressure. In the case of the fisheries sector, some OECD countries are outsourcing some vessel and quota registry functions and fisheries research services as part of broader reforms in government service delivery (OECD, 2003).

There has also been a general trend towards increased transparency in the availability, impacts and beneficiaries of government programs. A recent OECD report on environmentally harmful subsidies noted that improved transparency on the beneficiaries, economic costs and environmental effects of subsidies can stimulate voter opposition to subsidies, making subsidy reform less politically damaging for governments (OECD, 2005). Identifying who benefits from subsidies, and highlighting their relative "bargaining power", can provide a higher degree of transparency and thus can be a particularly powerful motivating force for change.

International factors

International factors may influence domestic reform through competitive pressures and the negotiation of binding agreements or treaties. Competitive pressure resulting from trade liberalisation tends to strengthen incentives for domestic firms to seek reform of policies that put them at a competitive disadvantage compared with their foreign competitors. In the fisheries sector, this can occur through the linkages in the value chain

between, for example, harvesting and processing. As the international fisheries market has become more competitive, processing companies are increasingly pressing governments to reform the management of domestic fisheries in order to improve the quality and consistency of product supply into the value chain. This was a factor in the shift towards individual vessel quotas in a number of Canada's Pacific fisheries (particularly the Pacific Halibut fishery) (Bixby and Jones, 2003).

Sectoral reforms can also be induced by international commitments and constraints imposed by international treaties or agreements. Recent examples in the fisheries sector are the development of the FAO International Plans of Action on various issues (including the management of fishing capacity and IUU fishing) and the commitment to discipline fisheries subsidies made under the WSSD Plan of Implementation. This latter commitment is currently the subject of negotiations in the WTO. Such international obligations can push governments to undertake domestic policy changes, sometimes in the face of domestic opposition. At the regional level, the EU's Common Fisheries Policy places certain obligations on Member countries with respect to their domestic fisheries policies and has been a catalyst for policy reform in many EU countries. For example, the United Kingdom has undertaken a number of major reviews of its fisheries policy, at least partly in response to policy challenges arising from the impact of the Common Fisheries Policy on the UK sector, and is contemplating the next steps in reforming the sector (UK Cabinet Office 2004; DEFRA 2005a, b).

Political institutions

The institutional features of the political decision-making system may be important for the ability to implement reform. At the broad level, there are three key results from the political economy literature that are worth highlighting (OECD 2006):

- Presidential political systems and majoritarian electoral rules often empower large and homogeneous constituencies as compared with the outcomes in parliamentarian systems and under proportional electoral rules and they should in principle be better placed to overcome resistance of small interest groups to reform.
- The political orientation of the government is perceived to determine the country's position regarding the trade-off between equity and efficiency with left of centre governments being perceived to give a greater weight to equity.
- The government's tenure of office, and the amount of time left in office, may affect the reform process. Government's may have a "honeymoon" period when first elected during which reforms can be implemented with high short term costs in the expectation that the benefits may be at least partly realised before the end of its mandate. Conversely, governments facing an election may be inhibited from introducing such reforms.

There are also several ways in which the effects of political competition are diminished. Special interest groups may help to elect representatives who serve their interests. Rival political parties may insulate themselves from electoral costs by allowing their policies to converge. In 1997, the adoption of a national framework law on fisheries by the French National Assembly occurred in a context of parliamentary majority change. This change influenced only very marginally the content of the law even though it had been negotiated and drafted under the previous parliamentary majority's Minister of Agriculture (Lequesne, 2004). In Scotland, the major parties have very similar views on

the state of fisheries and how they should be organised. The major difference is the manner in which this issue is used as a banner to rally support or opposition to the EU (Royal Society of Edinburgh 2004).

Fishers still largely benefit from a favourable public image and this plays a role in the political institutions of some countries. This is certainly the case in Spain and France where Lequesne (2004) argues that "the image of the skipper on board (who may own the ship) defying the hostile sea and bureaucrats (once national, now European) to ensure society's food security" (p.45) is still an aspect of the rhetoric used by the industry in its negotiations over public policy towards the sector (particularly in the small scale sector). Such a situation is probably also the case in Japan and generally in other countries where local fishing communities contribute to the preservation of local traditional culture in the form of fish-eating habits, festivals, customs and manners. It can be argued that while this is probably largely valid only for the small-scale fisheries, these points are taken on and exploited by the whole fishing industry. This debate is also entangled with national interest and sovereignty issues.

Reform strategies

From a political economy perspective, the optimal design of reform strategies will depend on the economic and social institutions and policies and these will differ from country to country, reflecting specific political factors. However, there are some broad insights from the literature (primarily dealing with labour and product market reforms) that shed some light on how countries can design strategies effectively (OECD 2006). These focus on:

- The extent to which institutions and policies are complementary in the sense that the existence of one increases the political support for another. If these complementarities are known, constituencies for reform could in principle be established by appropriately combining and sequencing reforms.
- The use of a "confrontation" strategy which attempts to directly weaken incumbents' bargaining power (through, for example, the mandatory use of secret ballots in voting on strike action in labour market reform).
- The use of an "inclusion" approach based on extending existing membership of political and decision making institutions to a greater extent so as to internalise outsider interests into insiders' behaviour. This can be seen in the trend towards the increased use of mechanisms to include stakeholders in fisheries management decision making in OECD countries (OECD 1997; 2003)
- Sequencing of reforms in a "wedge" strategy where governments introduce reforms that target parts of the sector that have a weaker bargaining power. This strategy tends to reinforce a duality in the polity but may also build up public support for subsequent reforms aimed at the remaining parts of the sector or fishery. This is often evident in the use of pilot schemes in fisheries management where the trial of new measures on a portion of the fishing industry provides a demonstration effect to the rest of the industry.
- Sequencing strategies can be applied to different elements of the value chain or between sectors. There is some evidence that reforms are relatively easier and more successfully implemented in sectors producing intermediate inputs to other industries (as there is potentially relatively wide support for reform) (Fernandez

and Rodrik, 1991). This may be the case in the fisheries sector where reforms may be relatively easier to implement in the processing sector where distributional concerns may be less politically contentious compared to the harvesting sector. Nicoletti and Scarpetta (2005) also note that there are potential interaction and sequencing effects across markets, particularly between product and labour markets.

Compensation strategies[4]

Compensation payments have been a central feature of the adjustment packages used by governments in driving policy reform. They have been a major element in the transfer programs of the fisheries sector in many OECD countries, with cost reducing and income enhancing transfers accounting for around 27% of total government financial transfers to the OECD fisheries sector in 2003 (OECD 2006b). There are three key reasons why governments provide compensation in the pursuit of policy reform: to overcome resistance to reform; to reduce the negative impacts of reform; and to ensure the durability of reform.

First, governments may seek to overcome resistance to policy reform by providing compensation to those who lose from reform. While one of the main objectives of introducing reform is to improve overall economic efficiency, existing legal rights may be affected for some individuals or groups and rents will be reduced or eliminated in the process (for example, through a reduction in asset values, economic dislocation or loss of transfer payments). Compensating transfers can be critical in obtaining the consent of these individuals or groups and allowing the reform to take place.

Using compensation to reduce the opposition to reform is a fundamental outcome from the political economy model, in which compensation is a necessary cost to obtain welfare-improving reforms (Foster and Rausser, 1994). In technical terms, if the net welfare gains from the policy reform remain positive after compensation is provided, then this is regarded as turning a "potential Pareto-improvement" into an "actual Pareto-improvement".[5] The amount of compensation required will depend on the political influence of the interest groups, but the costs of compensation should be minimised so as to maintain the net welfare gain (including the deadweight losses that arise from market distortion and the opportunity costs of government funds)[6]. Foster and Rausser (1994) furthermore note that compensation transfers can also be used to drive a "wedge" between sub-groups of an interest group (or groups) that may be blocking the reform (for example, differentially targeting compensation to small-scale and large-scale vessel owners). This serves to break down the homogeneity of the group's interests and can increase its coordination costs.

Second, compensation strategies can be motivated by distributional concerns and can be used to reduce the negative effects of policy change. When compensation is the policy objective, accuracy in assessing the impacts of policy reform is essential to the efficiency of the program. Providing too much or too little compensation will create market distortions, increase deadweight losses in the economy and reduce efficiency. However, it is generally very difficult to know in advance what the appropriate impact of a policy reform will be, and ex post evaluation of the impact is politically infeasible as it would delay the delivery of compensation to affected individuals. A two-step approach would divide the compensation into two parts, with an advance payment delivered up front and a second payment given after more information on individual impacts is revealed. In general, effective compensation programs should be directly targeted to affected groups,

tailored to the objectives of the policy and be temporary. These principles will help to minimise deadweight losses and will not unduly impede adjustment subsequent to the policy reform by distortions in input or output markets. As was noted in the OECD study on government financial transfers to the fisheries sector, the efficiency and impact of income support programs can be improved with more appropriate targeting and ensuring that the payments are decoupled from fishing activity so as to minimise distortions in the labour market and economy more generally (OECD 2006).

Finally compensation payments can play a role in ensuring the durability of policy reform, by helping governments reduce or counterbalance pressures for the reforms to be fully or partially reversed after they have been implemented. In an analysis of the durability of sectoral reforms in the United States, Patashnik (2003) concluded that the long-term durability of policy reform cannot be taken for granted: "the organised interests that bear the economic costs of policy reform do not necessarily disappear after the reforms are past" (p.226), even with the use of compensation schemes to smooth the passage of reform.[7] He noted that the long-term sustainability of any given policy reform hinges on the successful reworking of institutions and on the generation of positive policy-feedback effects (in particular, the empowerment of social groups with a stake in the reform's maintenance).

The design and implementation of vessel decommissioning schemes provides a good example of the problems associated with the credibility and durability of policy reform. Such schemes are widely used in OECD countries, accounting for 6% of total government financial transfers to the sector in 2003. However, it is widely recognised that the schemes have not been particularly effective in meeting their objectives (Clark *et al.*, 2005; OECD, 2006). This is partly a result of the expectations of future assistance for adjustment becoming embedded in the fishers' expectations and budget planning, so that there is little incentive to maintain the reduction in capital (that is, negative policy feedback). The general failure of the schemes is also due to them being implemented without concurrent changes to the management institutions that may serve to reinforce fishers' incentives to automatically adjust capacity.[8] (Newby *et al*., 2004) cite the case of northern prawn fishery in Australia where the two buyback schemes that were implemented between 1987 and 1999 successfully removed capacity, but the subsequent management of the fishery led to the erosion of many of the benefits. This resulted in a need for further structural adjustment in the fishery.

The fisheries context

Overview of the marine capture fisheries sector

The marine capture fisheries sector in OECD countries is characterised by a large number of relatively diverse actors. This diversity is evident in various dimensions such as the scale of the operations, the ownership pattern of the means of production (for instance owner operated small vessels and shareholder companies operating large vessels), the techniques used (nets, hooks, trawls, etc), the species targeted, and the markets supplied.

A study conducted by ELSA-Pêche in the EU and North Atlantic fisheries identified a "multiple world where some fishers act in the context of a socially oriented and community based representation of their action with a strong intergenerational transmission of patrimonies, symbolic as well as social and cultural; and others who act in a pure industrial relation permanently searching for rent opportunities and thus seeking to

enlarge their range of action" (Raux and Bailly, n.d.). These two groups correspond roughly to the small-scale and large-scale fisheries, though the exact definition of these terms will differ from place to place. These two groups should also be seen as opposing ends of a spectrum rather than as clearly distinguishable. Indeed, if anything, the distinction is becoming more blurred as small-scale fisheries become more capitalised and while large-scale fisheries tend to move closer inshore. The terms 'traditional' and "modern" fisheries could also be used to distinguish parts of the sector. The spectrum implies a diverse range of incentives with respect to policy reform and different winners and losers associated with this.

The local importance of fisheries

The fisheries sector in OECD countries is small in macro-economic terms. It generally accounts for less than 1% of GNP in most countries and even less in terms of total employment. However, it is generally more important in terms of trade. While the fisheries sector is generally of marginal national economic importance, this may not be the case locally. The incidence of fisheries policies on fisheries dependent areas will depend on the economic or employment threshold level applied and the geographical resolution of the data examined. A low geographical resolution will fail to capture the fact that the fisheries sector is necessarily heavily concentrated in the coastal regions close to harbours. In a few areas of the EU, the ratio of total employment in fisheries (defined as employment in capture fisheries, marine aquaculture and fish processing) to total employment can be well over 20% with Port de la Selva in Spain topping the list with 62% employment in fisheries (Megapesca, 2000).

However, employment figures alone do not reflect the role of fishing communities and fisheries products in local traditions and customs, or the importance of fishing in defining local and even national cultural identity. Fisheries, particularly small-scale operations, will also increase the attractiveness of coastal areas for other activities most notably tourism.

Role of management / enforcement and of science

As a result of increased fishing pressure and assertion of national sovereignty over many fisheries, the nature of government intervention has increased significantly during the 20th century. During the earlier part of the 1900s, governments were actively promoting fisheries. This evolved into a discourse of optimising fishing levels during the second half of the 20th century, and has since been replaced by policies to limit and then to reduce fishing effort in order to protect the resource base. This latter swing in government policy occurred over the course of just two to three decades.

With the changing nature of government intervention has come increased dependence on science for decision making. There is possibly no other sector in which science is so closely intertwined with management. The general set-up is one in which specially mandated fisheries research institutes generate formalised knowledge, which is then used as a basis for fisheries management decisions. The basic approach is to predict outcomes of management measures (particularly recommended catch and effort levels) with the fish stock as the basic unit. This approach has changed little even though the core management objectives have evolved considerably in the twentieth century (Degnbol, 2001).

Regulatory bureaucracies expect science to play a key role in management. They also usually attempt to draw legitimacy from science (Salter, 1988). However, the drawing of boundaries between science and management is fraught with problems. Most obvious is the definition of what constitutes too great a risk of excessive fishing mortality or insufficient stock size. This is often presented as the result of a scientific process of investigations but may also be influenced by a political process which seeks to distribute risk between the public and stakeholder groups, and across generations.

Organisation and representation of fisheries interests

The structure of the fisheries sector and the manner in which it organises the links between state and fishers varies from context to context. There are however some clear tendencies. In most cases, socio-economic and territorial differences are reflected in a clear segmentation of the organisation of interests. Often, this segmentation does not reflect the usual distinction between labour and capital. For instance, in France and Spain, it reflects the differences in specific interests of the large-scale and small-scale fisheries (Lequesne, 2004). The extent of organization is also different. The large-scale fishery is more organised and more vocal at all levels of governance from local to national, and from supranational or international. This is illustrated by the ongoing debate in the EU about the proposed Mediterranean fisheries regulation. What is often represented as industry wide opposition reflects better the opinion of the larger operators than that of small-scale coastal fisheries. Alongside this is a general intention from public authorities to favour a single or small number of interlocutors when it comes to the representation of fisheries interests. This has lead for instance to the creation of the CNPMEM in France or the Produktschap Vis in the Netherlands. The result may be that public authorities underestimate the diversity of interests present in their marine capture fisheries sector.

The situation in Japan is very different. There the institutional set-up recognises three basic types of fisheries, the coastal, offshore and distant water fisheries, which are managed separately. For example, fisheries cooperatives organised at a village level play a key role in the administration of coastal fisheries (FAO, 2003a).

Identifying key agents in the political economy of fisheries policy reform

Stakeholders and user-groups

It is useful to make a distinction between stakeholders and user-groups as these two terms are widely used in the debate over fisheries policy, particularly with respect to the role of citizens in the development and implementation of policy. However, the terms are subject to many kinds of definitions when put into practice (Wilson and McCay, 1998).

A stakeholder is anyone or group that has a "stake" or any kind of interest in an issue. This is a very wide definition which in principle covers everyone, but in practice includes any group that has the power to affect the bargaining over an issue (Degnbol *et al.*, 2003). Government regulatory agencies, politicians, fishers' organisations, environmental groups, fishing community associations are all stakeholder groups.[9]

User group is a narrower term and refers to people who make their living from the marine environment, such as commercial fishers, or people who use it recreationally with sufficient consistency to organise around this use, such as recreational fishers and the tourism industry. An important distinction among user groups is that between

consumptive and non-consumptive user groups. The activities of non-consumptive user-groups, such as bird-watchers, will not directly affect the environment (except for issues such as crowding) while the activities of consumptive user groups have a more direct impact. User groups will tend to organise along these two broader categories, seeking to build coalitions within the categories to influence policy choices (Degnbol *et al.*, 2003). The difference between user groups and other stakeholders is important because it is the behaviour of the user groups that fisheries policy seeks to influence and to whom policy reform is primarily directed.

Consumptive user groups

A clear distinction can be made between commercial and recreational fishers. Commercial fishers can be further divided into small-scale and large-scale fishers. While this can be problematic from a definitional perspective, it is nevertheless helpful for conceptual purposes.

Small-scale commercial fisheries tend to operate in a context of a socially oriented and community based representation of their action with a strong intergenerational transmission of patrimonies, symbolic as well as social and cultural (Raux and Bailly, undated). They value both the harvest and the stock of the resources. The image of this group would be that of a small-scale, owner-operated vessel supplying a local market. They are less mobile and thus more dependent on the local resource basis. They also are more likely to defend and promote a cooperative model of administration (Lequesne, 2004). Larger, more capital intensive operations have the option of delocalising and fishing further away from their home basis. In some places, small-scale vessels will face competition for access to resources from both the recreational and large-scale sectors. The small-scale fisheries sector therefore tends to be the group most affected by the depletion of the local resource basis.

Large-scale commercial fisheries tend to operate in a much more entrepreneurial logic. They constantly seek new rent opportunities, to enlarge their range of operations, and protect rights against contestability. In doing so, they may clash with small-scale fisheries, which can often be seen as an anachronism in a modern economy. The image is of a large vessel operated by a hired skipper and crew, processing its catch on board and supplying the domestic and international markets according to a profit maximising objective. Under conventional policies, the harvest is valued more than the stock of resources. Industry representatives are much more likely to find it legitimate to combine other trades with that of ship owners, such as wholesaler or processor.

Recreational fishers are not always recognised as legitimate stakeholders in OECD countries, although this is slowly changing. In Japan, they are seen as competitors to the coastal fishers and no longer benefit from the open access they used to enjoy (FAO, 2003a). Recreational fishers in the European Union are not represented on the Advisory Committee for Fisheries and Aquaculture, the main stakeholder advisory body to the EU Commission in fisheries matters.[10] Recreational fishers are becoming increasingly important both because of the volume of their catches and because of the value of the contribution of the recreational fishing industry to GNP. In the United States, the contribution of marine recreational fisheries to GNP is of the same order of magnitude as commercial fisheries (FAO, 2003b). However, the value of the recreational fisheries does not necessarily accrue to the conventional fishing dependent economies, as recreational fishers are likely to be much more linked to the tourism sector, and will want large mature

fish in a clean environment. They are likely to value the stock of the resource more than the harvest.

Over-capitalisation in fisheries has been one of the major consequences from conventional fisheries policies in the past. There is therefore no doubt that the *upstream industry*, which provides the inputs necessary for the fishing industry has had a positive interest in this policy. In the short to medium term, fishers have bought more nets, boats and other equipments than they would have if policies had been different.

The major interest of *processors* will be to secure supplies at a reasonable price and supply markets with products for which there is a demand. This is easier when landings are reliable and more concentrated and closer to consumers.

Non-consumptive user groups

Fisheries managers and scientists are two user groups with *a priori* similar interests in the conventional fisheries policy and management structure. Symes (1997) noted that 'the hollowing out of the state has not yet occurred in fisheries' and that this places fisheries management in a 'somewhat anomalous position in terms of modern patterns of governance'. Thirty-eight per cent of all government financial transfers in fisheries go to research, management and enforcement (OECD 2006). Fisheries managers and scientists have a tendency to externalise the shortcomings and problems in fisheries ("the industry is not doing what it should" or "the politicians have not taken our advice on board") while at the same arguing for more resources (see for instance the EU Commission's Communication on "Improving scientific and technical advice for Community fisheries management" (CEC, 2003). Nevertheless, an increased emphasis on value for money and effectiveness of bureaucracies means that fisheries managers and scientists are coming under increasing scrutiny. This trend can be seen for instance in Australia where the 1991 Fisheries Management Act mandates management effectiveness and cost efficiency as explicit objectives for the Australian Fisheries Management Authority.

One big difference between *conservation groups* and the consumptive user groups is the value they place on the stock of the natural resource being exploited, as opposed to the harvest. Both groups value the stock, but the conservationists will place a much lower value on the harvest, if any at all. Boyce (2000) showed that this had implications for their respective acceptance of regulation. In view of the low levels of current stocks and the impact of fisheries on the environment, the effectiveness of conservation groups in terms of political influence and affecting bargaining outcomes is open to debate. The groups are no doubt gaining public support and enjoying some policy gains. For example, the World Wide Fund for nature has played a major role in pushing for reform of fisheries subsidies and in framing the WTO debate subsidies disciplines (see the series of publications on the issue in WWF 1998, 2001, 2004).

The *tourism industry* is an important economic sector in many of the coastal regions where fishing is important. However, because of its diversity, its position in relation to the fisheries is equally mixed. In most cases the tourism industry does not seem to have a clear-cut interest in the fisheries industry and how it is organised or managed. Fishing and tourism may, however, be placed in a situation of competition, most often for space as a result of the increased urbanisation of coast lines, but occasionally also for access to resources, where recreational fishing is important for instance. On the other hand, the very existence of a fishing sector, particularly small-scale, can increase the attractiveness of areas for tourism.

Being scattered along the coastal regions, the *fishing communities* often make strong contributions to the preservation of local traditional culture in the form of fish-eating habits, festivals, customs and manners. However, in most countries the age profile of the fishing workforce is changing with number of fishers decreasing and their average age increasing. This poses some concern for local communities, but may also be a natural solution to problems of overfishing in some instances.

If fishing activities take place under their jurisdiction *local authorities* can reap particular benefits from narrowly targeted fisheries policies, as these tend to direct more resources to them than would be justifiable purely on the basis of a share of population or economic activity. It is estimated that around 43% of government financial transfers were devoted to fisheries infrastructure in 2003 (OECD 2006).

As for the general *public*, "conventional" policies have engendered an, until now, stable supply of seafood and allowed it to express a feeling of solidarity with members of a hazardous profession that contributes to society's food security. The costs associated with fisheries policies are considered to be low as they are spread widely across the community. The actual perception of welfare benefit will vary from country to country in accordance with the importance of fisheries and wider environmental quality. The potential gains from shifting from the status quo are probably viewed as being quite limited.

Notes

1. Hogwood and Peters (1982) note that policy making is not done from a blank slate, but is actually a process of policy succession: the replacement of an existing policy, program or organisation by another. They point to the need to design policies for succession not for permanence, but highlight a number of political economy problems that may arise (such as concerns over policy credibility and the development of a rolling coalition of special interests who may oppose continued change).

2. The desire to improve the safety of vessels and crew also played a role in the push for reform as the race to fish had resulted in severe pressure on vessels to work for long periods within the short fishing season, with decreasing marginal returns each year.

3. However, it has also been argued that opposition to reform may be weaker during economic upswings as the costs of reform are likely to be relatively small and the distributional effects less visible when aggregate incomes are growing.

4. This section draws on work being undertaken in Trade and Agriculture Directorate on the role of compensation in policy reform.

5. A potential Pareto-improvement is defined as a situation in which a policy change makes some members of society better off, but makes no one worse off. In neoclassical economics, this is interpreted in the sense of the Kaldor-Hicks criterion where the world is viewed as being made better off if the magnitude of gains and the magnitude of losses from a policy change are such that the gainers can fully compensate the losers for the losses and still be better off themselves (even if the transfers never actually take place).

6. Note that both over- and under-compensation are potentially optimal strategies to overcoming opposition to reform.

7. Indeed, it has been speculated that the use of compensation schemes and side payments may actually undermine the credibility of reforms by making special interests sceptical that the reform process will continue (Patashnik 2003; Shaviro 2000).

8. Clark *et al* (2005) argue that, even with perfectly enforced rights based management (including individual transferable quotas), the expectations of future government assistance will reduce the expected costs of adjustment and result in a higher than optimal level of investment in fishing vessels.

9. Stakeholder is an "essentially contested" term because the legitimacy of the voice of particular groups is often called into question by other groups in the political bargaining context (Gallie, 1955).

10 However, two recreational fishers associations sit on the Executive Committee of the newly created North Sea Regional Advisory Council (RAC). RACs are being set up to cover specific regions and fisheries in the EU, and bring together fisheries and other stakeholder representatives to inform the European Commission's policy development and implementation activities.

Chapter 3

Introducing market-based reforms to manage overcapacity in Norway

This case study reviews the process of introducing market-based reforms to manage over-capacity in the Norwegian fisheries sector. The fisheries sector is a politically important sector in Norway due in large part to the high regional concentration of the industry and the organised influence of the fishers' organisations. These factors played a significant role when it was decided to introduce market-based management reforms into the sector to help address the problems of overcapacity, low profitability and depleted stocks. The process of reform, which essentially began in the 1990s, was strongly influenced by distributional considerations, a fear of privatisation of the commons through the use of ITQs, and the diverse views of the different fleet segments. The establishment of the vessel-based quota system was a reaction to this and issues surrounding the system's design, allocation keys for the quota and the longevity of the system were strongly debated. The system continued to evolve with extensive discussion within the sector, and further refinements to the quota system (involving the Structural Quota System and the trial Quota Exchange System) were introduced in 2003, followed by later adjustments in 2005 and 2007.

Policy context

Norway is the tenth largest fisheries producer in the world, with catches of around 2.4 million tonnes in 2006. The bulk of the catch is based on relatively few species, with 90% of the catch covered by just 10 species. In addition, 90% of the catch comes from stocks that are shared with other countries including the Russian federation, European Union, Iceland, Faro Islands and Greenland. The fishing sector makes a relatively small contribution to the GDP of Norway (0.7% in 2006) but is a major export sector, accounting for 5.1% of total Norwegian exports in 2006 (third behind oil and gas, and metals); Norway is also the second largest exporter of fisheries products in the world (behind China).

The numbers of both fishers and vessels has been declining steadily in Norway over the past decades as a result of increases in technical efficiency and government policies to reduce the fleet size. The number of full and part time fishers was just under 13 500 in2007, down from around 30 000 in 1985. The number of vessels has declined from over 25 000 in the early 1980s to 7 041 in 2007. Around 60% of the vessels are less than 10m in length and this vessel class has experienced the greatest proportional decline over the last decade (down from 10 601 vessels in 1996 to 4 056 vessels in 2007, however many of these were inactive). There is a strong regional pattern to the fishing fleet. In the northern region of Norway, the fleet is dominated by small fishing vessels operating close to shore, while the larger fishing vessels operating in the Barents Sea and the North Sea

mainly belong to owners on the west coast, apart from the cod trawlers which to a large extent are owned by a few large processing companies.

The regional pattern is also reflected in the important role that fishing, processing and, more recently, aquaculture have played in rural development. The sector has been essential in securing basic employment in a large number of coastal communities. The alternative employment opportunities in these communities vary considerably, mainly focused on seasonal tourist activity, but with many opportunities for employment in the offshore oil/service industry. Nevertheless, the regional concentration of fisheries has meant that they play an important role in the politics of Norway as the sector plays an important role in the Norwegian government's overall policy to maintain the settlement structure in coastal communities, especially in the northern part of Norway.

The objectives of Norway's fishery policy therefore reflect two policy priorities. Fisheries management is intended to maximise the profits of the sector through an economically efficient use of the resources, while at the same time ensuring socio-economic optimisation with respect to the returns to communities along Norway's coast. Reconciling these two priorities has been a consistent feature of the fisheries policy reform debate in Norway over the past few decades. For example, opposition from the fishery industry was a decisive factor behind Norway's decision not to join the European Community in 1972 as well as in 1994. Fisheries will probably continue to be one of the main issues in the discussion on a possible membership in the European Union in the future as well.

The political importance of the fisheries sector is reflected in the organisation of the sector and the institutional design for decision making (Hersoug, 2005). The political interests of the fishers are represented primarily by the Norwegian Fishermen's Association (NFA), established in 1926, and the Norwegian Coastal Fishers' Association (NCFA), which was set up more recently in 1990 to cater for the smaller scale coastal fishers. The NFA is, in essence, a labour union which has a strong political influence and takes part in discussions and decisions on fishery management, including quota decisions. Norway has a long tradition of user-participation, and the fishery policy has been formed taking into account the views of the fishers, represented by the NFA and the NCFA.

The Ministry of Fisheries is responsible for overall policy in the fishing sector while the implementation of management measures is done by the Directorate of Fisheries. In the national regulation process, the Directorate makes a proposal on how the Norwegian share of internationally agreed TACs should be shared amongst the various fleets and regions. This proposal is then presented in an open meeting where representatives from the NFA, NFCA, Federation of Norwegian Food and Allied Workers Union, The Sami Parliament and others who are interested are invited to participate. Based on discusses in the meeting the Directorate gives its recommendations to the Ministry. The Ministry then evaluates the recommendations and the Minister of Fisheries decides how fishing should be arranged for the following year. Throughout the whole regulatory process, a great deal of importance is attached to cooperation between the authorities and the various fishers' representative organisations (OECD 2006a).

The reform process

Within this policy context, the reform process was driven by a number of inter-related factors. First, a series of resource crises hit the major Norwegian fisheries, creating a strong incentive for both government and many fishers to engage in debate over how to improve the profitability and adaptability of the industry. Second, the resource crises and

accompanying low profitability and excess capacity in many fleets made it clear that it was necessary to change the open access nature of fisheries that were the norm in Norway at the time. One by one, Norway's key fisheries were shifted from open access to closed access, primarily through the installation of limited entry based on a tight licensing regime. Third, these events were accompanied by a massive reduction in subsidies to the sector, from a peak of over NOK 1.3 billion in the early 1980s to less than NOK 200 million by 1994 and only NOK 50 million in 2006. This required the sector to be more self-reliant and flexible in generating profits, rather than relying on government transfers to carry them through fluctuating fortunes.

While the resource crises were a major trigger for reform, it was the shift from open access fisheries to closed access that generated the most heated debate and ultimately led to the introduction of market-based instruments to manage over-capacity in the sector (Hersoug, 2005). Closing the commons had significant implications for the distribution of wealth within the sector. It was necessary for the government to develop flexible management systems that would generate resource rent, while at the same time, addressing the distributional concerns. Market-based instruments have helped to create a profitable and sustainable sector, but the process has not always been smooth and has been marked by an evolution of the design and implementation of management instruments to meet different policy challenges. The rest of this section discusses the reform process in detail. Table 3.1 provides a timeline of the key events in the process.

Table 3.1. Timeline for Norwegian reform process

	Event
1960	First decommissioning scheme undertaken
1984	Quota transfer system (early version of Unit Quota System) introduced in part of the cod trawler fleet
1990	Debate opened on individual transferable quotas
	Individual vessel quotas introduced in coastal cod fleet
	Unit Quota System introduced in cod trawler fleet
1994	Unit Quota System introduced in Greenland shrimp trawler fleet
1996	Unit Quota System introduced in purse seiner fleet
2000	Unit Quota System introduced in long-liner fleet
2001	Unit Quota System introduced in saithe trawler fleet
2002	Unit Quota System introduced in industrial trawlers
2004	Structural Quota System introduced to coastal fleet
2004	Quota Exchange System introduced for coastal fleet as temporary measure
2005	Unit quota system for offshore fleet redesigned to mirror structural quota system
	Moratorium on further use of market based instruments and review of fleet structure policy
2007	Structural Quota System re-introduced, with some modifications.
2008	Quota Exchange System for coastal fleet (introduced in 2004) was settled.

Source: OECD (2006a); Hersoug (2005).

Resource crisis

At the end of the 1960s, there was a total collapse in the Norwegian herring fisheries. The impact on fishers was masked to some extent by the availability of subsidies to fishers to compensate for lack of profitability. However, it became evident that the fleet had to be reduced as overcapacity was hampering economic recovery. At that time "limited entry" was the internationally accepted remedy to overcapacity, and the principle was introduced in Norwegian fisheries through a new law regulating participation in fisheries in 1972 (Act on the Regulation and Participation in Fisheries)[1].

There were four different objectives attached to the implementation of the law:

- Fishing capacity had to be adjusted to the carrying capacity of the resources.
- Profitability had to be achieved by the fleet as well as the individual operator.
- The license regime should contribute to a "reasonable (geographical) distribution of the fleet".
- The exclusive access rights of bona fide fishers should be protected.

The objective to maintain a particular geographical distribution is a clear reflection of the role that fisheries policy played in regional development policy, which in a Norwegian setting meant that the fisheries should contribute to the maintenance of the settlement pattern.

In 1988/89, it was evident that a cod crisis was looming. The issue of over-capacity was again put on the agenda, although this time it mostly affected the coastal fleet. The issue of establishing an Individual Transferable Quota system (ITQ) was introduced through a report from a working group on the structure of the harvesting sector. The group comprised representatives from the Norwegian Ministry of Fisheries, the Directorate of Fisheries, and the Norwegian Fishermen's Association (NFA). The original idea was to introduce enterprise allocations to the offshore fleet, thereby making it possible for companies with two or more vessels to rationalize harvesting capacity and, in addition, making it possible for two or more companies to co-operate in reducing effort. This was, according to most fishers and politicians, considered being more or less similar to ITQs. The proposal created a heated debate, with strong opposition from the coastal fishers and politicians. The proposal was not acceptable to the fishers because the fisheries policy was perceived as a regional policy contributing to the maintenance of the established settlement pattern.

Faced with opposition to the proposal, the Ministry of Fisheries prepared a white paper in 1992 for the Parliament. Four officials from the Ministry of Fisheries were assigned to draft the first discussion paper, in co-operation with biologists from the Institute of Marine Research, and economists and social scientists from Norwegian universities. The report described the existing ITQ-schemes in Australia, New Zealand, Iceland and Canada, and the group presented an overview of different forms of ITQ. The group ended up by recommending different forms of ITQ-systems with strong geographical limitations on transferability. The report discussed various forms of "transferability", including:

- The traditional trading of quotas
- Transfer of vessels with quota
- Enterprise allocations to be "traded" within the company

- Renting quotas on an annual basis
- Co-operative fishing where several owners may decide to use one boat to catch several quotas

The Ministry's preferred version (relating to vessels longer than 8 meters) was based on TAC allocation to various groups (vessels and regions) based on historical catch. Individual quotas, defined as a share of the TAC, would be allocated for a limited period of time (five years) and be subject to an annual resource fee to be paid to the government. Quotas would be tradable within groups and regions, while transfers across vessel groups and regions would require permission from the Ministry.

By taking the demand for greater flexibility and the need for regional stability into consideration, the Ministry thought the proposal would meet acceptance, not only by the fishers, but by regional politicians as well. However, "[t]he overwhelming majority of those consulted were strongly against ITQs, even in the modified version suggested in the draft" (Apostle *et al.*, 1998). The main reason for the skepticism was the fear of privatization of the commons. While it was generally agreed that it was necessary to have TACs, and closed access, and that the exclusive right to fish is distributed to a limited number of fishers based on tradition, it was not considered legitimate that someone should be given an exclusive right to trade and make profit from the fisheries resource, without actually fishing. The pure forms of an ITQ system therefore did not favour in political discussions. The Labor Party (at the time in Cabinet) and a task force within the party found that the question of ITQ should not be on the political agenda. In the revised version of the white paper presented to the Parliament, the question of transferability was considerably watered down. In the 1992 report from the Parliament's standing committee on fisheries, the majority rejected an ITQ option. This effectively scuttled future debate on the use of ITQs in Norway.

The establishment of the Individual Vessel Quota system (IVQ)

However, an alternative to an ITQ-system, the Individual Vessel Quota (IVQ) system, was established and implemented in most of the Norwegian fishing fleet. Most attention was focused on the Northeast Atlantic cod stock that was in a serious state in the late 1980s. Due to a sudden and unexpected decline in the size of the cod stock, the TAC was set to 340 000 tons in 1989, down from 630 000 tons the previous year. In 1989, the coastal fisheries were closed after only three and a half months. Because of this, an individual quota system was established during the fall of 1989 and implemented for the 1990 season in the costal fleet.

The fishers, represented through the Norwegian Fishermen's Association had a relatively strong voice in the process. The key policy arena for negotiating the IVQ regime was the Advisory Board for Fisheries Regulations, established in 1983 as the meeting place between the industry representatives and the fisheries authorities on resource management issues (Hoel *et al*., 1996). While the Council formally only had a role vis-à-vis the Minister of Fisheries, the Council's decision would usually, and particularly if they were unanimous, be very influential (Hershoug, 2003). In this case, the government decision was made during the fall of 1989, based on the recommendation of the Advisory Board for Fisheries Regulations.

The IVQ system was a two-tiered system. The most active vessels, as measured by the quantity of cod landed in the 1987-89 period, were put under a vessel quota regime (the priority group I vessels). These quotas were exclusive, so that the vessel owner had

full discretion to decide when or where to fish. On the other hand, the less active vessels were allowed to fish competitively under a group quota (group II vessels). There were no restrictions on participation to this fishery, as long as the fisher fulfilled the requirements of being a registered fisher. However, the allocation to this group was about 10% of the quota given to the coastal vessels in group I.

When the IVQ system was implemented, the dramatic condition of the cod stock made it inevitable to take steps to improve the situation for the full time fishers. However, the IVQ regime was initiated as a response to the resource crisis, and initially the idea was to abolish the system once the situation returned to normal. This may have been the main reason why the IVQ system was adopted so quickly, with relatively few objections.

Even though both the fisheries authorities and the Fisherman's Association regarded the IVQ system as transitional, the IVQ system became permanent when the crisis passed. During the 1980s, the annual landings from the coastal fleet averaged 180 000 tons. Assuming this represents a "normal" situation in the fishery, the crisis was over in 1993 when landings returned to about this level. Despite this, with reference to the over-capacity in the coastal fleet, the Ministry of Fisheries argued that the quota was still not large enough to allow all vessels to a normal level of operation. In spite of its earlier position on IVQs, the Fisherman's Association supported this view. The major reason for the shift was that the owners of vessels in priority group I discovered the benefit of being inside a closed group (Holm *et al*., 1996; Hersoug, 2005). The exclusion of some 4 000 vessels from full quota rights meant that there was a dramatic improvement in wealth and profit for the approximately 3 500 remaining rights holders in Group 1.It allowed the rights holders to fish their quota when it suited them, or to sell the vessel with the additional quota value. The Norwegian Fishermen's Association therefore began to work to protect the value of rights created by the IVQ and was supportive thereafter of measures to improve the profitability of the sector through the further refinement of the quota-based management instruments (including transferability).

The establishment of long-term allocation keys

While TACs in the important cod fisheries were introduced before the establishment of the Norwegian EEZ, there was no effective allocation to different fleet groups. All cod trawlers got some form of quotas from 1976 and onwards, but the costal fleet could fish with only minor restrictions until 1986, due to an agreement between Norway and the former Soviet Union. However, following the 1989 cod stock crisis, a fixed allocation key was required. Overcapacity was defined as the main problem, but representatives from the offshore fleet were reluctant to start restructuring as long as there was open access in the coastal fleet. They feared that new entrants to the coastal fleet would immediately consume any efficiency gains. Hence, a fixed allocation key was needed. This was also acknowledged by the NFA. After intense debate, the so-called "trawler ladder" for cod, an allocation key providing the sharing formula between the offshore fleet and the coastal fleet, was finally decided in 1989.[2] Based on the five-year allocation key, imposed and followed up by the Ministry of Fisheries, the task of scaling down the trawler fleet could start. The "Unit Quota System" was introduced in 1990 to accomplish this (see Box 3.1 for a summary of market-base instruments used in Norwegian fisheries).[3]

Box 3.1. Summary of Norway's key market-based management instruments

Individual vessel quota system. This is a management mechanism to distribute the Norwegian TAC amongst different segments of the fishing fleet. The fleet is divided into several groups according to size and fishing technique (trawlers, purse seine, etc). Each vessel group is then allocated a group quota which is then shared among the participating vessels in fixed and (more or less) guaranteed portions. Trade in quota is not allowed, although an informal market has existed.

Unit Quota System (UQS). This quota transfer system is an adjunct to the IVQ system and is intended to reduce the number of vessels in the offshore fleet. The system allows the owner of two vessels to transfer the quota of one vessel to the other vessel. If the surplus vessel is sold or scrapped, the vessel owner can hold the additional quota for 18 years (13 years if the vessel is sold rather than scrapped). The time limit was abolished in 2005 when the Structural quota system (SQS) was introduced to the offshore fleet as well (see below).

Structural quota system (SQS). This quota transfer system was introduced in 2004 to encourage capacity rationalization in the coastal fleet. It enables vessels between 15 and 21 meters and between 21 and 28 meters to transfer quota from one vessel to another vessel if one vessel is scrapped. 20% of the quota attached to the scrapped vessel is returned to the regulation group while the remaining 80% is held in perpetuity by the vessel owner. To avoid geographical concentration, the SQS is subject to certain limitations. The government has decided (the spring 2007) that the structural quota would be given with a predetermined time limit (20 years). The SQS for the coastal fleet would also be extended to cover the group of vessels with a quota length of 11-15 meters (or 13-15 m in the case of the coastal group of mackerel fishing).

Quota exchange system. This was introduced in selected coastal counties in 2004 as a temporary measure for the coastal fleet. The system allows two vessel owners within one vessel group to team up and fish both quotas on one vessel for a period of three out of five years. This system was settled by the end of quota year 2007.

Source: OECD (2006a).

Overcapacity also proved to be a problem in the pelagic fleet as technical improvements rapidly improved efficiency and countered any gains made as a result of decommissioning programmes. In 1994, a new long-term allocation key was proposed, this time covering more species (including herring, mackerel, capelin as well as saithe and haddock), based on historical catches and proportionality. This caused a dramatic conflict within the NFA, especially on the allocation of cod. On one hand, owners of offshore vessels were demanding a larger quota share while, on the other hand, coastal fishers, demanding what they considered to be the fair share based on historical catches. A compromise was reached, leaving the Ministry of Fisheries with a solution that was easy to adapt. At the same time the solution was difficult to counter, as it was already a negotiated solution by the industry itself of a politically very sensitive question. To move even a single per cent from one group to another in only one fishery, would probably break the fragile agreement. The allocation keys were implemented in the industry in 1994 and lasted for seven years.

In 2001, the allocation keys were up for discussion. This time the threats of breaking up and leaving the organization was clearly pronounced by the subordinate organization of the offshore fleet, centering on even minimal changes to the previous allocation keys. The case had been thoroughly prepared through a large committee, consisting of fishers from most fleet segments. The committee managed to obtain a compromise and after days of negotiation, a similar compromise was reach in the NFA, now binding the allocation until 2007. It was renewed in 2007 with little debate or opposition.

As a part of the agreement, the Ministry was requested to “close” a number of fisheries, that is, to limit the participation according to certain criteria. It was also a

request that led to the so-called "Finnmark model", whereas the coastal fleet is divided into four length-groups, each group being allocated a quota according to a historical share. These requests did go very well along the lines of the Ministry of Fisheries work to take further steps to reduce capacity in the coastal fleet. The "Finnmark-model" was implemented from 2002, as well as the new allocation keys.

The establishment of quota-transfer systems in the coastal fleet

During 2002, the Ministry of Fisheries proposed three important changes to the Norwegian access regime. The first was a green paper published in the spring of 2002, proposing to close the saithe, haddock and herring fisheries in the northern part of the country which had remained open, even if the most important demersal fishery, the cod fishery, were closed in 1990. The Ministry argued that no further restructuring in the coastal fleet could take place before access was closed to all the fishers.[4]

The proposal introduced a dual structure, as already implemented in the cod fisheries, giving the priority Group I vessels of the cod fisheries an individual vessel quota on saithe and haddock according to vessel size. Vessels not holding a permit in the cod fisheries, had to qualify according to their historical catch of saithe or/and haddock or/and cod to be given a permit to the new priority group I, now enlarged to include cod, saithe and haddock. Vessels not qualified were given access in the open fisheries of cod, saithe and haddock in the so-called Group II.

The proposal was supported by NFA, and the protesting groups were weak, being represented by the Norwegian Coastal Fishermen's Union (NCFU) and various local politicians (Hersoug 2003). Hersoug (2003) also argues that the concern of the NCFU had a strong basis, as these fisheries have constituted the backbone of many small-scale and part time fishers in marginal regions. During 2002, the last open fishery of mackerel was closed, as well as the coastal fisheries of Norwegian Spring Spawning herring.

The second proposal was a green paper concerning a decommissioning scheme for the coastal fleet partly financed by a fee on first hand sales of fish. The idea was to build up a "Structural Fund" over a five-year period aimed at buying out and scrapping coastal vessels of less than 15 meters. This is contrary to the traditional approach in Norway, where the Government has financed all decommissioning schemes. The principle of "all pay, some receive" was chosen to establish a fund big enough to have an effect, while keeping the fee as low as possible.

This proposal was also supported by NFA, on the condition that the government had to contribute matching funds to the Structural Fund. The government did that for 2003 and 2004, but has given no guarantee for further contributions to the found. The government has given contributions for the years after 2004 as well.

The third proposal was a green paper on the actual restructuring of the coastal fleet, considered having substantial overcapacity. From the Ministry's point of view, it was important to offer the coastal fleet an option that they would choose to use, depending on its individual situation. In the summer of 2002, after a period with some consultation with stakeholders, the Ministry presented a green (public hearing) paper suggesting two main directions of policy; either co-operation through the exchange of quotas between various vessels; the Quota Exchange System, or a more permanent restructuring through the merging of vessels that each holds a fishing permit; the Structural Quota System.

In March 2003, the government presented a white paper to the Parliament on "Structural measures towards the coastal fishing fleet". In the white paper, the Ministry of Fisheries gave a review on the policy towards the coastal fleet, by a description of the different proposals, arguing why it was necessary to reduce the capacity in the coastal fleet, and the expected long-term effect these new instruments would have on employment and settlement in the coastal areas.

The series of green paper, together with the white paper on the Structural Fund, quickly became the main topic discussed in the fisheries media. It was opposed primarily by three groups, the Norwegian Coastal Fishermen's Union, various local politicians and some representatives from different academic institutions. They argued that these systems were too close to an ITQ system; that there was no overcapacity in the smaller part of the coastal fleet (a number of small-scale fishers have a technical capacity which they choose not to apply), and that it would not go along with the policy on employment and settlement in remote areas. Finally, there were arguments that the consequences of this new proposal were not discussed thoroughly enough in the white paper. Nevertheless, NFA asked for some extra time to be able to have a thorough discussion on the proposals within the organization, ending up with supporting all the proposals with some minor suggestions for change.

The Parliament did not immediately embrace the proposals, however the position taken by NFA was placed a great emphasis. After thorough consideration, the majority went along with all the proposals with only one minor change during the spring of 2003. This led to the implementation of the jointly funded decommissioning scheme from the summer of 2003, the Structural Quota System and a trial period for the Quota Exchange System from 2004 (this system was settled by the end of quota year 2007).

The 2007 White Paper

In October 2005 there was a cabinet reshuffle in Norway and the new government decided to halt all the market-like instruments pending a review of the fleet structural policy. The SQS was suspended as of 20 October 2005 and a committee was set up under the authority of Royal Resolution of 6 January 2006 to assess the impact of established structural measures in relation to the Government's objectives of: securing fish resources as commons; securing a fishing fleet that would serve to sustain activity the length of the Norwegian coastline; and ensuring that such a fleet is modern, diversified and profitable. The committee was requested to submit its proposals for how the structural policy might be formulated in order to realize these objectives. The committee was a diversified group including fishers and vessel owners, representatives from the fish processing industry, stakeholder organizations, the sales organizations, researchers and political representatives. The authorities were only observers to the committee.

On 19 August 2006, the committee submitted its report to the Ministry of Fisheries and Coastal Affairs. The Government then presented a White Paper to the Storting (Parliament) concerning a structural policy for the fishing fleet in the spring 2007 (16 March). The report was subject to a public hearing during fall 2006. Key point in the debate; time limit or not – "everyone" agreed that there was a need for structural policy instruments.

There was considerable debate within the committee on how the structural systems should function. Discussion focused around the future of the decommissioning schemes, the future of the SQS systems, and the issue of resource rent taxation.[5] The government

decided to continue providing the decommissioning schemes for the coastal fleet, at least up until July 2008, when it would be reviewed. It was also decided to continue with the SQS, although with some modifications. For example, the SQS for the coastal fleet would be extended to cover the group of vessels with a quota length of 11-15 m (or 13-15 m in the case of the coastal group for mackerel fishing). This would be evaluated at the end of 2009. There were also changes in the rules on quota ceilings in the SQS for the coastal fleet in order to meet the government's objective of regional distribution of fishing resources and revenues.

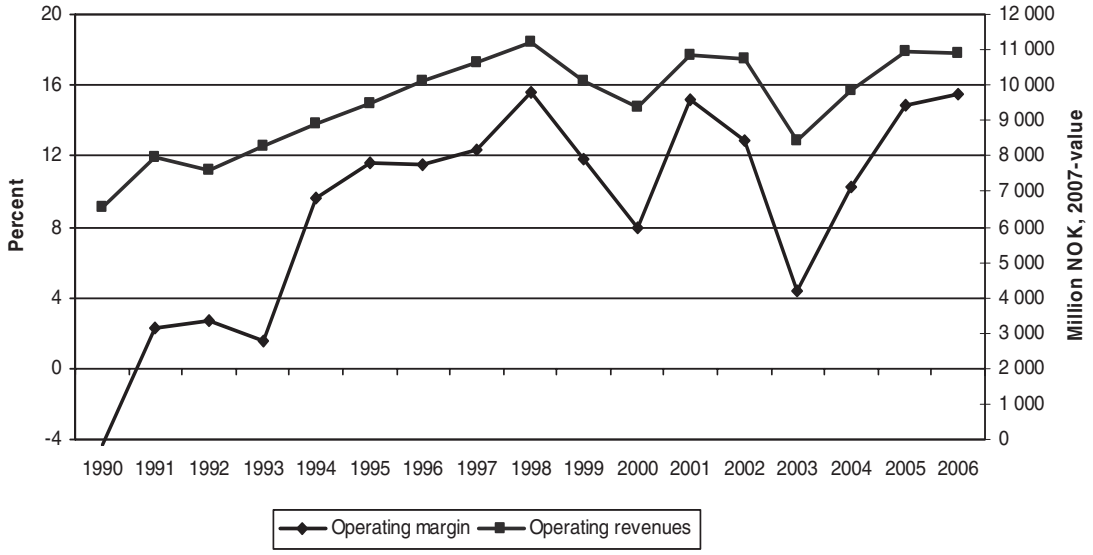
The issue of resource rent taxation was also hotly debated in the committee and was the subject of lengthy discussion in the Government's white paper. Indeed, the application of a resource rent tax to the fishing industry had been on the table since 1992 when a Government white paper concluded that, over time, a share of the resource rent form the fishing sector should be collected for the benefit of society. It proposed that differential charges should be introduced for a listing on the Register of Norwegian Fishing Vessels as a first step towards a resource rent tax. Successive government reports have been in favour of introducing resource rent taxation. The parity of the fishing industry with the oil and gas and hydropower industries was a key issue, as both these other sectors generate resource rents which are taxed. No resource rent tax, however, has ever been imposed on the fishing sector. In the most recent debate, there was a slim majority in the committee (8-7) against the introduction of a resource rent tax, although the majority of industry representatives actually supported the concept, in combination with an unlimited time period on the structural quotas. The government decided not to pursue the issue.

Outcomes of reform

The Norwegian fishing industry has grown from a heavily subsidized and overcapitalized industry to a competitive one that stands on its own two feet. This has been achieved through comprehensive structural adaptation and efficiency improvements. In reshaping the industry, there has been the effect of reduced employment and increased concentration. There is also increased resource rent being generated for fishers through higher sales prices and a high level of profitability (Figure 3.1).

The focus now is much more on profitability within each vessel group. Approximately 95% of the catch value comes from access-regulated fisheries. The TACs are distributed to the various vessel groups through fixed allocation keys, and are further allocated as Individual Vessel Quotas. Different quota-transfer systems such as the UQS and the QES have been developed to meet the challenge of an increasing overcapacity due to technical development in vessels, gear and equipment. The management instruments implemented leave the responsibility for adjusting the fishing capacity to the available resources to the industry, and thus secure higher profitability. However, it was a long and slow process and required a step-by-step approach to reform to ensure stability and cooperation amongst stakeholders.

Figure 3.1. Average operating margin and total operating revenues for vessels 8 metres and above 1990-2006



Operating margin = (operating result/operating revenues)*100.

Key insights

Economic crisis drove reforms

As is the case in many other countries, it was economic crisis that provided the impetus for reform to take place. While there had been an increasing degree of resource pressure on stocks, it was not until this was translated into severe impacts on the profitability of key fleet segments that the inertia to undertake significant reform was overcome. The temptation to keep subsidizing losses in the industry, and defer politically difficult reform, was significant, particularly as Norway enjoyed significant oil-based wealth. However, the economic crisis arrived at a time of change in the approach of the government of the day towards more self-sufficient industries in general. This was assisted by the powerful political voice of the NFA. Many fishers, especially the larger vessel owners, recognized the potential benefits in terms of increasing profits from closing access and reducing the number of participants in the industry.

Sequential reform, continuous improvement and the demonstration effect

The Norwegian reform process reflected a gradual approach to reform with sequential changes to the fisheries management system providing a smooth introduction of reforms over time. The reforms tackled the relatively "easier" fleet segments and those facing the more immediate economic crises before turning to the more politically difficult fleet segments after years of experiences with the various systems. In this way, the reforms introduced a series of tailor-made schemes which demonstrated an adaptive policy response, but keeping the basic policy principles intact. This reflects a philosophy of continuous improvement which provided a demonstration effect as successive fisheries moved from open access to closed access. This enabled support for further reform to be developed and then sustained. Such an approach is supported by all stakeholders through

the extensive consultation process which is an integral part of the Norwegian fisheries management system.

However, segments of the coastal fleet remain a concern. This politically difficult area remains the most contentious, and the most contended, because it represents the strongest intersection of the objectives of economic efficiency and regional development. The policy problem confronting the government is reflected in the increasingly complex regulatory framework governing the coastal fleet as the management systems are fine-tuned to try and reconcile these two policy priorities. This, in turn, reflects broader concerns about the complex and intricate fisheries management system in Norway that has developed over time, largely as a result of both the demand for more fine-tuning of regulations and the willingness of successive governments to meet such demands (Jentoft and Mikalsen, 2004). However, the government has gradually dealt with the coastal fleet issue by focusing changes on and reducing contentious issues within the larger vessel segments within the coastal fleet (mostly by bringing them into the regulated systems in place for larger vessels and other groups). So now the issues are now primarily focused on vessels less than 11 metres.

Strong stakeholder involvement

The varied fishing fleet in Norway has created challenges in designing efficient instruments to managing overcapacity. The key to overcome these challenges has been continuous and efficient cooperation between the authorities and the stakeholders in the fishing industry and other affected organisations/institutions. Norwegian fisheries management has been characterised as "a system of centralized consultation" (Mikalsen and Jentoft, 2003). While the central government retains the ultimate authority to manage fisheries, there is a significant element of power-sharing through the institutional arrangements facilitating participation in decision making. For example, the distribution of resources between vessel groups is largely determined by the NFA, with the allocation keys proposed by the NFA largely being adhered to by the government. This is in the interests of ensuring long term stability within and across vessel groups so that the benefits of the structural systems accrue to the fishers within the vessel groups. There is also strong stakeholder involvement in policy reform. For example, the development of the 2006 white paper was based on a year-long committee process which was comprised of key stakeholders, with the government acting as observers. However, while there has been a strong history of cooperation, this has been mainly driven by the government, with the industry taking some time to be fully supportive of the initiatives.

Compensation to achieve support for reforms

A holistic approach was taken to the reform process in Norway. Compensation to those who exited the industry was an essential part of the reforms and was largely effective in ensuring ongoing support for policy changes. Decommissioning schemes have been used as a means not only of assisting the transition to a lower level of capacity, but also as a means of compensation and buying support for reform from affected groups of fishers.

Support for the reforms was also achieved by ensuring that there was stability in the distribution of resources between the various vessel groups. The benefits of improved management were distributed over the groups through long term allocation keys that had been agreed within the industry (although not without dissent, particularly between the

coastal fleet and the offshore fleet, as represented by the NCFA and the NFA, respectively). Such stability, transparency and inclusiveness helped to reduce the perceived threats from policy reforms targeting capacity reductions and improved efficiency.

Meeting regional development objectives

Norway has a varied and technologically advanced fishing fleet, encompassing both small coastal vessels and large off-shore trawlers and purse seiners. A fleet composed of a variety of sizes has been seen to be vitally important to keep up both employment and livelihood in many coastal communities, but also because a varied fleet of smaller and larger vessels has the advantage of being able to exploit all parts of the fish-stocks, in-shore as well as off-shore, in a rational fuel- and cost- efficient way.

The government has faced an ongoing challenge in meeting the twin objectives of modernising the Norwegian fishing industry through the use of market-based instruments and reduced subsidies, and maintaining coastal or regional development. As noted above, a feature of the reforms has been the sequential nature of policy changes which has allowed management instruments to be successively fine-tuned in response to real-world experience. The latest round of policy changes for the coastal fleet represents a complex development of the type of market-based instrument used elsewhere in Norway. It is too early to tell if this will result in the intended outcomes as envisaged by the government.

Notes

1. This legislation had already been in place since 1956 – however a licence scheme was introduced in the purse seine fleet and for the shrimp trawlers – around 1972.
2. There are allocation keys in place for all the quota-based fisheries, the last ones from 2001, with minor adjustments in 2007.
3. In October 2005, the government decided to halt all further developments of market-like instruments pending a review of the fleet structural policy.
4. Most commercially important fisheries are now closed, but still with some open groups – small proportions of the different TACs are regulated with open access.
5. The mandate of the committee did not explicitly include resource rent taxation, but the committee decided to include it in its deliberations as a central part of the discussion.

Chapter 4

Reforming Mexico's fisheries[1]

Mexico's fisheries sector has witnessed a number of significant institutional changes since 1990 which have deeply influenced both the state of fish resources as well as stakeholders' incomes. This chapter reviews developments in Mexican fisheries management policy, focusing on institutional arrangements and fisheries policy formulation. The first part of the chapter reviews the evolution and present status of the institutional arrangements, while the second part provides an assessment of the key issues confronting the policy development process.

Policy context[2]

Mexico's fisheries development in Mexico may be divided in the following periods (see Table 4.1 for a summary):

- before 1977, a period of fisheries development until the adoption of the Extended Fisheries Jurisdiction;
- 1977-1991, when government support boosted fish production and exports, ending just before the Fisheries Law of 1992 authorisation;
- 1992-2000, when private investment and environmental concerns shaped both institutions and management; and
- 2000 to date, which corresponds to the new administration.

A key historical feature of Mexican fisheries for many years was the exclusive access rights granted to fishers' co-operatives. These were granted by the government in 1938 for catching shrimp, abalone, lobster, oysters, cabrilla, Pismo clam and totoaba, which were highly valued fisheries. At the time, the Fisheries Department was part of the Forestry, Hunting and Fishing Division of the Secretariat of Agriculture and Development. While investment in fisheries was not a priority, an increasing interest in fish stock levels, and the possibilities of their increased utilisation, led to the creation of the National Institute for Fisheries Research (INP) in the early 1960s.

Table 4.1. Main events in Mexico's fisheries developments

Period	Institutional arrangements	Legal provisions	The fishing industry	International context	Other events
1970-1977	1972: Creation of the Under-Secretariat of Fisheries and PROPEMEX. The latter included Ocean Garden Products	1972: Federal Law for the Promotion of Fisheries	Increase in the number of vessels	1976: Adoption of extended fisheries jurisdiction	1976: peso crisis
1978-1991	1980: creation of BANPESCA[b] 1982: Upgrading to Secretariat level (SEPESCA)	1986: Federal Fisheries Law	1981-1982: transfer of the shrimp fleet from the private sector to co-operatives 1980-1986: 1st tuna embargo 1990 onwards: 2nd tuna embargo	1982: UNCLOS III	1982: peso crisis 1982-1983: strong ENSO 1986: Mexico joins GATT
1992-2000	1992: shut down of PROPEMEX and BANPESCA. Ocean Garden Products bought by BANCOMEXT. Creation of CONABIO, PROFEPA and INE 1995: creation of SEMARNAP, and SEPESCA is downgraded to an Under-Secretariat	1992: Fisheries Law and creation of standards (NOMs)	1991-1992: privatization of the shrimp fleet 1993: installation of TEDs by the shrimp fleet	1992: Conference of Rio, Agenda 21 and UN Conference on Responsible Fisheries 1993: La Jolla Agreement 1995: Adoption of the Code of Conduct for Responsible Fishing 1995: UN Fish Stock Agreement [a]	1992: land tenure reform 1994-1995: peso crisis 1994: NAFTA implementation 1997-1998: strong ENSO
2000 to date	2001: CONAPESCA replaces the Under-Secretariat, becomes part of SAGARPA and its offices moved to Mazatlan	2004: Discussion of the Law of Sustainable Aquaculture and Fisheries begins in Congress 2006 Adoption of new Fisheries Law	2006: Sale of Ocean Garden	2000: Mexico joins Agreement on the International Dolphin Conservation Programme 2002: Earth summit 2002: Mexico joins ICCAT	2004: Free Trade Agreement with Japan

a. Mexico has not signed the UN Fish Stocks Agreement. b. Between the 1960s and 1980, this was called BANFOCO.

The fisheries sector did not grow in a substantial manner until the first National Fisheries Programme in 1970 strengthened co-operative rights to inshore fisheries and encouraged the expansion of fishing fleets. In 1972 the government enacted the Federal Law for the Promotion of Fisheries and started focusing on the export market. This concerned 500 shrimp trawlers through the BANFOCO programme. PROPEMEX, a state company, was created in that year with the aim of regulating domestic prices and developing export markets. It incorporated Ocean Garden Products, a monopsony based in La Jolla, California which had been created in 1957 for marketing shrimp exports in the US. The adoption of the Extended Fisheries Jurisdiction (EFJ) in 1976 affirmed this support for the sector and allowed a faster growth of the fisheries sector. A peso devaluation in the same period served to favour export-oriented activities, such as fishing.

1977-1991

The National Plan for Fishing Development that was developed during the late 1970s and early 1980s demonstrated a strong interest in securing benefits from fishing catches under the newly implemented EFJ. Catches reached a record high in 1981 of about 1.5 million tonnes, although later stabilised around this level. Important institutional changes followed. The Department of Fisheries was upgraded to a Secretariat level (SEPESCA) in 1982 in order to 'foster national productivity and exports'. A state-directed fisheries bank, BANPESCA, was also set up for supporting both co-operatives and the private sector. However, BANPESCA loans mostly favoured co-operatives, playing an important role in the transfer of the privately-owned shrimp fleet to co-operatives in 1981-1982 in what was known as *la cooperativización*. This was, in fact, a way to "formalise" the rights of co-operatives on shrimp fishing since there was an informal arrangement between co-operatives and private investors under which the latter operated their vessels disguised as co-operatives. This transfer to the cooperatives brought about more debts to co-operatives (and consequently to BANPESCA), diminishing returns, and a migration of investors from shrimp fisheries toward tuna fisheries, taking advantage of government subsidies (see below). Moreover, both PROPEMEX and BANPESCA were ill-managed and exports were not substantially increased.

Three events marked the development of the Mexican fisheries sector in the early-1980s: a strong El Niño-Southern Oscillation (ENSO), the tuna embargo, and another peso crisis. The incoming administration that took office in 1982 faced serious trouble. First, fisheries production fell about one-third by 1983 due to the impact of a strong ENSO, hitting mostly the Californian pilchard and Pacific anchovy fisheries.

Second, the 1980-1986 tuna embargo brought negative consequences to the whole industry as the government directed immense financial resources to rescue the tuna fleet. Indeed, heavy reliance on the US market and failure to develop alternative export markets created problems and, in order to protect tuna investors, PROPEMEX purchased all the tuna production from Mexican vessels and redirected it towards the domestic market. Massive inventories started to accumulate in PROPEMEX storehouses and prices fell. PROPEMEX ceased granting financial aid to vessel owners and consequently they were unable to meet their commitments, with the risk of leaving BANPESCA with an estimated USD 1 billion in non-performing loans. Thus, the government resumed its subsidy programme by 1985, supporting the entire tuna fleet, even when one-third of it remained inactive. The embargo was lifted in 1986 but another one started in 1990 under the Marine Mammal Protection Act principle: tuna products from all nations fishing in the eastern tropical Pacific whose dolphin mortality rates were 1.5 times the mortality register for the US fleet for the eastern spinner dolphin (*stenella longirostris*) and two times the mortality

register for the US fleet for the spotted coastal dolphin (*stenella attenuate*). It is noteworthy that these two species are more abundant in Mexican waters than in US waters.

Third, the 1982 peso crisis provoked a debt crisis as oil export earnings collapsed. In spite of severe financial problems, the government carried on granting subsidies to the sector. It sustained the level of landings and maintained exports but contributed, at the same time, to increase the debt of both BANPESCA and PROPEMEX, which had as well to support the high costs of the shrimp fleets. In addition, several joint ventures on processing plants (*e.g.* the tuna plants, *Pescado de Colima* and *Pescado de Chiapas*) and large trawlers bought in Spain failed in achieving economic efficiency at a high financial cost.

Large debts borne by co-operatives were expected to be somewhat alleviated by the new Federal Fisheries Law in 1986. The Law aimed in practice to strengthen co-operative access rights through concessions and permits for both fishing and aquaculture, confirming the *la cooperativización* move. As with capture fisheries, only co-operatives were allowed to cultivate shrimp, however, pressure from the private sector in order to have a share from shrimp earnings was constant during the 1980s (Cruz-Torres, 2000). The administration responded to this pressure during its reforming process of the Mexican economy, which started in 1988. The previous administration's strategy had entailed a high cost and a priority was to restructure the sector and to curb fiscal deficits. This included privatisation to encourage inward investment in the fisheries sector. PROPEMEX and BANPESCA were both shut down, and the privatisation of canneries, processing factories and vessels began in 1988. Without BANPESCA, the government-owned foreign-trade bank (BANCOMEXT) was empowered to support export-oriented fisheries. Subsidies through the PRONASOL programme were made available for the development of domestic fisheries, pin-pointing poor fishing communities.

The reform process from 1992 to 2006

Given all the financial problems faced by both the government and co-operatives, the National Programme for the Development of Fisheries and its Resources (PNDPR) which was developed in 1992 stressed the need to improve the efficiency of both fleet performance and infrastructure development. To facilitate this process, a new Fisheries Law was passed in 1992, only six years after the enactment of the former law. One of its main features was the withdrawal of the co-operatives' historic preferential exclusivity to exploit valuable fisheries. The co-operatives' access rights were replaced by the system of permits and concessions, which was already in force for other inshore fisheries. In addition, a system of standards was put in place under the name of Mexican official standards (NOMs). These define and regulate permits and concessions, gear specifications, closures, quota levels and other management instruments. A feature without precedent in Mexico was the fact of stakeholders (including NGOs and universities researchers) participation in the development process of each NOM.

The message of the PNDPR was well anticipated by the private sector. In 1991, 63 shrimp trawlers were bought and by 1992, when the new Fisheries Law was being enacted, private investors already had 450 vessels. By 1993-94, 90% of the offshore fleet in the North Pacific was already private, and the trend continued throughout the country. During this time, the shrimp fishery faced the threat of an embargo justified on the grounds of marine turtle by-catch. In contrast with the tuna embargoes, both the government and the industry took swift action: a total closure on turtle fishing was declared in 1990 and by 1993, the whole fleet of Mexican shrimp trawlers was equipped with turtle-excluder devices (TEDs), obtaining the US authorities certification.

Aquaculture was promoted as well, and private investors mainly took over shrimp farming. The central objective was to encourage export earnings through shrimp productivity. Within this context, Ocean Garden Products was initially deemed to be privatised, but it was brought under the administration of BANCOMEXT, remaining therefore under government control until it was sold in 2006.

Privatisation and deregulation processes in the new administration were accompanied by an increased focus on environmental concerns. This was not a Mexican initiative, but rather came about through the influence of international trends. Mexico played an active role in the 1992 UN Conference on Responsible Fisheries held in Cancun, where the Precautionary Approach of the Rio Declaration was adopted. This led to the endorsement of the UN Code of Conduct for Responsible Fisheries three years later.

Several environmental-related institutions were created in 1992, chiefly the Mexican biodiversity commission (CONABIO), the environmental enforcing agency (PROFEPA) and the Institute of Ecology (INE). Although concerns arose relating to North American Free Trade Agreement (NAFTA) and fisheries trade, Chomo and Ferrantino (2000) demonstrated that NAFTA did not significantly influence North American fisheries sustainability. However, in spite of all efforts concerning environmental issues and legal provisions set up by the administration, the second tuna embargo was not lifted. The Inter-American Tropical Tuna Commission (IATTC), under the context of the Panama Declaration, played a central role in achieving conciliation between importing countries, US authorities, the tuna industry and environmental organisations to revise US laws (Constance and Bonanno, 1999). However, other NGOs, such as the Earth Island Institute, opposed the Panama Declaration.

Another peso crisis in late 1994 arrived with the new administration. Although exports were facilitated by the peso devaluation, environmental concerns remained a significant influence on policy. This was demonstrated in both fisheries policy and institutional arrangements. The policy principles underlying the "sustainability discourse" were adopted and featured prominently in the 1995-2000 Fisheries and Aquaculture Programme. This programme emphasised the need to "halt the tendency towards environmental deterioration", to "reverse the process of over-exploitation of resources", and to "promote responsible fishing practices in conformity with resource availability."

To facilitate this, the former Secretariat of Fisheries, SEPESCA (along with other departments), was merged into the new Secretariat of the Environment, Natural Resources and Fisheries (SEMARNAP) but was downgraded to the level of an Under-Secretariat. The loss in federal hierarchy confirmed the trend in broadening of regulatory control flowing from growing concerns over the sustainability of fish resources (Thorpe and Bennett 2001). NGOs had a more prominent role in government programmes and, as a result, conservation issues were given a higher profile, leading to the increased implementation of marine reserves and the promotion of eco-tourism as alternative income options for local fishing communities. Less emphasis was placed on the development and implementation of fisheries management instruments, although the use of the NOMs was continued and extended.

Current fisheries-related institutions and policy have a more production and export orientation and are less environmentally directed than was the case under the previous administration. Although the Secretariat of the Environment (SEMARNAP) remained, it was renamed as SEMARNAT. The reason was that the Fisheries Under-Secretariat was moved into the Secretariat of Agriculture (SAGARPA), becoming the Commission of Aquaculture and Fisheries (*Comisión Nacional de Acuacultura y Pesca* or CONAPESCA). Some commentators noted that this movement in the federal hierarchy caused a loss of

presence for the fisheries sector within SAGARPA and within the Federal government more generally (Hernández and Kempton 2003). Indeed, the fisheries industry accounted for a little less than 7% of the primary sector GDP (covering agriculture, forestry and fisheries) during 1993-1996 (INEGI, 1997). Thus, objectives to boost the GDP share of the fisheries sector have most probably influenced the decision of changing fisheries-related agencies into SAGARPA, leaving environmental issues apart. PROFEPA was exempted from enforcing fisheries regulations, thus creating a void in fisheries management enforcement. It remained that way until 2004 when CONAPESCA created an enforcement department.

The Federal Fisheries Law (decreed in June of 1992, amended in January 2001) has as its objective "to warrant the conservation, preservation and rational use of fisheries resources and establish the basis for their adequate development and management". The Aquaculture and Fisheries Programme (*Programa de Acuacultura y Pesca*) for the period 2001-2006, under the Programme on Agriculture, Livestock, Rural Development, Fisheries and Food 2001-2006 of SAGARPA, endorses the following strategic guidelines: "to establish management schemes for aquaculture and fishing resources based upon technical and scientific knowledge as well as to promote the participation of the academia, the producers and the government in both the definition and assessment of opportunities for the development of fishing and aquaculture" (SAGARPA, 2006, p.6). These guidelines are translated into the following objectives for the sector:

- to use fisheries and aquaculture resources in a sustainable way;
- to promote the increase of the economic and social rent from fisheries and aquaculture;
- to grant and encourage legal certainty to fishing and aquaculture activities; and
- to promote support programmes and services to fishing and aquaculture activities.
- in addition, the *Programa de Acuacultura y Pesca* provides the following objectives for the *Instituto Nacional de Pesca* (INP):
- involve stakeholders in fisheries research; and
- optimise the commercial use of fisheries products.

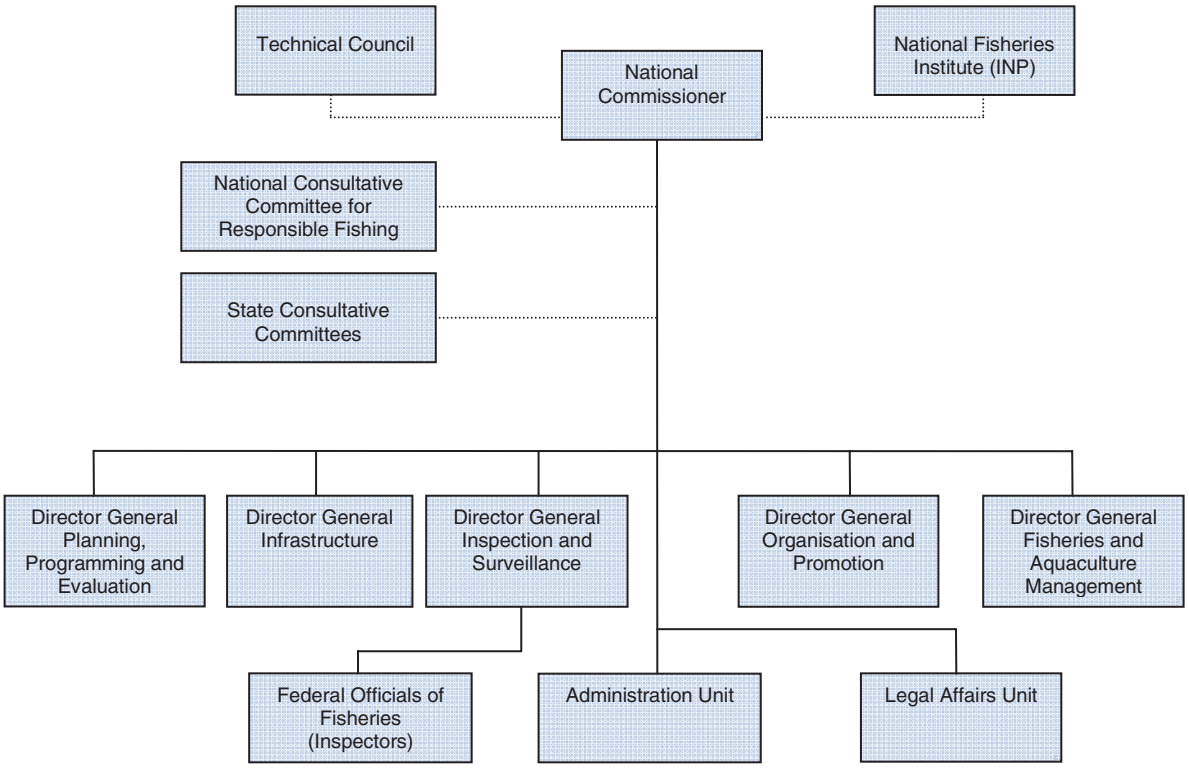
CONAPESCA operates together with the National Consultative Committee on Responsible Fishing and other State Consultative Committees (wherever they are in place) which define more specific policy and planning measures for several of the fisheries of both the Pacific Ocean and the Atlantic Ocean coasts (Chart 10.1). The management measures are developed to comply with Mexico's natural protected areas regulations which are devised and enforced by the SEMARNAT and more specifically by the CONANP (or *Comisión Nacional de Areas Naturales Protegidas*) for areas under federal jurisdiction or by the Secretariats of the Environment at the state level for those protected areas within a state jurisdiction.

With the transfer of fisheries management to the Secretariat of Agriculture, the now Secretariat of Environment and Natural Resources (*Secretaría del Medio Ambiente y Recursos Naturales*, SEMARNAT) retained the functions of sanctioning the National Fisheries Chart 2000 (CNP) to ensure compatibility with resource conservation and sustainability strategies and determine such measures like closed seasons. SEMARNAT also is in charge of managing Protected Natural Areas (*Áreas Naturales Protegidas*, ANPs). Fishing takes place in some marine ANPs (such as in the upper Gulf of California) and in

those areas SEMARNAT and CONAPESCA each has responsibilities and must coordinate their actions, with the latter responsible for regulating fishing in the ANPs.

CONAPESCA undertakes fisheries surveillance but has limited enforcement powers. It must refer legal actions to the National Prosecutor for further action which reduces the ability of CONAPESCA to respond to fisheries violations in a timely manner. PROFEPA has enforcement powers in relation to tortoises, endemic species and endangered species.

Figure 4.1. Organisation chart of CONAPESCA



Source: CONAPESCA.

The state governments and local municipalities play a limited role in fisheries. The major role that State governments have is in the provision of funding for regional fishing support programmes where they are responsible for allocating a portion of federal funds. Up until recently, the role of a State fisheries officer was to provide a liaison between the State governor and the fishing industry. Now the States have expanding fisheries offices with increasing responsibility for allocating funding. This reflects the conflicting objectives that sometimes underlie the provision of funding under the fisheries support programmes, as they attempt to meet both fisheries development and rural development objectives.

Major stakeholders are organised into various industry and social organisations. Most of the large scale commercial fishers are grouped under the National Fisheries and Aquaculture Industry Chamber (*Cámara Nacional de la Industria Pesquera y Acuícola*, CANAINPESCA). Some farmers form independent associations. Artisanal fishers are

usually *organised* in fishing cooperatives, grouped under the National Confederation of Fishing Cooperatives *(Confederación Nacional de Cooperativas Pesqueras*, CNCP). However, there are many cooperatives not affiliated to that organization. Many fishers belong to "Social Solidarity Societies" (SSS) and many "free fishers" do not belong to any group so the representativeness of the CNCP is not as complete as that of CANAINPESCA. The political organization and power of the commercial fishers tends to be significantly greater than that of the cooperatives, with more coordinated policy positions supported by access to scientific expertise. However, the cooperatives retain an element of regional influence, particularly in the poorer coastal states where artisanal fishing plays a stronger social role in the rural economy.

New fisheries law

A new "General Law for Sustainable Fisheries and Aquaculture" was unanimously passed by both Chambers of the Mexican Congress in 2006 although it is not yet in force. It builds on the existing objectives under the PADF, expanding them to more explicit objectives covering a wide range of fisheries and aquaculture management issues. The objectives in the new General Law are to:

- Establish and define principles to promote and regulate all of the management and sustainable use of fisheries and aquaculture resources, by taking into account social, technological, biological and environmental aspects.
- Promote the improvement of national fishers' and fish farmers' well-being through programmes on the fisheries and aquaculture sector.
- Fix the basis for the regulation, conservation, protection, restocking and the sustainable use of fisheries and aquaculture resources, as well as protecting and rehabilitating the related ecosystems.
- Fix basic norms for planning and regulating the sustainable use of fisheries and aquaculture resources in selected, controlled, natural or artificial environments so that the partial or complete biological cycles take place in maritime, inland or brackish water in both public or private lands.
- Provide the right of access and use of fisheries and aquaculture resources preferably for indigenous communities and villages mentioned in this law.
- Establish basis and coordination mechanisms between federal authorities, entities and municipalities.
- Determine and establish basis for the creation, operation and functioning of participation structures for fisheries and aquaculture producers.
- Support and facilitate scientific and technological research in fisheries and aquaculture.
- Establish concession rules and licences for the fisheries and aquaculture activities.
- Establish basis for the development and implementation of hygiene measures for fisheries and aquaculture resources.
- Establish basis for the certification of the hygiene, safety and quality of fisheries and aquaculture products, from capture to processing; as well as all related activities and establishments in which the production and the conservation take place.

- Establish the National System of Fisheries and Aquaculture Information and the National Registry of Fisheries and Aquaculture.
- Establish basis for the inspection and enforcement of fisheries and aquaculture activities, such as coordination mechanisms with competent authorities.
- Determine offences and related penalties for failures to recognize or violations of this law, its regulations and the Official Mexican Norms.
- Propose mechanisms that guarantee the orientation of fisheries and aquaculture towards nutritional goods.

Key reform issues and challenges

Mexican fisheries development has witnessed a number of institutional changes in few years which have deeply influenced both stakeholders' incomes and the condition of fish resources (see Box 4.1 for a summary). In this section, the consequences of institutional reforms are assessed. This section is focused on: the stability of the institutional structure, decentralisation of management; dealing with conflicts among stakeholders; improvements to coordination; improved legal certainty; and improvements to support programmes for the sector.

Institutional stability and long-term vision

A defining feature of Mexico's fisheries policies over the last couple of decades is the lack of stability in the institutional framework for the sector. It is clear that successive administrations have not been able to settle on an appropriate place for fisheries policy development and management functions within the federal bureaucracy. The consecutive shifting of responsibility for fisheries has lead to significant shifts in both policy directions and regulatory oversight.[3] These changes in policy direction experienced since 1990 have not been conducive to maximising the potential for the fisheries sector to generate long-term net economic benefits for the country. The need for a stable policy framework is particularly acute for the fisheries sector where management policies should be geared to enable long term, sustainable utilisation of available resources. Multiple changes in policy direction over the last 15 years has led to incoherent policies and compromised the resource and economic sustainability of the sector over the longer term. Under the Mexican political system, such shifts are, to some extent, unavoidable where new plans are put in place with each change in administration. However, they should reflect minor course corrections rather than wholesale shifts in policy priorities.

One of the main causes of such policy shifts is the lack of a clear vision for the long-term future of the fisheries and aquaculture sector that is shared by government and stakeholders alike. Multiple sets of objectives for the fisheries sector are contained in the former Fisheries Law, the SAGARPA Programme for Fisheries and Aquaculture and CONAPESCA's objectives and strategic guidelines. While these objectives are a step in the right direction, they do not constitute a coherent and directed vision for the future of the sector and do not provide the basis for sound long-term planning and development. This increases the incentive for successive administrations to put their own stamp on the sector, reduces the stability of the regulatory framework, and increases the uncertainty faced by industry participants and other stakeholders. Importantly, it leaves the sector vulnerable to policy shifts that are motivated by short-term political priorities, further eroding stability and stakeholders' perceptions of the legitimacy of policy changes.

Box 4.1. Impact of reforms on resources and profitability

Management reforms have had mixed results with respect to the status of fisheries resources. Of the 54 stocks for which stock assessments were available in 2004, 11 stocks are assessed as being overexploited while 34 stocks are fully exploited. The change in stock status for the assessed stocks in recent years has been marginal. There has been marked success in reducing bycatch in some fisheries. This has been particularly evident in the Pacific tuna fisheries where there has been a 99% decline in the number of dolphins caught per set between 1986 and 2003 through the use of selective fishing practices and technologies. The rapid and proactive introduction of turtle-excluder devices in the shrimp fisheries ensured that Mexico was not drawn into lengthy trade disputes as was the case with the dolphin-tuna issue and was able to maintain production and exports of this high value species. In other fisheries, bycatch reduction measures are gradually being introduced, although more remains to be done.

The negative environmental impacts of aquaculture have been reduced. Mangrove destruction for the construction of fish farms has been largely halted. Mexico's aquaculture sector operates in a way that allows the sector to promote itself as being able to provide national and international markets with "clean and green" products. This has been helped by the establishment of the network of Aquaculture Centres to help improve the aquatic health of fish farms as well as train operators in appropriate sanitary and aquatic health practices. However, concerns remain about the effect of public works such as canal construction and lagoon dredging on the shrimp larvae and juveniles, and on sedimentation in the waterways. There are also issues of coordination between government agencies with overlapping regulatory responsibilities for key aspects of aquaculture operations, particularly environmental management, land use approval and health and sanitation policy.

There is limited information on the economic profitability of commercial fisheries. However, anecdotal evidence indicates that certain segments of the fisheries sector generate intramarginal profits, most notably the tuna fleet and the commercial shrimp fleet. But the fact that too much effort remains in many fisheries suggests that any rent generated in the sector will be quickly dissipated as vessels increasingly compete for available resources. Further anecdotal evidence suggests that this is indeed the case for many of the sedentary and small scale fisheries where excess effort combined with illegal fishing have reduced profitability. The overwhelming focus on technical measures and input controls, coupled with a lack of clearly defined access rights, exacerbates this problem.

In areas where there have been innovative management regimes in place, particularly local co-management initiatives for area-based fisheries, there is evidence that resource rents and profitability is increasing and resource use conflicts declining. No surveys of costs and earnings are undertaken making it difficult to draw broad empirical conclusions about the success of policy reforms in achieving this objective. While from a pragmatic perspective, such surveys may not be perceived as the highest priority for authorities at this stage, they would nevertheless provide important information about the economic effectiveness of different management regimes. Future work on this area is required.

Source: OECD (2006b).

Decentralisation of decision-making

A significant feature of the institutional arrangements for the sector under the current administration has been an increased emphasis on decentralisation of fisheries administration and management. There has been an increased focus on the development and implementation of mechanisms for consultation and stakeholder involvement. Consultative mechanisms are in place for improving dialogue between Federal, state and municipal governments in setting NOMs, allocating funds under the various support programmes, and implementing management arrangements. Stakeholders also have a number of forums in which they have limited potential to influence policy development.

However, the decentralisation of decision making power and management responsibility has occurred at a very cautious rate and lacks a cohesive long-term plan. A regionalisation process for fisheries based on biophysical and social characteristics has the potential to improve transparency, increase accountability, increase stakeholder involvement and empowerment, enhance enforcement efforts, and better target financing and priorities for research and support. At the same time, regionalisation needs to be

carefully designed and well-resourced within an overall institutional framework that works to support a well-articulated vision for the industry and to avoid political interference in management. This will require a robust and resilient institutional structure at Federal, regional and state levels.

An allied concern expressed by industry and others in the course of preparing this report is the incorporation of CONAPESCA into first SEMARNAP and now SAGARPA at the level of an Under-Secretariat. This largely reflects a concern about a perceived lack of influence on fisheries matters within the Federal Government as a result of having to compete to be heard within a large department covering many (mostly agricultural) sectors. These concerns were exacerbated by the transfer of CONAPESCA from Mexico City to Mazatlan in 2001. There are, of course, costs and benefits associated with this institutional arrangement and it is incumbent on the government to determine which arrangement best meets their objectives. However, the location of CONAPESCA in Mazatlan suits the objective of bringing decision making closer to the stakeholder communities. Its location within the major fishing region of Mexico is appropriate, although care needs to be taken to ensure that its decision making processes and consultation is seen as inclusive across the other fishing regions, most notably on the eastern coast of Mexico. Further efforts are required to develop a truly decentralised and regionalised system of decision making.

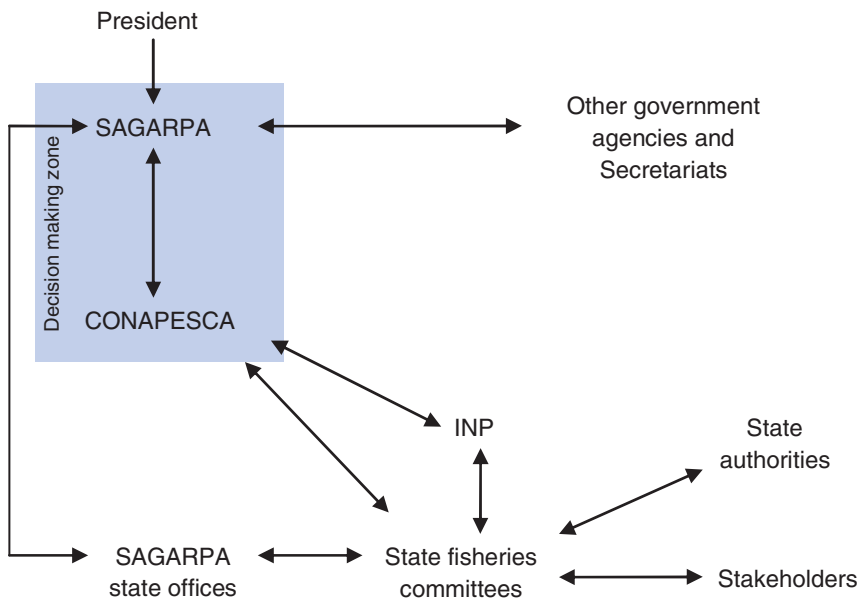
Three features of the current, partial, decentralisation are worth noting. First, the relocation of CONAPESCA from Mexico City to Mazatlan merely changed the place where centralised decision making was being undertaken. As can be seen in Figure 4.2, the decision making power still resides centrally with SAGARPA and CONAPESCA. The state offices for CONAPESCA are small in number, are co-located in SAGARPA state offices, and have low staffing and limited responsibility. Moreover, the fisheries officers in the state officers report to the local SAGARPA Under-Delegate rather than to CONAPESCA, a situation which compromises the lines of authority within SAGARPA and hampers effective monitoring and enforcement of fisheries regulations.

Second, earlier attempts to delegate decision power to coastal states through committees ran into difficulties for structural and political reasons. In responding to the guidelines of the FAO's Code of Conduct for Responsible Fisheries which encouraged meetings between government and stakeholders, SEMARNAP started to organise joint meetings with fishers, enforcers from PROFEPA, and scientists from INP during the 1990s. The purpose of the meetings was to move forward the process of setting up management measures in the form of NOMs for several fisheries. Initially, however, fishers were not motivated in participating because the committees' recommendations were often not taken into account by decision-makers at SAGARPA's and CONAPESCA's head offices (Hernández and Kempton, 2003). The fact that many of these meetings took place in Mexico City limited the effectiveness and perceived legitimacy of the eventual accords between authorities and fishers' representatives. Decision making was still centralised, even when CONAPESCA's offices were located in Mazatlan. These meetings became increasingly politicised and dominated by powerful fishing industry lobbies, as has been the case in many other Latin American countries (Thorpe and Bennett, 2001). This has improved in recent years and increased consultation is now taking place. The key lesson from the experience is that it is necessary to ensure that the influence of short-term political pressure is minimised within the institutional structure for fisheries management decision making.

Third, the states are not necessarily the most appropriate geographic unit for decentralised decision making and management. Their boundaries reflect factors other than ecosystem considerations and neglect the fact that fish resources and inland waters are often

shared across state borders. A biophysical basis for determining boundaries for fisheries management based on marine biodiversity patterns would be more appropriate. Otherwise, there is the potential for coastal states to compete against each other in a local race-for-fish, with the consequent risk of over-fishing and over-capitalisation.

Figure 4.2. Current institutional structure and decision making zone



One of the major aims of decentralisation is to provide local fishers with a more active role in fisheries management and increase incentives for resource stewardship (Young, 2001). As small-scale fishers have little political power, one development option is to strengthen fishers organisations, introducing a more efficient trading system to reduce the power of intermediaries (Hernández and Kempton, 2003), or in certain cases, by providing contingency funds for small-scale fishers (Lobato, 1996). Empowering fishers and encouraging local decision-making through some degree of co-management can also alleviate conflicts among stakeholders in Mexico. This has already started to take place in some local fisheries. Castilla and Defeo (2001) have demonstrated that an effective institutional arrangement for Latin American shellfish fisheries is a combination of co-management, self-government and property rights. They argue that one important feature of co-management is communal ownership which encourages co-operation among fishers. For example, enforcement costs are a major obstacle in achieving sustainable management measures but might be eased by stakeholders under a co-management regime. Such a system has been observed only in a few cases, such as abalone and lobster fisheries: fishers share costs not only for stock assessments but for surveying and enforcing illegal fishing. As Hernández and Kempton (2003) stated, if fishers were more knowledgeable and more empowered, they would be more likely to act responsibly to the new regulations.

Decentralisation always bears the risk of empowering local interest groups who seek to collude with local authorities to improve short term profits at the expense of long term resource sustainability and rent (Breton *et al.* 1998). Moreover, it has been argued that decision-making power must remain centralised, as it would be difficult to set up a unique national fisheries policy if decisions were to be made in coastal states. However, a well-

designed institutional structure based on an agreed vision and strategy for the sector, with well-defined parameters of responsibility, accountability, transparency and inclusion can address such concerns. Effective decentralisation should only devolve fisheries management decisions to coastal regions within a coherent long-term sustainable fisheries policy set up and audited by the federal government. Fisheries management programmes should take into account local particularities of both fish resources and stakeholders organisation (Rivera-Arriaga and Villalobos, 2001).

Some of the ingredients to further decentralisation are already in place in Mexico. First, the country can be naturally divided into the four coastal regions (Regions IIV) and the inland waters, each with distinctive regional ecological characteristics and policy issues. Second, regional consultative mechanisms are in place for some fisheries, and functioning with varying degrees of effectiveness. Third, the INP currently has a regional network through the CRIPs which will assist in the provision of scientific advice at local levels. Fourth, regional fisheries offices exist, although these are mostly in name only as they consist of a single fisheries officer located in the SAGARPA regional offices and reporting through the SAGARPA hierarchy rather than directly to CONAPESCA officials.

This basis could be further developed to provide an appropriate level of regional management that is representative, transparent, responsible and responsive, allowing for fishers to be empowered within the decision making system. Concerns over corruption or biased decision making can be addressed by ensuring a wide stakeholder involvement (including environmental NGOs and community groups as well as fishers' representatives), transparency of analysis and advice, and accountability mechanisms for advice given and decisions taken. The major risk to be wary of is the creation of an unwieldy hierarchical structure that is essentially maintains a top-down, command and control structure. This will very quickly lose legitimacy amongst fishers and other stakeholders. The benefits of decentralised decision making lie in improved stakeholder input to scientific analysis and regulatory design, increased acceptance of regulations, and potentially lower enforcement costs. The major cost involves an up-front investment in institutional capacity building.

Coordination among agencies and stakeholders

Whether or not a more decentralised institutional structure is pursued, there is a need to improve coordination amongst agencies with responsibilities for various aspects of Mexico's fisheries and aquaculture sector. Frequent changes in policy direction and institutional framework have led to overlapping duties and weak coordination between and within institutions and levels of government. This can be seen in several areas. First, there are overlapping responsibilities at the Federal level. For example, eight agencies at different levels of the federal administration, comprised in four different ministries, along with offices of each coastal state, are involved in coastal management, including fisheries. While SEMARNAT is charged with setting up co-ordinated coastal management programmes (*Planes de Ordenamiento Costero*), their practical implementation remains a major challenge (Rivera-Arriaga and Villalobos, 2001).

Second, there is a need to improve agency coordination for the approval and supervision of aquaculture projects. At present, there are too many overlapping and contradictory regulations emanating from different government agencies, increasing the costs and uncertainty associated with environmental compliance in aquaculture operations and delaying development. Part of the problem is that a coherent, transparent, risk-based set of environmental parameters for aquaculture operations is lacking at the moment due to the multiple pieces of (sometimes contradictory) legislation governing the industry. These include regulations overseen by CONAPESCA, SEMANART, PROFEPA, the Water

Commission, and soil conservation authorities. Rationalising and harmonising these regulations is essential and a "one-stop shop" would be a useful innovation to streamline the approvals and oversight process.

Third, there have been gaps in agency coordination, resulting in some management functions falling by the wayside. This has occurred, for example, in the case of enforcement functions. In 2000, PROFEPA was discharged from enforcing fisheries regulations, in order to concentrate its efforts on other environmental issues. Nevertheless, marine reserves enforcement remained as a competence of PROFEPA. Fisheries were left without any enforcement authority until 2004 when CONAPESCA created a department to undertake the enforcement function. Supervision of fishers' transgressions in surrounding areas of marine reserves remains unclear.

There also appears to be scope for improving co-ordination between different stakeholders in the whole fisheries sector, including government, industry, universities and NGOs. This would be a central feature of, and indeed essential to, a more decentralised institutional structure and requires commitment from both government and other stakeholders to actively engage in a mutually reinforcing and constructive dialogue. Stakeholders will quickly lose faith in such mechanisms if there is a perceived lack of responsiveness, empowerment and legitimacy on the part of government.

A priority area for improved coordination is scientific research and policy analysis. In spite of INP's acknowledged expertise on fisheries research, a strong co-operation link with both fishers and academic institutions is still missing (FAO, 2005). A contributing factor is that fisheries research is financed almost entirely by federal funds: Secretariat of the Treasury regulations do not allow INP to receive neither non-governmental nor private funding. As a result, it is unable to supplement its sources of revenue or establish stronger formal links with fishers and universities. Given the lack of trained staff to replace the qualified personnel leaving the INP (through retirement for the most part), it is important for the INP to be able to establish such links to expand its operating options. Involving industry and local universities in fisheries research would help to develop a common strategy and common set of priorities on fisheries research.

In addition, there is a lack of research on alternative instruments for fisheries management and the socio-economic impacts of current management arrangements and future management options. Multidisciplinary research in the sector is largely lacking and will tend to restrict the management options being considered by authorities. If the government wishes to pursue its decentralised management strategy, it will need to consider that a larger role for social scientists in both fisheries research and decision-making.

Conflicts among stakeholders

The current institutional arrangements do not adequately deal with conflicts between stakeholders in the sector. This is most apparent in the conflicts between small-scale and large-scale fleets in particular fisheries, between wild capture and aquaculture operations, and between fishers and other users. Social problems derived from conflicting access claims are quite frequent in both developed and developing countries, with the lack of clearly defined and enforceable access rights being one of the central causes (Panayotou, 1982; Willman and Garcia 1985; Stonich and Bailey, 2000; Thorpe *et al.* 2000).

Shrimp fisheries in Mexico are a clear example of such problems. Changes in the 1992 Fisheries Law led to a number of conflicts between co-operatives and private investors in important fishing states like Sinaloa and Sonora, as co-operatives remained in the inshore fishery catching smaller shrimp, directed mainly to the domestic market, while the private-

owned vessels caught shrimp for export (Vasquez-Leon and McGuire, 1993). In fact, the coexistence of offshore and inshore fleets in the shrimp fishery is a real challenge for fisheries managers. Economic and social interests seem to be in conflict as private investors seek profit maximisation, while unemployment is a major concern among inshore fishers. In fact, certain features of shrimp fisheries, including both social and biological aspects, impede to establish and achieve long-term management objectives, having serious consequences for the fishery as a whole. One of these features is that the shrimp fishery is sequential, which means that early stages of life-cycle are exploited by inshore fleets in either coastal lagoons or near shore, while juveniles and adult shrimp are caught by the offshore fleet. Maximum yield per recruit is obtained offshore, which implies that the higher the inshore catch, the lower the offshore catch. However, co-operatives have steadily been fishing further offshore, invading the large-scale fleet areas. Not surprisingly, hostility between both fleets frequently arises and, as Cruz-Torres (2000) puts it, a "pink-gold rush" starts, with the predictable outcome of over-capitalisation of both fleets. In the case of the shrimp fishery, however, the small-scale fleet has been the one with the most capacity to expand and has done so quite rapidly. Conciliation between objectives of the two fleets is very difficult to achieve and fisheries management measures are thus limited to allocating catch levels between fleets using fishery closures (Fernandez-Mendez *et al.*, 2000). However, such a management measure neglects resource rent distribution and does not prevent over-exploitation of fish stocks.

Potential conflicts are present as well when activities from different users overlap in the same area. This has been the case of shrimp aquaculture (Cruz-Torres, 2000; Stonich and Bailey, 2000). Private shrimp culture has been actively encouraged since the 1992 Fishery Law reform, giving yields of 61 704 tonnes with a value of about 2 600 million pesos in 2003. However, it is well documented that mangrove deforestation, reduction of wild shrimp and water quality degradation have boosted conflicts among different stakeholders, not only in Mexico, but elsewhere (Stonich and Bailey, 2000).

Marine reserves and eco-tourism have been another source of concern. Marine reserves are of special interest for biodiversity conservation and for limiting fishing, urban development, and water pollution (Bostford *et al.*, 1997) and have been promoted as management instruments in Mexico since the mid-1990s. Problems arise, however, when displaced fishers have no alternatives or these are poorly implemented (Chapter 13). A similar outcome happens when eco-tourism is not compatible with coastal fisheries. For example, Young (1999) cites the case of grey whale watching off Baja California peninsula, where the absence of effective community-based institutions allows tourism companies to impose their priorities and interests over those of local residents, such as lobster fishers.

Improved legal certainty in fishing and aquaculture activities

Reforms to the system of permits have helped to improve the legal certainty for commercial fishers. The decision to restrict the number of permits to one per vessel will assist management authorities in gaining a slightly greater degree of control over fleet expansion. The four year time limit for permits provides some degree of certainty for fishers. However, given that the permits are almost always automatically renewed, it is not clear that the length of validity of permits is a major issue for fishers. The decision taken to no longer issue 20-year concessions for commercial fishing was sensible as there was a lack of appropriate management policy instruments encouraging economic efficiency and managerial and technological innovation, leading to an excess of latent capacity and poorly performing companies.

Maintenance of long term concessions for aquaculture and tuna ranching provides long term certainty for investors and facilitates access to credit for operators. These 20-year concessions are renewable for a similar period and are also transferable, allowing for the entry of new participants in the sector and improving economic efficiency in the sector.

The performance of fisheries enforcement is beginning to improve following a period in which there was an enforcement vacuum due to shifts in administration policies and structures. The introduction of vessel monitoring systems (VMS) in the Pacific fleet and the use of observers in the entire tuna fleet and in a portion of the Pacific swordfish fleet are important positive steps forward. Plans to extend the use of VMS to small scale and artisanal vessels and observer coverage to parts of the shrimp fishery will reinforce these improvements. However, enforcement efforts are still hampered by a lack of resources and a poor institutional structure. This is exemplified by a split in enforcement functions between government agencies (CONAPESCA, PROFEPA and the Navy) and the fact that CONAPESCA has no legal power to enforce its own regulations without referring them to the National Prosecutor. There is also an acknowledgement within CONAPESCA that enforcement of regulations within the artisanal fisheries and many of the small scale fleets is virtually impossible with current levels of resources and without having a significant impact on the livelihoods of the poorer fishers. Innovative ways of enforcing regulations are therefore required for these fleets.

There remain problems with illegal fishing and inadequate monitoring and reporting of catches which undermines the advances made in the permit system and stock assessments. While illegal fishing is not a problem for the tuna fishery, it remains a major concern for many inshore fisheries (for example, shrimp) and sedentary fisheries (such as abalone and Queen Conch). An additional concern is the ability of the Mexican judicial system to adequately prosecute fisheries offences, although this largely lays outside the remit of fisheries policies.

Better targeting of support programmes

Government financial transfers to the marine capture industry account for the bulk of the transfers to the fisheries and aquaculture sector, accounting for two-thirds of total transfers to the fisheries and aquaculture sector. The value of transfers to the marine capture sector as a proportion of the value of landings increased from 14% 1996 in 1996 to 19% in 2004 and is marginally below the OECD average. Most of the transfers in this sector (72%) are directed towards direct payments and cost-reducing transfers, primarily payments for diesel subsidies, direct grants and a decommissioning scheme for the shrimp fleet. There is a major concern that some of the transfers, particularly those provided for diesel subsidies, engine purchase and vessel modernisation, will adversely affect the long term sustainability and profitability of the sector in the absence of effective constraints on effort and capacity.

In addition, while decommissioning schemes are generally regarded as central to capacity reduction efforts, it is essential to ensure that they are carefully designed so as to avoid providing perverse incentives to fishers which hamper further capacity reduction efforts. In particular, it is essential that there is no expansion in fishing effort following the removal of vessels through the decommissioning scheme. This would negate the effects of the scheme on the sustainability of the resource base and dissipate any resource rent that might be generated. There is a significant risk of such a situation occurring in the case of Mexico's shrimp fisheries where the management regime is based on limited entry and season and area closures, but with few controls on other effort parameters. Extension of the decommissioning scheme either within the shrimp fishery or to other fisheries should be accompanied by other management changes to ensure that effort does not expand or leak

back into the fishery. Efficient design and targeting of such schemes is essential if they are to be effective.

While a first priority is to remove GFTs other than those that are essential for managing fisheries, this may not always be politically feasible. In this case, the better targeting of financial support should be a priority. The majority of Mexico's financial transfers that are directed towards direct payments and cost-reducing transfers should be reduced. Authorities should also re-examine the regional and fleet destinations for expenditures. In particular, it is not clear why commercial fisheries require financial support, particularly if they are generating resource rents and making profits. The use of diesel subsidies is a clear example of government policy providing perverse incentives to the sector. Given that Mexico's major fisheries are regulated by limited entry with few constraints on expansion of other inputs, such subsidies will encourage fishers to increase effort. This is occurring at a time when most fisheries are under pressure to constrain or reduce effort. If particular fleets are not generating rents or profits, then the problem is the more fundamental one of inadequate management, and the provision of subsidies will merely delay and exacerbate the underlying problem.

Spending on the aquaculture sector has increased significantly in recent years through the *Alianza Contigo* programme and, reflecting increasing government focus on the development potential of the sector. The increase in expenditure is evident in the establishment of the network of aquaculture centres and improving understanding of aquatic health management. However, it would be appropriate for the government to institute some degree of cost recovery for government transfers to the aquaculture sector, particularly those related to the establishment, maintenance and operation of infrastructure facilities.

The ability and willingness of the sector to gain access to financial markets has increased and companies are beginning to make increased use of the loans and guarantees provided by BANCOMEXT to facilitate export-led developments, and the soft loans and credit guarantees available through FIRA-FOPESCA. However, equity may be an issue as the programmes tend to target larger commercial operators in the fisheries and aquaculture sectors and poorer applicants often cannot provide the required matching funds to take advantage of the programmes. These types of programmes will only partially address this deficiency and further attention needs to be paid to the use of more innovative financial mechanisms for the sector, as well as to broader financial sector policies.

Finally, it is important to note that fisheries policy changes do not come free of charge. It is clear that some investment in institutional capacity building is required. This will involve short-term costs, but can be expected to generate long-term benefits. Reforms that are directed towards more profitable commercial fisheries should be accompanied by cost recovery to ease the financial burden on the government.

Notes

1. This chapter is based on the recent OECD review of Mexico's agricultural and fisheries policies (OECD 2006).
2. More in-depth reviews of the history of Mexico's fisheries policies can be found in Ibarra *et al*. (2000a, b; 2005), Thorpe *et al*. (2000); Thorpe and Bennett (2001) and Hernández and Kempton (2003).
3. The changes are from a separate Secretariat (SEPESCA) to an Under-Secretariat in the Environment Secretariat, and now to an independent body under SAGARPA (with a level of Under-Secretariat but without its own legal entity).

Chapter 5

Fisheries policy reform in Korea: strengthening enforcement and raising fishers' awareness

The Government of Korea has been reforming its fisheries policies over the past decade to achieve sustainable fisheries. The reform has been driven by depletion of commercially important stocks and poor economic performances of Korea's fishing industry due to a continuous decline of inshore and offshore fisheries catches since the mid-1980s and, at the same time, an increase of operation costs.

To meet the sustainable fisheries challenge, Korea has developed a wide range of fisheries policy instruments to manage living marine resources in a sustainable manner. A permit system has been used as a framework to control fishing efforts and ceilings of the number of permits have been gradually established for different fishing types since the 1980s. Other policy measures include area/time closures and mesh size and gear restrictions. The Total Allowable Catch (TAC) system has been adopted to control catches of important species since 1999. In addition, various stock enhancement programs have been implemented, including installation of artificial reefs and release of juvenile fishes.

Various laws and regulations have been enacted to implement the policies. The Fisheries Act is a framework law while the Executive Order for Conservation of Fishery Resources provides specific guidelines on implementing the law. The Maritime Ministry Ordinance for Punishment against Violations of Fisheries Laws and Regulations is one of the important instruments for enforcement.

This chapter reviews recent policy changes in Korea's fishing sector and draws a number of lessons from its experiences. The chapter analyses three examples of recent reforms which show the direction of Korea's fisheries policy reform which are aimed at strengthening enforcement of fisheries laws and regulations, and increasing fisher's awareness on the importance of fishery sources management. The examples include an expansion and strict enforcement of the TAC system, intergovernmental efforts to combat illegal fishing activities (especially from small bottom trawling), and wide implementation of a community-based fisheries management scheme.

Development of the Total Allowable Catch (TAC) system

Background

The TAC system in Korea was adopted in 1999 after long discussions and pilot tests for two main reasons. The first reason was to develop an effective way to manage fisheries resources and to overcome limitations of traditional command and control measures. The second reason was to cope with the new environment in the Northeast Asian fisheries sector caused by declarations of the Exclusive Economic Zones by Korea (1996), Japan (1996) and China (1998), and new fisheries agreements between Korea and Japan signed in 1998 and Korea and China tentatively agreed in 1998.[1]

Korea's TAC system was first applied to four species: mackerel, jack mackerel, sardine and red snow crab. Target species were expanded to purplish Washington clam, pen shell and top shell in Jeju Island in 2001, followed by snow crab in 2002 and blue crab in 2003. Since then, nine species had been managed by the TAC system until 2006. In July 2007, common squid was added to the target species and so ten species are currently being managed under the system.

As Table 5.1 shows, less than 20% of total inshore and offshore capture fisheries catches have been managed by the TAC system up until 2006. However, the proportion will be increased sharply from 2007 because common squid quotas (166 000 t) have been added to the total quotas (Table 5.2).

Table 5.1. Share of TAC quotas of total catches in Korea (thousands of tons)

	1999	2000	2001	2002	2003	2004	2005	2006
Total Inshore and Offshore Catches(A)	1 336	1 189	1 252	1 096	1 097	1 077	1 097	1 108
TAC Species	Mackerel, Jack Mackerel, Sardine, Red Snow crab	Same as in 1999	1999 + Washingt on Clam, Pen Shell, Top Shell in Jeju	2001 + Snow Crab	2002 + Blue Crab	Same as in 2003	Same as in 2003	Same as in 2003
TAC Quotas (B)	208	245	239	232	232	219	216	216
B/A (%)	16	21	19	21	21	20	20	19
TAC Species Catches (C)	194	124	194	166	161	194	154	132
C/A (%)	15	10	16	15	15	18	14	12

Source: Ministry of Maritime Affairs and Fisheries (Now, Ministry for Food, Agriculture, Forestry and Fisheries)

Table 5.2. 2007 TAC quotas and fishing seasons

Species	TAC (tons)	Fishing Methods	Fishing Seasons
Total	381 930		
Mackerel	154 000		
Jack Mackerel	19 000	Offshore Large Purse Seine	2007.1.1 – 2007.12.31
Sardine	5 000		
Red Snow Crab	25 000	Offshore Trap Fishing	2007.1.1 – 2007.12.31
Snow Crab	1 200	Offshore Drift Net Fishing, Offshore Trap Fishing	2006.11.1 – 2007.5.31
Purplish Washington Clam	3 700	Underwater Diving	2007.1.1 – 2007.12.31
Pen Shell	3 200	Underwater Diving	2007.1.1 – 2007.12.31
Top Shell in Jeju Island	1 480	Village Fishing	2006.10.1 – 2007.5.31
Blue Crab	3 350	Offshore Drift Net Fishing and Trap Fishing Inshore Drift Net Fishing and Trap Fishing	2007.1.1 – 2007.12.31
Common Squid	166 000	Offshore Long-liner, Large Purse Seine, Offshore Trawl, Offshore Trawl on East Coast	2007.7.1 – 2008.6.30

Source: Ministry of Maritime Affairs and Fisheries.

Quota allocation and monitoring

TAC quotas are proposed by the Ministry of Maritime Affairs and Fisheries (MOMAF)[2] based on scientific assessments on target species conducted by the National Fisheries Research and Development Institute (NFRDI). When drafting the proposal, the MOMAF notifies scientific research results and recommendations to fishers and discusses how to set up quotas for each species. After the consultation with fishers, the proposal is reviewed by the TAC Committee, comprised of representatives of fishing industries, experts and local government officials as well as MOMAF officials. Then, the reviewed proposal is submitted to the Central Fisheries Coordination Committee, the highest advisory committee consisting of representatives of each regions and different fishing industries and fisheries experts, and is finalised by the Committee. Once quotas for each species are fixed, the MOMAF allocates the quotas to individual vessels based on the recommendations of local governments, taking historical catches and vessel sizes into account and issues a certificate for each vessel. At the beginning of a fishing season, 70% of the total quotas are allocated to individual vessels and 30% are allocated later if a certain vessel reaches its initial quota.

Catches of TAC species are monitored by local governments and TAC observers on a regular basis. All catches should be landed at designated fishing ports, of which there were 103 designated sites in 2007. Local governments are responsible for monitoring catches and check individual's catches on a monthly basis during the fishing season. They check catch data more frequently at the end of the season when aggregate catches of target species are approaching the total quotas. TAC observers play a supplementary role and monitor catches at landing sites. Even though the number of observers increased significantly from 14 in 2005 to 40 in 2008, they are not able to cover all landing sites at this moment.

If catches of a species reach 80% of total quotas, the MOMAF should notify the fact to fishers, local governments and fishers' organizations. Once catches reach the total quotas, local governments should issue an order to stop fishing.

Recent policy changes

The MOMAF amended TAC regulations in early 2006 to implement the TAC system more effectively and strictly. For example, this included increased penalties for those who do not report their catches or underreport them and for those who catch fishes without quotas. In addition, the MOMAF strongly required local governments to issue an order to stop fishing once quotas are fully utilized. These actions were taken because the TAC system had been implemented in a relatively loose way in order to attract fisher's participation. This phenomenon had been recognized as an inevitable one at the beginning of a new system but could no longer be used as an excuse. Even though fisher's voluntary participation is one of the most important factors in implementing the system, several years' experiences have revealed that the policy could not be successful without strict enforcement.

After the regulations were amended, meaningful changes have been occurred in the fisheries sector. One example was that fishers in the Gangwon Province reported by themselves that they had underreported their red snow crab catches. They asked the MOMAF to take their real catches into consideration in allocating quotas for the next fishing season while they promised to comply with TAC regulations in the future. The MOMAF required them to reduce actual catches and decided to reallocate quotas between Gangwon Province and Gyeongsanbuk-do Province, allowing them to catch snow crabs up to a level of 80% of their real historical catches under the condition that they should

continue their efforts to reduce real catches. Although they were not fined because there were no explicit regulations at that stage when the fishers were under-reporting, this provided a meaningful signal for fishers to be aware of the importance of compliance with TAC regulations.

Another case was that the Gyeongsangbuk-do Province government ordered 19 snow crab fishers to stop fishing for the first time in May 2007 when their quotas were fully used. This delivered a clear message to fishers that they should pay more attention to quota management. These cases have contributed to change not only fisher's awareness but also local government official's attitude toward implementing TAC system

Outcomes

The role of the TAC system in Korea is growing in managing fisheries resources and is expected to play a more important role in the future as more species are included in the system. The increasing popularity of the TAC system is reflected in the fact that the number of vessels participating in the system increased from 200 in 1999 to 1 280 in 2007.

Furthermore, it has been observed some fish stocks have recovered and, as a consequence, catches of the species have increased. For example, the estimated MSY for snow crab has increased marginally from 1 100 – 1 300 tons in 2001 when the species came under TAC management to 1 100 – 1 500 tons in 2008. Catch per unit effort of snow crab increased from 318 tons in 2004 to 438 tons in 2006 mainly due to the TAC system implementation. The actual catches of the species increased from 947 tons in 2001 to 1 135tons in 2007.

In the case of red snow crab, although the catches had decreased in the first few years until 2002 when they reached the lowest level at 17 996 tons, they increased to 23 828 tons in 2006. In addition, as a result of fishers' efforts to manage pen shell, the catches of the species increased almost doubled from 1 426 tons in 2002 to 2 733 tons in 2006.

Combat against illegal small bottom-trawling

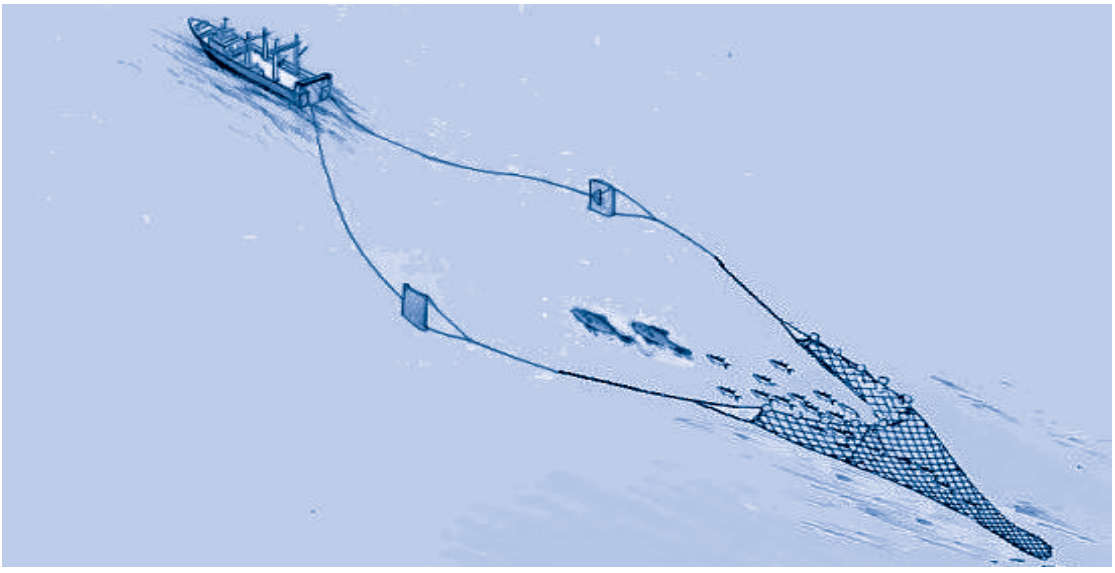
Background

Small bottom-trawling vessels were used to catch fish on the sea bottom by using otter boards to keep the trawl open and nets with small mesh (Figure 5.1). This harvesting system was likely to catch juvenile fishes as well as mature ones and had adverse impacts on the sustainability of fishery resources. This type of fishing method has not been allowed in coastal seas since 1953 when the Fisheries Act was enacted. However, more than 3 000 small bottom-trawl vessels had been operating without permits to fish until recently because the boat owners were able to earn more than could be earned through legal fishing in a short period of time.

One of the reasons why this fishing method persisted for a long time was strong resistance of fishers undertaking small bottom trawling through their nationwide organization. Whenever the MOMAF tried to stop their illegal fishing activities, they protested strongly by arguing that they had to use the fishing gears in order to make a living for low-income families. Another reason was the inefficient enforcement of government agencies including the Prosecutors' Office. Even if enforcement officials of the MOMAF and the Korea Coast Guide caught illegal boats and asked prosecutors to prosecute them, prosecutors charged only minor monetary fines that fishers were able to make up for by operating their vessels for two or three days. Prosecutors thought retaining illegal fishers or

confiscating the illegal vessels would be too strong penalties for the fishers who violated laws to "make a living".

Figure 5.1. Small bottom-trawl fishing method



Source: Ministry of Maritime Affairs and Fisheries, Korea.

However, as fishery stocks became overexploited and catches declined, fisher's organizations and representatives of fishing industry have strongly called for more proactive government actions to stop illegal fishing. From the government's perspective, any government efforts to conserve fishery resources on a broader scale would not have been supported by fishers and fishing industry without a demonstrated effort to stop the illegal bottom-trawl fishing. Therefore, there has been consensus that the government should enforce fisheries laws and regulations more strictly.

Policy development

The MOMAF set up a comprehensive plan to finish illegal fishing of small bottom-trawl vessels when the Rho MooHyun administration was launched in 2003. The Ministry reported to the president, who was once the Minister of Maritime Affairs and Fisheries, to use every possible means to eradicate illegal small bottom -trawling. The Ministry also proposed to enact a special law so as to achieve the objectives of the policy.

However, despite of the Ministry's effort, tangible results did not appear until 2004 when the president ordered in a cabinet meeting that all related government agencies should cooperate and solve the problem. The president especially emphasized the strict enforcement of laws and regulations by prosecutors and allowed the MOMAF to pursue an enactment of a special law to buy the illegal vessels and scrap them.

Under the president's special order, Ministers of the MOMAF, the Ministry of Home Affairs and the Ministry of Justice announced the government's firm willingness to enforce laws and regulations more strictly, and this was followed by coordinated and intensive monitoring and surveillance activities by government agencies. Officials from the MOMAF, The Marine Police and local governments monitored together small bottom-trawl vessels as a group not only in fishing grounds but also in fishing ports to check whether illegal gears were shipped. These actions were taken because separate enforcement

activities had not been effective enough to deter the illegal fishing. In the meantime, the Prosecutors' Office announced its plan to increase penalties if any illegal fishing activities were detected and to take the illegal fishers into custody in addition to fines.

Furthermore, it was agreed among government agencies, fishing industry and the National Assembly that illegal bottom-trawl vessels should be scrapped to solve the fundamental overcapacity problem and to prevent them from re-entering fishing grounds. Under the consensus, a special law to buy and scrap the illegal vessels was proposed by a group of congressmen in September 2004 and passed in December of the year.

The law enabled the MOMAF to buy small bottom-trawl vessels by paying the depreciated value of vessels. It also allowed the government to compensate fishers if they had other types of legal fishing permits and wanted to leave the fishing sector. In this case, payments were made based on vessels sizes under the condition that they should surrender the fishing permits and that the payment should not exceed KRW 20 million per vessel. Since this program was very exceptional from a legal perspective, the implementation period of the program was limited, i.e. fishers were allowed to apply for the program only in 2005 and 2006. If any small bottom-trawl vessels were caught after this period, it would be confiscated without any compensation.

Outcomes

Under the special law, 2 467 boats were bought and scrapped by the government (1 787 in 2005 and 680 in 2006) (Table 5.3). A total of KRW 82.6 billion was spent in the program and was covered mainly by the central government (90%) while local governments paid the rest (10%).

As a consequence of the policy, meaningful changes have been reported by various agencies. The catches of eight species targeted by small bottom-trawl vessels increased by 26.7 % from 54 080 tons in 2004 to 68 520 tons in 2006. Furthermore, fish sales in four Fisheries Cooperatives in Gunsan in Jeollabuk-do, Yeosu and Mokpo in Jeollanam-do and Sacheon in Gyeongsangnam-do where small bottom-trawl vessels were once operated also increased by 20.0 % from 113 641 tons in 2004 to 136 393 tons in 2006.

It has been recognized that illegal small bottom-trawl vessels have disappeared since this program was implemented. Moreover, there has been a consensus among fishers that any illegal fishing vessels should not re-enter and peer pressure to monitor illegal fishing has been widespread.

Table 5.3. Result of decommissioning of small bottom-trawl vessels in Korea

	Total		2005		2006	
	Number of vessels	Payment (million KRW)	Number of vessels	Payment (million KRW)	Number of vessels	Payment (million KRW)
Total	2 467	82 609	1 787	63 105	680	19 504
Busan Metropolitan City	153	6 510	138	5 722	15	788
Chungcheongnam-do	52	2 041	26	1 283	26	758
Jeollabuk-do	392	13 501	174	7 057	218	6 444
Jeollanam-do	1 338	40 273	982	30 874	356	9 399
Gyeongsangnam-do	532	20 284	467	18 169	65	2 115

Source: Ministry of Maritime Affairs and Fisheries.

Future policy challenges

One of the key policy challenges is to prevent re-entry of small bottom-trawl vessels. Since building this type of vessel is not difficult from a technical point of view, there is always possibility of the re-entry issue emerging in the future. In fact, attempts by some fishers to modify legal fishing gears to something similar to small bottom-trawling have been reported. Even though the modified gears are not exactly same as of small bottom-trawl vessels, the negative impact on fishery resources is believed to be the same. Therefore, government agencies should continue intensive monitoring and surveillance activities while fishers should also keep an eye on illegal fishing.

Another task is to stop illegal fishing activities from those who have legal permits and gears. It has been reported that some fishers have violated fisheries laws and regulations by using different fishing methods rather than permitted ones; by catching fishes even in closed seasons; and by catching fishes un*authorised* fishing grounds. The MOMAF has focused on monitoring these illegal activities since 2006 when it declared that small bottom trawling did not exist anymore. To achieve the goal, monitoring and surveillance should be conducted in a collaborative manner among government agencies.

From regulation to self-management: community-based fisheries management

Background

Since 2001, the emphasis of fisheries policies in Korea has shifted away from government-led strategies towards ensuring greater fisher participation and self-management. Korea's fishing industry had suffered from several problems caused by fish stock decrease, reduced catches and increased operating costs. Although this situation was not unique to Korea, it was closely related to the limitations of traditional fisheries policies in Korea where government-initiated development strategies had been adopted. This resulted in fisher's high dependence on government support while fishers paid less attention to managing fishery resources in a sustainable manner and engaged in a race to fish. This was one of the reasons why conflicts among fisher groups had continued.

In this situation, a strong need to find alternatives in fisheries management had been raised not only by fisheries experts but also by the government itself. In order to come up with the alternatives, the MOMAF surveyed in 2000 best practice fishing communities showing good performances in managing fishery resources. As a result of the search conducted by regional branches of the MOMAF and local governments, fourteen communities had been identified. Common elements of their practices provided a basis on elaborating new concept of fishery resource management called Community-Based Fisheries Management (CBFM). CBFM was officially adopted as a new approach to fisheries management by the MOMAF in 2001. Since then, it has played a significant role in changing fisheries policies as well as fishers' attitudes towards fisheries management.

Even though the concept of CBFM had already been adopted in many other counties, Korea developed its own concept and way of implementation based on the best practices of fishing communities. Many fishing communities in Korea had a long history of collaboration among fishers in the community when exercising their rights to catch shellfishes in fishing grounds designated by the government. The rights have been strongly protected by the laws and regulations allowing only local fishers to access fishery resources in the *authorised* areas. Many of the communities had their own regulations on, for example, how to limit daily catches and how to share profits. This experience has provided a strong basis in developing CBFM in Korea.

Development of CBFM

Development strategy by stages. At the beginning of implementation, a three stage strategy was established. The first stage, Modelling Stage, focused on developing models for each type of community and identifying best practices based on pilot tests. One of the most important objectives in this stage was to induce fisher's participation by providing education opportunities and financial incentives. In addition, the Fisheries Act was amended to support CBFM activities in this stage. All of these actions were taken by 2004. The second stage starting in 2005 was the Proliferation Stage. This stage was designed to raise fisher's awareness; educate local leaders to make them play a key role in expanding CBFM; diversify participating communities by attracting fisher catching offshore fishes; and encourage fishers to cooperate more closely with adjacent communities (for example, by merging more than two communities). By the time this stage is finished in 2010 as planned, 900 fishing villages and fisher's organizations out of about 3 000 are expected to participate in CBFM. In the third stage after 2011, all fishing villages are expected to adopt CBFM as a key mechanism to manage fishery resources and this stage is categorized as Settlement Stage.

CBFM has been expanded more rapidly since 2003 when the Rho Moo-Hyun administration was launched. President Rho played a key role in conceptualizing CBFM when he was the Minister of Maritime Affairs and Fisheries from August 2000 to March 2001. He has emphasized that the recovery of fishery resources could not be accomplished without fisher's voluntary participations. He sometimes mentioned CBFM as one of his presidential priorities.

Since the launch of CBFM, fishing industry leaders' active role and collaboration with the government have resulted in rapid expansion of participating communities and number of fishers. As shown in Table 5.4, the number of communities has increased nine-fold since 2001while the number of fishers participating in CBFM has increased eight-fold.

Table 5.4. Trends of participating communities and fishers of CBFM

	2001	2002	2003	2004	2005	2007
Number of participating communities	63	79	122	174	308	579
Number of participating fishers	5 107	6 575	10 765	15 469	24 805	44 061

Source: Ministry of Maritime Affairs and Fisheries

Institutional arrangements. Various institutions and organizations have been involved in implementing CBFM. First, a central CBFM leader's forum plays an important role in coordinating fishers' opinions and suggesting policy changes to the government. The central forum consists of representatives of regional leaders' forum which is comprised of leaders from every participating community. The Korea Fisheries Association provides consulting services when communities have conflicts with other communities. Experts in the Association act as moderators to solve conflicts between communities. The National Federation of Fisheries Cooperatives, the largest and nationwide fisher's organization, hosts an annual meeting where leaders of each community and representatives of related organizations meet every year and discuss how to implement CBFM more effectively. Local governments are responsible for determining the eligibility of fishing communities which want to participate in CBFM. The MOMAF provides financial incentives as well as technical assistance through its regional offices.

Fishers' activities. Under the CBFM system, each community should develop its own regulations on how to manage fishery resources within their fishing grounds. Some examples of typical activities include: cleaning their fishing grounds on a regular basis including collecting abandoned fishing gears; releasing juvenile fishes or shellfishes; closing a part of their fishing grounds voluntarily; limiting daily or monthly catches in order to manage fishery resources and at the same time to maintain good prices of their catches; and operating surveillance ships to prevent illegal fishing activities. In many communities, fishers make efforts to increase profitability by selling catches in a collective way and sometimes by developing their own brands.

Incentives. The MOMAF and local governments provide financial incentives to communities showing good performances based on evaluation carried out by a separate Evaluation Committee whose Secretariat is the Korea Fishers Association. The incentives range from KRW 50-300 million per community, reaching KRW 11.8 billion in total in 2007. They are covered mostly by the central government (50%) and local governments (40%) while the community itself is required to bear remaining 10%. This financial incentive should be used for facilitating CBFM activities.

Another incentive is a certification system. Based on the evaluation, the MOMAF issues a certificate for best practice communities. In addition, government awards are offered to leaders who have contributed to implementing and expanding CBFM.

Outcomes

It is generally recognized that CBFM has been successful in changing the way of managing fishery resources in many fishing communities. Significant numbers of communities have shown visible improvements: stock increase especially shellfishes; stable prices of their catches; and income increase. Good practices and success stories been introduced by the MOMAF in its publication series. This in one of the reasons why the number of participating communities has sharply increased.

According to a survey conducted in 2007 by the Korea Gallup, one of the leading survey companies in Korea, 81% of 420 interviewed fishers were satisfied with CBFM and 77% of them said CBFM should be expanded. Most of the respondents said that their incomes had increased since their participation. Even though evaluation from fisheries experts and local government officials differed from that of fishers with an overall satisfaction rate of 52.5 %, it is agreed among relevant agencies and experts that CBFM has been effective in overcoming the limitations of government-led fisheries management.

Future policy challenges

However, there are limitations in implementing CBFM in Korea. First, despite an increase of participating communities, not every community has been successful; some of them have quit the fishery resource management activities. The major reasons were lack of eligible leaders in a community and conflicts between members.

Furthermore, many communities have been focusing on relatively straightforward activities such as cleaning up fishing grounds and releasing juvenile fishes. Less than 20% of the communities have been making efforts to include more challenging activities such as enlarging mesh sizes beyond legal minimum limits and selling their catches in a collective manner.

Another issue is the question of whether fishers' activities are really voluntary and self-regulatory. Some experts argue that this is another form of government-initiated reform

because this has been driven by the president and the government. They insist that most communities are interested in receiving financial incentives rather than managing fishery resources themselves. This notion has been partly reflected on the survey. About 30% of respondents agreed an assumption that if government's financial incentives were not offered any more, most communities would stop CBFM activities.

It has been also pointed out that most participating communities are those who have exclusive fishing grounds designated by fisheries laws and regulations, where sedentary species and shellfish are mostly caught. Two-thirds of participating communities fall into this category while those who do not have exclusive fishing grounds and catch migratory species account for only one-third of the communities under CBFM. Although the latter group has requested the establishment of a legal framework to allow exclusive rights to fish in areas where they manage resources by reducing catch efforts, it has not been concluded whether the exclusive rights should be provided because it may bring the more difficult task of reconciling different interests with other fisher groups who have fishing permits under the current system.

Key insights and lessons learned

Strong political will is the main driving force

This case study demonstrates that strong political will plays a key role in implementing policies successfully. The cases introduced here show Korea's unique experience in terms of the involvement of the highest policy maker, the President. In the case of the combat against illegal fishing, the President's special order delivered a clear message to small bottom trawl fishers that they cannot continue illegal fishing activities any more. This was followed up with coordinated and intensive monitoring by relevant government agencies to achieve the government's objectives. As a result of the deterrence activities by government surveillance ships, the actual number of arrested small bottom trawl boats was reduced from 904 in 2004 to 61 in 2006. In the case of CBFM, The President's interest has played a critical role in expanding community's participation. He attended the 2nd annual meeting in 2004 and stressed the importance of fisher's voluntary participation. In addition, he sent a video address or a written memo in most annual meetings to encourage fishers. This was why CBFM is designated as a "presidential agenda" as noted above.

Financial incentives facilitate policy implementation

The Korean government provided incentives for fishers who stopped illegal fishing activities and participate in resource management in order to stimulate fishers' participation. Government loans were offered for those who changed the structure of their boats and fishing gears to legal ones. In 2004 and 2005, the number of boats receiving the loans increased sharply (Table 5.5). For those who sold their boats and needed time to find another job, opportunities to participate in public works such as cleaning wastes in shoreline were given on a temporary basis. Furthermore, job training courses were arranged through local labour education institutions. In the case of CBFM, financial incentives offered by the government have also been a catalyst to expansion of CBFM. 75% of fishers surveyed agreed that the financial incentives had been effective.

Table 5.5. Government loans for vessel conversion

	2002	2003	2004	2005	2006
Number of boats	5	23	94	167	24
Loans (KRW million)	138	720	3 281	4 652	602

Source: Ministry of Maritime Affairs and Fisheries.

Fisher's participation, cooperation and support are the key

Fisher's active participation is an essential factor to achieve sustainable fisheries. This was especially important in Korea's TAC system because many TAC target species are caught by several fishing gears and methods and, therefore, government's administrative capability and enforcement inevitably have limitations in implementing the system without fisher's cooperation.

Strong support by the fishing industry was one of the critical aspects enabling the Korean government to continue the combat against illegal bottom trawling. Since fisher's awareness on the importance of fishery resource management has increased over the past decades, they understood how bottom trawling had imposed negative impacts not only on target species but also on the ecosystem as a whole. Therefore, legal fishers supported the government's efforts to stop illegal bottom trawling. In addition, they participated in the "honorary surveillance ship program", where fishers voluntarily report illegal fishing activities conducted by other vessels. This changed the atmosphere of fishing communities where, in the past, fishers were not able to explicitly require small bottom trawlers to stop the illegal fishing. As a result of these collaborative efforts, some fishing communities started to adopt the concept of community-based fisheries management and find alternative ways to fish and make a living.

Fishing industry's cooperation has led to legal support by the National Assembly. Enactment of the special law was one of the most important factors to stop illegal bottom trawling. This law was enacted based on consensus that illegal fishing boats would re-enter fishing grounds as long as they remain in ports even if they are not able to catch fish for the time being. Experiences from the past 50 years clearly showed that enforcement alone would not be able to completely stop the illegal fishing. Even though there were some opposition against the enactment, especially from legal experts due to its exceptional characteristics allowing the government to pay for illegal boats, an agreement was relatively easily reached in the National Assembly.

Demonstration effect is an efficient way to raise fisher's awareness

Korea's experience reveals the important benefits that are derived from the demonstration effect. Raising fishers' awareness and understanding on the TAC system has been central to the development of the system. Gradual implementation of the TAC system has allowed fishers to become familiar with how the system works. Once TAC implementation results in tangible outcomes such as stable catches and income increases, fishers are more likely to be cooperative to the policy.

Fisher's awareness raising can be accomplished through community leaders. Korea's experience on CBFM reveals that without an enthusiastic leader, CBFM activities would not be successful. Then question is how to inform and educate community leaders. In this regard, raising leaders has been of top priority of the related agencies and various education opportunities and consulting services have been provided to leaders.

In line with this, it has been also proved that providing best practice guidelines is the most effective way to attract fishers to participate in fishery resource management. In Korea, introducing success stories to other communities has been a key strategy in CBFM and, therefore, a series of booklets has been published on a regular basis. In addition, field trips have been arranged for those who are interested in learning how to implement CBFM in other communities. This bottom-up approach has been successful since many communities have demonstrated tangible outcomes from the early stage of CBFM. According to the survey mentioned above, education including field trips was endorsed by most interviewees, 83% of fishers and 59% of experts and local officials.

Role of local governments is important

In addition to fisher's participation, the active role of local governments is also critical for the success of fisheries management. In implementing the TAC system in Korea, local government officials have been reluctant to impose bans even if a quota of individual vessel is fully utilized because they face fishers on a daily basis and are likely to be generous in enforcing laws and regulations. However, through recent policy changes, they started to understand the strict enforcement of TAC regulations is essential.

Quality of information affects the success of policies

Korea's experiences with the TAC system clearly show that monitoring is one of the key issues in making the system successful. Systematic collection of catch data and double checking of the data is essential. In addition, there is a need for strong legal support for observers' monitoring activities in order to ensure that they can collect data in a credible way. There is a need to strengthen reporting and monitoring systems for catches of target species. Currently, local governments check catches of individual fishers based on reports from fisher's organizations and Fisheries Cooperatives of the region. The Fisheries Cooperatives information systems dealing with catch data need to be upgraded so as to manage the data in more efficient and reliable way. Furthermore, the number of TAC observers should increase in order to cover all designated fish landing sites.

The credibility of stock assessment is also essential to the success of the TAC system. While some improvements have been made in recent years, there is clearly scope for increasing the policy priority given to stock assessment. In particular, there is a need to ensure that the NFRDI as adequately resourced (in terms of research vessels and experts) to carry out its functions.

Notes

1. New fisheries agreement between Korea and Japan entered into force in January 1999 and the agreement between Korea and China entered into force in June 2001.
2. Due to the re-organisation of the Korean government in March 2008, the Ministry of Maritime Affairs and Fisheries was divided into the Ministry for Food, Agriculture, Forestry and Fisheries and the Ministry of Land, Transport and Maritime Affairs. Now, the Ministry for Food, Agriculture, Forestry and Fisheries has the authority to establish and implement fisheries policies.

Chapter 6

Development of the individual transferable quota system in Iceland

Iceland is one of the leading countries to have adopted the Individual Transferable Quota (ITQ) system and applied the system to fisheries management. Therefore, Icelandic experiences in the ITQ system development provide good insights for fisheries policy reforms at the national level. This chapter describes the evolution of quota system in the Icelandic fisheries sector, key features of the current ITQ system and outcomes of the system. Furthermore, this chapter aims at sharing information and lessons learned from the Icelandic experiences.

Background

Before discussing the ITQ system in detail, it is necessary to overview the key figures and economic importance of the fisheries industry in Iceland. The fisheries industry is one of the most important industries in Iceland in terms of its contribution to the Gross Domestic Product (GDP) and exports. As Table 6.1 indicates, fishing and fish processing industries had accounted for 10-15% of GDP up until 2000 when the contribution fell below 10%. However, the contribution to GDP is the highest among OCED countries. Although the contribution of the fisheries industry to GDP has declined over the past decades, actual gross outputs in prices have kept an increasing trend (Table 6.2). The share of marine products in total exports of goods has also been declining, from 80% in 1991 to around 42% in 2007. This, however, can be traced to significant increases in other exports, mainly aluminium, since the value of exports of marine products has not been decreasing. With respect to fish catches of Icelandic vessels, the total catches in the 1980s and early 1990s were relatively stable at between 1.5 million and 1.6 million tons, as Table 6.3 reveals. The catches reached at the peak at 2.2 million tons in 1997 followed by a sharp decrease in 1998 and 1999. Although total catches showed a short recovery in 2002, they have considerably reduced since 2003 mainly because of the sharp decrease of capelin catch that tends to vary significantly between years.

The most important fisheries in Iceland are demersal or groundfish fisheries catching mainly cod, haddock, saithe, redfish and Greenland halibut (Eythórsson, 2000). From 2003 to 2006, the demersal fishery generated about 78% of the total catch values, as indicated in Table 6.4, while cod is the most commercially important single species. Pelagic fisheries catch around two-thirds of the total volume in Iceland, but the value of the catches contributes less than 20% to the total value.

Table 6.1. Contribution of the fisheries industries to GDP in Iceland (1975-2005)

	1975	1980	1985	1990	1995	2000	2005
Fishing (%)	6.4	8.0	7.7	9.6	9.5	7.0	4.7
Fish Processing (%)	6.0	7.8	6.2	4.8	4.7	2.7	1.3
Total (%)	12.4	15.8	13.9	14.4	14.2	9.7	6.0

Source: Statistics Iceland.

Table 6.2. Gross output of the fishing industries in Iceland, 1975-2005 (ISK million, current prices)

	1975	1980	1985	1990	1995	2000	2005
Fishing	191	1 866	14 030	46 011	55 347	63 659	72 020
Fish Processing	378	3 217	20 867	49 400	66 007	70 512	81 241
Total	569	5 083	34 897	95 411	121 354	134 171	153 261

Source: Statistics Iceland.

Table 6.3. Catches of Icelandic fishing vessels, 1975-2006

	Total	Cod	Haddock	Saithe	Redfish	Herring	Capelin	Shellfish	Others
1975	988 571	265 759	36 658	61 431	38 291	33 433	501 093	7 298	44 608
1980	1 508 071	428 344	47 915	52 380	69 868	53 268	759 519	12 358	84 419
1985	1 672 279	322 810	49 553	55 135	91 381	49 363	992 999	27 279	83 759
1990	1 502 292	333 652	66 030	95 015	94 848	90 338	693 740	31 389	97 280
1995	1 605 127	202 900	60 125	47 466	118 750	284 473	715 551	84 556	91 306
2000	1 980 163	238 324	41 698	32 947	116 297	287 663	884 858	46 198	332 178
2001	1 986 584	240 002	39 825	31 941	92 527	178 950	918 417	46 820	438 101
2002	2 133 327	213 417	49 951	41 839	110 876	223 843	1 078 818	54 765	359 819
2003	1 979 545	206 405	60 330	51 935	111 143	250 097	675 625	45 729	578 280
2004	1 727 785	227 258	84 563	62 965	84 513	224 365	515 581	32 678	495 862
2005	1 668 927	212 456	96 580	67 736	77 540	264 660	605 059	14 036	330 859
2006	1 322 914	199 375	96 591	75 460	82 595	291 380	184 431	6 081	387 001

Source: Statistics Iceland.

Table 6.4. Catch Values by Species in Iceland, 2003-2006 (unit: 000 ISK)

	2003	2004	2005	2006	2003-2006	Percentage
Total	67 277 674	67 975 107	67 920 065	76 163 325	279 336 171	100.0
Cod	26 051 833	27 979 389	24 924 027	27 588 627	106 543 876	
Haddock	5 863 722	7 660 219	8 881 445	11 418 054	33 823 440	
Saithe	2 488 788	2 777 740	3 086 148	4 684 188	13 036 864	
Redfish	4 705 417	3 719 051	5 466 266	6 537 375	20 428 109	
Oceanic redfish	3 209 537	2 637 371	1 666 045	3 129 867	10 642 820	
Catfish	1 542 247	1 126 124	1 396 560	1 681 676	5 746 607	
Other demersal	7 491 012	7 664 598	6 865 319	7 703 133	29 724 062	
Demersal subtotal	51 352 556	53 564 492	52 285 810	62 742 920	219 945 778	78.7
Herring	1 755 601	2 364 477	1 988 124	2 394 990	8 503 192	
Norwegian spring-spawning herring	1 911 468	2 185 623	5 161 065	3 951 852	13 210 008	
Capelin	4 877 527	4 033 234	5 030 553	2 180 468	16 121 782	
Blue whiting	3 441 615	2 820 029	1 489 498	3 584 730	11 335 872	
Other pelagics	195 683	506 725	458 632	450 888	1 611 928	
Pelagics subtotal	12 181 894	11 910 088	14 127 872	12 562 928	50 782 782	18.2
Crustaceans	3 639 776	2 422 513	1 450 762	817 238	8 330 289	3.0
Molluscs	103 449	78 013	55 623	40 240	277 325	0.1

Source: Statistics Iceland.

Evolution of the quota system in Iceland

In Iceland, soon after Iceland gained control over the Exclusive Economic Zones (EEZs) in 1976, the previous management system was completely overhauled. The overhaul was initiated by various problems that Icelandic fisheries were faced with, including overexploitation of stocks, and poor economic performances. In order to address these issues, a series of actions has been taken.

An individual vessels quota system was introduced for herring fishery in 1976 by expanding a Total Allowable Catch (TAC) system that was established in 1969 due to the continuous decline in herring stocks (Runolfsson, 2001 b). The individual vessel quotas were made transferable in 1979. Then, the TAC system was applied to the demersal fisheries starting with cod in 1976 and individual effort restrictions were added to the fisheries management in 1977. For example, Cod fishery or trawlers was first limited to 323 days a year. However, these restrictions were ineffective and the days at sea in the cod fishery were reduced to 215 days in 1983. In addition, the individual transferable vessel quota system was applied to the whole demersal fisheries in 1984, including included haddock, saithe and redfish, except for small vessels. The initial quotas were basically allocated on the basis of catches in a reference period, which was determined to

be the three-year period between 1981 and 1983.Furthermore, the capelin fishery was added to the individual vessel quota system in 1980 and the quotas were made transferable in 1986Although individual vessel quota system was accepted based on agreement among the Icelandic government, the Parliament, fishing industry and other stakeholders, policy challenges emerged in the late 1980s. For example, the catches of the most important species were still exceeding scientific advice and TACs decided by the government. The excessive fishing became unacceptable and there was a substantial pressure to integrate different effort restrictions into a single management system so that all operators can play under the same rules. These developments led to the legislation of the Fisheries Management Act in 1990, providing a legal basis of a fairly uniform and comprehensive ITQ system. Since the Fisheries Management Act entered into force in 1991, most commercially important species have been managed by the ITQ system. In addition, the ITQ system started to cover all Icelandic fishing fleet in 2004. In the fishing year 2006/2007, 19 species were subject to the individual quota system. Meanwhile, due to the importance of the fisheries industry in Iceland, the ITQ system has continued to feature heavily in political debate and has been subject to modifications (OECD, 2004; Sanchirico *et al.*, 2006).

Key features of the current ITQ system in Iceland

Quota allocation

Under the current ITQ system, TACs of each species are determined by the Ministry of Fisheries[1] by taking into account the recommendations from the Marine Research Institute (MRI) for stock status of target species. Special rules are applied for cod, capelin and herring in deciding TACs. In 2007, the MRI recommended the TAC for cod should be based on the average of last year's TAC and 20% of the estimated fishable biomass in the assessment year. According to this formulation, the cod TAC for 2008/2009 fishing year was recommended to be 124 000 tons.[2] For capelin, the rule is that at least 400 thousand tons should be allowed to spawn in order to maintain the sustainability of the stock. In addition, the TAC for herring is recommended based a specific fishing mortality rate. Fishing vessels are allocated their "annual catch quotas" based on the vessel's "permanent quota shares" and the total quotas of the species that the vessels intend to catch. The permanent quota shares have been provided to eligible fishing vessels mainly based on catch histories, usually during three years prior to the introduction of the quota system for the species. The combined quota share for all vessels amounts to 100% of each species. Fishing years are normally from September of the year in concern to August of the following year even though some fisheries have shorter fishing periods (OECD, 2004; Sanchirico *et al.*, 2006)

Divisibility and transferability

Quota shares and annual catch quotas are divisible and transferable to other fishing vessels with minor restrictions. The restrictions, designed to discourage speculative quota holdings, include that (1) no vessels may purchase quotas that are clearly excessive of what the vessel can harvest, and (2) any vessel that does not harvest 50% of its annual catch quotas in two subsequent years will lose its permanent quota share. Another constraint is that the quota-shares held by any company or individual should not exceed certain limits, ranging from 12% of the TACs for cod to 35% for ocean redfish (OECD,

2004). In addition, any company or individual's quota share should not exceed more than 12% of the value of the total quotas allocated for all species.

In addition, some flexibility is provided to vessel owners. They can transfer 20% of their quotas to the following fishing year and catch fishes up to 5% in excess of the quotas under the condition that the excess catch is withdrawn from next fishing year's quota of the vessel (Iceland Ministry of Fisheries website, *www.fisheries.is*).

Each year, a large share of the annual catch quotas is traded. Much of this trade is internal transfers between vessels owned by a same operator. A large part of the trade is also in the form of interspecies exchange. That is, one operator trades a part of its annual quotas in one species for quotas in another species. Moreover, some of the annual catch quotas are traded for money. Applications for quota transfers should be submitted to the Directorate of Fisheries which verifies and registers the transfers on its website. The Icelandic Quota Exchange was established in 1998 and operated to 2001. Since 2001, quotas have been transferred on an open market by individual firms or through brokers.

Fee

A special fishing fee has been levied on annual quota allocation from September 2004 according to the 2002 amendment of the Fisheries Management Act. The fee is calculated based on the certain rate of net landed value, i.e. value of after deduction of operation costs and fishermen's salaries from total landed values of the species. The rate in the 2004 fishing year was 6% and it will increase to 9.5% by the 2009 fishing year (OECD, 2004; *www.fisheries.is*).

Management of small fishing vessels

In the process of quota system development in Iceland, small fishing vessels have been given special consideration because it was not administratively desirable to include them in the ITQ system because of the large number of small vessels with minimal percentage (about 2%) of total catch. When an initial individual transferable vessel quota system was adopted for the demersal fishery in 1984, small vessels under 10 Gross Registered Tonnage (GRT) were exempted from the system. However, as the number of small vessels and their catch increased, there was a need to strengthen the exemption criteria.

With the legislation of the Fisheries Management Act of 1990, small vessels under 6 GRT are allowed to choose between the general quota regime and effort restrictions. Most small vessel operators chose the effort restriction option. However, the small vessels became effective and their increased catches became unacceptable. Therefore, individual vessel quotas had been imposed on the small vessels step by step, with the final step being taken in 2004. Now, the quota management system for small vessels is identical to the general quota management regime for larger vessels except for small vessels that can only use long-line or hand-line. There is full transferability of fishing quotas between small vessels but it is not possible to transfer small vessel quotas to larger vessels. In short, small vessels must comply with the general quota management rules in addition to the special fishing gear and quota trading restrictions.

Catch data collection

Information on each vessel's catches, weight and species composition for instance, is collected by officials at landing ports. Weighing stations are normally operated by municipal authorities and weighing fees are collected. Once weighing is completed, the relevant port authorities transmit the catch information to the central database of the Directorate of Fisheries. As required by the Article 17 of the Fisheries Management Act, special fisheries inspectors of the Directorate of Fisheries "supervise the landing, weighing-in and processing of the catch". They also "accompany fishing vessels on voyages or board the vessels to check their cargo and fishing gear". The information accumulated in the database is provided to vessel owners and skippers to check their quota status. The database is updated daily and accessible by the general public to ensure transparency (Gissurarson, 2001; *www.fisheries.is*). Furthermore, buyers of the catch (usually the processors) have to register and send the Directorate of Fisheries information on the value and amounts of the purchase and the disposition of the catch. This registration system provides double checking of the catch information.

Cod equivalents or species exchange

Iceland is the leader in using species exchanges under which quota shares can be converted into a "cod equivalent" or a "cod currency." The term "cod equivalent" implies the relative value of different fish species on the market set by the Ministry of Fisheries regulation every year. For each vessel having a quota for several species, the total quota may be calculated in kilograms as cod equivalents. However, there are some restrictions on the exchange. It is not allowed to convert more than 5% of total annual catch quotas and no more than 2% of the total quotas can be converted into any one species (Sanchirico *et al.*, 2006, *www.fisheries.is*).

Special regional quota allocation: shock absorbers

The Minister of Fisheries has the authority to allocate certain amount of cod equivalent for special purposes. The amount is normally less than 3% of the total quota allocations. The specially allocated quotas are basically intended to serve as shock absorbers and regional policy instruments. These quotas are used for special allocations when local stocks collapse and this affects severely a limited group of vessels that has specialised in local fisheries to catch the stocks. This arrangement has been applied to coastal shrimp and scallop fisheries that have large fluctuations in stock status and catches. These quotas are also used to compensate small communities that lose quotas for various reasons. A community that suffers from the loss of quotas through transfers or because of a reduction in catches for other reasons can apply to the Minister for a special regional quota allocation.

These shock absorbers have been considered as a very important policy instrument since they deal with geographically isolated problems within the quota system and solve them without a special legislation when they arise. However, it is important to note that the extent of these shock absorbers and other special measures should be limited because all special allocations might hamper the function of the system and affect the competitiveness of the operators.

Monitoring and enforcement

Several government agencies and institutions are involved in monitoring and enforcing the ITQ system. The Directorate of Fisheries under the Ministry of Fisheries is the principal agency monitoring compliance with fisheries laws and regulations and enforcing fisheries management measures. The Directorate issues commercial fishing permits and allocates catch quotas to fishing vessels. It also records quota transfers between vessels and collects catch data. The Icelandic Coast Guard, under the Minister of Justice, monitors fishing activities at sea, including surveillance of areas closed for fishing and inspection of mesh sizes and other gear related practices (*www.fisheries.is*). Marine observers, employed by the Ministry of Fisheries, play an important role in checking compliance with regulations on mesh size, by-catch, etc. They may take trips on fishing vessels and may travel between fishing. Violations of the Fisheries Management Act and related regulations may result in heavy penalties including expropriation of catch and gear and cancellation of fishing permits (Gissurarson, 2001).

Outcomes of ITQ system

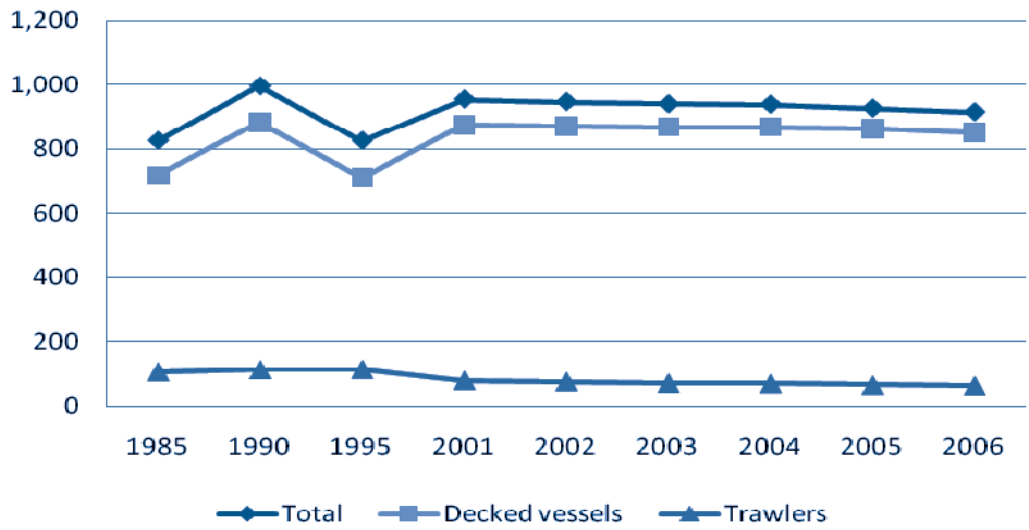
Outcomes of the ITQ system in Iceland can be analysed by examining the questions of whether fishing fleet has been reduced, whether fish stocks have increased and whether economic performance of the fishing industry has increased. One of the overall evaluations is that fish stocks have recovered, landing quality has improved, and the catch per unit fleet capacity has risen significantly in Icelandic fisheries (Hentrich 2006). In the following section, these factors are examined in detail.

Fishing fleet change

An ITQ system does not directly control the number of vessels and vessel size but the quota management system let the fishing industry adjust the fishing fleet. In general, a well-functioning ITQ system results in downsizing fishing fleet. Figure 6.1 shows an overall trend of the number of decked vessels and trawlers. Over the last two decades, decked vessels have increased by 18%, with a sharp increase in the late 1980s mainly due to increased sizes of replacement vessels. However, the number of the vessels has remained relatively stable since 2001. Trawlers, normally having greater tonnage than decked vessels, have decreased by 41%. This opposite direction has resulted in a stable trend in GRT at between 110 000 and 125 000 tons over the same period. In the meantime, undecked vessels, mostly small vessels less than 10 Gross Tonnage (GT), have considerably reduced over recent years. The number of undecked vessels was 1 134 in 1998, but was reduced to 744 in 2007 while the GTs of the vessels has also decreased from 5 208 tons to 3 556 tons.

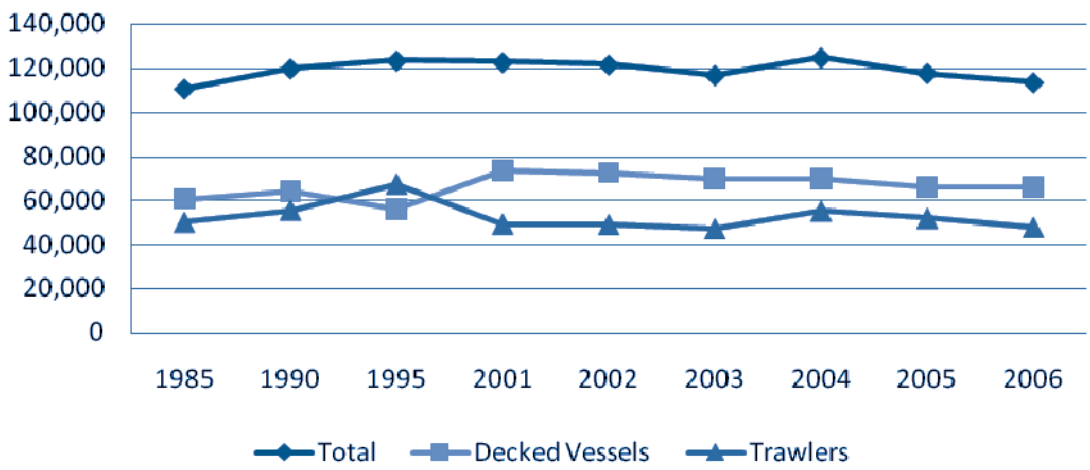
In terms of fishing fleet composition, as seen in Figure 6.4 decked vessels accounted for more than 50% of the total numbers and gross tonnages in 2007. Trawlers accounted for about 44% of gross tonnages although they contributed only 4% to the total number of the vessels. The number of undecked vessels accounted for about 45% but the percentage of them in gross tonnages was only 2%.

Figure 6.1. Trend in number of Icelandic fishing vessels (trawlers and decked vessels)



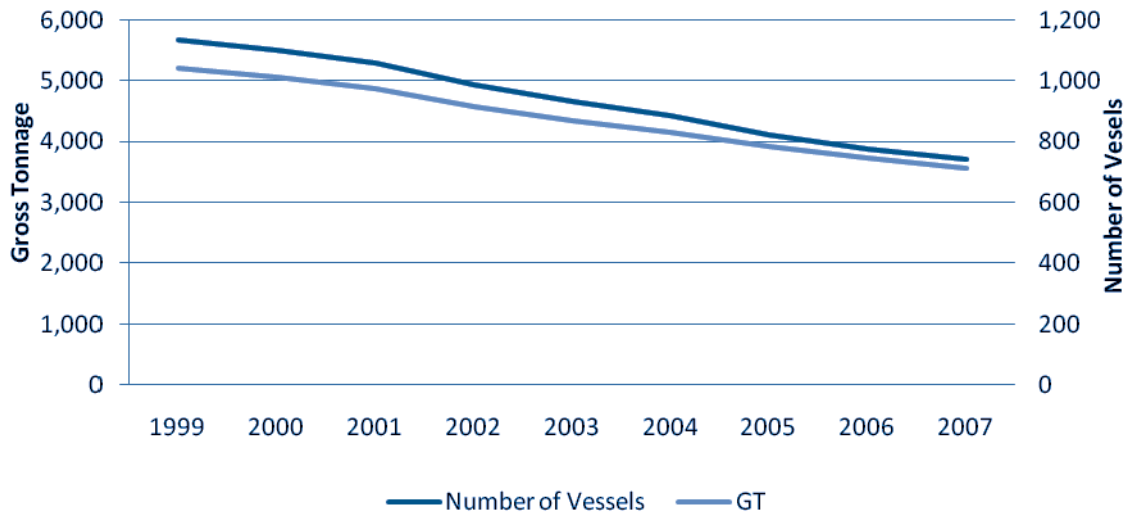
Source: Statistics Iceland.

Figure 6.2. GRT of Icelandic fishing fleet (trawlers and decked vessels)



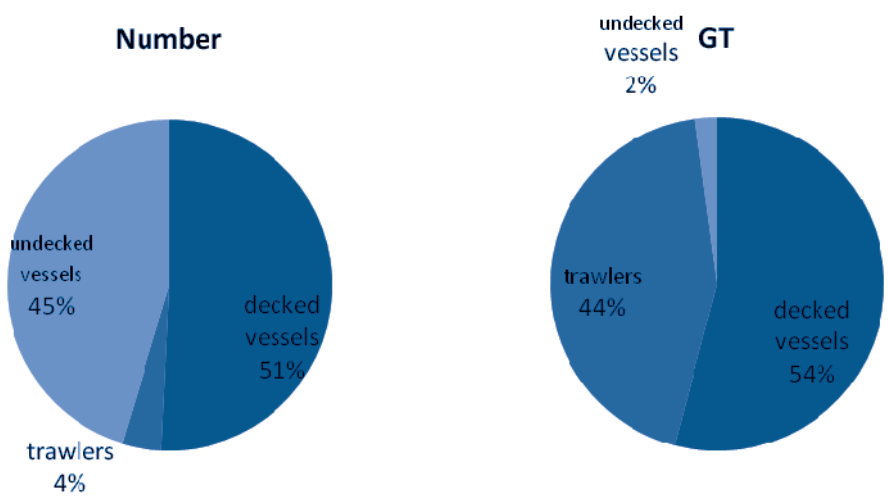
Source: Statistics Iceland.

Figure 6.3. Undecked fishing vessels in Iceland



Source: Statistics Iceland.

Figure 6.4. Composition of the fishing fleet in Iceland, 2007



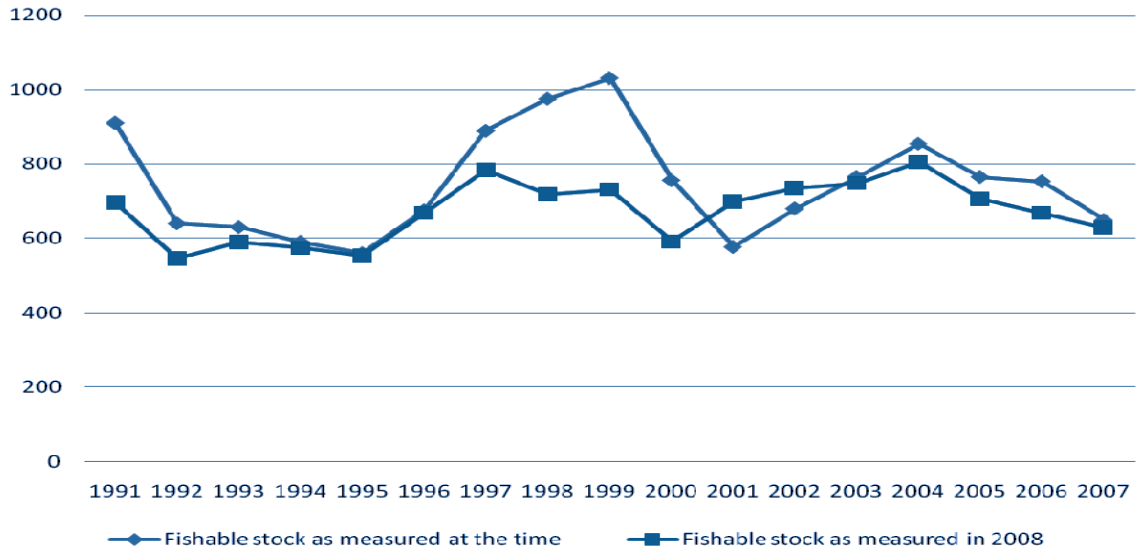
Source: Statistics Iceland.

Changes in fish stocks and total quotas

Figure 6.5 describes the trend in stock changes of cod, the most important single species in Iceland. Fishable stock biomass of cod (four years and older) increased in the late 1990s and it remained above 700 000 tons although it dropped to 591 tons in 2001. However, the cod stock has shown a slightly decreasing trend since 2004. Consequently, cod TACs have reduced in recent years as seen Table 6.5. It is worthy to noting that stock assessment has a tendency to overestimate biomass although they are refined later on due to increased data availability including catch data. As seen in Figure 6.5, stock biomasses measured at the time were greater than those measured in

2008 except for 2000 and 2001. As a whole, the difference between biomasses measured at the time and in 2008 has been less than 10% of total biomass except for 1997-2001.

Figure 6.5. Cod Stock Assessments (1991-2007)



Source: Ministry of Fisheries, Iceland

Stock changes can also be analysed in an indirect way by examining the trend in TACs of important species because the TACs are determined by the Ministry of Fisheries based on MRI's scientific stock assessment on the species.

Table 6.5 shows that total TACs in Iceland have varied over the past ten years. An overall decrease (868 232 tons) from 1997/98 to 2007/08 fishing year is mainly due to the reduction of capelin quotas (850 782 tons) since capelin has long been the single largest contributor to the total catches in Iceland.[3] There are however several species that show increasing trends in their quotas. They include haddock (45 000 tons in 1997/98 to 100 000 tons in 2007/08 fishing year), saithe (30 000 to 75 000) and Icelandic herring (100 000 to 150 000) although there were fluctuations depending on the specific circumstances of the fishing year. On the other hand, decreasing trends have been observed in cod (218 000 to 130 000), redfish (65 000 to 57 000), capelin (1 008 028 to 157 246) and offshore shrimp (75 000 to 7 000).

Table 6.5. Evolution of TACs in Iceland

Unit: 000 tons

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08
Total	**1 602**	**1 544**	**1 422**	**1 453**	**1 661**	**1 314**	**1 328**	**1 413**	**811**	**947**	**734**
Cod	218	250	250	220	190	179	209	205	198	193	130
Haddock	45	35	35	30	41	55	75	90	105	105	100
Saithe	30	30	30	30	37	45	50	70	80	80	75
Redfish	65	65	60	57	65	60	57	57	57	57	57
Catfishes	13	13	13	13	16	16	16	13	13	13	12.5
Greenland Halibut	10	10	10	20	20	23	23	15	15	15	15
Icelandic Herring	100	70	100	110	125	105	110	110	110	130	150
Capelin	1 008	995	892	919	1 096	765	737	803	194	318	318.2
Others	113	76	2 530	54	71	66	51	50	39	36	38

Source: Directorate of Fisheries, Iceland.

Even though this analysis does not show a clear direction, it should be noted that the quotas for cod and haddock, the most important species in terms of catch values, accounting for more than 50% of total catch values from 2003 to 2006 as shown in Table 6.4, have increased and, therefore, contributed to the better economic performances in recent years as discussed below.

Economic performance of Icelandic fisheries

Table 6.6 indicates the trend of net profits of fishing and fish processing industry in Iceland using annuity approach with 6% rate of return. The total net profits were positive in most years except for the years of 1997 and 1999. It is noticeable that the profits in 2001, 2002, 2003 and 2006 were much higher than those in other years.

Table 6.6. Net profits of fishing and fish processing in Iceland, 1996-2006

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total	2.2	-1.4	3.3	-1.3	2.3	18.1	10.1	10	5.9	8.4	16.9
Demersal species	-1	-5.5	2.8	1.4	6.4	19.6	11.5	10.3	7.5	9.7	18.5
Shrimp	0.3	-2.5	-1.6	-0.7	-3.5	8.2	1.6	10.8	0.8	-	-
Capelin	21.4	15.2	9.3	-20.1	-19.3	17.4	9.5	7.7	0.8	1.1	8.9

Source: Statistics Iceland.

Trend in the catch per unit effort (CPUE) in fishing is an indication of efficiency of the fishery. In the case of cod, with the standard for CPUE set at 100 for all types of gear in 1991, the CPUE increased considerably in 1994-97 for all types of gear but it fell significantly after 1998 In recent years, the CPUE has increased again in trawl and longline fishing while that of gillnet fishing dropped to the lower level than the early 1990s (*www.fisheries.is*).

With regard to employment in the fishing and fish processing industries, as Table 6.7 shows, the number of employees and the percentage of them to the national employment have constantly decreased. From 1990 to 2005, employment in the fishing industry reduced by 36% from 6 985 to 4 440 while, in the fish processing industry, employment decreased from 7 554 to 6 400 although the decreasing rate was lower than the fishing industry at 15%. As a consequence, fishing and fish processing industry's contribution to the national employment has also declined considerably from 11.6% to 6.6% over the same time. However, this decreasing trend is not unique in Iceland, rather it is common in other industrialized countries where employment has been shifting from primary industries to service industries. Also, it can be interpreted as a result of efficient operation of the fishing industry since the reduced number of employees creates greater value.

Table 6.7. Employment of the fishing industry in Iceland 1

	1990	1995	2000	2001	2002	2003	2004	2005
Fishing	6 985	6 396	6 210	5 790	5 850	5 490	4 850	4 440
Fish processing	7 554	7 339	6 600	6 570	6 530	6 360	6 640	6 400
Total	14 539	13 735	12 810	12 360	12 380	11 850	11 490	10 840
Percentage of national employment	11.6%	11.1%	8.3%	7.9%	7.9%	7.6%	7.3%	6.6%

1 This table is combined with two tables from the Statistics Iceland: number of man-years by economic activity 1963-1997 (1990, 1995) and employed persons by economic activity, nationality, sex and regions 1998-2005 (including foreign nationals).

Source: Ministry of Fisheries.

Lessons learned

"Evolutionary process, not design"

The evolution of the Icelandic ITQ system was "a process of gradual discovery and difficult bargaining" (Gissurarson, 2000). That is, the course towards a complete ITQ fisheries management system in Iceland has evolved more by trial and error than by a grand design. The main lesson to be learned from this process is that the introduction of the ITQ system in fisheries management is not a simple task (Runolfsson, 2001b).

The introduction of ITQs was marked by opposition from various interest groups that wanted to protect their traditional values and interests, as well as by conflicts between stakeholders. Some of the conflicts went to court to seek resolution. Others have been resolved through negotiations and the introduction of legislation and regulations. However, it is generally accepted that the ITQ system in Iceland has succeeded in realizing its objectives although there are several issues that attract policy attention. The rest of this section reviews how controversial issues involved in the ITQ system have been addressed in Iceland and what their implications might be for other countries introducing the system.

Response to crisis

The key steps in the evolution of the ITQ system have usually been taken in response to crises in respective fisheries mainly due to a sudden reduction in stock biomass levels. Therefore, individual vessel quotas were introduced in the herring fishery in 1975, following a collapse in the herring stocks and a moratorium on herring catches. Similarly, vessel quotas in the capelin fishery and the ITQ system in the demersal fisheries were introduced in 1984, in response to a perceived danger of a corresponding collapse in the stock levels and a serious financial crisis in these fisheries. This process reflects the reluctance of the fishing industry to accept new fisheries management systems on a voluntary basis. Only when faced with a crisis, especially involving a significant fall in income, were stakeholders were willing accept policy changes (Runolfsson, 2001b).

By catch or "high-grading" issue

Discards of non-target species and the practice of 'high-grading', an attempt to increase total value of catch by throwing away low-value fishes caught unintentionally, have been seen as one of the possible problems in fisheries quota management systems in general (Hentrich, 2006)[4]. In order to discourage discards, it has been decided in Iceland that every vessel could land up to 5 % in excess of the vessel's annual catch quota. As mentioned above, a vessel's excess catches are subject to be withdrawn from the following year's quota. In addition, fishers can land small or undersize fishes with only 50% of the weight being charged against the annual catch quota up to a certain limit, generally 10% of the total landings of each species.

Furthermore, strict surveillance of fishing vessels, including observers on board, stiff penalties for violations of ITQ rules and regulations and flexibility in quota management allowing transfer of quotas between different species, have played an important role in addressing the high-grading issue. As a consequence, there has been no detectable increase in high-grading in Iceland (Gissurarson, 2000; Hentrich, 2006; Sanchirico *et al*., 2006).

Concentration of quota ownership: distributional effects and equity issue

It has been argued by critics of the ITQ system that the system could encourage quota concentration and therefore result in high unemployment in fishing communities that are heavily dependent on the fisheries industry (Liu, 2000).

There are two different views on how to interpret the trends in quota concentration. Eythórsson (2000) argues that there has been substantial concentration of quota shares from large companies since the introduction of the ITQ system. 22 companies holding more than 1 % of total quotas shared 47.2% of the total quotas in 1994, compared to 25.5% in 1991. Another figure shows that 20 largest companies held rights to harvest 56.6 % of the total allowable catches in 1998/99. Many fisheries-dependent communities, especially those in remote villages have lost their fishing quotas and therefore are faced with finding alternatives economic activities and employment opportunities. In order to cope with the growing concentration, upper limits were set up in 1998 (for example, 10% for cod and haddock and 20% for herring and capelin) (Eythórsson, 2000).

However, Runolfsson (2001) argues that concentration is not a serious problem in Iceland. Although the percentage of total quota shares of the 10 largest harvesting companies increased considerably from 24.7 % in 1991 to 37.6% in 1998, this trend was a result of the wave of the mergers in the fisheries sector. Most of the 10 largest companies merged with other large and small companies in the 1990s. In addition, the increased percentage of the quota shares of large companies does not necessarily mean that the ownership have been concentrated because the number of stockholders of the companies, considered as the owners of harvesting rights, increased from less than 2 800 in 1990 to over 10 000 in 1998 (Runolfsson, 2001).

Pálsson (1995) points out that even if the number of stockholders increases, decision-making is being made by a small group of company managers and consequently fishing communities are likely to be dependent on their decision regarding employment and incomes. An analysis using the Gini coefficient reveals a substantial increase in the distributional inequality during the period examined, 1984-1994. According to the analysis, the coefficient rose from 0.677 in 1984 to 0.799 in 1994 (Pálsson, 1995).

The issue of concentration of quota ownership is closely related to the initial quota allocation issue. Due to its distributional effects, initial allocation of quotas is a key issue in increasing acceptance of the quota management system. In practice, allocation based on historical catch has been widely used (Hentrich, 2006). In Iceland, the general rule was to issue permanent quota shares to eligible vessels based on catch records in the previous three years even though there were several exceptions. This was a result of continuous modification efforts to balance various interests and has contributed to smooth transitions to new quota management system (Runolfsson, 2001).

However, the equity issue involved in the initial allocation has been legally challenged in Iceland. A district judge in the Western Fjords decided in 2000 that the initial allocation of quotas on based catch history had violated the constitutional principles of economic freedom and equal treatment by noting that the method of the allocation discriminated the group of quota recipients with other people. However, the Supreme Court reversed the ruling and determined that the initial allocation had not included any arbitrary or unconstitutional discrimination and therefore the allocation was constitutional (Gissurarson, 2000). More recently, the United Nations Human Rights Committee discussed the issue of the initial allocation of rights under the Iceland ITQ system (UNHRC, 2007).

Conflicts between stakeholders

The conflict between vessel owners and crewmen has dominated the ITQ debate for many years in Iceland. There were two main issues in the dispute. First of all, pricing of fish in vertically integrated companies was a serious problem for many years. The compensation to crews on Icelandic fishing vessels was basically a proportion of the value of landings. The crew unions were constantly fighting against vessel operators over landing prices when the operators bought the catch for their own processing facilities. This dispute was the main cause of periodic strikes and animosity between the crews and the vessel operators. This issue was solved in such a way that pricing of landings in vertically integrated companies is now done using a formula incorporating the prices in auction markets. Another highly disputed issue was pricing of fish when a quota was rented to another vessel. When operators rent quotas to their vessels, they often wanted to use a net price, i.e. price after deducting quota rental costs from a gross price, as a basis in calculating share of crews. However, crews wanted to be paid based on the gross price since in many cases there were big differences between the gross price and the net price. It is now illegal to pay the crew out of the net price except for small operators who rent quotas for their vessels and are also members of the crews at the same time.

These conflicts have been resolved with a new institutional framework that was established in 1998. The institutions include: the Share-price Office to control leasing transactions; a committee with representatives from both vessel owners and crewmen to resolve conflicts between the two sides; and the Quota Exchange Market where all quota leasing contracts should be made (Eythórsson, 2000).[5]

Property rights issue

Allocation of individual quotas involves the question of whether or not the quotas are private property rights. This goes to the heart of the question of whether the quotas can be the target of taxation, depreciation and collateral for loans.

Before discussing this question in detail, it is important to review the key features of property rights, which include security, exclusivity, permanence and transferability. Security refers to the ability of a property owner to protect its ownership against challenges by other individuals, institutes and the government. Exclusivity is characterized by the ability of a property holder to utilize and manage it without outside interference. Permanence refers to time span of the right. This can be ranged from zero (then, the property right worth nothing) to indefinite duration. Transferability means the ability to transfer the whole or a part of the right to someone else. Therefore, divisibility is an important feature of the transferability (Arnarson, 2005).

Analysis of the characteristics of ITQs in line with the key features of property rights reveals that ITQs are not the same perfect property rights as the property rights on land for instance. ITQs are basically harvesting rights and not ownership for fish stock itself. Therefore, ITQs are sometimes compared to a right to extract a certain quantity of timber from a given forest or a right to harvest a certain number of deer from a given population (Runolfsson, 2001).

The Fisheries Management Act of 1990 defined the fish stocks in Icelandic waters as public property. Article 1 of the Act states that "*The exploitable marine stocks of the Icelandic fishing banks are the common property of the Icelandic nation… The allocation of harvest rights provided for by this Act endows individual parties neither with the right of ownership nor irrevocable jurisdiction over harvest rights*." However, the Article has been criticized on the grounds that it has created uncertainty concerning the permanence and exclusivity of the ITQs and has undermined the economic effectiveness of the system.

In addition, the legislation did not resolve the controversies over taxation and collateral issues. The taxation issue went to court and the Supreme Court ruled in 1993 that quota holding should be taxed as private capital while they could be depreciated by the same rate as copyrights (at an annual rate of 20%). Another issue of whether ITQs can be collateral in a financial transaction went to court as well. Previously, this had been solved by mutual agreements to ensure that quota shares and vessels could not be separated without consulting the bank. In 1999, the Supreme Court recognized ITQs as indirect collateral of the fishing vessel to which they were issued. These court decisions demonstrate that the ITQ legislation did not anticipate the wide range of consequences of quota allocation (Eythórsson, 2000; Gissurarson, 2000).

Arnason (2005) found that the quality of the Icelandic ITQ property right was about 0.86 on a scale of zero to one[6], calculated by what is called "Q-measures", taking into account four characteristics of property rights, i.e. security, exclusivity, permanence and transferability. The Q-value of Iceland was lower than that of New Zealand ITQ property rights (0.96) and higher than that of Norway (0.44).

In summary, ITQs in Iceland have many common features of property rights: they are perfectly individual and divisible; they are also exclusive to a great extent; and they are transferable with minor restrictions. However, they are not really permanent and secure (Gissurarson, 2000). Therefore, there is some scope to ensure more secure and long term individual quota rights and increased transferability.

Resource tax debate

Some Icelandic economists have argued that resource rentals should be paid by ITQ holders as a form of special tax for cost recovery because they have been benefited from the fisheries management system. However, the argument has not been broadly supported by the public as well as by the fisheries industry (not surprisingly) and has proven politically unfeasible in Iceland (Eythórsson, 2000; Gissurarson, 2000). Instead of the tax, a resource fee has been introduced and charged to quota holders, as mentioned above.

Notes

1. The Ministry of Fisheries became the Ministry of Fisheries and Agriculture in January 2008 by merging with the former Ministry of Agriculture.
2. The Ministry of Fisheries decided the cod TAC to be 130 000 tons for 2008/2009 fishing year.
3. It should be noted that in deciding the capelin quota it is taken into account that the species is an important feed for cod stock.
4. Arnason (1996) argued that an ITQ system could either increase or decrease discards compared to unmanaged fisheries. It has also been pointed out that high-grading has been prevailing not only in quota management system but also in other management systems.
5. As mentioned earlier, the Quota Exchange Market was operated only from 1998 to 2001. Since 2001, quotas have been transferred to an open market.
6. Q-value 1.0 means a perfect property right.

Chapter 7

Introducing market-based reforms to ensure sustainability in New Zealand fisheries

This case study reviews the broad reform that has taken place in New Zealand's fisheries management since the 1980s. Reform was initially undertaken as part of economy-wide liberalisation and also to address the need to provide for the sustainable utilisation of fish stocks. Prior to this, fisheries were managed under an open access system using traditional control methods such as restrictions on gear capacity and boat size. The industry was both subsidised by government and overcapitalised and fish stocks were overexploited. To address these problems, new management arrangements were introduced based on a total allowable catch (TAC) with fishing entitlements within that limit determined by individual transferable quotas (ITQs) (see Table 7.1 for a timeline showing the process of continuous reform that New Zealand underwent after the initial introduction of a Quota Management Scheme into both the inshore and offshore fisheries). The introduction of ITQs provided an opportunity to reduce the total catch and facilitated industry restructuring. Although the system has continued to evolve, tradable property rights and security of access remain the basis of the management system. This has also encouraged the development of stakeholder organisations and greater participation by fishers in management.

Table 7.1. Timeline of New Zealand fisheries policy reform

	Event
1978	Establishment of New Zealand's 200-mile EEZ
1985	Management of offshore fishery by ITQs introduced
1986	QMS introduced to the inshore fishery
1992	Treaty of Waitangi Settlement
1992	Introduction of cost recovery scheme
1996	Fisheries Act
1998	Fisheries Amendment Act
1999	Fisheries Amendment Act
2001	Introduction of Annual Catch Entitlements
2001	Introduction of new cost recovery scheme

Policy context

The New Zealand exclusive economic zone (EEZ) is the fifth largest in the world at approximately 1.3 million square nautical miles, twenty times the area of its landmass. Approximately 130 species make up the 750 000 tonnes of seafood that is harvested annually from New Zealand's waters. The commercial fisheries sector is New Zealand's fifth largest export earner, contributing NZD 1.7 billion annually to GDP and accounting for around 2% of world fishing output.

The industry is composed of two sectors with a total of 1 372 vessels; the deepwater industry and the inshore industry. The deepwater industry contributes 70% of total catch and includes species such as hoki, ling and orange roughy. It is dominated by a small number of vertically integrated companies. The inshore industry catches snapper, founder and rock lobster and is fished by a mixture of small-scale fishers and vertically-integrated companies. 11% of total catches are pelagic species (mackerel and tuna) and 10% come from aquaculture (Ministry of Fisheries). 2 500 seafood entities provide direct employment for 7 155 full-time equivalent people. There are approximately 500 000 active recreational fishers (Hersoug, 2002).

Table 7.2. New Zealand fishing exports 2005

Top ten species

Species	Volume (000 tonnes)	Value (NZD million)
Squid	70.9	168
Hoki	42.8	152
Rock Lobster	2.4	114
Orange Roughy	5.0	70
Paua	0.7	51
Ling	8.1	47
Hake	5.8	32
Jack Mackerel	30.3	31
Snapper	4.1	26

Source: Ministry of Fisheries

New Zealand's major export markets are the European Union (18%), the United States (17%), Japan (16%) and Australia (12%). Other Asian countries (excluding Japan) collectively account for 27% of New Zealand's exported seafood product. In 2003, for the first time in more than a decade export dependency slipped below 90% by value of total production. In the short term, export earnings are expected to fall as the New Zealand dollar strengthens against the US dollar and reductions in TAC for commercially dominant species take effect.

Drivers of reform

Since the early 1960s, New Zealand's fisheries management system was based primarily on regulated open entry. The system was designed to encourage greater

domestic participation in commercial fishing. In 1978, New Zealand extended its EEZ to 200 miles, of which 75% was deeper than 1 000 metres. In order to expand fleet capacity and introduce the expertise required for deep water fishing, a share of the Total Allowable Catch (TAC) was assigned to the domestic industry, while the remainder was allocated to distant water fishing nations (DFWNs) through license arrangements under bilateral agreements. At the same time, a package of financial incentives was introduced that encouraged New Zealand companies to partake in joint deep water fishing ventures. As a result, between 1978 and 1986 the New Zealand fleet larger than 20 metres expanded by 45 vessels (Hersoug, 2002).

By the late 1970s, fishing capacity had expanded beyond that required to harvest the catch. Constraints on fishing effort failed to protect stocks from depletion, while conflicts intensified among fishing sectors. Continued changes in regulatory design and enforcement caused many to question the effectiveness of the present system and its reliance on regulatory controls, leading to impetus for reform. In 1983, the exclusion of part-time fishers from the inshore fishery did not significantly reduce fishing pressure, eventually leading to overcapitalisation.

At the same time in the early 1980s, New Zealand's economy was developing with high levels of protection that led to inefficiency and a lack of competition so that the economy was characterised by low economic growth, high inflation and declining terms of trade. In 1984, a change in government resulted in the removal of government assistance to many industries and liberalisation, moving New Zealand from a highly regulated economy to one of the most deregulated in the western world. The fishing sector was also liberalised as part of these reforms, although further incremental reforms have taken place since then in an effort to continually improve the revised fisheries management system.

In 1984, the government introduced three options for restructuring the fleet. First, a continuous reduction in catches could be achieved through economic attrition. Second, a TAC regime could be introduced that would close the fishery when the TAC is reached. Finally, ITQs could be introduced that would divide each fishery into individual shares, given in perpetuity according to fisher catch history (based on their average catch level over two years, spanning 1982-4). At the same time, the state offered to buy back the amount of quota needed to reduce previous catch histories to sustainable TAC levels. At the end of 1984 and early 1985, the government held consultations with the industry to gain further information and feedback on the proposal. In 1985, the off-shore fishery began to be managed under the ITQ system.

Although the offshore fishery experienced successful transition, the inshore fishery was still suffering from overcapitalisation. In 1986 a Quota Management Scheme (QMS) using ITQs for the inshore fishery was introduced. The QMS was introduced with two goals in mind: the economic efficiency of the fleet and biological sustainability of the inshore fishery (Hersoug, 2002). The QMS has two key structural pillars: a Total Allowable Catch (TAC) and Individual Transferable Quota (ITQ) rights that change the property rights structure for fisheries resources from open access to private. In New Zealand, the Minister of Fisheries sets an annual TAC for each fish stock in each Quota Management Area (QMA), which is a scaled back proportion of the prior catch history of individual fishers. In general, the TAC is set at a level that ensures fish populations remain at or above a level that will produce the maximum sustainable yield. Quotas were allocated provisionally on a ten-year basis, paid as an annual resource fee and partly transferable (within companies with at least 75% national ownership).

Key features of policy reform and their impact

Reform in New Zealand's fisheries management can be divided into three stages, which are examined in turn below. The initial stage occurred at the time of economy-wide liberalisation and resulted in an end to traditional control methods and 'top-down' policy making. An ITQ system for the offshore fishery was introduced fairly quickly after a short round of consultation with industry. In 1986, the QMS was introduced for inshore fisheries. Other reform elements included the decentralisation of management responsibilities, a shift from input to outcome based management reflected in an output related appropriation system, commercialisation of many public services, a shift in emphasis from public service to customer service, and a separation of policy and operational responsibilities (Harte, 2007).

Further reform has largely been incremental in light of the need to improve the revised management system in response to loopholes and the changing internal and external circumstances of the fishery. The second stage of reform occurred around a decade later in response to industry calls for revision. The third reform was a further tweaking of the system as a result of changes in global pressures and local demands.

The introduction of the QMS in 1986 and initial problems

The QMS was designed to allow commercial fishers flexibility and discretion regarding when and by what method to catch their portion of the TAC by enabling individual quotas to be transferred in order to match the capacity of a particular fisher. Because ITQs were allocated in perpetuity, the trading market enabled the present value of expected net future catch flows to be determined, providing ITQ holders with more security when making long-term investment decisions. Transferability also provided ITQ holders with the option of exiting the industry by selling ITQ at current market value, which then provided opportunities for those new entrants who could afford to purchase ITQ (Randall, 2004).

Although there were few obstacles to initial reform and the introduction of the QMS in light of the obviously worsening environmental and economic conditions in the sector in the mid-1980s, disagreements began to emerge on a number of fundamental issues, including the quota allocation mechanism, resource rentals, bycatch provisions and Maori fishing claims.

When ITQs were introduced, the original ***quota adjustment mechanism*** relied on governments entering the market as a seller of quota rights if stock assessments warranted increasing the TAC and as a buyer of excessive quota rights if the TAC exceeded sustainable harvest levels (Randall and Harte, 2000). Quotas were provided as fixed tonnages but as initial allocations were based on past catch histories, the maximum sustainable yields were exceeded in some fisheries. On two occasions the government bought back quota, paying NZD 45 million for 15 000 t of quota and NZD 100 million to reduce TACs. The government concluded that the present mechanism created incentives to fully harvest the TAC, which led to a review of fisheries legislation.

Fisheries resources within an EEZ are public property and therefore belong to the entire nation. Therefore, the QMS introduced a method for fishers to pay to use this resource. However, fishers claimed that fish in and of themselves have little intrinsic value until caught. The introduction of ***resource rents*** brought considerable uncertainty regarding the value of quota and became one of the more contentious elements of the new fisheries regime, eventually requiring review.

After only one year of the new QMS scheme, it became clear that ***bycatch provisions*** were inadequate. It became difficult to provide incentives for fishers to land all bycatch while at the same time to discourage them from obtaining bycatch.

Although 80% of the commercial catch was part of the QMS, 120 species remained outside it. However, before further species could be incorporated into the QMS, issues regarding ***Maori ownership*** of fisheries resources had to first be solved.

Second stage reform: the 1992 Treaty of Waitangi Settlement and the 1996 Fisheries Act

After only a few years it became clear that the QMS needed revision and extension. The 1996 Fisheries Act introduced a number of new changes to the regime. The Act forms the statutory basis for fisheries management and establishes a broad framework for managing customary, recreational and commercial fishing. Its aim is to provide for the utilisation of fisheries resources while ensuring sustainability in both economic and environmental terms.

The 1992 ***Treaty of Waitangi Settlement Act*** (Fisheries Claims) paved the way for further reform to the QMS system. The Treaty of Waitangi guarantees customary fishing rights for the indigenous Maori population. The 1992 Settlement provides for the transfer of 20% of the TAC of all QMS stocks in the QMS (both current and future, with the exception of those stocks provided for in the Maori Fisheries Act 1989). Maori interests now control around 33% of the industry through commercial rights. The remaining portion of the TAC is known as the total allowable commercial catch (TACC).

In 1990, legislation redefined ***quota rights*** as a percentage of the TAC (which later became the TACC), rather than as a tonnage. In doing so, the burden of risk associated with uncertainty over future TAC levels was moved from the government to industry. For TACC decreases, an "Accord" was negotiated between government and industry to provide compensation payments over a transition period to 1994. During this period, resource rentals were set aside to compensate quota owners for TACC reductions (Randall and Harte, 2000). Any changes to the TACC were pro-rated across ITQ owners. For TACC increases, existing ITQ owners enjoyed the benefits of extra harvest at no extra cost.

More than ten years after the introduction of the QMS, the New Zealand fishing industry was not very satisfied with the resource rent scheme. ***Resource rents*** were difficult to fix precisely as there was little information available on profitability within each fishery and the industry claimed that prices did not reflect true quota values. In 1992, in order to obtain a more appropriate fiscal return from fisheries, the government decided to implement a cost recovery regime for fisheries services in addition to the system of collecting resource rentals. However, resource rents had to eventually be abandoned due to the complexities of resource ownership and the impossibility of running a dual regime (for Maori and non-Maori). The Fisheries Act was amended to enable government to recover the costs of management.

In the 1987/8 fishing season a new quota versus ***by-catch*** trade-off was introduced allowing fishers to swap certain bycatch species for ordinary QMS quota species according to predetermined exchange keys. Bycatch remains a problem for the Ministry of Fisheries as it is difficult to determine the right incentives so that fish caught is brought to shore while at the same time the catch of bycatch is limited to sustainable levels.

One of the new introductions through the ACT was in response to the large ***documentation requirements*** attached to the sale, storage and movement of fish and the difficulties of ensuring compliance. Compliance and enforcement is undertaken through a detailed set of reporting procedures that track the flow of fish from a vessel to a licensed fish receiver on land to export records, alongside an at-sea surveillance program including on-board observers (Newell, 2005).

As part of its liberalisation of the fishing industry, fisheries activities within the Ministry of Agriculture and Fisheries (MAF) were restructured to focus primary functions on research, management and policy advice. Since 1997, the provision of ***research services*** (around NZD 16 million annually) has been fully contestable by open tender (Batstone and Sharp, 1998).

Features of third stage reform

Towards the end of the twentieth century, the New Zealand fisheries sector was coming under increasing economic pressure due to a strengthening New Zealand dollar against the US dollar. This economic pressure, coupled with the need for better definition of roles and responsibilities, improved flexibility and participation and a simplifying of the existing regime led to further reform. The 1998 and 1999 Fisheries Amendments Acts opened up devolution of fisheries services and a more efficient cost recovery regime and Annual Catch Entitlement (ACE) scheme (Hersoug, 2002).

A new catch-balancing scheme was implemented in October 2001. Under the new regime, the ITQ is a share of the TAC and generates an annual catch entitlement (ACE) in tonnes, designated at the start of each fishing year. The ***ACE*** can be fished against or sold to other fishers, but it can no longer be leased. If catches exceed the ACE, the deemed value of the exceeded amount must be paid. Although it is not a criminal offence to catch in excess of the ACE, the deemed value acts as the primary deterrent to fishers taking excess catch as the deemed value is set at a higher rate than the ACE. If the deemed value is not paid, the fishing permit is suspended and fishing without one is considered a serious criminal offence.

Between 1992 and 2004 there was a moratorium on the issue of new permits for non-QMS species to control effort prior to introducing these into the ***QMS***. Changes in 2004 meant that commercial fishers can now target any non-QMS species not listed in Schedule 4C of the Fisheries Act. If there are sustainability or utilisation concerns, the stock will be considered for introduction to the QMS.

Part of the implementation of reform has been to ***directly charge users for services*** or more radically devolve those services to users or to other providers where the government only monitors this provision against standards and specifications. A new cost recovery regime became effective from 2000/1, which increases self-management by the industry. In effect, commercial stakeholders can take over non-core management responsibilities that they believe they can run cheaper and more efficiently than the government. New Zealand now has one of the least costly management systems in the world without having compromised the sustainability of the resource. Total management costs are 3-5% of total catch value. However, the transaction costs involved are fairly high (Hersoug, 2002).

Reform outcomes

Today, the QMS covers around 85% of the volume and value of commercial catch. Around 2 200 individuals and companies own quota with eight fishing companies providing 80% of production (Ministry of Fisheries). Seafood production based on wild stocks has increased and stabilised as part of an internationally competitive seafood industry, which is still increasing in terms of employment and turnover. The majority of stocks seem to be in a fairly healthy condition while management costs remain low. Furthermore, the industry pays 50-60% of management costs and there are no subsidies involved (Hersoug, 2002). In general, the introduction of the QMS has brought about the following improvements.

- Improved biological status of stocks.
- More secure access to the resource.
- Market oriented industry structured by market forces.
- Reduced overcapitalisation.
- Greater industry freedom, flexibility and responsibility.
- Minimal government intervention.
- Improved industry efficiency, competitiveness and profitability.

In New Zealand, ITQs initially represented a simple catching right but have evolved over time to provide property rights that provide incentives for ITQ owners to begin participating in management. In 1999, the Fisheries Amendment Act delegated certain management responsibilities to "approved service delivery organizations", more commonly referred to as Commercial Stakeholder Organisations (CSOs). These are usually composed of ITQ owners who take on responsibility for managing the commercial fishery in which their members own ITQs. Currently, most commercial fisheries in New Zealand are represented by a CSO. Improved engagement of CSOs has allowed for greater integration of stakeholder views in the management of New Zealand's fisheries resources (Yandle, 2007).

The rapid move to "collectivism" (or stakeholder groupings) is perhaps the most surprising response to privatisation. Essentially, and partly in relation to the move towards cost recovery, fishing industry groups have realised that as long as they are using a common resource they must manage that resource collectively themselves. While QMS provides security of ownership (and is based on output control), voluntary collective self-management (based on input control) helps provide for sustainable utilisation (Hughey, 2000).

Sustainability of reform

The challenge for any fisheries policy and management system is to determine and enforce access rights to fisheries and harvest levels that will sustain fish stocks. Most nations continue to face problems related to overcapacity in fisheries such as declining catch-per-unit effort and excessive competition and overcapitalisation. Relying on input controls has generally failed to prevent overcapacity and overexploitation.

The adoption in 1986 of a property rights-based quota management system in New Zealand based on ITQs has lessened the ecological consequences of the incentive for fishers to race for fish (Randall and Harte, 2000).

Although QMS covers 85% of the total commercial catch, around 100 commercially valued species remain outside the QMS. With the exception of rock lobster, these are all mid to deep-water species requiring large-scale fishing operations. The number of quota owners has averaged about 1 400 over the history of the program. Although there has been a net exit in New Zealand's ITQ system, there have been on average around 90 new quota owners in a variety of markets entering the system per year since 1990 (Newell, 2005). Quota markets are very active, implying that transaction costs are low (or that values are high relative to transactions costs). About 140 000 leases and 23 000 sales of quotas occurred between economically distinct private entities under the ITQ program as of 2000 (Newell, 2005).

Since the establishment of the QMS, both property rights and institutional arrangements for managing New Zealand's fisheries have continued to mature. In so doing, the seafood industry has been encouraged to voluntarily organise into associations to better manage fisheries resources. These associations are placing increasing emphasis on co-managing the productive capacity of marine ecosystems. However, barriers remain to the widespread uptake of co-management arrangements (Randall and Harte, 2005). The following considers specific areas that are crucial to ensuring the sustainability of reform.

Quota markets

As an allocation mechanism, the QMS outperforms its predecessor. Since 1986, components of the QMS have changed according to biological and economic conditions in the fishery while tradeable quotas have provided a basis for new industry organisations to evolve. These developments should enhance the stability of the QMS.

There has been substantial price dispersion within individual quota markets but the magnitude of this dispersion has gone down over time, particularly for quota sales and is comparable to that found in other well-functioning markets. Overall, the trends are consistent with a period of market development where participants learn how to operate in the newly created market and traders and brokers begin to set-up shop. The observed dispersion could potentially be reduced through the establishment of a central trading exchange, thereby improving the quality of information for market participants. There has been an increase in the value of quota prices over the history of the ITQ program which is consistent with an increase in the profitability of the included fisheries. In practice, virtually all leases are for a period of 1 year or less. All transactions must be recorded and submitted to the New Zealand government. Some markets have relatively few transactions although these tend to be economically and ecologically unimportant fisheries. Market thinness could be addressed through policy by aggregating illiquid quota markets into other quota markets. The advantages of such aggregation would have to be considered along with any positive or negative biological, social and administrative implications (Newell, 2005). The evidence to date suggests a reasonable level of economic sophistication in these markets, implying that market based quota systems are potentially effective instruments for efficient fisheries management (Newell, 2005).

Cost recovery

Only the cost of commercial fisheries management is recovered in New Zealand. Prior to the introduction of the QMS in 1986 nearly all the costs of fisheries management were borne by the Crown. These appropriations were ultimately funded through New Zealand's general taxation system (Harte, 2007). By international standards, New Zealand has a low cost system of fisheries management, which should enhance the sustainability of reform. The cost of fisheries management relative to the landed value of New Zealand's catch is 4% compared to an OECD average of 17% (Harte, 2007). (Such international comparisons refer to the costs of fisheries services provided by public agencies and for mostly data collection reasons ignore private costs incurred by fishers.)

Incorporating recreational interests

Incorporating the interests of recreational fishers is still a policy problem. Marine recreational harvesters number nearly 400 000 and recreational catch is regulated by bag-limits, minimum fish length and mesh size, closed areas and other gear restrictions. Attempts to quantify recreational harvest and to bring this source of fishing mortality under the ambit of the stock assessment process were not well supported. At the same time, there has been discontent regarding the recreational sector from the commercial sector as they felt they were being burdened with all the costs of adjustment (Batstone and Sharp, 1998).

Ongoing issues

The problem of regional imbalances and part-timers and crew being excluded from the ownership of equity raises equity issues. Furthermore, there has been a continued demise in smaller owners/operators (Stewart and Walshe, 2007). These remain on-going issues in the current fisheries management system and may be addressed at a later date.

In mixed fisheries, ITQs may generate additional incentives for discarding as fishermen find it to their advantage to discard any fish whose landed value does not exceed the cost of catching and landing it. For example, in ITQ fisheries, quota is used up when the fish is landed. In valuable fisheries, the cost of landing the fish (i.e. the quota price) can be substantial compared to the landed value of the fish. However, in non-transferable quota systems, the problem may be worse as fishermen in multispecies fisheries generally have no alternative but to discard all catches of species for which they have filled their quota in order to keep fishing for other species. The outcome in New Zealand is that additional incentives are in place to ensure more selective fishing (Arnason, 2002).

Key insights from the reforms

Since the introduction of the QMS, the industry has been marked by industry profitability, higher levels of investment and improved fish sustainability (Hersoug, 2002). However, the suitability of the New Zealand setting for the introduction of ITQs should not be underestimated. Preconditions in New Zealand were favourable for a number of reasons: the QMS was introduced as part of a larger package of economy-wide, market-oriented reform in which efficiency and cost-effective service delivery became part of all public service delivery; New Zealand had a large and remote EEZ and exclusive rights for most of the commercial fishing species necessary for a QMS;

resistance was fairly moderate as fishing interests were quite weak in New Zealand due to the importance of agriculture as a primary export. The government also placed enormous value on and contributed considerable resources to discussing potential solutions with commercial stakeholders and providing compensation for those wishing to leave the industry when the QMS was introduced (Hersoug, 2002).

While New Zealand's experience reflects a particular set of political, economic and environmental circumstances, there are a number of valuable insights for reforms in other countries.

Basic conditions for reform

The New Zealand reform experience highlights a number of basic conditions that are essential to the successful introduction of a transferable quota system:

- a general public sector ethos of transparency, efficiency and accountability;
- a clearly identifiable and commercial fishing sector;
- a system of fishing rights that have a high degree of durability and hence form the basis for attributing costs and collecting levies;
- effective commercial stakeholder organisations that represent the commercial industry and can engage government agencies in constructive dialogue and negotiation over cost recovery; and
- government agencies that have strong policy and administrative capabilities.

ITQs encourage economically efficient fishing of the TAC

Promoters of ITQ management regimes believe they offer superior performance to alternative fisheries management regimes (Wingard, 2000). Economically, they closely emulate private property rights, guaranteeing that the benefits of investment will be reaped by the investor, providing an incentive to utilize the resource in an efficient and sustainable way. Fishers holding quota may be more inclined to fish more carefully and even forego fishing if holding off will yield market or other benefits. As they have long-term predictable access to the fishery, the long-term health of the stock is of much greater concern. Where ITQs can be bought, sold, traded, rented or leased, shares will go to the most efficient producers and share prices will reflect the true value of the resource (Wingard, 2000). It seems that ITQs so far represent the only fisheries management system currently used that can claim this degree of general success.

Within New Zealand there is strong evidence that the QMS has lessened the ecological consequences of the incentive for fishers to "race for fish" at the same time that the industry has experienced substantial growth in the volume and value of production. The security of tenure in access to the fisheries resources allows ITQ holders to develop high value products that improve their competitiveness in overseas markets and the sustainable utilization of New Zealand fish stocks (Hughey, Cullen and Kerr, 2000).

Cost recovery was more widely accepted than resource rents

The QMS system in New Zealand is not strictly a pure ITQ system. Cost recovery is not normally found in an ITQ system and its addition resulted in a major restructuring of the institutional set-up between industry and government. The history of New Zealand's

cost recovery regime contains many lessons about the construction of a cost recovery regime and the transparent and accountable attribution of costs to the commercial sector.

Management agencies must be committed not just to the recovery of costs of fisheries management but to maximising the value derived from the sustainable management of fisheries resources through a suite of policy instruments, of which cost recovery is one. The system of funding commercial fisheries management in New Zealand has been successful in recovering the costs of fisheries management from the commercial industry, improving transparency and accountability in the delivery of fisheries management services, involving industry in both the determination of fisheries management services and in some instances the delivery of these services, and generating efficiencies in the delivery of fisheries services (Harte, 2007). Nevertheless, there have also been some difficult and costly lessons learnt over the 20 years that it took for the cost recovery system to be developed and refined.

Harte (2007) published research on the recovery of management costs from the commercial sector and the associated delegation of some commercial management functions to the seafood industry. He concluded that:

- Clear principles and cost recovery rules are required from the start of any cost recovery regime. Efficiency gains in fisheries service delivery have occurred in many areas but the potential for more than incremental improvement is constrained by the need for public agencies to meet multiple objectives and respond to an ever increasing variety of issues and challenges. Therefore, accountabilities must be clearly defined and accepted by all parties.

- Designing and administering a cost recovery system is complex and resource intensive. Engaging stakeholders in the process has high transaction costs for both participants and the management agency. Nevertheless, not to engage stakeholders reduces the likelihood of acceptance of the attribution system and will do little to bring about efficiencies in the delivery of fisheries services since it tends to be the levy payers who have the greatest incentives to see efficiencies occur. The success of joint industry-government working groups in resolving conflicts over the cost recovery regime further supports the need for fundamental engagement of stakeholders in the design and implementation of a cost recovery system. Where industry has provided fisheries management services they have been successful in exceeding the standards set by government agencies for those services and have provided them at a much lower cost than if the services had been performed by or contracted out by government agencies.

- The total cost of fisheries management is likely to increase rather than decrease as a result of delegation, devolution and a general trend towards increasing complexity of fisheries management, particularly for the private sector due to costs from fisheries services devolved to the industry (e.g. registry services).

- There may well be initial high transaction costs of introducing a cost recovery system and perhaps a short-term reduction in efficiency as there is a need to implement new procedures and processes to ensure transparency and accountability. These will inevitably need revision and review in light of actual performance as occurred in New Zealand.

The introduction of tradeable rights is not a one-off action but a continuous process requiring modification and refinement

The history of fishing in New Zealand shows continuous challenge and change. Reform occurred in two stages. First, the initial conditions for implementing the quota management system were established by removing excess effort from the fishery and reducing catch levels. Second, tradable rights to harvest the total allowable catch were introduced; allowing rights to gravitate towards their most highly valued commercial use (Sharp, 1997). Since then, biological and economic conditions altered in the fishery, requiring the continual tweaking of the system.

Litigation has also provided a role in the modification and refinement of New Zealand's QMS. For example, equity issues regarding Maori claims to subsistence fishing were addressed only in 1986 and it was only after litigation that the government decided to seriously consider Maori claims (Sharp, 1997).

The introduction of a QMS may see a large exit from the industry

Since the inception of the QMS, the structure of the fishing industry in New Zealand has been in a state of transition. Given that exit appears to be a relatively easy process (as there is a ready market for quota), many have chosen this option with apparent success in entering other employment.

Quota allocations by share rather than volume may be more suitable for some fisheries

Quota entitlements defined in terms of volume of harvest created problems in New Zealand when the TAC was altered from one year to the next as fisheries authorities had to sell or buy quotas according to whether the TAC increased or decreased relative to initial volume allocations. As funds have to be found to buy quotas back from the industry, New Zealand scrapped this method in favour of proportional or share quota entitlements. Under the new system, the ITQ is a lasting quota entitlement explicitly granted in perpetuity. "Permanent" ITQs are economically superior to those of limited duration and share quotas have a clear advantage in terms of economic efficiency over volume quotas.

The strength of self-management is crucial

Trading of quotas results in the reallocation of quotas to those best able to use them. Quota trading is therefore a crucial part of the economic efficiency of the ITQ system. For this to occur smoothly, transaction costs must be minimized. No official mechanisms or institutions to facilitate quota trading were set up alongside the New Zealand quota system. Despite this, there is little evidence that quota trading has been hampered by market imperfections and high transaction costs (Arnason, 2002). This may be due to the strong sense of self-management that has developed alongside the ITW system through stakeholder organisations. CSOs in the New Zealand context seem to be fairly successful management organisations.

Conclusion

Although it initially took some years for the QMS to outgrow its experimental phase, it is now considered irreversible and secure (Drummond, Kirk and Nelson, 2000). The system has been subject to frequent revisions and amendments; partly to fine tune and partly to meet unexpected developments. Today, while the basic features remain (transferable rights granted in perpetuity), most other aspects have changed over time, including the trading of quotas, the payment system, the by-catch provisions, and distribution of management responsibilities.

The QMS shows that when fishers/processors receive access rights in perpetuity they are able to secure operations in a more efficient way. That means they are able to catch when it is considered most economic and structure their operations so as to achieve greater individual efficiency. Continued revisions to the New Zealand fisheries management system have seen an increase in local stakeholder involvement and provided a platform from which new organisations have been launched to obtain larger benefits through co-operation. Nevertheless, while some biological objectives have been met under the QMS, questions remain about its success at meeting socio-economic objectives. ITQ allocations inevitably lead to some winning and others losing, potentially causing disruption to individual fishing operations, if not the communities and regions economically and socially reliant on commercial fishing.

The next challenge facing fisheries management in New Zealand is to move beyond single stock management by exploring ways the QMS can be used to effectively manage multi-species fisheries and the potentially adverse environmental effects of fishing and integrated with management of the wider marine environment (Bess, 2004).

Chapter 8

Insights for the process of policy reform in the fisheries sector

The case studies presented in this report provide a review of the process of reform in selected OECD countries. The case studies are not necessarily representative of the experiences of all OECD countries, but they do illustrate the variety of reform experiences that have occurred. The economic, environmental, social and political situations in the countries covered in this report vary widely. Yet each of the countries has undergone significant reforms in recent years. While the ambition, effectiveness and sustainability of the reforms differs from country to country, there are sufficient common insights that can be generalized to the process of policy reform in all OECD, and many non-OECD, countries. The purpose of this chapter is to draw out those common elements from the case studies and provide a number of policy lessons that may assist governments in their current and future reform efforts. The chapter focuses on four key stages of the reform process: identifying the need for reform; the processes driving reform; building support for reform; and sustaining reform.

Identifying the need for reform

Before reform can take place, it is necessary for there to be a demonstrated need for some form of reform to take place. Without such a trigger, there is unlikely to be any support amongst key actors (fishers, politicians, even the general public) for policy change from the status quo to take place, nor any agreement on what the policy change should even be addressing. While governments sometimes undertake general interest reforms, the norm is for reform efforts to be triggered by economic crisis.

In the case of the fisheries sector, the experience from the case studies demonstrates that poor environmental performance is not generally sufficient to prompt governments to undertake significant reform efforts. In each of the case studies, it was economic crisis rather than environmental crisis that provided the key trigger for reforms to be contemplated and acted upon. In the case of Norway, it was not until increasing resource pressure on stocks was translated into severe impacts on the profitability of key fleet segments that the inertia to undertake significant reform was overcome. Similarly, the poor economic situation of the large parts of the fleets in Korea, Iceland and New Zealand created the impetus for their respective reform processes.

One of the consequences of this observation is that the economic costs to the fishing sector and to society more generally, that result from poor environmental performance will tend to be larger than would be the case if reform efforts had been started earlier. The nature of the fishing sector is such that fishers will generally only need to cover the marginal costs of operations in order to stay in the business. In many cases, this can continue for quite some time as the resource base deteriorates until the economic pressure is sufficient to generate calls for policy changes to address more fundamental problems.

The costs of delaying action can be significant, as witnessed the economic fallout from high profile stock collapses in the 1990s.

It is, therefore, necessary to ensure that the institutional frameworks governing fisheries provide greater scope for an "early warning" system to forestall environmental and economic crisis, thereby supplying the necessary information and risk analysis to trigger changes in policy or course corrections to management arrangements. Such early warning systems can help to reduce the costs associated with waiting for the "right" conditions for change, but must also be weighed up against the likely benefits from policy intervention.

A greater focus on the economic consequences of policy and management decisions than is currently the case is a central ingredient in such an early warning system. In most OECD countries, and certainly in the case studies presented in this report, there is a need to inject a greater emphasis on economic information in the process underpinning decisions on management options. For example, data on the costs and earnings of fleets are rarely collected on a consistent basis (with Australia, the United Kingdom and Norway being notable exceptions). Yet such data is fundamental to determining the economic and, in conjunction with biological data, the environmental health of a fishery and can provide important signals to decision makers about the need to undertake policy reform.

Driving reform

Identifying the need for reform is only the first step. The process of putting reform on the political agenda and driving it forward comes next. As noted above, the key driving force is generally economic crisis affecting the fishing sector. However, the case studies have demonstrated that there are other drivers, both external and internal to the sector, which can also be harnessed to help drive the process of reform.

First, there are often policy reforms that occur more generally within the economy that have a flow-on effect to the fishing sector. Such general policy reforms can often bolster and accelerate existing pressure for reform in the sector. In the case of New Zealand, for example, there was a general shift in the political agenda towards an increased use of economic instruments in managing a whole range of sectors, including the fishing sector (as well as telecommunications, electricity, agriculture, etc). The introduction of ITQs and cost recovery exemplified this general philosophical ground shift in the political landscape. However, the shift came at an opportune time for the fishing sector as it had been suffering from overfishing and poor economic profitability for some years and the pressure for change had been steadily building. Similarly, there was a broader political push in Norway to reduce the extensive use of subsidies in the fishing sector which helped to trigger the reform efforts to introduce economic instruments into the management of fishing fleets in order to provide a policy environment that would enable the industry to survive without government subsidies.

Second, pressure for reform can be driven by events outside the domestic economy altogether. For example, commitments under the GATT or the WTO to liberalise trade restrictions can generate pressure for changes within the sector to accommodate the changed economic landscape facing the sector. International environmental commitments are another example of an external driver. This is exemplified in the case of Mexico with respect to the tuna-dolphin dispute which generated considerable policy reforms within the Mexican tuna fishing industry.

Third, pressure for reform can be driven by groups within the fishing sector. This may be the result of a perception that the returns to particular groups can be increased from a change in some aspect(s) of government policy (classical "rent-seeking" behaviour). The potential beneficiaries of policy change have a strong interest in seeing particular reform agendas pursued. This was demonstrated in the case of the commercial shrimp sector in Mexico which successfully pushed for a vessel decommissioning in 2005 and 2006 in order to improve the profitability of the sector. Although the policy initiative did not solve the key underlying cause of poor profitability – conflicts over resource use between the commercial and artisanal sectors – it did engender a momentum for reform and may lead on to further reform efforts in the future. In a similar fashion, individual fleet segments within the Norwegian, Korean and Icelandic fleets pushed for reforms that had been introduced in other fleet segments, largely as a result of the demonstration effect of the benefits of specific policy changes.

Finally, a fundamental ingredient for driving reform is political will. Strong and effective leadership is essential to seeing reform initiatives be developed and implemented. Often, this is the outcome of key personalities in leadership positions in the government or in the fishing industry. This was demonstrated in the case of Korea where the personal attention of the President of Korea played a central role in the reforms to combat IUU fishing and the introduction and extension of community-based fisheries management. Similarly, the strength of stakeholder involvement can generate enormous political pressure for change, but generally still requires forceful personalities within the industry groups to provide the catalyst and focal point for promoting a reform agenda within both industry and government.

While these driving forces are all clearly helpful in driving reform, they are largely dependent on circumstances where they may come together. A lesson from the case studies is that there may be a large degree of good fortune in a number of driving forces coming together to generate the critical initial momentum for reform. For example, without the general push for reduced government intervention in the New Zealand economy, it is conceivable that the extensive and successful reforms to the fishing sector may not have occurred until much later, if at all. So, does reform rely on serendipity and the perfect confluence of drivers, personalities and pressures? The answer to this is both yes and no, otherwise reform would rarely occur or be successful. Rather, it points to the need to ensure that the basic conditions that may provide a fertile ground for reform efforts to take hold exist and are entrenched. The case studies highlight the role of transparency, accountability and responsibility in the institutional structures governing the sector in ensuring that stakeholders in the sector have an input to any reform initiatives, either general interest or special interest reforms.

Building support for reform

The case studies have also demonstrated that reforms are generally a long-term process and that building and maintaining support for policy initiatives is essential to the eventual success of the reform. Central to achieving this is the identification of the costs and benefits of reform both between groups and over time. As has been noted earlier in this report, the costs of fisheries policy reform are generally highly concentrated in specific groups while the benefits are diffused across the community as a whole. In addition, the benefits of reform may accrue over the longer term (for example, through stock rebuilding or responses to changes in management policies), creating a transitional burden that may reduce support for change. Identifying the potential winners and losers

from reform enables the government to better target compensation and transitional measures, and to build support for reform.

The process of identifying costs and benefits of policy change requires a comprehensive *ex ante* and systematic analysis of the likely impacts the change across the sector. In practice, it may be difficult to fully account for the full range of impacts due to a lack of data or an incomplete understanding of the economic system underpinning the industry. This underscores the need identified earlier to provide a greater focus on the regular collection of economic data on the fishing sector. Such data are essential to gaining a better understanding the likely economic consequences of policy changes. Trying to develop such data on an ad hoc basis, or in response to particular policy initiatives, may be more costly and inefficient than maintaining a regular program of economic data collection.

Compensation strategies to address distributional concerns arising from policy reform proposals plays a central role in building and maintaining support for reform amongst key stakeholders. The case studies highlight the fact that there is a range of forms that the compensation can take. First, the use of adjustment payments facilitated the transition phase following the introduction of reforms in all the countries studied. These generally took the form of vessel decommissioning and license buyback programmes, allowing those who wished to leave the industry, or were forced to leave, to exit with some financial assistance. Adjustment payments also provided a mechanism for restructuring the fleet segments to provide for a more profitable and sustainable future (provided management actions reinforced the reforms). The use of temporary and targeted social support schemes also proved helpful in facilitating reform in fisheries-dependent communities.

Second, compensation also took the form of the provision of a stronger rights-based management regime for those who remained in the sector, especially in the cases of New Zealand, Norway and Iceland. In general, this led to more profitable and sustainable industries in these countries. Critical to such compensation was the development of an explicit or implicit pact between governments and the industry to ensure the long-term durability, flexibility and security of the rights. Credibility and trust is central to the success of such compensation strategies as they rely to a large extent on the ability of key actors to agree on the long-term strategic direction of the industry. The benefits from stronger rights based approaches to management are longer term and so they may not accrue to the beneficiaries for some years, potentially creating a situation where there is a "wait-and-see" attitude to the outcome of policy changes.

The organisation and representation of fishers' interests is a key to gaining support for reform. In the cases of Korea and Norway, it was clear that the reforms would have been much more difficult to implement if there had not been a strong institutionalised approach to ensuring stakeholder involvement in decision-making. This was less of an issue in the case of New Zealand where the top-down nature of the reforms did not provide much scope for fishing industry input during the initial "big bang" reform of the sector. However, the trade-off for the New Zealand fishing industry was a greater involvement in fisheries management decisions following the reform process, together with the implementation of cost recovery which provided a vehicle for greater industry say in the directions of research.

Finally, the demonstration effect proved to be a major factor in ensuring that there was a steady build-up of support for reforms in the countries studies. In Norway, for example, the reduction of subsidies occurred quite rapidly, but the introduction of the new

rights based fisheries management systems was undertaken in a gradual approach. It started with a key coastal cod fleet and then was gradually introduced into other fleet segments. The advantage of this approach was that it enabled the positive effects of the policy reform to become evident to other segments of the sector. In the end, there was a general clamour for these segments to be brought into the new management regimes in order to reap the benefits. In Korea, the introduction of community based fisheries management was started as a pilot project, but quickly became the subject of increased demand from fishing communities as the benefits became apparent.

Several factors underpin the success of the demonstration effect. First, and most obviously, the policy change has to be effective in meeting its objectives. Second, the government has to demonstrate a willingness to be flexible about the way in which the policy initiatives might be applied to successive fleet segments. Third, there must also be a demonstrated willingness to fine-tune policy instruments to ensure that they are applied in an effective manner. All of these factors point to the need to ensure that there are appropriate mechanisms in place within the institutional structures governing the sector to enable opportunities and needs for fine-tuning and policy adjustments to be recognised and acted upon.

Sustaining reform

One of the major challenges in all policy reform efforts, not just in fisheries, is ensuring that reforms are sustained over time. The pressure to wind back reforms can be significant, especially if particular interest groups have retained sufficient power or cohesiveness following the reforms to influence the future course of policy. Withstanding such pressure can require significant political commitment and may need to be coupled with further measures to gain the support of remaining disaffected groups (through, for example, compensation strategies).

More generally, the case studies have demonstrated the fact that successful reform is generally not a one-off event, but is actually a result of a process of continuous improvement over time that fine-tunes and adapts policies to evolving policy realities and external circumstances. This is most evident in the cases of Iceland and New Zealand where the introduction of ITQs, while revolutionary in many respects, actually marked the beginning of a long period of learning, refinement and improvement to the ways in which the policy instruments were used in each country.

Reform can also be made more sustainable by ensuring that the policy settings in place provide for autonomous adjustment that improves the flexibility and adaptability of the sector to changing natural and economic circumstances. The reforms undertaken in New Zealand, Iceland, Norway and Korea focused heavily on providing an enabling environment for the industry with strong, secure and long term access rights, meaningful stakeholder involvement, and well-structured enforcement mechanisms as the central features of a responsive policy framework for the sector.

At the same time, the case studies demonstrate that there is no “one size fits all” approach to policy reform in the OECD fishing sector. The reform experiences reviewed in this study reflect a range of national resource endowments, political systems, economic, social and cultural backgrounds, and fisheries policy objectives. The case studies also highlight the fact that successful reform is possible and can create a profitable and sustainable fishing industry. However, reforms must be underpinned by strong political commitment, sound economic analysis, appropriate distributional and compensation strategies, and a high degree of stakeholder involvement in the institutional framework within which reforms are developed and implemented.

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NATIONAL EXPERIENCES

Much has been done over the years to improve fisheries management in OECD countries. Ongoing problems of over-fishing, overcapacity and the economic crisis intensify the need for reform. Although there is a general consensus on the importance of a successful fisheries management, the effort levels and effectiveness of policy reforms have differed among OECD countries. This study examines the factors that facilitate reform, as well as the difficulties countries face in the process of reform. It provides an overview of domestic reform experiences in Norway, Mexico, Iceland, New Zealand and Korea.

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