Structural Change in Fisheries

DEALING WITH THE HUMAN DIMENSION

OECD

Structural Change in Fisheries

DEALING WITH THE HUMAN DIMENSION

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where the governments of 30 democracies work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The Commission of the European Communities takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

Corrigenda to OECD publications may be found on line at: *www.oecd.org/publishing/corrigenda*.

Foreword

The meeting on the *Human Side of Fisheries Adjustment* brought together experts and delegates to the OECD Committee for Fisheries to analyse the social issues and policy challenges that arise as a result of fisheries adjustment policies, and how OECD Member countries are meeting those policy challenges. The meeting focused on two key questions:

- How have OECD governments sought to assist unemployed fishers find new employment, develop useful new skills, and create new employment opportunities in their regions?
- Is there sufficient coherence between fisheries management policies and social and labour market adjustment policies in ensuring resilient fishing communities?

This meeting was organised by the Committee for Fisheries as part of its project on "Fisheries Policy Reform", which seeks to identify the key policy lessons from reform experiences in the fisheries sector. The workshop intended to contribute to the Committee's understanding of the process of policy reform, particularly with respect to the impacts of structural adjustments on the fisheries labour market and fisheries communities. The focus on the labour market arises in recognition of the important role that social factors often play in helping or inhibiting the broader process of reform in the sector. This is particularly evident in the case of fisheries adjustment programs as labour market changes will generally accompany capacity adjustment, but are often overlooked in the policy debate.

The views and opinions expressed in these *Proceedings* are those of the individual authors and do not necessarily represent the views of the OECD and the Member countries. It is published on the responsibility of the Secretary-General of the OECD.

Acknowledgements

Financial support for the meeting was provided by the governments of Canada, Norway and the Netherlands. The OECD would like to thank Jane Willing (New Zealand Ministry of Fisheries) for her chairing of the meeting as well as all speakers and participants for their contribution. The meeting was organised by the Fisheries Policies Division of the Trade and Agriculture Directorate under the guidance of Anthony Cox. The *Proceedings* were edited and prepared for publication by Emily Andrews Chouicha.

Table of Contents

Expert Meeting on the Human Side of Fisheries Adjustment

Chair's Summary

Jane Willing, Ministry of Fisheries, New Zealand

The process of adjustment in the fisheries sector has been a continuous feature of fisheries policy in OECD countries for several decades. Declining fish stocks and expanding fishing fleets have combined with growing competition from aquaculture to put increased pressure on the fishing sector to adjust the size and nature of its operations in many countries. However, the process of adjustment has not always been straightforward and governments have often faced difficult policy dilemmas when trying to guide the fishing sector towards a more sustainable future.

A central concern has been the impact of adjustment policies on fishers and fishing communities. In many coastal areas, there are few alternative employment opportunities for fishers, resulting in a high degree of dependence on fishing activity. Indeed, such concerns are sometimes regarded as one of the major reasons behind policy inertia in adjusting fishing activity. Furthermore, adjustment policies are generally focused on reducing the number of fishing vessels or the amount of fishing activity, and the impact of such adjustment on fishing communities – the "human side" of adjustment - is often treated as an afterthought in the policy process.

To address these issues, the OECD convened an *Expert Meeting on the Human Side of Fisheries Adjustment*. This meeting took place at OECD Headquarters on 19 October 2006 and brought together delegates of the OECD Committee for Fisheries and experts to analyse the social issues and policy challenges that arise from fisheries adjustment policies, and how OECD member countries are meeting those challenges. The meeting was organised as part of the Committee's ongoing project on 'Fisheries Policy Reform' and sought to identify the key policy lessons for addressing the human side of adjustment from reform experience in the fisheries sector.

The dimensions of the policy problem

The focus on the labour market arises in recognition of the important role that social factors often play in helping or inhibiting the broader process of reform in the sector. This is particularly evident in the case of fishing adjustment programmes, as labour market changes generally accompany capacity adjustment, but are often overlooked in the policy debate. The particular characteristics of the fisheries sector make the social aspects of the adjustment challenge all the more difficult to assess and anticipate. For example, there is a general 'stickiness' in the fisheries-related labour market, with low job mobility and

limited employment alternatives in many coastal regions. This has a knock-on effect on the flexibility and resilience of fishing communities.

Government efforts to facilitate adjustment have tended to focus on short-term efforts to finance alternative employment for redundant fishery workers (often referred to as 'active' labour market policies). These are generally introduced as an adjunct to capacity adjustment programmes and are often added as an afterthought, given that vessel reduction is usually the main focus of policy reform. There has, however, been little evaluation of the effectiveness of such active labour market policies across the fisheries sectors of OECD countries and there is considerable scope for developing policy insights from the experiences of schemes that have been implanted to date.

A longer-term issue is to ensure that governments develop broader policy frameworks that provide fishing communities with a coherent set of policy signals so that adjustment occurs smoothly and largely autonomously in the future. Such 'passive' labour market policies are an essential complement to short term active labour market policies in ensuring that the adaptability and resilience of fishing communities is strengthened over time. The management arrangements for fisheries will also play a major role in ensuring the resilience of the fishing sector as it is essential that fisheries management policy and labour market policies are mutually supportive and coherent.

There is a strong tendency in fisheries management and analysis to focus on certain aspects of fish and fleets, to the virtual exclusion of other components of the fishery system. At a policy level, there have been remarkably few efforts, either conceptually or in practice, to link the fishery into broader societal concerns. Certainly, the role of the fishery in supporting regional economies and in providing employment is well known, but within governmental structures, the implications of this relationship often never make it into decision making processes.

A key realm of interaction between individual participants in the fishery and the overall socioeconomic environment is through labour markets, in which people choose their form of employment among options available to them. Fishers shift between occupations (occupational mobility) and locations (geographical mobility) in response to a wide range of factors.

In his keynote speech, Anthony Charles described how government policies have often centred on the fulfilment of ecological goals, with resulting social effects not fully anticipated. For example, capacity reduction schemes have a human dimension that is felt in fisheries labour markets. On the other side of the same coin, social policies have often been used to obtain desired ecological goals: adjustment measures may be a tool to manage fisheries capacity. However, fisheries communities have certain characteristics that change how they absorb and react to these policies. In fishery-dependent regions, coastal communities will typically have the fishery sector as the engine of the local economy. Therefore, a decline in the fishery can have dramatic impacts on the integrity of communities.

Challenges from the case studies

The multi-objective nature of fisheries

Fisheries management is multi-objective, serving a variety of social, cultural, political, economic and ecological goals. In this, social objectives are no less important

than economic or ecological ones. For example, in her case study on "The Real Cost of Diminishing Fishing Effort in the European Union", using the Scottish Northeast Fishery as an example, Nicki Holmyard maintained that fishing communities see their own objectives as both pursuing a sustainable fishery and maintaining traditions.

Appropriate policy and regulatory instruments are necessary to achieve societal objectives such as the effective management of fisheries and the support of vulnerable fishing communities. Nevertheless, as occurred in the example from Australia provided by Frank Meere, structural adjustment was a tool used to redress overcapacity and reduce pressure on overfished stocks. Instead, he argued, a primary role for governments is to establish management regimes that remove incentives that lead to overcapacity, rather than using labour adjustment strategies, particularly as these strategies may have been part of government policy that contributed to overcapacity in the first place.

However, as Anthony Charles highlighted, objectives of adjustment in the fishing industry may already be contradictory even within government departments. For example, regional development policy may maintain coastal communities alongside a fisheries policy that reduces the number of fishers, or, conflict may exist between those whose responsibilities focus on the human side of adjustment and those who focus on the fiscal side. Government labour market adjustment policies and programs are typically a dynamic bend reflecting multiple and often changing sets of objectives and priorities.

Lack of economic alternatives

Fishery adjustment and restructuring policies that deal with over-capacity have been critiqued as failing to actively address the major problem of a lack of economic alternatives beyond the fishery. Restructuring, in the absence of non-fishery alternatives may fail, either because it is unsustainable and politically unworkable due to adverse impacts on those dependent on the fishery, or practically unfeasible, as when there is no alternative, fishers will fish illegally to maintain their livelihood.

Financial support in the face of a need for economic diversification does not directly provide fishers leaving the industry with an opportunity to find another employment activity. Instead, policy-makers implement active policies that centre on retraining, as described in the case study by Thomas Binet on France's experience of fisheries capacity adjustment. In France, the fisheries labour market is now a 'closed' market, requiring entrants to possess specific qualifications. Access to the labour market and progression through various levels of responsibility is achieved by certificate-holders and training is provided for each new level to facilitate occupational mobility. Although this leads to high levels of safety on board, such policies may make it extremely difficult for older fishers to find alternative employment. In Japan, this is a particular problem. Nobuyuki Yagi described how the percentage of male fishery workers over 60 years of age in Japan increased from 14% in 1971 to 47% in 2004, while only 3% of male workers are aged between 15 and 24. Furthermore, Bjørn Hersoug on his case study of Norway, discovered that education in fishing did not rely on formal education, but was acquired through experience with relatives in the industry and in a fishing community. As more formal education and certificates are required, some older fishermen may find their options restricted. The disadvantage of training and re-skilling for new roles is increased geographical mobility. Fishers may experience a pull from cities that can benefit from their new skills, resulting in migration away from coastal communities, as has been the case in Norway. In Scotland, the oil and gas industries in particular have been quick to employ skilled boat Masters. The result of this is that regulatory, economic and

demographic changes experienced by northeast Scotland's fishing communities in recent years has resulted in an increasing sense of despondency and low morale in fishing areas.

What goes on outside the fishery itself but within the broader socioeconomic environment can also operate in complex ways through the labour market to influence the fishery system. For example, increasing numbers of foreign workers have been obvious in the Scottish and French fishing industries. In Scotland, this can be seen in full-time fish processing. In France, an increasing number of foreign fisheries can be found in the off-shore fishery.

Additional factors highlighted by Bjørn Hersoug's study on the human side of fishery capacity adjustment in Norway include the fact that multiple household members may be involved in harvesting or related activities, resulting in less responsiveness to restructuring. In addition, there is a differential effect of adjustment on women and men, particularly as women, in addition to working in fishery-related roles, play an important role in the building up and holding of fishery and marine environmental knowledge, as explained in a presentation on Mexico's rural development strategy by Claudia Stella Beltran Turriago.

Political issues

The relative use of labour in a fishery relates to the social opportunity cost of labour. When fishers have no livelihood alternatives to fishing, there is a social cost to keeping those individuals in the fishery. Adjustment measures have the potential to be designed to alter the mix of factor inputs in order to better meet societal objectives. However, as Gorazd Ruseski pointed out in his paper on the lessons learnt from restructuring and adjustment policies in Canada, it is often difficulty for policy-makers to design successful adjustment policy and programme options, as the state of the resource and vibrancy of the economy play a significant role. Furthermore, decisions to close fisheries are usually only taken at the last minute, leaving only a short window for officials to develop policy options and programs.

Gorazd Ruseski also highlighted the difficulty in determining who qualifies for adjustment measures. Many Newfoundland communities lost up to 20% of their populations, mostly in the 18-35 age group during 10 years of fisheries unrest (1992-2002). Instead, Canada has had most success with a voluntary, multiple round, reverse auction process where fishers set the value they will accept to return the licence and regional review boards managed by fishing industry representatives evaluate bids of comparable price against a number of factors.

Features of successful adjustment policies

Clear objectives

Fisheries adjustment is structural change that is undertaken to enable the fishery sector to better achieve a range of identified objectives. Given that most forms of adjustment in society involve a certain degree of dislocation, social stress and potential distributional impacts, it is important to ensure that they are necessary. A clear idea of the desired future look of the fishery before implementing policies to achieve that outcome is essential. Policy actions should be based on multiple societal objectives rather than single subordinate ones that may not reflect the full reality of fishery goals.

Provision of training programs and opportunities

The single most important challenge to be faced in putting into place fisheries adjustment measures is the lack of economic or livelihood alternatives available for those involved in fisheries, resulting in major social impacts arising from adjustment measures that target labour in the fishery. Those removed from the fishery may continue to fish illegally, or leave communities, disrupting the integrity of coastal communities. Supporting recruitment will also bring new generations into the industry.

Coherence with other policies

Social programs that assist adjustment are often funded separately and are not coordinated with fishery capacity reduction programmes. As a result, a lack of policy coherence may exist between fishery-specific policies and those outside the sector. Consequently, there is a need to integrate fisheries into regional economic development and other relevant policies.

Flexibility

Flexibility is necessary to meet all the possible fluctuations in designing successful adjustment policies. It is up to policy-makers to smooth the exchange of labour from low productive sectors to more highly productive sectors while also securing an acceptable social security for redundant workers. Norwegian experiences show that fleet adjustments work best if implemented gradually through market mechanisms or long-term state financed scrapping schemes. Flexibility allows policies to adapt to the objectives of steady rationalization, job creation and re-skilling - preferably in the same geographical area, and provide incentives for young people entering the industry.

Conclusion

In situations of perfect labour markets, fisheries adjustment that reduces employment in the sector will result in a shift of individuals to other occupations or locations. However, in many fisheries, labour is relatively geographically immobile as fishers place a high value on the communities in which they live. There is often a significant amount of occupational immobility. These are compounded by the specialised skills required by fishers and an increasing average age which might impact the perceived worthiness of retraining programmes. Competing or unclear objectives, a lack of labour mobility and a lack of attention given to the role of short and long-term responsive policies, are key challenges for fisheries adjustment. Efforts to establish clear objectives, ensure economic diversification through re-training, coherence with other policies already in place, and maintaining immediate and long-term responses, are critical to the success of programmes for sustainable fishery systems.

PART I

SETTING THE SCENE

Chapter 1

The Human Dimension of Fisheries Adjustment: Key Issues and Policy Challenges

Anthony Charles, Saint Mary's University, Halifax, Nova Scotia, Canada

Introduction: Fisheries, Adjustment and Human Considerations

Fisheries adjustment can be envisioned in a variety of ways. It is often portrayed simply as a matter of reducing fishing capacity, in terms of some combination of capital and labour in the fishery. However, fisheries adjustment should be seen more broadly than this, as a mechanism for restructuring the fishery to better meet the range of objectives being pursued, economic performance goals and to bring the magnitude of the fishery in line with resource productivity levels (*i.e.* to match the fleets to the fish).in terms of it should be supporting and the range of options that can be utilized. But however depicted, there is no doubt that fisheries adjustment has a human dimension – both with respect to how adjustment measures impact on people and their communities, and with respect to the underlying objectives pursued. This theme is the focus of the present paper.

The paper comprises eight sections. In this section is found an overview of some major elements underlying fisheries adjustment – the dynamic evolution of fisheries and fishing communities, the breadth of the fishery system and the world beyond it, fishery labour markets, and sustainable development considerations. Section 2 examines the objectives of fisheries adjustment, as well as links to societal and fishery objectives, the specific focus on dealing with over capacity through adjustment, and the balancing of labour and capital in the fishery. Section 3 discusses the range of 'ingredients' of adjustment, such as *(a)* where to aim in terms of the future of the fishery, *(b)* short-term versus long-term aspects, *(c)* types of adjustment and restructuring, notably capital and labour reduction mechanisms, and *(d)* the interaction of adjustment with components of the fishery system. Section 4 presents several policy approaches to fisheries adjustment, focusing on capacity reduction and livelihood diversification. Section 5 reviews a wide range of challenges facing fisheries adjustment initiatives, from a lack of labour mobility to a lack of policy coherence, from barriers to exiting the fishery to a shortage of economic alternatives. Section 6 turns to a discussion of human impacts resulting from fisheries adjustment, ranging from those at the individual or community level, to those of a wider scope, to those arising as a result of policy measures. Section 7 discusses some potential social and community-oriented mechanisms for fisheries adjustment. Finally, Section 8 presents a number of conclusions to the paper.

The Changing Nature of Fisheries and Fishing Communities

By its nature, fisheries adjustment involves changes over time. But such changes do not take place in a vacuum – they interact with a range of dynamic processes already occurring in those fishery systems, and in coastal economies, to produce varying impacts on the components of the fishery system. It is important, therefore, to understand not only the nature of deliberate adjustment processes, but also the underlying dynamic changes with which adjustment activities interact. For example, Hamilton and Duncan (2000: p.95) note that fisheries dependent regions of the northern Atlantic:

> "…have experienced rapid social changes in recent decades, driven partly by globalisation and other large socio-economic forces and partly also by shifts in ocean ecology. Among the most notable social changes has been a widespread substitution of technology for labour, so that fisheries related work tends to support fewer people. …the population of many small fishing communities has declined and grown older. Many fishing communities have also become less fisheries dependent and developed more diverse economies, commonly based on expansion of tourism, service and public-sector jobs. Families connected to fishing communities have diversified too, in their fishing and non-fishing activities."

Indeed, these authors (Hamilton and Duncan 2000: p.104) note that in addition to specific fishery-related causes, "The demographic changes also represent a more general modernisation that includes declining fertility, closer ties with global markets and trends, and increased educational attainment among fishing community residents." As part of this trend, they suggest (p.105) that "Elements of small community fisheries have become less traditional, more professional and, at the same time, more technologically capable of rapidly affecting resources. Small communities now contain both an older, more traditional inshore group and the newer, more professional fishermen…" These two groups are "competing both with each other and with the larger corporate fleets". Thus there can be a complex mix of driving forces and of outcomes relating to the dynamic change affecting fisheries.

Whether due to 'natural' processes or fisheries adjustment measures, a reduced fishing fleet can have major implications on fishing communities. Indeed, Hersoug (2006) suggests that such reductions could even mean that "former fishing villages over time may become redundant". He notes that "Some manage to take up new occupations, such as aquaculture or tourism. Other coastal communities experience a long drawn-out death rattle, gradually losing the public and private service institutions (the school and the local shop), ending up as a retiree dwelling place or a community of vacationers, taking over existing houses or constructing new cabins." Clearly, it is crucial to keep track of what form of dynamic change is taking place, and how this is influenced by policy-driven fisheries adjustment.

The Fishery and Beyond the Fishery

There is a strong tendency in fishery management, as well as in fishery analysis, to focus on the 'core' aspects of fish and fleets, to the virtual exclusion of other components of the fishery system – such as aquatic ecosystems, fishing households, fishing communities, processing and marketing, ancillary services, and the overall socioeconomic environment of the fishery. Symes (2000, p.214) comments: "For far too

long the fishing industry has been viewed as a separate, almost unique entity and studied more for its intrinsic interest rather than as part of the wider economic system in which it is situated."

At a policy level, there is a need for greater attention, both conceptually and in practice, to how the fishery links into broader societal concerns, relating to such matters as regional development, employment and labour markets. Certainly, such considerations are noted in various studies, and the role of the fishery in supporting regional economies and in providing employment is well known, but within governmental structures, the implications of this strong inter-relationship often fail to be integrated into the decision making processes within fisheries ministries or elsewhere in government.

Smith (1983, p.2) advocates an integrated approach that "permits the search for solutions to the problems of low standards of living in fishing communities to expand beyond those areas which are fishery-specific", highlighting that "The need for a holistic approach to fishing community development is obvious. What is implied is the necessity for viewing the fish production sector on the one hand as vertically integrated with factor input markets and with product markets and on the other hand as horizontally integrated with other non-fishery sectors…" This approach is echoed by Ben-Yami and Anderson (1985: p.9): "most problems affecting fishing communities are unlikely to be seriously tackled unless equal attention is also given to non-fishery needs in the community". They suggest that "Non-fishery options include development which will diversify the social services and communal activities in the community, thereby improving the quality of life and creating employment and income".

Fishery Labour Markets

A key realm of interaction between individual participants in the fishery and the overall socioeconomic environment is through labour markets, in which people choose their form of employment from among the options available to them. In assessing the labour markets relevant to fisheries, it is important to understand both *(a)* internal aspects of the markets, such as the system of remuneration used by vessel owners to pay crew members (*e.g.*, wages or a share system), and *(b)* external labour-oriented interactions between the fishery and other economic sectors in the local, regional, national and/or international economy. Heen (1988) has highlighted the importance of examining both income and non-income variables as determinants of labour market behaviour, and fisher decision making.

Various authors have emphasised the importance of examining 'labour dynamics' in the fishery, *i.e.* how fishers and others decide on their choice of livelihood, and how the supply and demand of labour evolve over time. For example, Terkla *et al.* (1985) argue that "understanding labour adjustment processes is likely to be crucial for implementing efficient and equitable management policy" throughout the fishing industry. Labour dynamics describe how fishers, fishery workers, and others in the labour force, inside or outside the fishery, shift over time *(1)* between occupations (reflecting *occupational mobility*), and *(2)* between locations (involving *geographical mobility*), in response to a wide range of factors from wage levels to social and cultural considerations. Smith (1981) noted the important relationship between labour mobility and the economic state of fisheries, and Munro (1990) has emphasized that fishery management must anticipate the impacts of changes in the employment options available to fishers by looking *beyond* the fishery, at the nature and dynamics of the larger economic system. Given all these

considerations with respect to labour dynamics, Hersoug (1985, 2006) highlights a key point to be kept in mind in fisheries adjustment programs, namely that "…the migration of the fishers may therefore be as complicated as that of the fish."

It is crucial as well to note that what goes on outside the fishery *per se*, but within the broader socioeconomic environment, can operate in complex ways through the labour market to influence the fishery system. For example, consider how wage rates or crew shares on fishing vessels depend on the balance of the labour supply and demand process. In a region of high unemployment, with relatively low bargaining power among workers, average wage rates throughout the economy may be relatively low. This in turn may lead to a situation in the fishery where resource rents go primarily to boat owners (rather than labour) as above-normal profits. These profits may in turn lead to greater investment in vessels, resulting in excess catching power and possibly excessive fishing effort, thus threatening the sustainability of the resource base – largely as a result of regional labour markets, beyond the fishery as such.

Sustainable Development Considerations

In recent years, a 'sustainable development' framework has emerged within which to address fisheries management – and indeed the management of other natural resources. Such a framework is based on a balanced treatment of all aspects of sustainable development – *e.g.*, ecological, social, economic, community and institutional components (Charles 2001).

Notably, a sustainable development framework has been used by OECD (2006) in its publication entitled *Financial Support to Fisheries: Implications for Sustainable Development*. This compilation provides a multi-faceted examination of financial transfers (*i.e*. subsidies) in the fisheries of the world. Within that document, particular chapters of note in relation to the present paper include "A sustainable development framework for assessing the effects of government financial transfers" (chapter 2), "Social impacts of government financial support of fisheries" (chapter 7 – referenced herein as Charles (2006) and also appearing in an earlier form as Charles (2004a)) and "Social capital and fisheries subsidy reform" (Chapter 8).

The key message from sustainable development thinking of relevance to assessing the impacts of fisheries adjustment lies in the multi-dimensional nature of the sustainable development concept. This tells us that any policy action, such as fisheries adjustment, should not be undertaken without first ensuring that the outcomes anticipated for each sustainability component – *i.e.* ecological, social, economic, community and institutional aspects – are acceptable, *i.e.* positive or at least not overly detrimental. Since, as shall be discussed, fisheries adjustment measures are often motivated largely by economic arguments, connected in some manner to ecological ones, it is important to ensure that social and community components of sustainable development are not neglected. This holds both for assessing the adjustment measures, if they are under consideration, or for ameliorating their impact, if the measures are being implemented.

Fisheries Objectives and Fisheries Adjustment

Fishery and Societal Objectives

The effectiveness of fisheries management can be measured by the extent to which it achieves societal objectives through the use of appropriate policy and regulatory instruments. The societal objectives for a fishery are those that are *strategic* in nature – e.g., what do we want the fishery system to provide for society? This contrasts with lower-level objectives that are more at an *operational* level (Charles 2001). A major challenge lies in the fact that fisheries are very much multi-objective in nature, serving a variety of social, cultural, political, economic and ecological goals (even if these are *de facto* rather than explicitly declared). In any given situation, the particular set of objectives to be pursued, and the priorities amongst them, will depend on societal policy decisions. In turn, the choice of fishery objectives helps determine a *desired fishery configuration* (fleet composition, preferred gears, etc.), the desired level at which fishing should take place (*e.g.*, optimal harvest rate or TAC), and the desirable regulatory framework, including the choice of fishery institutions and management approaches.

In broad terms, strategic objectives are often seen as falling into three principal categories (*e.g.*, Food and Agriculture Organisation 1983): *(a)* Biological and conservation-related; *(b)* Social and equity-related; and *(c)* Economic. (In practice, objectives in the first of these groups, biological and conservation-oriented, may well be treated not as an objective, but as a requirement to be met, and thus a *constraint* on the pursuit of other goals.) Among fishery-specific social and economic objectives, some that are frequently referenced include:

- production of fish for food, livelihood (income) or profit
- economic efficiency, economic viability and rent generation
- employment
- export promotion and generation of foreign exchange.

Other social and economic objectives may be pursued as well, including those at the 'macro' policy level, applying more broadly than just to the fishery, such as:

- industry diversification
- social cohesion
- socio-political stability
- decreasing rural-urban drift
- maintaining a regional balance of development.

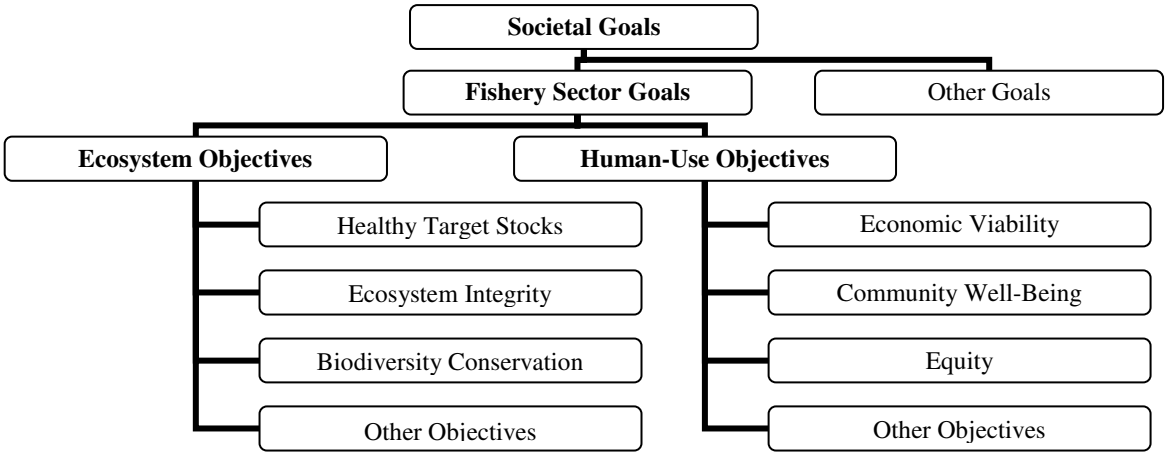
Fisheries adjustment is structural change that is undertaken to enable the fishery sector to better achieve the agreed-upon set of societal objectives. Indeed, before embarking on adjustment measures, it is important to ensure that they are indeed necessary to meet societal objectives, since most forms of adjustment in fisheries (or elsewhere in society, for that matter) involve a certain degree of dislocation, social stress and potential distributional impacts. However, it can be difficult to achieve this assurance of the necessity of adjustment, given the reality that *(1)* such goals are often not fully delineated, and *(2)* as noted above, typically there is a multiplicity of objectives, and a

lack of analysis undertaken to ascertain the impact of restructuring on each of these objectives. For example, it may be that adjustment is envisioned to improve fishery performance in meeting certain economic ends, but an understanding of the impacts that could result on the full range of fishery objectives may be lacking.

The necessity of a broad perspective that encompasses the full range of objectives is inherent in the concept of 'objectives-based' decision making in policy and management (not only in fisheries but across many sectors). Objectives-based approaches focus on linking the actions taken to the objectives being pursued, typically within a hierarchy of objectives (see Figure 1.1). While this is in a sense simply a logical decision-making arrangement, and reflects a standard approach utilized in planning and operations management, its new-found popularity is useful in reminding us of the importance of having policy and management decisions responsive to societal objectives.

This point is especially crucial for fisheries adjustment measures, which imply deliberate actions being taken to change certain key attributes of the fishery – such as its fleet size or capacity, its labour force, or its composition in terms of fleet sectors, gear types, etc. Any such actions are likely to have consequences of a social and economic, as well as potentially an environmental, nature. Thus, whether an action with dislocation and cost implications, such as fleet capacity reduction, is desirable or not is a matter of assessing the full range of consequences of that action, relative to societal objectives for the fishery. Such actions may be unhelpful (and indeed counter-productive, if net benefits are negative) unless they serve to move forward the aggregate set of societal objectives not only for the fishery sector but also for the broader social and economic systems. This idea is at the heart of the 'objectives-based' approach.

Figure 1.1. Hierarchy of Objectives in Fisheries Adjustment



In an objectives-based policy framework, it is important to avoid situations in which a lower-level objective is pursued single-mindedly to the extent that policy makers lose sight of the original societal objectives from which that low-level goal was derived. It is important as well to be clear in differentiating between the means and the ends, *i.e.*, between objectives and methods/tools. There is a risk of mis-representing an action (such

as fishing capacity reduction) as being an objective of fishery policy, whereas in reality it is more accurately expressed as one of a set of tools for potential use in meeting real objectives (such as those discussed earlier in this section and depicted in the above figure).

Two realities must be noted in relation to the pursuit of multiple objectives in the fishery. First, with multiple objectives, there will always be some degree of trade-off among them. As Hersoug (2006) notes "…there are obvious contradictions between the goals, and goal attainment can only be measured as some form of compromise. Greater attention to profitability will for example lead to less employment and most probably to legitimacy problems."

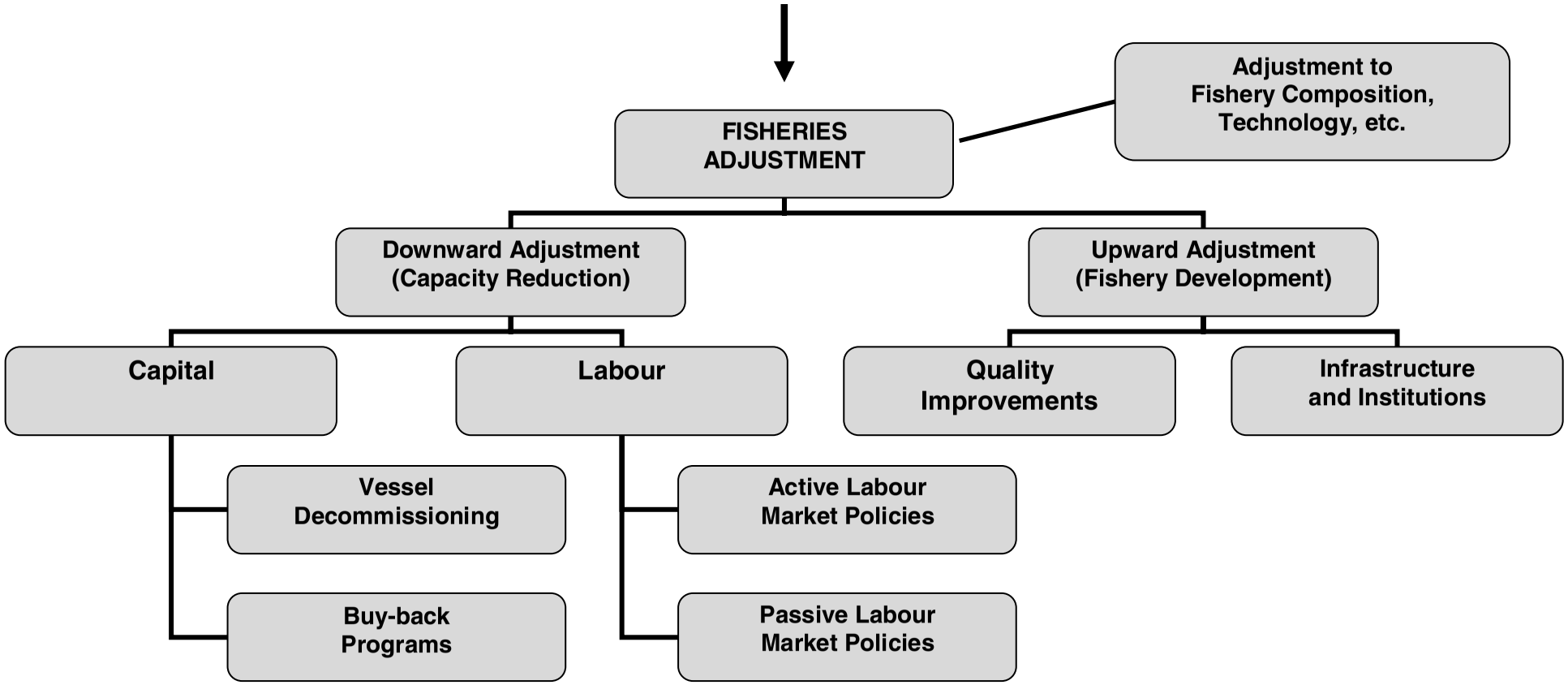
Second, in pursuing a multiple set of objectives through fisheries adjustment, there is a need for *efficiency* in policy implementation. To this end, a broad view of efficiency is required, *i.e.*, seeking to obtain the greatest benefits (in terms of meeting objectives, within a long-term perspective) at the least cost. Such a perspective can be used to determine the preferred fishery configuration – *i.e.*, what the fishery should look like in terms of a desired 'mix' among multiple user groups (such as commercial, recreational, and subsistence fishers), scales of operation (notably small-scale versus large-scale, or artisanal versus industrial), and gear types. Also, within any single user group or gear type in the fishery, there is a need to decide on the balance among a variety of inputs that combine to produce fishing effort (labour, capital, technology, management and enforcement activity, etc.). These decisions all depend on the blend of societal objectives pursued, and the capability of the various fishery players to meet those objectives.

Links to Fisheries Adjustment

Fisheries adjustment, as noted earlier, involves structural approaches to help achieve the various objectives specified in the fishery. This may involve reducing fishing fleets (e.g., through fleet buy-back and decommissioning schemes) – certainly a common preoccupation today, in keeping with the reality of the world's fisheries as having little room for increasing global catches – but it could involve an *upward* adjustment in fishery capacity under certain circumstances. Whatever the overall direction of adjustment, the achievement of societal goals may also involve adjustment in terms of re-allocation of fishery access and/or shifts in fleet composition. This may be done so that those fleet sectors (*e.g.*, large-scale or small-scale, labour-intensive or capital-intensive) or fishery types (*e.g.,* commercial, recreational, subsistence, etc.) most able to meet societal objectives are given preference in terms of fishery access. A framework for envisioning the range of fisheries adjustment options is shown in Figure 1.2.

The idea of fisheries adjustment can be related to that of 'fishery development'. While the latter could be seen as having an expansionary connotation, in fact a key aspect of fishery development is to increase the overall level of benefits from the fishery without necessarily increasing the catch (or indeed, in some situations, to *maintain* the level of benefits even while *decreasing* the catch). This can be through a range of measures to (1) improve the flow of sustainable benefits from the fishery, including market development, quality control, and improvements to distribution processes, and (2) improve the physical infrastructure, technological capabilities, institutions and/or human productivity in the fishery system. Many of these interact with structural decisions in the fishery, and thus with possibilities for fisheries adjustment.

Figure 1.2. Range of Fisheries Adjustment Options



Finally, it should be noted that in fishery-dependent regions, where few alternative employment possibilities are available, maintenance of sustainable livelihoods, in the form of stable employment at reasonable incomes, is often a priority among society's fishery-oriented objectives. This may be seen as both a matter of employment and of maintaining the 'engine' of the coastal economy, given the flow of benefits from the fishery into coastal communities.

Over Capacity

Adjustment measures are often advocated as a means to manage fishing capacity – the *catching power* of the fishery, which can be assessed in terms of potential harvests or potential fishing effort (the latter reflected in some mix of factor inputs, including fishers, vessels and gear). The focus is often expressed as being on over capacity, which arises when there is a mis-match between the capacity *needed* to take the available harvest, and the *actual* capacity – *i.e.* when there is greater catching power than is needed to catch the available fish. This comes about as the result of a dynamic process, involving entry of fishers, expansion of fishing effort, investment in vessel construction, depreciation, and so on.

Why is over capacity of concern? It has been claimed (Pascoe and Greboval 2005) that overcapacity will "lead to lower production levels than might be achieved, and also a reduction, if not total dissipation, of the economic benefits that may be generated from a fishery". Indeed, the development of over capacity can involve a waste of physical capital, with more used in the fishing fleet than necessary to catch the available fish. Furthermore, if there is a positive opportunity cost of labour – *i.e.* if other productive activities are available for fishers elsewhere in the economy, and the fishers are mobile enough to accept those opportunities – then maintaining a greater number of fishers than needed to catch the fish can be seen as wasteful economically.

These concerns must be modified, however, in cases where the capital invested, while excessive, is 'sunk' in the sense of being already in place within the fleets of the fishery. In such cases, the economic 'damage' of over investment is already done. Whether it is worthwhile to worry about, and pay for, removal of that excess capacity, as opposed to focusing on controlling the fishing effort exerted by existing vessels, is not at all clear-cut. Similarly, if fishers are in place in the fishery, and have low or zero opportunity costs, then the value of diverting limited funds and attention away from effective fishery management and into labour adjustment, in order to remove those fishers from the fishery, is also not clear-cut. In such instances, it is possible that the benefits of removing excess capacity could be outweighed by the costs of doing so.

As Pascoe and Greboval (2005) note, various authors have "identified overcapacity as the single key problem afflicting marine capture fisheries resources". Indeed, a tendency to blame overcapacity for fishery problems is so pervasive as to become 'accepted wisdom' that is rarely critically evaluated. In reality, problems with overcapacity described in the literature are often those in which, for example, effort has not been managed well, leading to a shortening of the fishing season or the like, and a resulting dissipation of benefits. In such situations of ineffective management, it may be true, as Pascoe and Greboval (2005) note, that "unless capacity is effectively controlled, there exists the potential for unsustainable levels of fishing effort to be developed and exerted". However, the idea that overcapacity is "the single key problem" even in fisheries where either total catch or total effort is effectively controlled does not seem well-supported. This highlights the importance of understanding cause-and-effect relationships, *e.g.* in

this case, whether the various problems one might observe in the fishery actually arises as a result of overcapacity or due to some other cause.

Indeed, as has been shown previously (Charles and Munro 1985), in some circumstances it may well be optimal to have capacity greater than needed to catch the available harvest (apparent 'over capacity'). This can occur, for example, when capacity had been 'optimally' built up previously, to catch relatively abundant stocks and in the knowledge that the capacity, being nonmalleable (*i.e.* with a low re-sale value and/or no alternative uses) would thereafter remain in the fishery. Of course, the optimality of such a situation depends on the capability of management to prevent that level of capacity from excessively harvesting the stock.

In addition to the above-noted economic concerns about overcapacity, there are also possible conservation impacts. It is often said that over capacity is among the greatest threats to sustainability in fisheries. However, Pascoe and Greboval (2005) note that "the existence of overcapacity does not necessarily result in unsustainability". This is an important point in that a fishery with over capacity may have abundant fishers, boats and gear, and thus a *potential* to over fish, yet a powerful fleet does no damage to the stocks if the boats are merely tied to the dock. Thus, it is not over capacity *per se* that poses a threat to conservation, but rather its presence in combination with ineffective fishery management that is unable to control the fishing effort of the fleet and thus the killing of fish. In this sense, the effect of over capacity on conservation is indirect, through problems of manageability, since *(a)* a large number of boats is presumably more difficult to manage than a smaller number, and *(b)* over capacity often reflects high investment levels, and correspondingly high debt among fishers, this can increase the pressure to increase harvests so as to pay debts.

Overall, then, a realistic approach to overcapacity would recognize that *(1)* truly excess capacity implies a waste of physical capital, and possibly of labour resources, if there are positive opportunity costs, but *(2)* some overcapacity can be a good thing in a fishery, allowing for responses to fluctuating resources in the face of nonmalleable capital, and *(3)* overcapacity by itself is often not the issue, but rather its presence *in conjunction with* poor or limited fishery management, notably an inability to control effort and to resist political pressure. There can also be a concern over an inability to keep excess capacity from shifting into other fisheries, such as those on the high seas. As noted earlier, capacity reduction is not a societal objective, nor a fishery objective (just as 'mesh size increase' or 'limited entry' are not fishery objectives *per se*). Instead, all of these are rightly management and policy tools that can be considered for inclusion in a suitable portfolio, or package, of tools for use in meeting a range of objectives.

The Balance of Labour and Capital

As noted earlier, despite the frequent equating of fisheries adjustment to capacity reduction, in reality the idea of adjustment is more multi-faceted – including aspects relating to changes in the composition of factor inputs in the fishery. For example, past efforts at 'modernization' often sought to make fisheries more capital intensive, at the expense of employment, in the belief that such shifts would better meet certain fisheries goals, such as profitability and safety at sea.

On the other hand, shifts toward more labour-intensive fisheries have advantages in terms of employment and community well-being, fleet flexibility and fuel economy. The relative use of labour in the fishery relates to the *social opportunity cost of labour* – the

true cost to society of having a fisher working in the fishery, rather than doing something else in the economy. When fishers actually have no livelihood alternatives to fishing, then there is no social cost to keeping those individuals in the fishery. Indeed, the removal of fishers from the fishery may lead, through a multiplier effect, to an economic *loss* to the regional economy. In addition, social costs may rise, due for example to increased crime and/or decreased health and welfare levels. In such circumstances, the reduction of labour in the fishery would be a social 'bad'.

In any case, the key point is that adjustment measures have the potential to be designed to alter the mix of factor inputs, in order to better meet societal objectives. For example, an adjustment measure aimed primarily at reducing capacity in the fishery overall (perhaps for economic and environmental reasons) might be implemented through a judicious targeting of fleet reduction to minimize social harm to regional employment and community well-being (e.g., perhaps using capacity reduction to shift toward a more labour intensive fishery).

What Does Fisheries Adjustment Involve?

Choices about the Future Shape of the Fishery

Fisheries adjustment involves certain actions – such as vessel decommissioning schemes, licence retirement schemes, and changes to fleet composition – but any such alterations to the structure of the fishery sector imply the need for choices to be made concerning the desired future shape of the fishery – and such choices, as emphasized earlier, depend on the societal objectives being pursued. Potential changes, such as reducing certain fleets, or shifting from a more labour- or capital-intensive fishery, impact on the achievement of such societal objectives. John (1994: p.7) has expressed one aspect of this question as follows: "Within any single user group or gear type in the fishery, a variety of inputs combine to produce fishing effort, including labor, capital, technology, management and enforcement. To what extent should each of these exit from the fishery?"

Short-term and Long-term Measures

Fisheries adjustment can involve either or both of short term policies and long term policies. On the one hand, short-term measures may be focused on buybacks, dealing with redundant fishers through compensation programs and the like. Longer-term measures could include the development of 'broader policy frameworks' that provide coherence in fisheries policy relative to that of community economic development, regional development, etc.

Forms of Adjustment

Dolan *et al.* (2005) view adjustment, or 'restructuring', with a focus on human-induced changes in certain key variables. They differentiate between five forms of restructuring:

- physical restructuring: human-induced change in physical structure or the levels and/or distribution of 'elements or compounds'

- biological restructuring: human-induced change in species attributes such as population size, spatial structure, and/or in biodiversity measures
- social restructuring: socioeconomic processes such as urbanization, demographic change, generational dynamics, etc.
- industrial restructuring: change in industry or employment structure
- institutional restructuring: change in government policies and programs.

These authors (p.197) also refer to *interactive restructuring* – "the multidimensional processes that are reshaping biophysical, social, institutional, and industrial structures", including the interactions among these and the "potential consequences for health at all levels".

Of these five types of restructuring, the first three reflect change in the various components of the fishery ecosystem and human system that could result from either internal or external drivers. The latter two types are those put in place as deliberate adjustment through management and policy measures within the fishery (or beyond). With respect to "institutional restructuring", it is important to recognize that fisheries adjustment may imply changes to fishery management itself, to improve the 'fit' with broad societal policies – *e.g.*, to ensure that actions within the fishery are coherent with broader policy, whether that be in employment maintenance, regional development, etc. With respect to "industrial restructuring", this section briefly introduces two major forms of fisheries adjustment, namely *(a)* buy-back and decommissioning schemes, and *(b)* labour market adjustments (including licensing aspects).

Buy-back and Decommissioning Schemes

As noted earlier, reductions in fleet size and other aspects of physical capital are common components of fisheries adjustment. In the short term, these most often take place through buy-back programs and vessel decommissioning.

Holland et al. (1999: p.62) note that such programs often are targeted on certain groups in the fishery, *i.e.* "to direct the buyback resources toward specific groups of fishermen. This has been done with eligibility requirements, bid ranking systems and direct allocation of funds among groups." These authors have described the wide variety of targets to be found within such capacity reduction programs:

> "Some programs have been limited to only those fishermen most dependent on the fishery… Other programs have at least indirectly targeted underutilized or inactive permits… Several programs have targeted the opposite group, the most active fishers… Other programs have targeted potential rather than demonstrated capacity… There are also examples of programs that have specifically targeted groups of fishermen on the basis of demographic characteristics. Some programs have allocated funds among gear groups, vessel classes and areas…"

From a social perspective, a range of impacts can be anticipated as resulting from buy-backs and vessel decommissioning. These are discussed later in this paper.

Labour Market Adjustments

Labour adjustment measures are often delineated into two categories:

- Active labour market policies… Measures accompanying adjustment actions, focusing either (a) at an individual fisher scale, locating alternative employment

or livelihood options for displaced fishers, and/or (b) at a community or regional level, involving introduction of new employment opportunities as alternatives for the fishing sector (or generally available to all, thereby implicitly increasing the opportunity cost of fishing and inducing exit from the fishery).

- Passive labour market policies… sets of policy measures and incentive structures that provide the policy environment in which individuals and communities are induced to make decisions in keeping with the reality of the labour market, e.g., with shifting of labour away from the fishery in cases in which that sector cannot support the previous level of labour involvement.

Interaction of Adjustment with Various Aspects of the Fishery

This section discusses some interactions that may exist between fisheries adjustment on the one hand, and a range of fishery components or considerations on the other – the post-harvest sector of the fishery, fishing households, fishing communities, the fishery's socioeconomic environment, gender and the role of women in the fishery, and technological change. For each of these, the interactions may occur through the particular component being impacted by fisheries adjustment, or through its effect on adjustment processes.

Post-Harvest

Fisheries adjustment can include changes in the processing sector, the social impact of which will vary according to the type of processing involved and in particular whether it is capital-intensive or labour-intensive (*e.g.*, ranging from capital-intensive factory freezer trawlers and fish meal production, to relatively labour-intensive processing carried out by fishers and their families). It is important to understand who is working in fish processing: in particular, these individuals may well be relatives of fishers and/or residents of the same communities in which the fishers live. Particularly notable is the major role of women in on-shore fish plant work.

In considering fisheries adjustment options – changes to the structure of the fishery and its constituent components (fleet types) – it is also important to take into account emerging trends in fish markets. Specifically, emerging certification and eco-labelling approaches will lead to changes in consumer preferences, which need to be considered in fisheries adjustment decision making. For example, if this trend leads to certain modes of fishing becoming identified as environmentally- or socially-destructive, it will be important to be aware of this, since restructuring decisions that are, or turn out to be, contrary to such consumer preferences, may in fact have very negative impacts.

Fishing Households

In some fisheries and some fishing communities, multiple household members may be involved in harvesting and/or related fishery activities, or there may be broader 'kin relationships' involved. If household and kin participation are major aspects of the labour market, two results can be foreseen. First, fisheries adjustment can have major social (and economic) impacts on certain family units. Second, the family connections mean that labour market processes may not work in the manner that may be expected according to theory.

In the long term, the availability of household labour within the fishery may provide greater income security, since internalising labour costs allows the enterprise to better survive fishery downturns. Alternatively, income security in households could also be

enhanced *(1)* when household members not involved in harvesting are involved on the post-harvest side, perhaps working in processing plants, or marketing and distributing the catch within the community and beyond, and *(2)* when household members hold jobs entirely outside the fishery system, which could stabilise family income and reduce the risk of major loss if a disaster in the fishery were to occur (such as an unexpected stock collapse). These various labour market complexities imply risk-spreading strategies that may make fishers less responsiveness to restructuring incentives than might otherwise be the case.

Fishing Communities

Just as the past tendency of fishery management to focus exclusively on target fish stocks is broadening through an "ecosystem approach to fisheries" to incorporate the context of where the fish live (ecosystems), so too is it logical (and indeed crucial) to incorporate into fishery policy discussions not only fishers but also the coastal communities where the fishers live. This point certainly applies to aspects of fisheries adjustment. In that regard, it is important to understand *(a)* linkages between adjustment options and the realities of how communities operate – socially, economically and in terms of community institutions – and *(b)* impacts of adjustment processes on key objectives such as community well-being and community cohesion. In considering such impacts, a variety of factors within coastal fishing communities may be relevant, for example those indicated in the following table:

Table 1.1. Factors of Potential Relevance in Fishing Communities

Demographic: • community population • population trends • levels of migration • age and gender structure • education levels **Socio-cultural:** • identified community objectives • religious stratification • gender roles • social stratification, power structure • level of social cohesion • local traditions and norms **Economic:** • income levels and distribution • wealth levels and distribution • degree of dependence on the fishery • degree of fishing-related activity • diversity in livelihood opportunities • household economic structure • types and location of markets	**Institutional:** • pattern of community organisation • pattern of local resource management • pattern of resource ownership, tenure • level of community infrastructure • regulatory and enforcement methods • traditional ecological knowledge • involvement of women in institutions • interaction with upper levels of government **Environmental:** • availability/ condition of fish stocks • quality of aquatic and coastal habitat • oceanographic/environmental conditions

The Fishery's Socioeconomic Environment

The socioeconomic environment around a fishery incorporates human, social and institutional elements, at the community, regional, national and global levels. The links between the fishery and the socioeconomic environment, and consequently the possibilities for interaction with fishery adjustment initiatives, can include the following:

- Interactions of demographic aspects within the fishery, such as participation by age and gender, with external influences, such as national population and migration trends.
- The broad aspects of society, culture, history and tradition that impact on decision making in the fishery system.
- Interaction of the fishery economy with the economic structure and dynamics at the regional and/or national levels.
- Relationship of local fishery objectives to broader regional and national policy goals.
- Interaction of the local institutional structure with institutions, legal arrangements, legislation and policy frameworks at national and/or sub-national levels.

Gender Considerations and the Role of W omen

An important consideration in fisheries adjustment is that of gender-related impacts, notably the differential effects of adjustment on women and men. In much of the world, women are either involved in fishing itself, or play a major role in on-shore components of the fishery (such as processing or marketing). Davis (1988: p.214) suggests that there are two major forms of participation by women: "The first mode is tangible and functional and entails women's fishery-related work roles. The second contributory mode is less tangible and involves the emotional, ideological, more rarified contributions women make to the fishing enterprises – in terms of their roles of wife, mother, and sister of fishermen and as carriers of the family tradition." On the latter point, Ruddle (1994) highlights the important role of women in the building up and holding of fishery and marine environmental knowledge within the community. These can be crucial roles in the functioning of the fishery, and thus gender issues need to be taken into account in implementing fisheries adjustment measures.

Technological change

In assessing the need for fisheries adjustment measures, as important as the level of current fishing capacity is the phenomenon of technological change, since advancements in fishing technology have been the source of long-standing processes of change in the fishery. In addition to effects on catching power and catches themselves, technological change can have social impacts. For example, McCay (1979) found that the introduction of new long-liner technology in the fishery of Fogo Island, Newfoundland (Canada), affected the level of earnings, the sharing of revenues between owner and crew, returns to capital, and labour mobility. These impacts in turn produced changes in fishery participation levels, to the extent that difficulties arose in recruiting vessel crews, despite high unemployment levels in the region.

Policy Approaches to Fisheries Adjustment

Overall Approaches

There is no single avenue to approaching fisheries adjustment, but rather a range of policy mechanisms for potential use in achieving the ultimate objectives. Specifically, one might choose between three mechanisms to determine the final configuration of the

fishery – market forces, planning approaches and/or community-based approaches - or indeed a suitable combination of these:

Market approaches. In a purely market-based approach (*e.g.*, ITQs), the marketplace determines the eventual configuration of the fishery, *e.g.*, through the trading of fishing rights. Capacity reduction occurs as choices are made by individual fishers or corporate fishing entities to either remain or to exit the fishery after selling off their rights to others.

Planning approaches. Targeted, selective approaches (such as targeted vessel buy-backs) aim to achieve a desired overall fishery configuration, which may take into account such factors as the differential capacity of the various gear types and fleet sectors in the fishery, and the conservation impacts of the harvesting technologies.

Community-based approaches. Local-level co-management approaches to capacity reduction are also planning mechanisms but ones fitting within a framework of devolved governance, aiming specifically to produce a fishery configuration that meets local objectives as well as societal ones. Such approaches aim to be efficient at the fishery level (*e.g.*, reducing fishing costs by co-ordinating fishing effort among community participants) and the regulatory level (*e.g.*, reducing conflict, increasing self-enforcement and decentralising management).

Capacity Reduction

If fishery policy were based on pursuing only a single objective, a suitable capacity reduction policy may be fairly obvious. For example, a single-minded pursuit of maximum harvesting efficiency might focus on eliminating fishers until one reached the minimum number capable of harvesting the available catch. But if fishery policy involves multiple objectives - that is, if society seeks a balance among a range of social, economic and conservation goals - then capacity reduction must similarly be designed to consider impacts on a range of factors, such as conservation, ecological balance, rent generation, income distribution, fishing community welfare, and institutional stability. Thus the matter of how capacity reduction can contribute to achieving the multiple objectives set by society for the fishery is a key matter to be resolved at the outset.

This implies that capacity reduction needs to be part of a planning process that moves the fishery system toward a desired configuration. This has two key implications…

First, as noted earlier, capacity reduction may need to be focused selectively on certain fishery sectors or certain inputs, to best meet multiple objectives. For example, it may be desired that the capacity reduction scheme reduces employment to create a more capital-intensive fishery, or reduces capital so as to shift toward a more labour-intensive fishery. Either might be accomplished by changing allocations of catches, or through a 'buy-back' of targeted boats.

Second, in developing approaches to adjustment, it is important to properly assess policy options in terms of their capability to promote societal objectives, to guard against perverse policies. Consider, for example, fishery policies that pursue capacity reduction through *(a)* favouring specialist/full-time fishers at the expense of generalist/part-time fishers, or *(b)* adopt 'use-it-or-lose-it' policies that force fishers to fish regularly or risk losing their fishing rights. Both of these policies have the perverse effect of rewarding those who place the most pressure on the resource, while penalising fishers who respond to low stock abundance by reducing their impact on the stocks (perhaps by shifting temporarily to other work). Whether these policies have positive features that compensate

for such negative aspects is something that can be explored within a suitably comprehensive planning process, based on objective examination of the fishery.

Livelihood and Economic Diversification

Fishery policies of restructuring and adjustment, to deal with over exploitation and over capacity, have been long critiqued for their failure to actively address the major problem of a lack of economic alternatives beyond the fishery. For example, fishery economist Ian Smith (1981: p.22) long ago pointed out that rationalization actions are likely to aggravate problems posed by a lack of livelihood (employment) alternatives since "Management programmes fail to deal adequately with fishermen who are displaced". Smith noted that fishery restructuring, in the absence of non-fishery economic alternatives, may fail either because it is *(a)* non-sustainable and politically infeasible, due to adverse impacts on those dependent on the fishery, or *(b)* practically infeasible, since fishers removed from a fishery, and without other options, will do what they feel necessary - including illegal fishing - to maintain their livelihood.

Solving the problem of a lack of alternatives to fishing is by no means simple, yet efforts in this direction seem critical in most cases to the success of programs for sustainable fishery systems – especially in the context of heavily exploited fisheries. Such efforts will typically be composed of within-fishery and non-fishery actions, including those targeted on individuals and households (livelihood diversification) and those targeted on fishing communities and regions (economic diversification):

Multi-species Fishing

Within the fishery, it can be useful to encourage multi-species fishing, in which individual fishers utilise a range of fish resources, in contrast to policies that lead to specialisation of fishers into single-species fisheries. By diversifying across sources of fish, the individual fisher reduces risks, and at the same time, the pressure to seriously over exploit particular species may be reduced.

Multiple Sources of Livelihood for Fishers

There can be value in reinforcing or renewing the traditional practice in many seasonal fisheries of 'occupational pluralism' - fishers holding jobs outside the fishery during non-fishing times. Through such practices, fishers avoid total reliance on fishing for their income, and this can lead to a reduction in the pressure they would otherwise face to obtain a livelihood entirely from the fishery, and thus may also reduce pressure on the fish stocks. It has been suggested, on the other hand, that the opposite outcome could occur: namely, that when fishers have other, non-fishing income sources, they may be less responsive to economic signals within the fishery, and thus less willing to exit. However, it would not be expected that fishers would operate their fishing activities at a loss – unless there are regulatory reasons to do so, or if there are multiple objectives being met in such circumstances, such as if the fishery is a significant source of food for households, or if it is viewed as a social or recreational activity more than an income source. Overall, it would seem that in most cases, encouraging livelihood diversification, and by implication, discouraging excessive specialisation of fishers, will boost the resilience of the fishery.

Diversification of the Economy

Third, a frequently advocated policy approach to fisheries adjustment lies in diversifying coastal economies by creating new, sustainable economic activity outside the

fishery sector. From the perspective of the individual, this enhances the range of available livelihood choices, both for current fishers and for young people looking for a job, making it more attractive for so-inclined fishers to leave the fishery, and reducing incentives for others to enter the fishery. In other words, such a move increases the *opportunity cost of labour* in the fishery, which can lead to an overall reduction in fishing capacity, and reduced pressure on the resource base.

Economic diversification may, in many cases, be the single most important need in the pursuit of sustainable, resilient fisheries. It is a particularly challenging task, however, and might be best tackled through an *integrated* portfolio of approaches, potentially involving *(i)* indigenously-created employment alternatives within the local region or community, perhaps based on comparative advantages in ocean-related activity (such as fish farming, coastal tourism, and the like), *(ii)* overcoming constraints on local development that may be due to factors at the macro-economic or macro-political level, and *(iii)* attention to institutional arrangements that promote effective governance at a local level.

Panayotou and Panayotou (1986) suggest that economic development efforts may be best focused on promoting non-fishing employment alternatives in those areas where geographical mobility is most limited. Similarly, Symes (2000, p.218) makes clear the particular need for economic diversification in small and/or peripheral communities:

> "the impacts of structural rationalisation, implying both the downsizing of the fishing fleets and their concentration in more favoured locations, will be most keenly felt in the smaller, more peripheral communities where the infrastructures are less developed and connectivity to the main economic centres is weak. The need, therefore, is to buttress those disadvantaged, one-sided local economies through the diversification of their employment base and the creation of a range of alternative jobs".

Challenges in Implementing Fisheries Adjustment

Lack of Clear Decision Making on the Desired Future of the Fishery

Structural adjustment cannot be used effectively without knowledge of the desired direction to 'restructure' the fishery, *i.e.* without having determined the desired configuration of the fishery – in terms of fleet composition, preferred gear types, desired labour or capital intensivity, age structure of the fishermen, and the like. For example, it is sometimes claimed that in situations with extensive over capacity, any move to reduce that capacity will be worthwhile. Such a claim is simply erroneous – without care in working toward overall societal objectives, a mis-guided reduction of fleet capacity could well have undesirable consequences, such as altering (or preserving) the fleet composition in a manner that increases inequity (by differentially impacting on certain fleet sectors) or that destroys working institutional arrangements (such as inherent compliance mechanisms, community-based management, etc.). There are thus real risks inherent in a rush to restructure, in the absence of clear societal objectives.

Easy Entry versus Barriers to Exit

The number of fishers participating in the fishery, and the aggregate fishing effort, can vary over time according to such factors as *(a)* the perceived profitability of fishing

versus other economic activity, *(b)* traditional practices of the fishers, perhaps reflecting religious or cultural norms, *(c)* policy measures and management restrictions, as well as government actions such as buy-backs of fishing vessels, and *(d)* external 'forcing' factors - changes elsewhere in the economy or society, notably in the availability of non-fishing opportunities (affecting labour mobility).

Entry into fisheries can be a major problem, leading to over capacity, over harvesting and social unrest, among other effects. Consider, for example, a situation such as one that occurred some time ago in Costa Rica, when government policy to encourage agricultural exports provided incentives for local farmers in inland areas to cut down forest, so as to 'improve' the land, which then could be sold to ranchers, coffee growers or others. The small-scale farmers, having sold the land, found it increasingly difficult to find more land - in other words, it became more difficult to obtain a livelihood inland - so many migrated to urban areas and to the coast. The latter group began fishing, for example in the Gulf of Nicoya on the Pacific coast of the country. This increase in the coastal labour force, together with an institutional environment of imperfect fishery controls, led directly to increased exploitation of coastal shrimp and fish resources, and declines in abundance (Charles and Herrera 1994).

At the same time, exit from the fishery can be even more problematic. Pascoe and Greboval (2005) have summarized the barriers to exit from fisheries as follows:

> "These take two main forms: the lack of alternative employment opportunities and the 'non-malleability' of capital. In many cases, fishers have nowhere else to go. Similarly, there are few alternative uses for fishing vessels when fisheries are overexploited. As a result, the 'opportunity cost' of both labour and capital is negligible if not zero, and fishers will continue in the fishery as long as they can continue to cover their running costs."

Of these two categories, the effects of a lack of employment alternatives are discussed below. The second, the *non-malleability* of capital, referred to by Pascoe and Greboval (2005), is equally a crucial determinant of policy impact. John (1994: p.8) has noted that non-malleable capital – arising notably in fleets of specialised vessels having few alternative uses – "tends to make capital investment relatively irreversible and labor relatively immobile, exacerbating the exit problem…" In such situations, common in many fisheries, the reduction of existing capacity is much more difficult, contrasting with cases in which capital is malleable (and investments are reversible), so that fishers can receive a reasonable resale value for capital if they exit the fishery.

It is important to differentiate among the forces influencing decisions to exit or remain within a given sector. Heen (1988) notes that with respect to labour dynamics in general, "The concepts of 'push' and 'pull' have been used to explain labour market behaviour. A person is 'pulled' by a better situation, for example a higher wage. 'Pushed' has been used in two different ways: 'push' by discharge or demotion, and 'push' of an unfavourable situation."

On this point, Hersoug (2006) notes that "There is little doubt about the general decline in the number of fishers, but labour researchers have for years debated whether push or pull factors have been the most important. …Bad times in the fishing industry may certainly explain why many quit and why few are recruited, but good times in other industries (such as construction, oil and gas, and public and private service), may be equally important."

Lack of Alternative Economic Opportunities

A key challenge to be faced in putting into place fisheries adjustment measures, as noted above, is the lack of economic or livelihood alternatives available for those involved in fisheries – a phenomenon common to many parts of the world. This is certainly the case in fishery-dependent regions, where, by definition, the local economy depends to a large extent on fishing activity. Indeed, many coastal regions, particularly if located at the periphery of the national economy, have a non-diversified employment base.

In such situations, the social opportunity cost of labour may be very low, implying that the *optimal* level of fishing effort (and potentially fishing capacity) is higher than would otherwise be the case. Furthermore, adjustment measures that target labour in the fishery may have major social impacts in situations lacking economic and livelihood alternatives. Indeed, those removed from the fishery through adjustment processes will have incentives in undesirable directions – *e.g.*, to return to the fishery on an illegal basis or to leave their home communities (thereby disrupting the integrity of those communities)., Conversely, the building of livelihood alternatives, if successful, can counter perverse incentives such as these, thereby generating benefits from social, economic and ecological perspectives. .

Lack of Labour Mobility

Even if economic alternatives exist outside the fishery sector, constraints may still exist on the success of fisheries adjustment. In situations of perfect labour markets, fisheries adjustment that reduces employment in the sector will result in a shift of individuals into other occupations, or to other locations. However, it is well established that in many fisheries, labour is relatively immobile geographically (*i.e*. fishers do not easily accept leaving their communities in search of new employment), and there is often an element of occupational immobility as well (*i.e.*, a reluctance, or a lack of skills, to change into a job fundamentally different from fishing). These realities complicate an assessment of the social impacts of fisheries adjustment, typically implying higher negative impacts, when taken in conjunction with a lack of economic alternatives, noted above.

The difference in the occurrence of occupational and geographical immobility has been long noted. The results of Terkla *et al.* (1985) show that in many fishing ports studied, "labour out-migration is low because of strong attachment to community and family", and the study of Panayotou and Panayotou (1986) indicates that labour is "quite mobile between occupations but less so between locations". In Norway's fisheries, Heen (1988) similarly notes that "Geographical immobility is even more striking than occupational immobility".

Also important in examining labour mobility, and in assessing the human impacts of fisheries adjustment on communities, is to understand the value that fishers place on the communities in which they live. As Apostle *et al.* (1985: p.256) note, "it is essential to understand how inhabitants perceive their present-day existence. ...Do people continue to live in these small villages by choice, or from lack of alternatives?"

In speaking of livelihood arrangements in coastal fisheries, Hersoug (2006) notes that:

> "The typical trait of such a coastal system of occupation is that it is flexible. Reduction in one sector does not necessarily result in unemployment. The individual has an occupational mobility which contributes to stability of the coastal settlement pattern, because even if a former fisher starts commuting, the family remains in the fishing community. These occupations were characterised as flexible, as they all required little formal education and few specific certificates. Today, this flexibility is considerably reduced as most coastal occupations have been through a process of professionalisation, where more formal education and certificates are required."

In a World Bank report, John (1994, p.18) has noted:

> "Studies relating to labor mobility in some developing countries indicate that fishermen are responsive to economic incentives and move between occupations, but there is less labor mobility between locations because of the attachment of fisherfolk to their area of residence. This tendency has implications for plans to create supplementary and alternative employment opportunities for fisherfolk in fishing communities. Such programs should be locale-specific…"

While the lack of labour mobility is a key challenge to fisheries adjustment, there is scope for movement, in that fishery labour processes are intimately related to the overall socioeconomic environment (Panayotou 1982). Several studies (*e.g.*, Ferris and Plourde 1982; Panayotou and Panayotou 1986) have found that fisher labour dynamics are sensitive to market signals and economic incentives, which can substantially increase occupational mobility.

Specialized Skills / Aging Work Force / Poor Retraining

The lack of geographical and/or occupational mobility noted above is certainly due in significant part to a real attachment to place on the part of fishers, and others in fishing communities. At the same time, immobility is also connected to other aspects of the individuals themselves, such as the specialized nature of skills held by fishers, as well as to the overall demographics of fishers – including an increasing average age in many situations. Finally, inadequacies in the re-training programs used in adjustment can limit the success of efforts that might otherwise help to increase occupational mobility.

Lack of Coherence between Fishery Policy and other Governmental Policy

Holland et al. (1999: p.63) have noted that in every case they examined of fisheries adjustment, "…governments have some types of social programs designed to help individuals in economically distressed sectors to adjust. However, these programs are often funded separately and are not coordinated with fishery capacity reduction programs." This is an illustration of a lack of policy coherence – *i.e.* a lack of coordination between fishery-specific policies and those outside the sector. Other examples could include *(1)* a regional development policy that seeks to maintain coastal communities, at the same time as fishery policy is seeking to reduce the number of fishers, or *(2)* a labour policy that supports rural employment at the same time as fishery policy indirectly aims to reduce that employment.

The need for policy coherence may be expressed within a fishery context when policy directions elsewhere in government (outside the fishery sector) – *e.g.*, with respect to labour markets, social support programs or other policy – are not supportive of, or are counter to, fisheries adjustment measures. It is sometimes assumed that the non-fishery policy should be changed to make it 'coherent' with fishery policy. Of course, it is equally, perhaps more, reasonable to conclude that in situations of 'incoherence', fishery policy may be out of step with overall government policy directions, or with policy in certain key areas. In this case, it is important for fishery policy to broaden its horizon to mesh better with other policy directions.

Lack of Mandate to Integrate Fisheries with Regional/Community Development

It is apparent that one of the key problems faced in fisheries – ones seeking to relieve pressure on fish stocks without causing excessive damage to livelihoods and coastal communities – is the lack of integration of fisheries into regional economic development policy. Fishery agencies may implement policy that implicitly has major community and regional impacts, yet may at the same time claim to have no mandate to deal with such matters. Alternatively, it may be a lack of will to integrate, or even to consider, social, regional and community impacts. These considerations may not be high on the agenda in situations in which the dominant culture of an agency is one of biological and/or narrow fisheries economics thinking. In any case, this manifestation of a lack of policy coherence can present a major challenge to meeting the goals of fisheries adjustment.

Human Impacts of Fisheries Adjustment

Potential Individual and Community Impacts of Adjustment

Effects of One-time Windfall Payments to Individuals

Whether fisheries adjustment is approached directly through buybacks of fishing vessels and/or fishing licenses, or indirectly through adoption of a system of fishing rights to induce capacity reduction, this can produce situations in which a certain group in the fishery (often the vessel owners) receive windfall payments from the government, whether as cash for the surrendering of their vessels and licenses, or as a 'gift' of fishing rights (*e.g.*, quota). In either case, this phenomenon produces wealth inequities within fishing communities, which in turn can have negative impacts on the social cohesion of those communities. A classic instance of inequity is the free provision of individual quota rights to vessel owners in a fishery, while nothing is provided to those in the same communities who happen to be crew members on the same vessels, and contributed to building the catch history on which the quotas are often based.

Loss of Individual Sense of Identity and Exclusion from Community

In addition to the financial aspect of adjustment arising in the above situation, there can also be a strong impact on individuals from a social perspective. Those removed from a fishery in the course of adjustment may well feel their sense of identity lessened, and may even feel they are no longer a full participant in their community. This can happen even if the individual was compensated well for leaving the fishery, but may be much more intense in the case of uncompensated crew members on vessels removed from the

fishery through the above-noted mechanisms in which the vessel owners accepted buy-outs or sold their fishing rights.

Loss of 'Critical Mass' and Consequent Decay in Fishing Communities

In fishery-dependent regions, coastal communities will typically have the fishery sector as the 'engine' of the local economy. A decline in the fishery, whether through change in resource abundance or through deliberate restructuring in the sector, can have dramatic impacts on the integrity of the communities. A process of decay can set in, both in terms of physical decay of infrastructure (*e.g.*, wharves) and community services (e.g., libraries, schools) that can no longer be well-maintained or supported, and in terms of a decay in the 'spirit' and cohesion of the communities.

Inequities in Fisheries Adjustment

In examining the major tool of fisheries adjustment, buy-back programs, Holland et al. (1999: p.60) have noted that "Whether intended or not, there are always equity implications relating to the distribution of buyback funding." One form of these inequities, relating to vessel owners versus crew members, was discussed above. Along these lines, the authors go further (p.62) to note that "These programs do nothing for other groups that may have been impacted by the crisis such as crew members who lost jobs, people working in processing and other fishery support industries. In fact buyback programs typically decrease employment opportunities for these groups." Holland *et al.* (1999: p.62) point out, however, that these negative repercussions of fisheries adjustment are sometimes addressed through supplementary programs which "include unemployment compensation, early retirement pensions, job training and placement programs, financial assistance for post-secondary education, grants to develop new business, etc. They provide adjustment assistance to the groups not eligible for assistance from the buyback…"

Health Impacts

The interaction between restructuring processes (*i.e.*, physical, biological, industrial, social and institutional restructuring, as described earlier) and health have been examined by Dolan et al. (2005: p.197) with respect to each of human, community and biophysical components of 'health':

- human health, *i.e.* direct impacts of restructuring on health measures, such as through alcoholism and suicide, as well as nutritional aspects;
- community health: related both to the ability to promote positive human health outcomes, and to the intrinsic value of the community and to "community-level condition";
- biophysical health: capability of the biophysical environment to maintain "both biological and social organization within the context of meeting human goals".

One could envision use of a table such as the following to monitor health impacts of fisheries adjustment measures, with each cell recording the impact of a certain form of restructuring on a certain category of health (human, community or biophysical).

	Human Health	Community Health	Biophysical Health
Physical Restructuring			
Biological Restructuring			
Industrial Restructuring			
Social Restructuring			
Institutional Restructuring			

Large-Scale and Dispersed Impacts

In considering the human impacts of fisheries adjustment, one naturally thinks first of the impacts on those directly affected within the fishery sector – fishers displaced through a fleet reduction program, fish plant workers out of work due to a reduction in processing activity, etc. Also commonly considered are impacts on fishing communities. However, a full assessment of social impacts must also consider societal costs incurred more broadly.

For example, if a small-boat fishery is 'adjusted' through fleet and fisher reduction measures, this may lead to direct economic and social impacts on individuals and a loss of 'critical mass' economically within some fishing communities. This in turn could lead to a consequent decay in coastal infrastructure such as harbours, wharves and the like, and the possibility of a centralization of fishing activities in larger centres. All this is of importance in assessing social costs of fisheries adjustment, but there are also potential impacts beyond this.

In Nova Scotia, Canada, for example, citizens in urban and inland areas value their proximity to the sea and to the historical fishing culture along the coast, as reflected in the above-noted harbours and wharves, along with the small-scale fishing boats based there. In other words, a loss or decay in those aspects would generate a negative impact on many citizens – while certainly the impact on any one resident of an urban centre would be less than that on a displaced fisher, nevertheless the aggregate loss across all individuals could be substantial. At the same time, tourists coming to Nova Scotia do so to a large extent for the ocean and coastal experience, with the widely-distributed small fishing towns dotting the coast being a part of that experience. If fisheries adjustment leads to a reduction in the quality of that environment, we can expect tourism decline resulting in economic losses, which in turn translate into a loss of employment and livelihood, as well as a range of social impacts.

Impacts of Policy Approaches to Fisheries Adjustment

Earlier parts of Section 6 of the paper have included discussions of the impacts of various forms of fisheries adjustment, such as buy-backs, vessel decommissioning and labour force restructuring. Here, the implications of a number of broad-based policy initiatives are explored, with emphasis on rights-based allocation systems, and attention as well to integrated management and community-based management.

Rights-based Systems

Rights-based fisheries management is often advocated as a mechanism for fisheries adjustment. This typically involves the recognition or allocation of two major forms of rights (Charles 2001, 2002):

- *Use rights* designate the right to access the fishery and harvest fish resources. These provide an important means to avoid the problems of *open access* in fisheries, in which an uncontrolled scramble to access resources often leads to fish stock depletion. Use rights can generally be placed within two major categories: access rights authorise entry into the fishery or into a specific fishing ground, while withdrawal (harvest) rights typically involve the right to a specific amount of fishing effort or the right to take a specific catch.
- *Management rights* designate the right to involvement in management decision making. They lie at the heart of co-management initiatives, the idea being to produce better 'buy-in' of fishery participants, who work together to create and manage their own fishing rules. Management rights may be held to varying degrees by a range of stakeholders in the fishery, depending on the type of management involved (*e.g.*, operational vs. strategic).

The connection of use rights to fisheries adjustment lies in the idea that a well-defined and suitably limited set of use rights holders will directly benefit from, and thus more likely support, desirable adjustment measures. Indeed, the set of use rights holders may well be a logical body to judge the desirability of potential fisheries adjustment measures. This approach also provides a means to internalize, amongst the use rights holders, both the costs and the benefits of fisheries adjustment that may be needed. Parallel to use rights are management rights; when fishers hold the latter as well as the former, they may well be in a position not only to accept adjustment but to drive the process of implementing it, since they are directly involved in management decision making.

The recognition of existing use rights or management rights, or the allocation of new rights, has the potential to facilitate fisheries adjustment, but also the potential for many social, cultural and institutional impacts. Perhaps the two key forms of impact relate to *(1)* equity and distributional issues relating to who receives the use rights, whether fishing vessel owners, licensed fishers, crew members, etc., and *(2)* the loss of community well-being in response to shifts of fishery capital, labour or supporting infrastructure out of the community, as a result of shifts in rights allocations. These matters have been discussed in detail elsewhere (*e.g.* Charles 2002); readers are referred to those original sources.

Integrated Ocean and Coastal Management

Integrated management frameworks explicitly link fisheries with other uses of the relevant ecosystem (ocean, coast, watershed), with the goal of greater coordination and effectiveness in governance. A key aspect of this lies in assessing and managing the many interactions between sectors, and of the various sectors with the overall ecosystem. Such a framework provides the opportunity to integrate as well the adjustments made to the various sectors – for example, restructuring in the fishery, leading to reduced labour use, might support expansion of other sectors (where the labour can be absorbed), or alternatively it might exacerbate the effects of downsizing in those sectors.

Devolution and Community-based Management

The growing policy trend toward devolution of management responsibilities to more local levels, and the accompanying expansion of interest in community-based management approaches, provides both challenges and opportunities – challenges in terms of greater difficulty in carrying out conventional centralized adjustment measures (e.g., central government bodies seeking to impose fishing capacity reductions across multiple local jurisdictions), and opportunities in terms of creating local 'buy-in' for

actions mutually agreed-upon by central governments and local/community bodies. Some of these considerations are explored in the following section.

Social and Community Mechanisms for Fisheries Adjustment

A naïve approach to fisheries adjustment might see social values and social dynamics as mere constraints, even annoyances, to be faced along the path to downsizing fishing fleets and fishery labour forces. This would be an unfortunate perspective. First, there is no reason to believe that among the multiple societal objectives being pursued through fishery policy, any one class (such as social objectives) is intrinsically any less important than others. Second, from a practical point of view, it is important to realize that social and community mechanisms can assist in fisheries adjustment, assuming of course that chosen routes to restructuring are compatible with basic social realities.

Indeed, one can envision social factors impacting on fisheries adjustment initiatives in four major ways:

- as 'driving forces' for change
- as constraints on change
- as supporting vehicles of change
- as direct instruments of change.

One of these, the constraining aspect, is well known – for example, when people depend strongly on fishing, cutting the fleet drastically does have social impacts, and that reality is certainly a constraining force. However, the other three ways in which social factors interact with adjustment – driving forces, supporting vehicles and direct instruments – are clearly ones with potential to help, or indeed promote, the adjustment process. Social forces may drive the need for change in the fishery, for example to ensure food security or reduce poverty. Supporting measures may include a range of social and cultural approaches and institutions that could be brought into the adjustment process, in a participatory manner that allows for compromise in designing the adjustment measures. Finally, social mechanisms can be direct instruments of change, for example through broad-based public campaigns.

These interactions between social factors and fisheries adjustment are perhaps particularly important to take into account at a local and community scale. For example, the Pacific Marine Conservation Council ad Ecotrust (2003: p.7) comment that:

> "Any reduction of the fleet, whether carefully designed or the result of regulatory or market forces, cannot help but have considerable impacts on coastal communities. Social and economic impacts can vary considerably from community to community, depending on local fleet composition, traditional target species, transportation, processing facilities and other portside infrastructure, and other factors. Likewise, any change in the composition of the fishing fleet—and hence in the size, location, and timing of fishing activity and effort along the coast—has consequences on the marine environment and living resources."

Given realities such as these, Symes (2000, p.219) has noted that in modern times, "There is a greater awareness of the need to tailor the solution to the particular local conditions and to rely much more on a bottom-up approach." Local-level approaches, and community institutions, can take a wide variety of forms. For example, while central

managers may focus on reducing capacity through individual-oriented buybacks, license retirement, etc., creative alternatives at the local level might include labour pooling (such as informal agreements amongst fishers to share a vessel) and the more formal formation of fishing cooperatives, in which fishers coordinate their fishing activity and share in the results. There seems to be strong arguments for government support to local-level and/or community-specific measures such as these that may achieve at least some of the results of fisheries adjustment but from a grass-roots approach. There is also the potential at this scale to take advantage of social forces and moral pressure to increase compliance and overall support for fisheries management.

Conclusions: Moving Forward

This paper has reviewed a wide range of considerations connecting social considerations with fisheries adjustment. The importance of an objectives-based approach to fisheries adjustment has been highlighted – one in which policy actions are based on a clear set of societal objectives, rather than single subordinate ones that may not reflect the full reality of fishery goals. The paper has described some approaches to fisheries adjustment, some challenges in implementing that adjustment, potential human impacts resulting from fisheries adjustment, and opportunities to utilize social and community forces to support fisheries adjustment.

It has been suggested (Symes 2000: p.220) that in addressing fisheries policy needs, "A balanced and integrated approach is essential. The position of the fisheries sector undoubtedly needs strengthening… [and] …more robust strategies are needed to stimulate new forms of employment and a reduced dependence on the fisheries sector. For both of these agendas, State support through policy direction and financial assistance will be necessary."

The key in this would seem to lie in an approach to fisheries adjustment that properly takes into account the range of objectives, dynamics and structures relating to ecological, economic and social dimensions of the fishery, and of its surrounding environment.

Cited References

Apostle, R., L. Kasdan, and A. Hanson (1985) Work satisfaction and community attachment among fishermen in southwest Nova Scotia. *Canadian Journal of Fisheries and Aquatic Sciences*, **42**, 256-67.

Ben-Yami, M., and A.M. Anderson (1985) *Community Fishery Centres: Guidelines for Establishment and Operation*. FAO Fisheries Technical Paper 264. Rome, Italy.

Charles, A.T. (2006) Social impacts of government financial support of fisheries. Ch.7 in: *Financial Support to Fisheries: Implications for Sustainable Development*. Organisation for Economic Co-operation and Development. Paris, France.

Charles, A.T. (2004a) *Subsidies in Fisheries: An Analysis of Social Impacts within an Integrated Sustainable Development Framework*. AGR/FI(2004)6. Organization for Economic Co-operation and Development, Paris France.

Charles, A.T. (2004b) Sustainability and Resilience in Natural Resource Systems: Policy Directions and Management Institutions. *Encyclopaedia of Life Support Systems*. Developed under the auspices of the UNESCO. Eolss Publishers, Oxford, UK.

Charles, A.T. (2002) Use Rights and Responsible Fisheries: Limiting Access and Harvesting through Rights-based Management. In: *A Fishery Manager's Guidebook. Management Measures and their Application*. (Cochrane, K., editor) FAO Fisheries Technical Paper, No. 424, Food and Agriculture Organization of the United Nations, Rome Italy, 231p.

Charles, A.T. (2001) *Sustainable Fishery Systems*. Blackwell Science, Oxford UK..

Charles, A.T., and A. Herrera (1994) Development and diversification: Sustainability strategies for a Costa Rican fishing cooperative. In: *Proceedings of the 6th Conference of the International Institute for Fisheries Economics and Trade* (Ed. by M. Antona, J. Catanzano, & J.G. Sutinen), pp.1315-1324. IIFET/ORSTOM, Paris, France.

Charles, A.T., and G.R. Munro (1985) Irreversible investment and optimal fisheries management: A stochastic analysis. *Marine Resources Economics* 1:247-264.

Coffey, Clare (2000) European funding for sustainable development of fisheries dependent regions. p.164-173 in Symes, David (ed.) *Fisheries Dependent Regions*. Fishing News Books, Blackwell Science.

Davis, D.L. (1988) "Shore Skippers" and "Grass Widows": Active and Passive Women's Roles in a Newfoundland Fishery. p.211-229 in: *To Work and To Weep: Women in Fishing Economies* (Ed. by J. Nadel-Klein & D.L. Davis). Social and Economic Papers No. 18. Institute of Social and Economic Research, Memorial University of Newfoundland, St. John's, Canada.

Dolan, A.H., M. Taylor, B. Neis, R. Ommer, J. Eyles, D. Schneider and B. Montevecchi (2005) "Restructuring and health in Canadian coastal communities". *Ecohealth* 2:195-208.

Ferris, J.S., and C.G. Plourde. (1982) "Labour mobility, seasonal unemployment insurance, and the Newfoundland inshore fishery" *Canadian Journal of Economics* 15: 426-441.

Food and Agriculture Organization (1983) *Report of the Expert Consultation on the Regulation of Fishing Effort (Fishing Mortality)*. FAO Fisheries Technical Report #289, FAO, Rome, Italy.

Hamilton, Lawrence C., and Cynthia M. Duncan (2000) Fisheries dependence and social change in the Northern Atlantic. p.95-105 in Symes, David (ed.) *Fisheries Dependent Regions*. Fishing News Books, Blackwell Science.

Heen, Knut (1988) "Norwegian fishermen: Labour market behaviour and analysis" *Marine Policy* 12:396-407.

Hersoug, Bjorn (1985) Fiskernes vandringer – om yrkesskifte og mobilitet blant norske fiskere 1971-80. Serie D: Fiskeriorganisasjon nr. 1/85. IFF, Universitetet i Tromsø.

Hersoug, Bjorn (2006) *Always Too Many? The Human Side of Fishery Capacity Adjustment in Norway*. Paper prepared for the OECD Expert Meeting on the Human Side of Fisheries Adjustment. OECD, Paris. 19 October 2006.

Holland, D., E. Gudmundsson and J. Gates. (1999) Do fishing vessel buyback programs work: A survey of the evidence. *Marine Policy* 23:47-69.

John, Joshua (1994) "*Managing Redundancy in Overexploited Fisheries*" World Bank Discussion Paper No.240. World Bank. Washington, USA.

McCay, B.J. (1979) Fish is scarce: Fisheries modernization on Fogo Island, Newfoundland. In: *North Atlantic Maritime Cultures* (Ed. by R. Andersen). Mouton, The Hague, Netherlands

Munro, G.R. (1990) Applications to policy problems: Labor mobility in the fishery. In: *Mathematical Bioeconomics: The Optimal Management of Renewable Resources*, 2nd edn. (by C.W. Clark), pp.76-85. Wiley-Interscience. New York, U.S.A.

OECD (2006) *Financial Support to Fisheries: Implications for Sustainable Development*. Organisation for Economic Co-operation and Development. Paris, France.

Pacific Marine Conservation Council / Ecotrust (2003) *Groundfish Fleet Restructuring Information and Analysis Project. Final Report and Technical Documentation*. Ecotrust, PO Box 29189, Presidio, San Francisco, CA 94129 USA.

Panayotou, T. (1982*) Management concepts for small-scale fisheries: Economic and social aspects*. FAO Fisheries Technical Paper #228, FAO, Rome, Italy.

Panayotou, T., and D. Panayotou (1986*) Occupational and geographical mobility in and out of Thai fisheries*. FAO Fisheries Technical Paper #271, FAO, Rome, Italy.

Pascoe, Sean, and Dominique Greboval (2005) Capacity management and sustainable fisheries: International experiences. In: *Overcoming Factors of Unsustainability and Overexploitation in Fisheries: Selected Papers on Issues and Approaches*. International Workshop on the Implementation of the International Fisheries Instruments and Factors of Unsustainability and Overexploitation in Fisheries. Siem

Reap, Cambodia. 13-16 September 2004. FAO Fisheries Report No. 782. FAO. Rome Italy.

Ruddle, K. (1994) Local knowledge in the folk management of fisheries and coastal marine environments. In: *Folk Management in the World's Fisheries: Lessons for Modern Fisheries Management* (Ed. by C.L. Dyer & J.R. McGoodwin), pp. 161-206. University Press of Colorado. Niwot, U.S.A.

Smith, I.R. (1983) *A Research Framework for Traditional Fisheries*. ICLARM Studies and Reviews 2. International Center for Living Aquatic Resources Management. Manila, Philippines.

Smith, I.R. (1981) Improving fishing incomes when resources are overfished. *Marine Policy*, **5**, 17-22.

Symes, David (ed.) (2000) *Fisheries Dependent Regions*. Fishing News Books, Blackwell Science.

Symes, David (2000) The future for fisheries dependent regions. p.209-220 in Symes, David (ed.) *Fisheries Dependent Regions*. Fishing News Books, Blackwell Science.

Terkla, D.G., Doeringer, P.B. & Moss, P.I. (1985) *Common property resource management with sticky labor: The effects of job attachment on fisheries management*. Discussion Paper No. 108, Department of Economics, Boston University, U.S.A.

Other References

Binkley, M. (2000). "From Fishing Centre to Tourist Destination: The Restructuring of Lunenburg, Nova Scotia". Lecture at the University of Faroe Islands, April 26, 2000.

Cunningham, S., and D. Greboval (2001) *Managing fishing capacity: A review of policy and technical issues*. FAO Fisheries Technical Paper No.409. FAO, Rome, Italy.

Endter-Wada, Joanna and Sean P. Keenan (2005) Adaptations by Long-Term Commercial Fishing Families in the California Bight: Coping with Changing Coastal Ecological and Social Systems. *Human Organization* 64:225-239.

FAO. (2002). "Evaluation of the Canadian Fisheries Adjustment and Restructuring Program License Retirement Programs". Accessed August, 2006 from: www.dfo-mpo.gc.ca/communic/cread/evaluations/02-03/fisheries_e.htm?template=print

Fisheries Resource Research Fund. (2004). "Structural Adjustment in Australian Fisheries". Commonwealth of Australia.

Lowe, M. and G. Knapp. (2006). "Economic and Social Impacts of BSAI Crab Rationalization on the Aleutians East Borough Communities of False Pass, King Cove and Akutan". University of Alaska Anchorage.

Sea Grant Oregon. (1999). "Oregon's Changing Coastal Fishing Communities". Corvallis, OR. pp. 1-82.

Ulmer, F. and G. Knapp. (2004). "Challenges in Restructuring Alaska's Salmon Fisheries". University of Alaska, Anchorage.

Chapter 2

The Decline of Fishing in Scotland and the Netherlands: The Real Costs

Nicki Holmyard,[1] *Chair of the North Sea Women's Network, United Kingdom*

Abstract

Fishing is more than just a job; it is a way of life that has endured over the centuries, in coastal communities where the traditions, structures and culture have been handed down from generation to generation. Around the North Sea, many small towns and villages owe their existence to the industry and are still fishing-dependent for much of their economic and cultural resources. However, the industry has undergone major changes in recent times, and there are further uncertainties ahead, challenging the very foundations on which the culture of fishing is built in this geographical region.

This paper looks at how communities in Scotland have been affected by recent structural changes in the industry and at the mechanisms used to cope with those changes. It also cites an example of positive change in the Netherlands.

It draws on industry facts and figures to show how fleets, processing capacity and community structure have changed over the past decade, and on interviews and anecdotes to show how strong the resilience of such communities is.

Introduction

The traditions, structures and dynamics of fishing impact upon all aspects of everyday life for fishers and their households (Pettersen 2000). This is especially true in northeast Scotland, in Ireland and in traditional fishing ports in the Netherlands, where many of the settlements owe their existence to the fishing industry and are still fishing dependent for much of their economic and cultural resources.

However, the industry has undergone major changes in the past decade including reductions in fishing quotas, effort limitation and decommissioning, and there are further uncertainties ahead (Symes 2005).

[1] Thanks to Jenny Hatchard for taking time out from writing her PhD to assist with this paper and for all the socio-economic work she undertakes for NSWN.

Research undertaken by Williams (2005), examined a number of ethnographic studies on the dynamics of fishing communities and households, and the impacts of restructuring and crisis, particularly in the fishing dependent areas of Norway (Gerrard 2000, 1995; Pettersen 2000, 1996) and Atlantic Canada (Marshall 2001; Binkley 2000; Davis 2000). Their investigations looked at the importance of the socio-cultural fabric of fishing, how the ecological crisis of the early 1990s impacted upon those dependent on the industry, and how they utilised socio-cultural resources to respond. Cohen's (1987) ethnography of the fishing dependent island of Whalsay and the work of Nuttall (2000) and Nuttall and Burnett (1998) highlight key issues relating to the restructuring of the fishing industry and its impacts on fishermen and communities in northeast Scotland.

Research conducted within these fishing communities highlights that their complementary objectives are dual in focus: on the one hand they wish to pursue sustainable development of the fishing industry and on the other, a key aim is to maintain their traditions. However, a key obstacle to social-cultural objectives is that while the notion of 'sustainable development' is rhetorically strong within the European context (Coffey 2000; Symes 2000a; Otterstad 1996), in practical terms the Common Fisheries Policy (CFP) has been shown to be an 'economic or sectoral policy largely unconcerned with, and relatively insensitive to, its social impacts.' (Symes 2000b:3)

The North Sea Women's Network (NSWN) was established in response to the social inadequacies of European fisheries policy. Its aims are to provide a voice for fishing communities at the EU and regional levels, and to work to ensure that the social impacts of fishing policy are taken into account by the Commission alongside biological and technical considerations.

The Network was formed during the 'Changing Role of Women in Fishing Communities' conference, held in Peterhead in June 2003 as part of a wider EU funded project, 'Women Working in Partnership in Europe.' The conference heard about the lives and initiatives of women from fishing dependent communities in many EU countries and looked for constructive ways to assist them. The NSWN was seen as a means to facilitate greater communication between women within such communities, and as a vehicle for facilitating mutual learning from examples of successful community initiatives.

One of the Network's key roles to date has been to take up a seat on the North Sea Regional Advisory Council (NSRAC), where the NSWN acts as a strong advocate for the inclusion of social and economic considerations in the RAC's advice to the Commission as well as in the RAC's own initiatives. The NSWN is also actively pursuing research to investigate strategies that will enable fishing communities to cope with the negative impacts of restructuring and to strengthen their resilience in the face of change. In doing so, the Network is acting as a voice for fishing communities and enabling them to influence future fisheries policy by focusing on solutions, rather than problems.

This endeavour requires that we look both within our own fishing communities for success stories and positive examples of adaptation to change – some of which are discussed in this paper – and further afield to the experiences of other communities which have experienced restructuring. For example, studies of "readjustment" policies implemented in the wake of the 1992 Northern Cod Moratorium demonstrate how they failed to reduce the number of fishers because of a failure to take into account the socio-cultural role of fishing (Binkley 2000; Woodrow 1998). Jentoft argues that not only do fishing communities need healthy stocks, but that the reverse is also true: 'viable fish stocks require viable fisheries communities' (2000, 53) and that when social structures

break down the fishery can no longer be sustained. In order to achieve successful fisheries management and truly sustainable development, greater account therefore needs to be taken of the social and cultural functions of the fishery.

In order to highlight 'the real costs of fisheries policy', this paper outlines the socio-economic context of fishing and fishing communities in Northeast Scotland and discusses the impacts that restructuring has had in the wake of the decline of North Sea cod stocks. It then addresses the issue of how communities are struggling to maintain their working populations. A third section looks further afield to the rest of the North Sea rim to consider impacts of restructuring there. In particular, an example of a successful strategy adopted by a fishing community in Noord-Holland is discussed, where the local population had previously struggled to maintain its fishing identity and culture. Finally, other work the NSWN does to address the 'real costs of fishing' is described in section four. The paper concludes with some key discussion points.

Fishing in Northeast Scotland

The Scottish fishing industry has been heavily impacted by the deepening resource crisis and ongoing restructuring of the sector (Symes 2005). In the UK, the demersal sector, which predominantly targets cod and haddock, and for which the northeast of Scotland is the leading region by weight and value of landings, has faced the most radical restructuring in recent years. This is the result of significant reductions in the fishing opportunities of the fleet.

The sector has faced severe reductions in quota and between1994 and 2004, North Sea cod and whiting quotas fell by almost 82%, plaice by 55% and haddock by 50%. The Scottish demersal fleet is now subject to further cuts in line with the Commission's Cod Recovery Plan. As well as cuts in quota, limits on effort have been introduced over the past few years. These restrict the number of days at sea that fishermen can spend and so limit their access to the resource. This, together with rising fuel costs have resulted in a decline in vessel income – particularly affecting crew share – and an increase in expenditure.

The following tables give further indication of the scale of changes experienced by the Scottish demersal fleet in recent history. Changes which have not yet run their course - a fact which itself has precipitated social uncertainty within fishing communities. Table 2.1 shows a continuing decline in key demersal stocks between 2000 and 2004 but a stable situation for pelagic stocks. However, these are also predicted to be subject to reduced quotas in the Commission's December 2006 announcements.

Table 2.1. Combined UK Quota for Key Demersal[1] and Pelagic[2] Stocks

Quota '000 tonnes	2000	2001	2002	2003	2004	% change 2000/2004
Combined key demersal stocks	210	159	186	128	141	-33%
Combined key pelagic stocks	285	290	282	276	277	-3%

1. Key demersal stocks are considered to be North Sea and West of Scotland stocks of cod, haddock, monkfish, whiting, saithe, plaice and Norway lobster.
2. Key pelagic stocks are considered to be North Sea and West of Scotland stocks of mackerel, herring and horse mackerel.

Source: SEERAD.

Table 2.2 shows that in the period 1994 – 2004, the number of fishing vessels declined by 42 in the <10m sector and by 559 in the >10m sector. This reduction was the direct result of two decommissioning schemes introduced in 1998 and 2002 to reduce overcapacity in the fleet.

Table 2.2. Scottish Fishing Vessels, 1994 - 2004

	<10m vessels	>10m vessels	<10m kW	>10m kW
1994	1 704	1 291	68 879	406 100
2004	1 662	732	85 343	342 889
Change '94 - 04	-42	-559	+16 464	-63 211

Source: SEERAD

These changes have wrought significant social impacts in the communities associated with the Scottish demersal fleet. A drop in the number of vessels, together with a trend for vessels to take fewer crew to sea, led to a 39% decline in onboard employment in Scotland between 1994 and 2004. In the same period, Northeast Scotland, the location of the most important fishing communities associated with the whitefish fleet, saw a reduction of 54%. The fleet is still considered to have excess capacity for the available resource, and restrictions on fishing are expected to stay in place until there is evidence that stocks have recovered in terms of spawning stock biomass and recruitment capability. Furthermore, a recent report from the UK Government's Prime Minister's Strategy Unit (PMSU 2004) suggests that a further 13% of the UK whitefish fleet's capacity needs to be removed.

Table 2.3 shows employment in the Northeast catching sector, Scotland as a whole, and the UK for comparison. It illustrates that the drop in fisheries employment in Northeast Scotland was most marked between 2002 and 2003, with a fall of 22%, as the full impact of vessel decommissioning and EU quota cuts took effect.

The decline in employment has slowed since that time and between 2003 and 2004 the number of Northeast fishermen dropped by just 3%, while the number of fishermen employed in Scotland as a whole remained almost constant. However, fishing remains vital to Northeast Scotland, which still accounts for 30% of the total fishermen employed in Scotland, and almost 14% of total fishermen employed in the UK.

Table 2.3. Employment in the Catching Sector, 1994-2004

Year	Northeast Scotland	Scotland	UK	Northeast as % of Scotland	Northeast as % of UK
1994	3 420	8 610	20 703	39.7%	16.5%
1995	3 217	8 395	19 921	38.3%	16.1%
1996	3 060	8 084	19 044	37.9%	16.1%
1997	3 096	8 194	18 604	37.8%	16.6%
1998	3 043	7 771	17 889	39.2%	17.0%
1999	2 767	7 330	15 961	37.7%	17.3%
2000	2 474	6 902	15 121	35.8%	16.4%
2001	2 438	6 637	14 645	36.7%	16.6%
2002	2 091	5 707	12 746	36.6%	16.4%
2003	1 640	5 276	11 774	31.0%	13.9%
2004	1 590	5 275	11 559	30.1%	13.8%

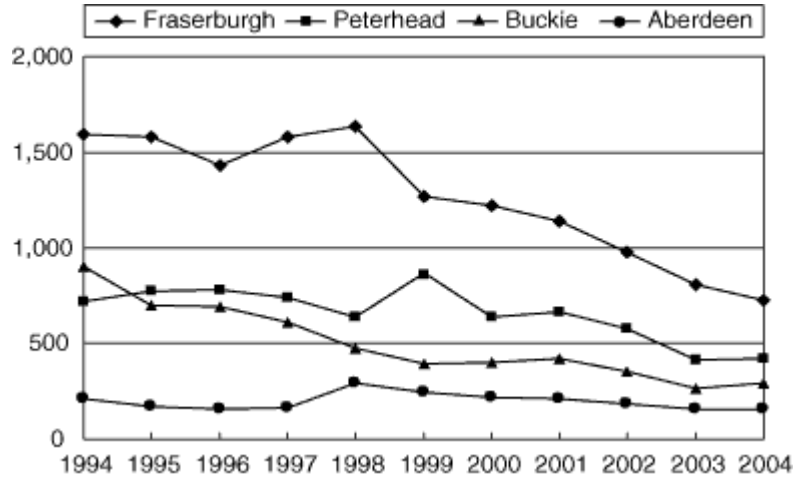
Source: Scottish Executive (www.scotland.gov.uk) and DEFRA (www.defra.gov.uk)

The Northeast of Scotland includes major ports in Fraserburgh and Peterhead and smaller fishing communities in Buckie and Banff. According to Scottish Executive

statistics, 29% of employment in the Fraserburgh area was directly dependent on catching, aquaculture and fish processing in 2004, making it the most fisheries-dependent area in Scotland. The figure for Peterhead was 14%, Buckie 11% and Banff 6%. If indirect jobs are taken into account, then Fraserburgh's dependency rises to 58%, Peterhead to 28%, Buckie to 22% and Banff to 12%.

Figure 2.1 illustrates the huge direct losses in employment suffered by these fragile communities between 1994 and 2004. Worst hit was Buckie with a 67% fall in fishing employment from 900 in 1994 to 293 in 2004. Fraserburgh suffered a 54% decline in fishermen employed, and Peterhead a 42% decline.

Figure 2.1. Employment by Fishing District, 1994-2004



Source : Aberdeenshire Council

Of the indirect employment provided by the fishing industry, jobs in processing account for a sizeable proportion. A 2004 survey of the UK processing industry by the Seafish Industry Authority showed that the Northeast of Scotland (Grampian in Figure 2) experienced a 6.5% decline in the number of fish processing employees between 2000 and 2004, from 4 712 to 4 406 full time equivalents (FTE). This compares with a 10.4% fall in Scotland overall and an 18.3% decrease in the UK.

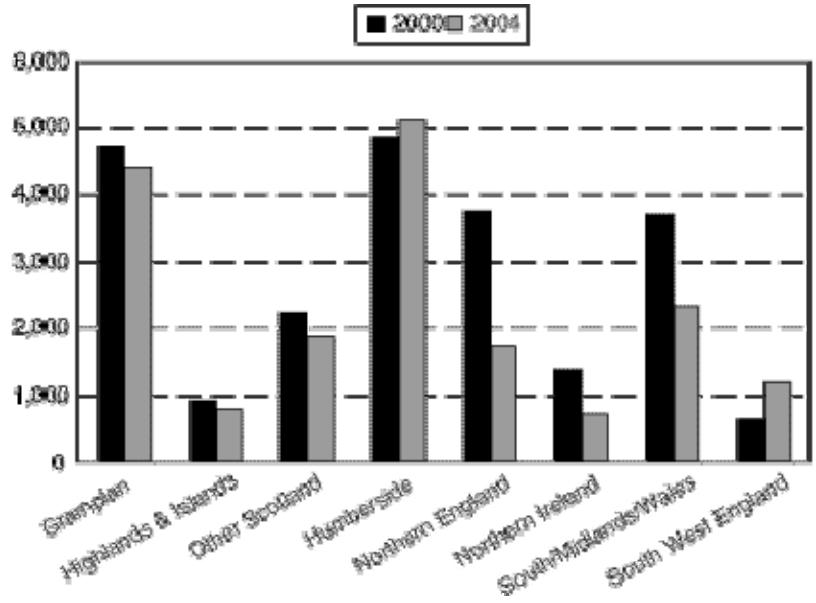
Despite this fall in employment, the area's share of the UK processing workforce rose from 21% in 2000 to 24.2% in 2004, making it the second largest UK contributor to full-time fish processing employment. However, this seemingly positive news has been accompanied by evidence of a weakening of the links between the fish processing sector in the UK and the domestic fishing fleet. What is missing from the survey is the nationalities of the employees, who are increasingly of Eastern European origin. This demographic change is inevitably having an impact on the social structures of the fishing industry and fishing communities in Northeast Scotland. The survey also fails to show the origin of much of the fish that is processed, an increasing proportion of which is imported. And, with imports brought in from sources that guarantee year round supply of a particular size, grade and quality, so the processors' interest in local supply diminishes further.

Such surveys also do not provide sufficient information about the diversity of impacts on employment of fisheries restructuring. A recent study by the School of Resources,

Environment and Society at the University of Aberdeen found a general decline in the number of registered unemployed people, but it also found pockets of high levels of unemployment in some remote fishing dependent communities. In contrast, in the larger fishing ports such as Aberdeen and Fraserburgh, the downturn in employment previously offered by fishing and related activities had been 'mopped up' by opportunities in the oil and gas industries or by the population (particularly young people) moving away from the area to find alternative employment. However, the research also found that areas with higher levels of population density exhibited higher high levels of deprivation.

These figures all serve to illustrate an important and ongoing economic dependence on the fishing industry in the Northeast of Scotland, with a concentration of dependence in Fraserburgh and Peterhead. However, even in these key ports the emphasis is becoming less concentrated on industry and this trend is more noted in the smaller ports that have suffered higher losses in employment. Interestingly, it has been suggested that for any location, a long-term relationship with the fishing industry generates socio-cultural characteristics, identities and dependencies that remain when the industry changes or leaves. These can be used as resources to mediate change and affect future development of communities (Brookfield, Gray and Hatchard 2005; Nadel-Klein 2003; Nuttall 2000).

Figure 2.2. Employment in Fish Processing (FTE), 200-2004



Source: 2004 Survey of the UK Sea Fish Processing Industry, Sea Fish Industry

In Northeast Scotland people who earn their living from fishing have traditionally been seen as a 'race apart', and part of an industry in an apparent state of 'perpetual crisis' (Nadel-Klein 2003; 2000, 363). However, Williams (2005) argues that traditional notions of community are being undermined by changes in industry. The evidence she provides for this was gathered during conversation with Northeastern Scotland fishermen and their families. Meanwhile, Nadel-Klein (2000:366), even before the most recent restructuring events, found that although fishers and their families have been used to

dealing with constant insecurity, the problems facing industry now as a result of significantly reduced fishing opportunities, are qualitatively different and pose a threat not just to the livelihood of each individual fisher and fisher household, but to the collective way of life and self-regard of an entire stretch of coast.

Maintaining industry

One of the main hurdles to maintaining a viable industry and continuing community traditions - given sufficient quota to catch - is a lack of trained personnel. According to Mike Park, head of the Scottish White Fish Producers' Association (SWFPA) the crew situation today compared with 20 years ago is significantly different. He explained that whilst the local college used to train 50-60 new crewmen every year, today the number of new entrants is in single figures and falling and this puts the viability of courses in jeopardy.

Children no longer follow their fathers and grandfathers to sea; instead they seek employment in the oil industry where wages are guaranteed and high, or move away from their fishing villages to seek work in the towns and cities. It would seem that young people are no longer interested in jobs that offer long hours, tough conditions and danger, and skippers find that even their existing crew is frequently tempted by better pay and conditions on oil and gas rigs. This problem is not unique to Scotland; it is happening in an even bigger way in Atlantic Canada, where whole generations are leaving to seek their fortune in the oil boom state of Alberta.

According to Mr Park, whilst fishing was once a family based activity with strong community ties and security, the young now choose not to prioritise those traditions and their places are filled with immigrant workers who have difficulty or are unwilling to integrate with the local community. He emphasises that this is no solution, as evidenced by the crumbling social structure of fishing communities and the increase in unemployment, disaffection and dissatisfaction, problems with drink and drugs and a general lack of discipline.

This problem is not unique to the fishing industry itself, but is mirrored in the seafood processing sector, which is also failing to attract sufficient young local recruits to fill vacancies. In Eyemouth in South East Scotland, Graham Sinclair, MD of crab processor Burgons of Eyemouth has been undertaking his own initiatives to encourage young people into the business by giving talks in local secondary schools and inviting visits to his factory to appreciate the nature of the processing industry. However, the main complaint is that the conditions are 'smelly' and cold and the work boring. Thus, a key challenge facing the fishing industry is one of how to make and sell itself as a viable attractive option for younger members of fishing communities at the very beginning of their working lives. These people would have a great deal to offer the industry in the future.

Williams (2005) found in conversations with fishermen that even where there was still willingness on the part of the younger generation to go into the industry, their parents were now inclined to dissuade them from such a career. She explains that whilst in the past going to sea was generally something to be looked forward to with anticipation and excitement, in recent times the enjoyment of the job has been severely undermined by rules and regulations. Fishermen have become anxious about the increase in regulations, the speed at which they change and the added administrative burden placed on them. There is also pressure to 'get everything right', with no room for error in the logbook that

could be construed as intentional rule breaking, with the result that criminal prosecutions could ensue. Breakdowns and gear problems are also increasing sources of anxiety, given the current restrictions on the number of days that can be spent at sea. Such increases in pressure are taking away job-satisfaction and leading to increasing problems of mental health amongst fishermen. Thus, the risks of entering fisheries as a career are perceived by many – both inside and outside of industry – as just too high.

The result of the regulatory, economic and demographic changes experienced by Northeast Scotland's fishing communities in recent years has been an increasing sense of despondency and low morale in fishing areas. There is also a great deal of uncertainty about how households are to move forward and make a future (Williams 2005). This uncertainty is reflected in a decline in investment in onshore businesses. In some coastal areas the conversion of harbours to marinas is undermining a tangible expression that places are or ever were fishing communities. Towns and villages that used to have a prosperous row of shops in the centre are now filled with boarded up businesses and an over supply of charity shops, mirroring the decline of the industry that built them. The decline also extends to ancillary businesses; to chandlers, engineers, boat building yards, fish sellers and transporters.

Thus, the general picture is that coastal regions are now facing a series of significant socio-economic pressures including unemployment, social instability, deprivation and economic competition. In an attempt to assess this situation, the University of Aberdeen's study investigated the broad socio-economic make-up of coastal communities, looked at the issues facing them, provided an overview of how the coastal population is changing its relationship with the sea, and suggested possible future directions for those communities.

Researchers found that little work had previously been undertaken towards providing a social, cultural and economic overview of Scotland's coastal communities, nor to catalogue any decline in traditional coastal activities or the emergence of new activity. However, despite this lack of socio-economic research information on Scottish coastal areas *per se*, a number of general rural studies showed that coastal regions have been subjected to a variety of demographic, economic and social changes related to the declining significance of the primary sector (fishing), the growth of flexible labour markets, an increase in the age of the population, in-migration and peripherality. The research concluded that the ability of coastal areas to overcome social disadvantage will be dependent upon an ability to develop effective local partnerships geared towards both improved social capital and economic growth. Two key examples the study identified were sectoral responses to economic change in Shetland and sustainable community development in several coastal areas including the fishing port of Eyemouth.

The North Sea

This situation is not exclusive to Scotland, but is mirrored in small fishing villages all round the North Sea, where similar cuts in TACs and quotas and restrictions in days at sea have all taken effect. Traditional links to fishing are being eroded and there is an urgent need to investigate the full dynamics and implications of the changing social and cultural make-up of fishing dependent coastal communities. It is precisely this type of research that the NSWN is seeking funding to undertake, in order to better predict the future of fishing communities.

After all, there is a future for these communities, albeit one that differs from their heydays of the past. And, as one industry leader informed, "I am sick to death of people always having a doom and gloom attitude to industry. It may be down, but it is not out, and some sectors - particularly nephrops - are doing well, with quotas on the increase." In addition, whitefish prices are currently high, with fishermen achieving a very good return for their efforts. It would seem that those left in the industry are finding a reasonable living.

The NSWN has members in Norway, Denmark, Finland, Sweden, Netherlands, France, Scotland, Ireland and Wales and those members work as active fishers, fishermen's wives, researchers and scientists or in ancillary industries. In working together, members of the Network have benefited from sharing their experiences. One particular example of successful adaptation to changed circumstances stands out.

In the Netherlands, Esmeralda Loos-Dekker is part of a family fishing for shrimp with a 24m beam trawler. Her husband is away for 10 days at a time leaving her to look after a young family and to undertake the on-shore tasks and paperwork associated with the fishing business. She was active in setting up Dutch women in fisheries association called VinVis, which now works closely with the Dutch Fish Bureau, the Ministry, and with fishing organisations. It acts as a voice for fishing communities.

However, not content with merely talking about potential future solutions to the decline in local port activity, Esmeralda became part of a small group that investigated the viability of setting up weekend fresh fish market with the help of Leader+ funding. Taking their example from similar public markets in France, the group decided to sell fresh fish to the public, to educate them about how to cook and eat it, and to educate children about fisheries and the sea. The Netherlands as a net exporter of fish and fish products is not a traditional fish eating country and Esmeralda realised that in order to promote sales, much work was needed.

The market began with a summer run in 2004 and was so successful that it now operates year round and is a new source of local employment. It offers fish landed fresh by local boats, with skilled filleters on hand to prepare the fish exactly as required by customers. Cookery demonstrations are a regular feature and encourage the purchase of different species. A cookbook has been produced and the market has begun to encourage other local food producers to take stalls on the market. The public can see how eels are smoked, how shrimp are boiled, visit a fishing vessel and see how nets are mended. In short, they can experience the realities of fishing for a living.

One unexpected result of the fresh fish market is that visitors regularly make the trip from Amsterdam, an hour away by car, to purchase supplies. Their numbers are growing and this has had a positive knock-on effect on the local economy. The initiative is still a resounding success and even received a visit from the Queen last year.

The North Sea Women's Network

The Dutch example is not unique – much positive work has been undertaken in Shetland for example. However the scale of its success is something the NSWN would like to see mirrored in many other declining fishing communities around the North Sea. This will require government policy to be sympathetic to the setting up of such initiatives, the development of national and regional plans to facilitate and encourage new ideas, and funding assistance as a priority to get them off the ground.

The NSWN works to promote changes in policy and in particular, to ensure that policy decisions at EU level take socio economic effects into account alongside biological and environmental factors. To this end, it has developed strong links with the new EU Economic Analysis Unit, portrayed before its setting up as a 'socio-economic' unit, yet 'socio' failed to appear in the title when the unit was set up in the autumn of 2005.

This unit is currently preparing a framework to ensure that environmental, economic and social impact assessment and analysis are carried out in a coordinated and timely manner, in accordance with the latest Commission guidelines. The framework under development will facilitate the rapid initiation and funding of both short and long-term economic and socio-economic studies, depending on the policies under consideration. A test case has just been undertaken with the STECF assessment of the proposed Long-term Management Plan for North Sea Flatfish and the NSWN was able to provide both considerable information on the community effects of those plans and supply a socio-economic expert to attend the meeting.

NSWN has also been active in providing NSRAC with a protocol for including socio-economic considerations in all its recommendations to the Commission and in undertaking a scoping study of Socio-Economic Aspects of North Sea Fisheries and Fishing Communities. This study proposed a dynamic overview of social and economic aspects of fisheries in the North Sea, an identification of the vulnerabilities of the fishing industry to changes in short and long-term fishing policy, and an examination of the factors and combinations of factors that contribute to both reliance on fisheries and resilience to changes in fisheries.

Funding is currently being sought to undertake this major project, which will collect data from ports around the North Sea and their associated fisheries sectors and communities, and analyse this to assess the current state of regional fisheries reliance and resilience. It will include the influence of imports and quayside landings, examine economic, social, cultural and environmental factors, and include qualitative and quantitative dimensions. The scoping study identified appropriate data types and sources together with methods for gathering and analysing existing research studies and data, and it is hoped to undertake a pilot project to firm these up in advance of the main study. Such research is deemed vital in light of the lack of coherent and cohesive socio-economic information found available when preparing a socio-economic assessment for the STECF flat fish management assessment.

Conclusions

In concluding this paper, whilst it is obvious from available data that the fisheries industry has been in decline over the past ten years, it would appear that this decline has now slowed and those remaining in industry are doing more than just surviving. However, the toll taken on fishing communities during this same period has been devastating and resulted in the breakdown of their social structure. Various studies have looked at particular aspects of that breakdown in terms of the decline in employment or the number of fishing vessels, in the mobility of the population or at the mental health of population sectors. What is needed now is a comprehensive review of the 'real cost of diminishing fishing effort in the EU' and this is something that the NSWN has firmly in its sights.

References

Aberdeenshire Council (2005), *Fisheries Statistics: Employment and Fleet Size*. Available: http://www.aberdeenshire.gov.uk/web/statistics.nsf/c55b907310fea2e741256652005a2a0d/ea6fd5acdcbb70b180256d27004ae65f/$FILE/Fish_mar05%20(emp).pdf.

Binkley, M., (2000) "Getting By in Tough Times: Coping with the Fisheries Crisis". *Women's Studies International Forum* 23(3):323-332.

Brookfield, K., T. Gray, and J. Hatchard (2005), "The Concept of Fisheries-Dependent Communities: A Comparative Analysis of Four UK Case Studies: Shetland, Peterhead, North Shields and Lowestoft". *Fisheries Research* 72 (1):55-69.

Coffey, C. (2000), "European Funding for Sustainable Development of Fisheries Dependent Regions. In: D. Symes (Ed.), *Fishing Dependent Regions, Fishing New Books*, Blackwell Science: Oxford. Pp. 164-173.

Davis, D. (2000), "Gendered Cultures of Conflict and Discontent: Living 'the Crisis' in a Newfoundland Community". *Women's Studies International Forum* 23 (3):343-353.

Cohen, A.P.(1987) "Whalsay: Symbol, Segment and Boundary in a Shetland Island Community". *Manchester University Press*: Manchester.

Daw, T., T. Gray(2005), "Fisheries Science and Sustainability in International Policy: A Study of Failure in the European Union's Common Fisheries Policy". *Marine Policy* 29(3):189-197.

Gerrard, S.(2000) "The Gender Dimensions of Local Festivals: the Fisheries Crisis and Women's and Men's Political Actions in North Norwegian Communities". *Women's Studies International Forum* 23(3):299-309.

Jentoft, S. (2000), "The Community: a Missing Link of Fisheries Management". *Marine Policy* 24(1): 53-59.

Marshall, J. (2001) "Connectivity and Restructuring: identity and gender relations in a fishing community". *Gender, Place and Culture* 8(4):391-401.

Nadel-Klein, J.. (2003), *Fishing for Heritage: Modernity and Loss Along the Scottish Coast*. Berg: Oxford.

Nuttall, M. (2000) "Crisis, Risk and Deskillment in North-east Scotland's Fishing Industry". In: D. Symes (Ed.) *Fishing Dependent Regions*. Fishing New Books, Blackwell Science: Oxford. Pp. 106-115.

Nuttall, M., and K. Burnett (1998), "The Negotiation and Management of Crisis in the Scottish Fishing Industry". In D. Symes (Ed.), *Northern Waters: Management Issues and Practice.* Fishing New Books, Blackwell Science: Oxford. Pp. 238-246.

Otterstad, O. (1996) "Sustainable Development in Fisheries: Illusion or Emerging Reality?" *Sociologia Ruralis* 36(2):163-176.

Pettersen, L.T. (2000) "Household Adaptations and Gender Differences in Inshore Fishing Communities in Northern Norway". In D. Symes (Ed.), *Fishing Dependent Regions. Fishing New Books*, Blackwell Science: Oxford. Pp. 82-91.

(1996) "Crisis Management and Household Strategies in Lofoten: A Question of Sustainable Development". *Sociologia Ruralis* 36(2):236-248.

Seafish (2003-2004) Survey of the UK Sea Fish Processing Industry, Sea Fish Industry. Key Features. Sea Fish Industry Authority: Edinburgh.

Strategy Unit (2004), Net Benefits: A Sustainable and Profitable Future for UK Fishing. Cabinet Office: London.

Symes, D. (2005), "Altering Course: Future Directions for Europe's Fisheries Policy". *Fisheries Research* 71(3):259-265.

(2000a), "The Future for Fisheries Dependent Regions". In D. Symes (Ed.), Fishing Dependent Regions. Fishing New Books, Blackwell Science: Oxford. Pp. 209-220.

(2000b) "Fisheries Dependent Regions: Scoping the Problem". In D. Symes (Ed.), *Fishing Dependent Regions. Fishing New Books*, Blackwell Science: Oxford. Pp. 3-14.

Williams, R. (2005) "Fishing Identities in 'New Times': Experiences from Northeast Scotland, Conference" Proceedings MARE International Conference People and the Sea III, Centre for Maritime Research, Amsterdam July 2005.

Woodrow, M. (1998), "A Case Study of Fisheries Reduction Programs During the Northern Cod Moratorium". *Ocean and Coastal Management* 39(1-2):105-118.

PART II

HOW GOVERNMENTS ARE ADDRESSING LABOUR ADJUSTMENT: THE FISHING SECTOR

Chapter 3

Restructuring and Adjustment in Canada's Fisheries Labour Market: The Learning Experience (1992-2003)

Gorazd Ruseski, Fisheries and Oceans, Canada

Introduction

Canada has the longest coastline in the world and Atlantic groundfish and Pacific salmon, have supported the economies of Canada's coastal communities for centuries. For many of those communities, whether originally populated by aboriginals or European immigrants, their "raison d'être" was the fishery.

The last decade of the 20th century and the first few years of the 21st century was a tumultuous period for fisheries management in these two most important fish stocks. The conservation measures, including complete fishery closures, put in place by Fisheries and Oceans Canada (DFO) to protect those stocks, led to a number of Government initiatives with varying success rates, which sought not only to address harvesting over-capacity issues, but more importantly to deal with the economic and social survival of those coastal communities and the people that had depended on those fisheries for their livelihood. The fishery is the only industry in Canada for which the federal government has full jurisdiction.

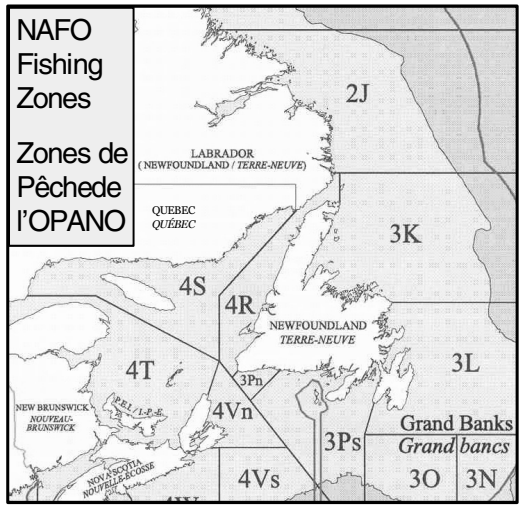
In late 2002 and early 2003, scientific assessments confirmed that Canada's Atlantic cod stocks were declining in fishing zones 2J3KL, 3Pn4RS, and 4TVn in the Atlantic and Gulf of St. Lawrence (see Figure 3.1) and, that despite previous efforts to sustain these stocks, this decline would continue. The Minister of Fisheries and Oceans felt compelled to announce a complete and long-term shutdown of these three fisheries. A package of adjustment measures was needed for the affected individuals and communities.

In the previous 10 years, Canada had been forced to develop a number of strategies (see Table 3.1) to respond to collapses in significant fishery stocks which had resulted in fishery closures and quota reductions. During that period capacity reduction, restructuring and adjustment programming had taken numerous forms. They included not only licensing policy and other fisheries management changes but also; the provision of income support, counselling, training, mobility supports, early retirement for older fishers, licence buy-outs, as well as funding for economic development and short term job creation for affected communities. These programming measures, delivered in several combinations and with significant levels of funding, had been the subject of much debate

by politicians, bureaucrats and by those in affected fishing communities and were deemed to have had varied success rates.

Thus, there was much discussion on what the appropriate federal response should be to the 2003 closures. The approach for the 2003 closures would need to be fiscally responsible, deal with individual and community needs of a long term closure, and build on the lessons learned from previous programming.

Figure 3.1. NAFO fishing zones (2002-2003)



Those lessons had been learned through the delivery of programs with expenditures in excess of CAD 3 billion for adjustment and economic development assistance for fishing communities on both coasts from 1992 to 2001. A large portion of those funds were directed at passive income support and at licence retirement, and many fishery managers, officials and politicians felt that this approach did not fully address the longer-term challenge of preparing individuals and their communities for alternate employment, and failed to break the dependence on the fishery.

Furthermore, license retirement and passive income support for fishery workers had set a precedent for Canada's federal government to respond to declines in other resource sectors, creating an expectation that the federal government would underwrite risks in these resource sectors too. Providing additional significant fiscal investment in these types of programs, both officials and politicians agreed, would detract from the broader move towards a fishing industry able to self-adjust and maintain viability.

In particular, the federal government had learned from the previous decade, especially through the Northern Cod Adjustment and Restructuring Program (NCARP) and The Atlantic Groundfish Strategy (TAGS), that not only did the provision of short term income support to affected individuals work against adjustment, but that it was a strategy that was very difficult to exit from. In fact, the significant costs and lack of adjustment success of investments in direct income support measures in the 1990s, caused the federal government to make policy changes that removed it as a tool that could be utilized in this latest fishery closure.

Also complicating the decision making process in 2003 was the fact that historically, not only fishery workers and their communities, but also the public and the bureaucracy,

looked to Fisheries and Oceans Canada (DFO) for programming solutions to respond to fisheries closures.

DFO, therefore, argued strongly that it did not have the federal mandate to provide restructuring and adjustment measures, and that beyond fisheries management and licensing policy measures, it did not have the necessary tools to provide assistance to those impacted by the closure. The lessons from previous programming clearly indicated that the responsibility for, and the delivery of, the most fiscally responsible and effective long-term measures lay with other government departments and agencies. The tool kit to respond to these closures required a whole of government response, which used the expertise and programming options of the federal government's Human Resources Development Canada (HRDC) (now called Human Resources and Skill Development), Canada's Atlantic Canada Opportunities Agency, the economic development agency for Quebec (CEDQ), the agency for Western Economic Diversification (WED) and of provincial governments.

Challenges in Fisheries Adjustment

Restructuring any industry, either as a result of employee reductions or a full industry closure, creates problems and challenges not only those for those individuals directly affected, their families and their communities, but also for those behind the restructuring, whether it be large corporations or governments.

Challenges for the Federal Government

A difficulty for politicians and bureaucrats in designing adjustment policy and program options is that successful adjustment relies mainly on the state of the resource and vibrancy of the economy, both of which are largely out of their control. Furthermore, government labour market adjustment policies and programs are typically a dynamic blend reflecting multiple and often changing sets of objectives and priorities. In designing adjustment programming there will often be a conflict between those whose responsibilities focus on the human side of adjustment and those whose focus is on the fiscal side, seeking measurable results and value for money. Experience has shown that achieving satisfactory results for both is very difficult.

The fishing industry is different from most other industries in that decisions to reduce capacity or close fisheries are usually made for conservation purposes, not economic ones. Political pressure from fishers and their communities to keep fisheries open (social and economic considerations versus conservation) is usually unrelenting. While governments typically provide constant scientific stock monitoring, and discussions on stock status between resource managers and fisherman's organizations are usually ongoing, decisions to close fisheries or make substantial quota cuts are usually only taken by both bureaucrats and politicians at the last minute, when no other options are available. This often leaves a window of less than six months for officials to develop policy options and programs for consideration by politicians. Therefore, there is, as witnessed by Canada's early efforts in adjustment, potential to make design mistakes.

Individual and Community Level Challenges

In Canada, not only are fishing communities usually situated in coastal, single industry towns, but the industry itself is often species specific and usually seasonal for

both fishers and plant workers. Fishing income is most often only a portion of all income, and these fishing communities are often dependent to some degree on unemployment/employment insurance (UI/EI) or other government assistance, as well as earnings from other employment. Any restructuring response must fully consider the role of existing government assistance in lifestyles.

In smaller communities particularly, the fishing industry often employs more than one member of a family, males most often in fishing and women either in processing plants or, as employees of the fishing enterprise, where they can also gain eligible weeks of employment to qualify for UI/EI. Adjustment is not an individual challenge but a family one. Often a fishing enterprise is inter-generational, sometimes with three generations dependent on a single fishing licence for their livelihood. Education levels are often low as young people are lured into the industry by regular income and pressure to add to household earnings, and as a result, skill transferability is low. Attachment to the fishery is usually historic and looked on with a sense of independence and pride. There is often a strong resistance to leave the community.

Delivering Fisheries Adjustment Programming

Canada's experience has been that restructuring in resource sectors, specifically the fisheries sector, is extremely complicated. In many sectors, industry layoffs and closures are planned and announced years in advance and there is an opportunity for industry leaders and government to work together to develop a full range of adjustment measures. Packages (financial, early retirement, retraining) are negotiated with unions and reductions are often phased in over months or years, the mining industry or the auto industry are good examples. In other sectors where layoffs have been unexpected and swift, such as the structural changes in the high tech sector in 2002, most companies had the financial capacity to provide large cash-outs and the highly educated employees, mostly located in urban centres, were easily integrated into the general work force.

The choices for developing adjustment measures in resource sectors are limited, because the development of the resource has often created single industry towns which are almost totally socially and economically dependent on the resource. Most natural resource industries are developed in rural, often remote, isolated communities where other employment opportunities are limited or non-existent. In many cases there are limited government service centres in the immediate area, certainly not the full complement of services that the delivery of a multi-tiered adjustment strategy requires for implementation. Governments require innovative ways to deliver services, a one size fits all approach does not work and departments must be flexible in their approach to service delivery.

Restructuring Initiatives 1992-2001

Between 1992 and 2001 as a result of quota cuts and fishery closures, Canada delivered four major restructuring initiatives in Atlantic Canada, and two in the Pacific. The programming and funding provided was in addition to the regular federal programming that was available to individuals and communities.

During this period, however, the restructuring initiatives gradually moved away from passive labour market programs (*e.g.*, employment insurance) and a greater emphasis was placed on active labour market programs (*i.e.*, early retirement and retraining).

Table 3.1. Restructuring Initiatives (1992-2001)

Programme	Funding Levels	Departments	Initiatives
Northern Cod Adjustment and Recovery Program (NCARP) 1992	CAD 920 M	DFO HRDC	Income Replacement, Licence Retirement, Early Retirement, Vessel Support
Atlantic Groundfish Adjustment Program (AGAP)1993	CAD 384 M	DFO HRDC	Short-term Job Creation, Counselling, Training, Early Retirement, Community Development
The Atlantic Groundfish Strategy (TAGS) 1994	CAD 1.9 B	HRDC DFO ACOA	Income Support, Active Measures Early Retirement, Harvesting Capacity Reduction, Economic Development, Administration
Canadian Fisheries Adjustment and Restructuring (CFAR) Program 1998	CAD 730 M	DFO HRDC ACOA CED-Q	Lump Sum Cash Payout, Active Adjustment Measures, Licence Retirement, Early Retirement,Community and Regional Economic Development
Pacific Salmon Revitalization Strategy 1996	CAD 80 m	DFO	Licence Retirement
Pacific Fisheries Adjustment and Restructuring (PFAR) 1998	CAD 400 M	DFO HRDC WED INAC	Licence Retirement, Vessel Tie-up, Selective Fishing, Fisheries Diversification, Community Economic Development, Recreational Fisheries Loans, Tourism

DFO- Fisheries and Oceans Canada
HRDC- Human Resources Development Canada
ACOA- Atlantic Canada Opportunities Agency
CED-Q- Canada Economic Development—Quebec
WED- Western Economic Diversification Canada
INAC- Indian and Northern Affairs Canada

Program Design

Those responsible for designing adjustment programs must ensure that a full range of real opportunities are made available to those adjusting. They must be sensitive to the political realities that retraining and mobility options are not always palatable for some segments of the population, especially older workers. Furthermore, heavy investments on the supply-side of labour force adjustment, without some more meaningful effort to create jobs that are accessible to the adjusting population, will not pay off over the longer term. This view is particularly relevant in areas of high structural unemployment such as Canada's coastal communities and much of the failure in Canada's first responses to the groundfish collapse was due to a lack of adequate investment in economic development and alternative job creation.

Determining who qualifies for adjustment measures is most challenging. The human side of adjustment creates pressures to be inclusive while fiscal responsibility creates pressures to be exclusive; a balance must be found. There must be a clear policy basis for program design (*e.g.*, economic impact analysis; assessment of number and nature of fishermen, plant workers, vessels and licenses that can be sustained). Understanding the client base is critical for those involved in policy and program design. A clear analysis of how people fundamentally exist in their current socio-economic milieu is mandatory to understanding how people will react to change. The design of eligibility criteria for programming, especially if income support is involved, is very important and if historic attachment to the fishery is a criterion, defining how it will be demonstrated must be well

thought out; errors are costly both financially and politically. In early the early stages of the groundfish collapse, Canada's design of eligibility criteria significantly underestimated the number of fishery workers who would qualify for programming, requiring significant new investments, creating major policy changes, and affecting adjustment results. Under The Atlantic Groundfish Strategy (TAGS) it had been expected that 25 000 fishery workers would qualify. In fact, the design allowed almost 40 000 to qualify for an average entitlement of 220 weeks of income support with an average weekly benefit of CAD 228. It was very difficult to get people to adjust out of the program and budget costs for income support could not be sustained under the original design.

There also must be assurances that the large numbers of new clients entering a system do not overwhelm the available human resources required to provide the adjustment measures. In large fishery closures, such as Canada's Atlantic Groundfish fishery where 40 000 workers were affected, government agencies must assure they have the administrative and financial capacity to identify, process, and track individuals. Often data bases that were not originally designed to work together are forced to be integrated, as in the case of fisheries licensing data and income and EI data.

On the administrative side, it is imperative that the proper legislative authorities are in place for making payments and delivering programming and that advice is sought from legal counsel on other appropriate issues. In a post program review, Canada's Auditor General suggested that Fisheries and Oceans Canada did not have proper authority to deliver some programming elements. Officials should ensure that a good management control framework is set up; regular reporting on results, using appropriate indicators and that finance officials are involved in program design and delivery to ensure that appropriate financial controls and systems are established. Canada's first response to its northern cod collapse was hastily designed and many controls were not in place, creating overpayments and payments to ineligible recipients.

When budgeting, in order to be responsive, setting nominal rather than fixed budget figures for individual program elements allows senior managers to have the flexibility to move funding between programs without returning to Ministers for permission, which can be time consuming and delay the ability to address changing dynamics. Under TAGS, when income support funding pressures threatened the program, managers were able to move money from other elements giving themselves time to create new policies and longer term solutions.

Furthermore, in costing the permanent adjustment program elements designed to lead to economic self-sufficiency outside the fishing industry, policy makers need to ensure that objectives are reasonable and can be accomplished within the resources and the life-span of the proposed program. To benefit from training for alternative occupations, for example, many clients in the fishery will need academic upgrading, and their education and training needs could carry beyond the life of the program, requiring expenditure levels exceeding the projected resources.

Rebuilding regional economies is expensive, difficult, and requires real opportunities that often do not exist in isolated, rural communities. Governments are often not prepared for, and do not have the capacity to respond to, crises in the resource sectors with their existing programming. The tool box has to be flexible and governments have to recognise that extraordinary expenditures may be required. Successful economic development usually requires partnering and in Canada, provincial and local governments along with

community groups and affected stakeholders played an important role in ensuring that investments were reasonable and sustainable.

Unemployment Insurance/Employment Insurance (UI/EI)

Understanding how affected fisheries workers have traditionally made use of UI/EI and related programming, and how adjustment measures will impact that use and the corresponding incomes of individuals and families, is incumbent on policy makers as programming is designed. The ease of accessibility to UI/EI fishing benefits has been identified as not only contributing to fishing overcapacity and continued dependency on income assistance, but as a barrier to adjustment. Canada's experience has been that policy makers may need to consider changes to UI/EI fishing benefits policy within any long term horizontal public policy strategy to improve the sustainability of the fishery. Those changes, however, are often politically sensitive, can impact on the sustainability of rural economies, and are very difficult to make.

Mobility issues are very important in adjustment programming and out-migration can be destructive to communities where other local economic opportunities do not exist. It is estimated that many Newfoundland communities lost up to 20% of their populations, much of the 18–35 age group during the ten years of fisheries unrest (1992–2002). One of the positives of UI/EI benefits is that the ability to qualify regularly can be an attractive alternative to out-migration.

Early Retirement

Early Retirement programs are often criticized because they represent a passive approach to assisting older workers adjust to economic and structural change. They are designed to provide older workers with financial assistance, either to bridge the gap between a job loss and re-employment when EI benefits have been exhausted, or to ensure that they are provided with sufficient income until they become eligible for old age retirement benefits. Income support measures have been found to be significantly effective for ensuring an adequate standard of living among unemployed older workers. Evaluations of income maintenance programs suggest that these approaches have enabled older recipients to enjoy a greater income than unemployed non-recipients, and have reduced the financial hardships associated with a job loss. Income support programs for older workers were; however, found to create disincentives for re-employment. These benefit packages appear to have discouraged older workers from participating in training, re-skilling, and/or adjustment services, thus reducing their potential for re-employment.

An evaluation of Canada's Program for Older Worker Adjustment (POWA), which was the model for fishers and plant worker early retirement, measured the post-layoff labour market and lifestyle experiences of over 1,000 program participants compared to a group of over 600 non-participating laid-off older workers with similar characteristics. The evaluation concluded that POWA functioned primarily as a passive support strategy, which provided much needed financial support to unemployed older workers who had exhausted any severance and EI benefits. Perhaps understandably, given their average age and employment histories in low-skilled industries, participants had little interest in training. Only ten per cent or less of workers in both the participant group and the comparison group took formal training lasting more than 40 hours following their layoff. The evaluation concluded that POWA was a disincentive to labour market participation.

Offering early retirement for older workers as part of an adjustment package, can be a reasonable alternative investment to mobility since it provides the economic base that allows older displaced individuals to stay in the communities, pay taxes and sustain the community. Furthermore, it has declining costs the closer the beneficiary gets to 65 (in Canada old age benefits begin at 65) and with the right criteria, such as disposal of fishing licences, it guarantees permanent adjustment.

One of the primary labour market problems encountered in many rural communities is the increase in the proportion of older workers relative to the number of available employment opportunities. Policies, such as early retirement programming, that compensate unemployment and provide disincentives for older workers to retrain and seek re-employment, and whatever other drawbacks they may have, can represent a viable means for making room for younger workers.

License Retirement

The value of licence retirement as an adjustment tool has been the subject of much discussion in Canada despite its frequent use. During the 1990s, Canada spent approximately CAD 550 million to remove licences in both the groundfish and salmon fisheries. The number of licenses in the Atlantic groundfish fishery was reduced from just over 17 000 to about 10 800, a 36% reduction. In the Pacific salmon fishery, there was a licence reduction of about 50% from 4 397 in 1995 to about 1 900 in 2000.

The design of licence retirement programming can be difficult. Policy makers need to be cautious when identifying targets and ensure that any targets for licenses, including price averages, the retirement of fishers, or capacity, are likely to be attainable and are not unduly rigid. Eligibility criteria are important to ensure that targeted fishers are eligible and apply.

It is very difficult to measure the success of licence retirement programming as both a capacity reduction and adjustment tool.

First of all licence retirement is very expensive as it recognizes that most fishers will not exit or will delay adjustment without adequate compensation. Liberal licence transfer policies in Canada have resulted in most fishers relying on the value of their licence as a source of pension; even in difficult times, these licences have had value, including when the original licensing fee was low.

Setting licence retirement values in Canada has been a difficult process and experience has been that offering a flat rate is the least acceptable policy choice to fishers as it does not reflect key variables, such as vessel size, catch history or historic earnings.

Canada has had the most success with a voluntary, multiple round, reverse auction process where fishers set the value they will accept to retire the licence, and regional review boards managed by fishing industry representatives, evaluate bids of comparable price against a number of factors. The multiple round process allows a first round to send key messages about acceptable bid values, and taking bids over an extended period allows for the purchase of licences by government when their values are lowest. The last successful groundfish retirement process in Newfoundland lasted almost 3 years and took 12 rounds of bidding. In contrast, in the Pacific salmon program in 1998, in the first round, the management board accepted only a few bids, clearly messaging acceptable prices. In two additional rounds it was able to meet its fleet reduction targets within budget.

Canada has now established a number of precedents in setting the value of particular licences in licence retirement programming and within the voluntary reverse auction process, the price of licences on enterprises of certain size with a certain catch history has been established. It is worth noting that, in Canada, the net cost of buying back a licence is less than gross cost, as fishers have been required to pay capital gains tax on the amount received. Furthermore removing licences with permanent exit criteria has shown to lead to fewer Fishers' EI claims (saving from CAD 2 300–CAD 10 400 per claimant/season).

Because fishery closures are often species specific, resource managers and officials involved in developing capacity reduction and adjustment measures must ensure that the policies developed do not entice those affected to redirect fishing effort and place undo pressures on other stocks. In Canada, licence and early retirement programming required the disposal of all licences and permanent exit from the fishery. Adjustment programming often requires that a complimentary broader fisheries management policy is in place to set the context for the restructuring initiative and that the implications for existing programs are addressed (*e.g.,* funds for fisheries enforcement preventing re-entry).

Many fisheries managers continue to argue that licence retirement does nothing about capacity reduction and that 10% of the fleet can still catch 100% of the quota. Many others argue that if a fishery is closed there is no need to buy out licences that an extended closure will force adjustment and that funds are better spent on retraining, job creation, and new economic development.

What is known is that with the proper criteria, such as the requirement for permanent exit and disposal of other licences, fisheries managers can assure that fishers will not remain in the fishery and redirect their fishing efforts putting pressure on other viable or threatened stocks. Regrettably, even with large licence buyouts, there is no guarantee that individual licence holders can find employment outside the fishery and be successful in their communities.

Timing and Communication

It is necessary for decision makers who manage the fisheries to have an open and constant dialogue, not only with those whose livelihoods will be affected by capacity reduction or closures, but with other governments and agencies who will have a role in providing adjustment programming. There must be a clear understanding by all involved of both the extent of the conservation problem and the objectives of the restructuring measures that will be taken. Targets should be clearly set and fully communicated. It is important that all parties understand the science around stock assessments and recovery rates, and that the message be communicated and continually reinforced. Optimism is a major barrier to adjustment. As verified by Canada's experience under both NCARP and TAGS, people will delay decisions if there is any hope that the resource will recover.

Also, there must be frequent communications between Government departments, as well as between regional Government offices and headquarters as programming roles out, because failures to recognize or respond to problems in one area can have major impacts on other program areas.

The announcement and timing of large quota cuts or fishery closures must be well thought out. Announcements, to be most effective for conservation purposes, are generally made immediately before a season. This creates a situation where most fishery workers and their families will have no immediate source of income and most will have

expired seasonal unemployment benefits. Without a clear strategy for short-term job creation that will allow workers to re-qualify for UI/EI benefits, there will be immediate demands for income support. As Canada's case history for Atlantic groundfish demonstrates, passive income support can be very costly and a barrier to adjustment. Furthermore, when announcements of closures take place immediately before a season, many fishers will already have incurred significant vessel start up costs. Governments must be prepared to respond to demands for compensation, to assist with vessel tie up costs (moorage and insurance), and requests to waive or reimburse licence fees when no season exits as was the case in the Pacific Salmon fishery.

The 2003 Cod Closure

In the 2003 closure, analysis had shown that impacts would be most acute in the provinces of Newfoundland and Labrador and in Quebec. Using the location of plant and harvester concentration, the provincial breakdown of impact was estimated at 60% Newfoundland and Labrador, 30% Quebec, and 10% New Brunswick and Nova Scotia. An estimated 700 plant workers were expected to lose their jobs; an additional 700 would lose Employment Insurance (EI) eligibility, and an estimated 16 plants would close. Approximately 1 600 fishers would fail to earn sufficient fishing income to qualify for future benefits. The ability to earn income derived from fishing or processing would be insufficient to maintain access to EI and to maintain a living wage for up to 3 000 people. Estimates showed that a closure could result in annual gross domestic product (GDP) losses of CAD 43 million in the province of Newfoundland and Labrador and CAD 15 million in Quebec

Because of reduced Total Allowable Catch limits, as a result of previous conservation measures, in 2000 in Newfoundland and Labrador, the <65' fleet caught CAD 6.45 million worth of fish, of which CAD 2.2 million (34.1%) was cod from the affected stocks. Cod fishers in the affected areas were licensed for groundfish, and had permission to catch cod. Fishers who wish to pursue other fishing opportunities to which they traditionally had access, such as Atlantic halibut, turbot, and other flatfish, were to be permitted to do so and could continue to purchase their licences; however, fixed gear licence holders would have few options to remain in the fishery as those other groundfish stocks, including other flatfishes, lumpfish, pelagics (herring, mackerel) and lobster provided only very modest catches. These vessels did not have the size or the technology to fish outside their area, or for other stocks such as shrimp. Core fishers who did not wish to participate in the groundfish fishery during the cod closure would not lose their licence privileges; however, non-core fishers[1] who decided not to renew their licences lost their privilege, as per DFO's licensing policy.

The greatest impact would be experienced by the most highly dependent fishers, many of whom held non-core status. This population was characterised by lower average incomes and higher dependency on government transfers. Consequently, closing access to

1 In the mid-1990s, licences associated with inshore (<65') vessels were split into core and non-core designations. Core fishers are considered to have a longer and greater attachment to the fishery. Core fishers receive priority status for new vessel-based licences. Licences can be re-issued between core members. To retain core status, a fisher must keep at least the number of key licences that was needed originally to qualify for core status. Non-core licences are not transferable, and are terminated when the licence-holder retires.

the cod fishery for highly dependent non-core fishers substantially reduced already marginal incomes.

The most affected communities were concentrated on the west coast of Newfoundland, southern Labrador, Quebec's Lower North Shore and Gaspésie peninsula. Some were rural, some remote, some have no roads, and all would face increased economic and employment challenges as a result of these closures. The economic situation in some of these communities would be further exacerbated should there be closures of other fisheries or industries upon which they depended.

HRDC data indicated that many affected fishers were older and highly dependent on EI. While most EI recipients were most likely eligible for Canada's EI Part II benefits (*i.e.* training, self-employment, counselling), past experience in Newfoundland and Labrador showed that only between 12% and 15% of individuals receiving EI benefits actually took advantage of these programs. It was hoped that with an announced long-term fishery closure more of these workers would decide to access this programming. It was also expected that some people would find that they had no other viable option but to go on provincial social assistance. The impact of a severe economic shock would have both immediate and long-term implications for these individuals and their communities.

Canada's Adjustment Tool Kit

In developing the 2003 response, Fisheries and Oceans Canada argued successfully that it did not have the tools to deal with the closure and should not have a lead role in providing programming. It did agree to provide data and analysis where possible. After extensive discussion between key federal departments, including Canada's central agencies (Finance, Treasury Board and Privy Council Office), it was decided that Human Resources Development Canada and the regional economic development agencies would have the lead roles in program delivery.

At the time the following program options were available for individuals and communities.

Human Resources Development Canada

Human Resources Development Canada had in place a number of programs under the authority of the Employment Insurance (EI) Parts I and II to temporarily support eligible workers who lost their jobs.

Under Part I of the *Employment Insurance (EI) Act*, assistance was available to displaced fishers and plant workers who could establish a claim for EI benefits based on the winter fishery or other employment. Under the provisions of the *Act*, eligible self-employed fishers were able to receive up to 26 weeks of fishing benefits based on earnings during a 31-week qualifying period. Salaried fishers and fish plant workers could receive up to 45 weeks of income benefits, depending upon the number of hours worked over the previous twelve-month period and the local unemployment rate.

The Work Sharing While Learning (WSWL) initiative targeted companies undergoing restructuring to deal with production slowdowns outside their control. It endeavored to prevent layoffs by encouraging company investment in employee learning and re-skilling. Under WSWL, employees on a reduced work week were able to collect EI Part I benefits on non-work days if the employer arranged for employee training to occur as required to support the company's restructuring plans. The Province of

Newfoundland and Labrador was interested in exploring how the program would have application to the affected fish plants.

Under the terms of Part II of the *EI Act*, individuals receiving EI benefits or who previously received EI benefits (had an EI claim that ended in the past three years) could be eligible for assistance under the Employment Benefits and Support Measures. More specifically, under this programming, assistance was available to help individuals prepare for, obtain, and keep other employment by providing them with services, such as, employment counselling which may include prior learning assessments, career testing (*e.g.* of essential skills), information on how to find a job, available employment opportunities and future demand occupations. In the Newfoundland region, a significant third party service delivery network of counselling services assisted workers in making career decisions. While the network would require additional resources, it was well positioned to deal with affected workers in various communities.

Eligible individuals requiring literacy instruction, upgrading and re-skilling for other occupations, could receive financial assistance to help pay for the cost of upgrading and skills development and related expenses, while they are enrolled in an approved training program. Newfoundland and Labrador has 16 community colleges and a network of private training institutions that can provide this assistance. As well, financial assistance was available to cover living away from home costs while undergoing training.

For eligible individuals interested in self-employment opportunities (*e.g.*, micro businesses), financial support and assistance in business planning was available while they got their business started.

The Labour Market Partnerships (LMP) Support Measure was a tool for employers, communities and community organizations to identify human resource and labour market requirements and develop plans to address them. LMP funded activities could support community planning activities for longer-term diversification away from the fishing industry.

Canada's EI Part II programs are delivered within the framework of Labour Market Development Agreements (LMDA) that have been negotiated with all provinces and territories except for Ontario. In co-managed agreements (*e.g.*, Newfoundland and Labrador, Prince Edward Island and Nova Scotia), there is joint decision-making and priority setting, combined with federal delivery. In full transfer agreements (*e.g.*, Quebec and New Brunswick), the provinces have sole decision-making authority and delivery responsibilities for similar measures.

Approximately 90% of the 2003 affected individuals resided in Newfoundland and Labrador and Quebec and most, or all, would be eligible for EI Part II programming. For 2003-2004, the EI Part II allocation for Newfoundland and Labrador and Quebec was CAD 130 million and CAD 598 million respectively.

The Youth Employment Strategy (YES) offered wage subsidies to employers who created meaningful work experiences for unemployed and underemployed youth. YES also provided funding to organizations that developed work opportunities in community service projects for youth at greatest risk for unemployment. It was estimated that approximately 10% of affected fishers and workers were youth.

The Older Workers Pilot Projects Initiative (OWPPI) allowed, on a cost-shared basis, HRDC to explore with the provinces, innovative ways to assist older Canadians, (normally between 55 and 64 years of age), who are unemployed or threatened with

unemployment, and who may be facing special challenges, because of their age, to reintegrate into the labour market. OWPPI projects are designed, developed, and evaluated by the provinces. The Province of Newfoundland and Labrador indicated that there were opportunities to assist workers affected by the closures through this initiative.

The Atlantic Canada Opportunities Agency (ACOA)

ACOA had two programs that supported community economic and business development priorities of Atlantic Canada; the Business Development Program (BDP) and the Strategic Community Investment Fund (SCIF). From 1998 to 2002, these programs had invested CAD 15 million into the affected areas in Newfoundland and Labrador.

The BDP provided assistance to small and medium-sized businesses in Atlantic Canada to start-up, expand, modernize, and become more competitive. Non-profit organizations that provided support to the business community could also qualify. Most business sectors were eligible except retail/wholesale, real estate, government services, and services of a personal or social nature. Eligible activities included business studies, capital investment, training, marketing, quality assurance, and not-for-profit activities that supported business in the region. Assistance was also available to help bid for and acquire public and private procurement contracts or to develop an innovative product or service.

SCIF was one element of a CAD 700 million Atlantic Investment Partnership (AIP), announced in June 2000. This CAD 135 million five-year initiative focused on projects that enhanced and expanded economic infrastructure and capacity, particularly projects that enhanced a region's capacity for innovation and knowledge-based opportunities, or which otherwise enhanced a region's capacity to affect greater trade and investment opportunities. SCIF specifically targeted non-commercial initiatives that benefit a community or group of communities. Eligible recipients include non-commercial/not-for-profit organizations. Project funding under SCIF was not to exceed 80% of the eligible costs. Financial assistance under this program was in the form of a non-repayable contribution. The Program became operational on June 22, 2001, and the early response indicated that demand would exceed the available funding. It was estimated that the demand for this initiative in Atlantic Canada to 2006 could easily reach CAD $270 million.

Canada Economic Development for Quebec

CED-Q also had two programs that supported community economic and business development priorities for Quebec; the Program of Assistance for development of Small Medium Enterprises (IDEA-SMEs) and the Regional Strategic Program (RSI).

The IDEA-SMEs provided assistance to small and medium Quebec enterprises. This program primarily targeted enterprise development. Its goal was to foster business growth by facilitating, among other things, access to relevant information, awareness of development issues, establishment of strategic enterprises and consolidation of their competitiveness through new business practices, innovation and marketing.

The RSI program supported the development and implementation of regional strategies and actions plans. Its goal was to foster the creation of a socio-economic environment conducive to economic growth and to enable Quebec regions to fully realize their economic potential, leading in the long-term to lasting improvement in prosperity

and employment. The program was used to support major initiatives that were likely to have a strategic impact on the regional economy, in response to major regional issues identified through local consultation, dialogue and mobilization. Among other things, the RSI provided assistance to improve the use and adaptation of appropriate technologies, to attract investment, tourism and international activities.

The 2003 Response

Regular HRDC programming focused on individuals' long term labour market needs, while Canada's Regional Economic Development Agencies' programs were directed at long-term economic development. It was felt that, while comprehensive, neither programming was designed for or flexible enough to offset the severe, short-term, consequences of situations such as this sudden closure of the fisheries. Under their terms and conditions at the time, these programs were unable to respond to the immediate needs of people affected by the fishery closure. It was determined that new short-term measures and resources were needed to address gaps.

In April of 2003, the Government of Canada outlined a CAD $50 M four-part action plan to assist individuals and communities most affected by the closure and to expand scientific research into the serious decline of these stocks.

The announcement included a two-year CAD 44 million community-based economic development assistance investment through the programming of the Atlantic Canada Opportunities Agency (ACOA) and Canada Economic Development—Quebec (CEDQ). To provide assistance for short-term job creation, Human Resources Development Canada (HRDC) would assist affected individuals and businesses by offering programming under the Employment Benefits and Support Measures (in Quebec and New Brunswick, similar measures are delivered by the province). The Government had committed to increasing the sustainability of local economies by working with stakeholder groups and with provincial governments to determine by the fall of 2003, what further measures would be required for a comprehensive approach towards strengthening the sustainability of local economies, and diversifying the economic base of communities.

Significant in the announcement was that there were no funds for long term income support or for licence or early retirement, a major policy change from previous programming. The focus was to provide insurable employment and work experience to prepare individuals in the most at-risk communities for a successful transition. This would complement existing measures provided by HRDC. Great care was taken to ensure that communications were structured to avoid creating unrealistic expectations.

The longer-term, capacity-building response was to be focused where there was demonstrated economic potential. In many of the affected communities, emerging opportunities existed, for example, in aquaculture, tourism, and light manufacturing. Investments would be targeted where the potential was greatest and be implemented over five years under existing authorities. New resources and modifications to existing terms and conditions were made. One unfortunate reality was that in those communities without sustainable economic potential, people would have little choice but to take advantage of mobility assistance or rely on social assistance.

In June, the Minister responsible for ACOA announced that eligibility criteria for the CAD 25.8 million in short term community employment programs had been finalised.

The Minister reported that over 90 project applications had been received and that several approvals would be coming over the next several days and weeks.

A wide variety of project types would be eligible for funding, under the Short Term Adjustment Initiative, (STAI) including, but not limited to, fisheries diversification projects, ghost net retrieval, community infrastructure, wharves, slipways, environmental cleanups, tourism projects and other initiatives. These project proposals would come directly from the communities and reflect their own priorities. The program was designed to leave some lasting and important infrastructure for the communities while at the same time providing much needed employment to the people affected by the cod closures. Proposals related to upgrading marine infrastructure, including slipways, wharf enhancements, and small boat basin developments were also considered.

ACOA would pay 100% of eligible project costs under the program and employment would be insurable for the purposes of Employment Insurance. Funding for materials and overheads was included in the projects provided through a modified Strategic Community Investment Fund (SCIF).

It was further announced that HRDC would provide CAD 27 million in new funds for an income bridging program for fishers and plant workers affected by the cod closures to provide temporary financial assistance to those whose EI benefits expired before the community-based economic development could be implemented. Eligibility criteria under the Temporary Fisheries Income (TFI) program were later modified to ensure that all fish plant workers and fishers affected by the fisheries closures could apply for temporary income support, provided in the form of a grant. The TFI program was effective from April 27, 2003 to September 6, 2003. It provided financial assistance for a period of up to 12 weeks to eligible individuals, most of who lived in remote communities where there are few other job opportunities.

The TFI program was put in place as part of the Government's broader action plan developed to offset the economic impact of the closure of the cod and crab fisheries on fishers and fish plant workers significantly affected by the closures. Changes to eligibility criteria meant, among other things, that fish plant workers who were associated with a cod line or cod room in a plant that was not designated as cod-dependent would now be eligible for income support.

At this time, no evaluation of the programming has been completed.

Summary

Restructuring and adjustment policy in Canada’s fishery remains an evolving science. Adjustment to the new realities of Canada’s fisheries will be a lengthy process not just for the individuals but for coastal communities as well, and as such, the evaluation of the success of adjustment programming for those individuals and communities will require time.

What is clear from Canada’s experience of the last decade is that fisheries departments alone will not have the answers and success will require a whole of government approach that includes partnering with community stakeholders. Solutions will remain costly and require significant long-term planning and flexibility to be successful. Also, passive and active labour market programmes should be implemented as part of a package and governments should be cautious of limiting their toolkit to one type of programme or the other.

Bibliography

British Columbia Job Protection Commissioner, G.S. Gislason and Associates (1998), "Fishing For Money, Challenges and Opportunities in the BC Salmon Fishery", June 1998.

Fisheries and Oceans Canada (1993), Charting a New Course: Towards the Fishery of the Future, Task Force on Incomes and Adjustment in the Atlantic Fishery, Communications Directorate, November.

_____ (1994), Final Evaluation of the Northern Cod Adjustment and Recovery Program, Corporate review, Evaluation and Audit Directorate, Gardner Pinfold Consulting Economists Ltd, December.

_____ (1998), Evaluation of the Atlantic Groundfish Strategy (DFO Components), Review Directorate, December.

_____ (1999) Review of the Pacific Salmon Vessel Tie-Up Program, Review Directorate, September.

_____ (2001), Evaluation Study of the Pacific Salmon Commercial Licence Retirement Program, performance management Network Inc., for Fisheries and Oceans Canada, February.

_____ (2002), Evaluation of the Canadian Fisheries Adjustment and Restructuring Program Licence Retirement Programs Evaluation Report, May.

Government of Newfoundland and Labrador, "The Atlantic Groundfish Strategy, An Analysis of the Program on a Regional Basis", Department of Finance, Economics and Statistics Branch.

Harrigan *et al.* (1998), The Atlantic Groundfish Strategy, Post- TAGS Review Report, Human Resources Development Canada, February 1998.

Human Resources Development Canada (1998), Evaluation of The Atlantic Groundfish Strategy (TAGS), TAGS/ HRDC Final Evaluation Report, March 1998, Evaluation and Data Development, Strategic Policy, March.

_____ (1999), Older Worker Adjustment Programs Lessons Learned Final Report Evaluation and Data Development, Strategic Policy, December.

_____ (2004), Summative Evaluation of HRDC's Component of the Pacific Fisheries Adjustment and Restructuring Program, Final Report, Program Evaluation Audit and Evaluation Directorate Strategic Policy and Planning, September.

Chapter 4

Assessing the Social Impact of Fisheries Adjustment under the Magnuson-Stevenson Act

Rebecca Lent, Director, NOAA Fisheries, United States

Overview of U.S. Fishing Industry: 1996-2004

Commercial landings (edible and industrial) by U.S. fishermen at coastal ports were 4.383 million metric tons valued at USD 3.742 billion in 2004 – an increase of 82 thousand metric tons (up 1.9%) and USD 407.7 million (up 12.2%) compared with 2003 (see Table 4.1). Since 1996, the year the *Magnuson-Stevens Fisheries Conservation and Management Act* (MSA) was reauthorised, commercial landings revenue has increased USD 200 million, which represents a 6% increase in nominal terms but after adjusting for inflation, represents a 9% decrease in landings value. In the aggregate, 2004 landings are virtually unchanged from 1996 landings.[1]

Trends in landings and landing revenue varied significantly across fisheries, however. Simply separating landings by finfish and shellfish illustrates the potential differences in fishery performance (see Table 4.2). That is, while shellfish experienced a 14% decrease in landings and a 15% increase in revenue, which overall resulted in a 33% increase in price per pound, the trend for finfish showed an increase in landings (3%) but a decrease in landings revenue (-3%).

In addition, while the economic performance of the fleet varies substantially from fishery to fishery, the evidence suggests that overall performance in the last several years has been at a non-optimum level. For example, a recent report by NOAA Fisheries (NMFS), *Assessments of Excess Fishing Capacity in Select Federally-Managed Commercial Fisheries,* indicates that the majority of fisheries and fleets examined have significant excess capacity.

[1] As this report was going to press, a new MSA reauthorisation was signed by the President (January 12, 2007)

Table 4.1. US Commercial Landings at Coastal Ports 1996-2004[2]

Year	Pounds	Revenue (USD)	Price (USD)/ Pound
1996	9 619 036 438	3 542 671 424	0.37
1997	9 925 726 123	3 570 080 952	0.36
1998	9 305 633 206	3 200 049 951	0.34
1999	9 385 383 681	3 553 462 986	0.38
2000	9 120 457 018	3 650 191 228	0.40
2001	9 493 028 925	3 222 041 529	0.34
2002	9 411 485 828	3 170 703 064	0.34
2003	9 480 872 939	3 334 745 119	0.35
2004	9 662 019 698	3 742 422 740	0.39
Change: 1996-2004	**42 983 260**	**199 751 316**	**0.02**
% Change: 1996–2004	**0%**	**6%**	**5%**

Current Legal Framework for Management of Federal Fisheries in the United States

The reauthoriSation of the MSA in 1996 represented a fundamental change in the management of fishery resources in federal waters of the United States. The new legislation required fishery managers to report annually to Congress on the status of stocks, prepare rebuilding plans for overfished stocks and stop overfishing. More specifically, the MSA provides for ten national standards, which provide much of the legal framework governing fisheries. National Standard 1 and National Standard 9 have, arguably, had the most direct and far-reaching impact on fishery management and, in turn, fishing effort. National Standard 1 calls for a halt to overfishing and provisions within MSA require rebuilding overfished stocks within 10 years or as quickly as possible. To date, rebuilding plans for 67 fish stocks identified as overfished have been adopted, and plans are being developed for an additional seven stocks.

[2] Reported landings, excluding Great Lakes landings, as of November 14, 2006. For most recent updates, see http://www.st.nmfs.noaa.gov/st1/commercial/index.html

Table 4.2. Trends in Landings and Landing Revenue (1996-2004)

	Shellfish			Finfish		
Year	Pounds	Revenue (USD)	Price (USD)/ Pound	Pounds	Revenue (USD)	Price (USD)/ Pound
1996	1 467 540 330	1 748 139 516	1.19	8 151 496 108	1 794 531 908	0.22
1997	1 468 543 876	1 771 591 812	1.21	8 457 182 247	1 798 489 140	0.21
1998	1 344 263 416	1 745 777 574	1.30	7 961 369 790	1 454 272 377	0.18
1999	1 583 663 596	2 004 860 073	1.27	7 801 720 085	1 548 602 913	0.20
2000	1 443 495 853	2 067 576 846	1.43	7 676 961 165	1 582 614 382	0.21
2001	1 275 453 755	1 766 878 324	1.39	8 217 575 170	1 455 163 205	0.18
2002	1 341 822 776	1 819 476 653	1.36	8 069 663 052	1 351 226 411	0.17
2003	1 266 251 136	1 859 916 889	1.47	8 214 621 803	1 474 828 230	0.18
2004	1 269 124 238	2 008 218 249	1.58	8 392 895 460	1 734 204 491	0.21
Change: 1996–2004	**-198 416 092**	**260 078 733**	**0.39**	**241 399 352**	**-60 327 417**	**-0.01**
Percentage Change: 1996–2004	**-14%**	**15%**	**33%**	**3%**	**-3%**	**-6%**

National Standard 9 requires that by-catch be minimized to the extent practicable. This mandate, coupled with other federal statutes (Endangered Species and the Marine Mammal Protection Act) ensures that by-catch monitoring and reduction is a priority for NMFS. In 2005 alone, 17 regulatory and management actions targeting by-catch reduction were implemented; USD 4.4 million of agency and cooperative research funds were spent to reduce by-catch; and over USD 40 million was spent on observer coverage in 42 fisheries to gather by-catch and other data.[3] Examples of actions taken to reduce the by-catch include the protective measures put in place in both the Atlantic and Pacific pelagic longline fisheries to reduce sea turtle by-catch; right whale protection measures in the Atlantic implemented in New England lobster fisheries; and the extensive closures of groundfish fishing areas off of Alaska to protect Steller sea lions.

Several of the MSA National Standards are concerned with the economic and social consequences of fishery management on fishers and fishing communities. For example, National Standard 4 requires that any rationalization plan be fair and equitable and not result in excessive share of such privileges. In addition, National Standard 5 requires regulations consider economic efficiency while National Standard 7 requires that "conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication." National Standard 8, on the other hand, requires managers to take into account the importance of fishery resources to fishing communities

3 See NOAA *Fisheries Reducing By-catch* 2005 Report available at http://www.nmfs.noaa.gov/bycatch.htm

in order to provide for the sustained participation of such communities and, to the extent practicable, minimize adverse economic impacts on such communities.

Over the past ten years, the Regional Fishery Management Councils that are responsible for preparing Fishery Management Plans have faced a significant challenge in ensuring that these legislative mandates are met. Furthermore, the Secretary of Commerce, which houses the National Marine Fisheries Service, has faced enormous pressure in meeting these mandates, including substantial litigation (from all constituents) as well as political pressure.

Current Framework for Assessing Economic and Sociocultural Consequences of Fishery Management Actions

In addition to meeting the provisions found in the MSA, NMFS must also meet broader federal requirements for economic and social impact assessments of regulatory actions. A key feature of the federal regulatory process is that fishery managers cannot simply implement a regulation to achieve a conservation goal but instead must consider a suite of management alternatives. More specifically, Executive Order 12866 requires regulatory agencies to assess all costs and benefits of available regulatory alternatives, including the alternative of not regulating. Further, in choosing among alternative regulatory approaches, agencies are directed to "select those approaches that maximize net benefits (including potential economic, environmental, public health and safety, and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach."

Other mandates compelling federal agencies to conduct economic and social impact assessments of management measures include but are not limited to the Marine Mammal Protection Act, the Endangered Species Act, the Regulatory Flexibility Act, the National Environmental Policy Act, and Executive Order 12898. While the primary purposes of both the Marine Mammal Protection Act and Endangered Species Act are to protect and rebuild threatened and endangered species, each law requires that any regulatory action taken to conserve a protected species consider the economic impacts of these proposed management options. Further, under the ESA, any area may be excluded from critical habitat designation if it is determined that the benefits of such exclusion outweigh the benefits of specifying such area as part of the critical habitat, "unless the failure to designate such area as critical habitat will result in the extinction of the species concerned."

The Regulatory Flexibility Act (RFA) compels agencies to analyze the impact on small entities of proposed regulations and to communicate these findings to the public. In addition to the proposed rule, the agency must evaluate alternatives that would accomplish regulatory objectives without unduly burdening small entities or erecting barriers to competition. While the RFA does not preclude a rule from having significant economic impacts on small entities, it does require the agency to identify the affected entities and describe the potential impacts. RFA is particularly relevant to NMFS because all firms (harvesters, charter vessels, processors, etc.) have been classified as small entities for RFA purposes.

National Environmental Policy Act (NEPA) requires that an environmental impact statement be prepared on every "major federal action" undertaken or permitted. Briefly, the essential elements of NEPA decision-making include assessments of the social, economic, and environmental impacts of a proposed action and alternatives to the

proposed project action that meet purpose of the action. It also requires federal agencies to consider both the indirect and cumulative effects of their actions.

Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," states that "each Federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high adverse human health and environmental effects of its programs, policies, and activities on minority populations and low income populations." Environmental justice concerns are included in a federal agency's NEPA documentation.

A recent amendment to the Northeast Multispecies Fishery Management Plan (FMP) provides a concrete example of how economic analyses support fisheries management.[4] Amendment 13 to the Northeast Multispecies FMP was designed to rebuild 19 fish stocks found in the northwest Atlantic, and managed by NOAA Fisheries, to levels mandated under the Sustainable Fisheries Act (SFA). The time horizon for rebuilding these stocks was generally ten years, although for some stocks it was longer. Before the Amendment could be implemented, it was critical to determine the net national benefits that would result from the proposed action. This was accomplished by combining a biological model and an economic model to examine the likely impacts of rebuilding these fish stocks on the fishing industry, and consumers. Model results showed that the preferred alternative resulted in increased national benefits of USD 161 million dollars over the status-quo alternative when all stocks are rebuilt in 2026.

Structural Change in U.S. Fisheries

Structural Change: Fishing Capital

Since the 1996 reauthorization of MSA, a number of measures have been implemented to address fishing capacity. Measures to address capacity may be placed in three broad categories: *(1)* limited entry and other permit programs; *(2)* exclusive quota programs, including individual fishing quotas (IFQs), community development quotas (CDQs), and cooperatives; and *(3)* decommissioning schemes and/or loans for industry-funded buyout measures.

Limited Entry and other permit programs: The vast majority of federally-managed fisheries have instituted limited entry and/or other permit programs.

Exclusive quota programs & Cooperatives:

- Under IFQ regimes, major reductions in capacity have occurred in the surf clam/ocean quahog and South Atlantic wreckfish, and Alaska halibut/sablefish fisheries.
- IFQ programs have recently been approved for the BSAI crab fishery and Gulf of Alaska pollock fishery
- CDQs implemented in western Alaska have not resulted in significant capacity reduction, in part because these communities represent a modest portion of overall capacity and, in part, because this was not a program objective.

4 Summary provided by John Walden, an economist at the Northeast Fisheries Science Center.

- Harvest cooperatives were established in two federally managed fisheries starting in the mid- and late-1990s: Pacific Coast whiting and Bering Sea pollock. The Pacific whiting fishery cooperative has rationalized harvesting operations and transferred some overcapacity to other fisheries.[5] Harvest capacity in the Bering Sea pollock fishery has been substantially reduced by both the original American Fisheries Act buyback and subsequent rationalization of operations.

Decommissioning Schemes & Loans for Industry-funded Buyout Measures

Under section 312(b) of the MSA, the NMFS has the authority to conduct a fishing capacity reduction program if funds are provided and it is determined that such a program is necessary to prevent or end overfishing, rebuild stocks of fish, or achieve measurable or significant improvements in the conservation and management of the fishery. Under the authority of this section, the Secretary may buy vessels and/or fishing permits in order to obtain the maximum sustained reduction in fishing capacity at the least cost and in a minimum period of time. Declaration of a fishery resource disaster is not required to authorize such a program.

The capacity reduction program must be consistent with any State and Federal fishery management plans in place for that fishery. Funding for such programs is authorized under Section 312(c) of the MSA and allows NMFS to obtain funding under authorization of the Saltonstall-Kennedy Act, through specific appropriations, from industry fee systems, and from public, private, or non-profit sources. Key outcomes and measures include:[6]

- From 1994 to 2005, the U.S. implemented 9 permit and vessel buybacks with total costs of more than USD 280 million, the largest of which occurred in the Bering Sea and Aleutian Islands (BSAI) pollock fishery, Pacific groundfish fishery and the BSAI crab fishery.
- With the exception of the BSAI crab fishery, all vessel/permit buybacks to date have involved some public funding. Aggregate public costs amount to almost USD 70 million, or approximately 25% of total buyback costs. The majority of the public costs have been generated by four fisheries: Northeast multispecies, USD 34.5 million; Bering Sea Pollock, USD 15 million; Pacific Coast groundfish, USD 10 million; and Washington State salmon, USD 8.7 million.
- Pending and future permit and vessel buybacks are likely to be strictly industry funded.

Several buyback programs have been implemented as part of disaster assistance funding including a fishing effort reduction program in the Gulf of Mexico for hurricane disaster assistance that was funded under the FY06 Disaster Supplemental and funding under the FY00 Emergency Supplemental appropriation for a permit buyback to address the Northeast multispecies fishery failure declared in 1994.

---

5 Joseph M. Sullivan, A Harvesting Cooperatives and U.S. Anti-Trust Law: Recent Developments and Implications@, a paper presented at an International Institute of Fisheries and Trade symposium, at Corvallis, OR, July 10-14, 2000.

6 Excludes several ongoing small permit buybacks implemented as components of disaster assistance. Information on these and other disaster assistance can be found in the Appendix.

Structural Change: Fishing Labor

U.S. Social Assistance Programs for Commercial Fishermen & Their Relevance for Fishery Management

The U.S. provides two broad-based social assistance programs for workers: unemployment insurance programs and Social Security retirement benefits.[7] Unemployment insurance payments are intended to provide temporary financial assistance to unemployed workers who meet the requirements of state law while Social Security retirement benefits are intended to provide a secure source of income for retired seniors. The degree to which fishermen qualify for benefits under these programs has import for both fishery management and state and local economies. For example, the presence or lack of unemployment benefits may affect the fishery management process if one considers that stock rebuilding plans generally call for significant harvest reductions, which directly impact fishermen's current income. To the extent that fishermen qualify for income assistance from other sources and ease financial pressures on fishing households, it may temper opposition to restrictive conservation measures. Further, to the extent that a rebuilding plan impacts household incomes in a given region, local and state policy makers may prefer less aggressive rebuilding alternatives that, at least in the short run, result in less disruption to the local and regional economies.

Likewise, the degree to which fishermen qualify for retirement benefits may also help to explain current participation decisions by older fishermen and, more importantly, predict future participation decisions by aging fishermen. While participation decisions depend upon a multitude of factors including the availability of other sources of employment and the ability and cost of switching to other fisheries, to the authors' knowledge, no one has to date considered the impact of retirement income on fishermen's participation decisions.

Further, if fishermen do not qualify and/or are not likely to qualify in the future for Social Security retirement benefits at the same rate as the rest of the population, this could have important implications for local and state economies. That is, if fishermen are expected to receive relatively smaller Social Security benefits, then state and local policy makers could use this information to begin to plan for a more dependent senior class than they might otherwise have anticipated.

Unfortunately, data on the U.S. fishery labor sector and, in particular, vessel crewmembers, are neither very substantial nor reliable, which makes it difficult to draw any definitive conclusions on the extent to which either social assistance program affects / could affect either fishery management or state and local economies. Instead, the approach adopted herein is to describe the primary unemployment assistance programs and Social Security benefits program, identifying the extent to which fishermen are likely to be covered under these programs. This is followed by a case study that looks at income earned by a small sample (60 individuals) of Alaska vessel owners and compares their earnings to the general population. Next, using information collected on Alaska fishing communities, the earnings information from the vessel owners is then compared to

7 Other Social Security benefit programs include Disability Insurance wherein benefits are paid every month to workers of all ages who have a severe disability; Family Insurance wherein benefits paid every month to the spouse and children of retired or disabled workers; Survivors Insurance wherein benefits are paid every month to the widow or widower and children of a deceased worker. Herein, we only focus on Retirement Benefits.

household income in fishing communities to make some preliminary inferences about the extent to which Alaska crew members are likely to be covered by Social Security retirement benefits. This is clearly not a satisfying approach given the gravity of the question for fishery participants, however, and the final section calls for additional information collection and research in this area.

Unemployment Insurance [8]

In general, the Federal-State Unemployment Insurance Program provides unemployment benefits to eligible workers who are unemployed through no fault of their own (as determined under State law), and meet other eligibility requirements (*e.g.*, wages earned or time worked during a period of time). In general, benefits are based on a percentage of an individual's earnings over a recent 52-week period - up to a State maximum amount – and can be paid for a maximum of 26 weeks in most States. Unemployment insurance covers seasonal employees but does not cover those who are self-employed in a seasonal industry. It is unlawful for an employer to require an employee to release, repay, pay into, or waive any unemployment insurance benefit rights, for any reason. In some instances, extended benefits are available to workers who have exhausted regular unemployment insurance benefits during periods of high unemployment. The basic Extended Benefits program provides up to 13 additional weeks of benefits when a State is experiencing high unemployment. Some States have also enacted a voluntary program to pay up to 7 additional weeks (20 weeks maximum) of Extended Benefits during periods of extremely high unemployment.

Among the major categories of employment not generally covered by the law are sole proprietors and partners, independent contractors, and those hired under flexible staffing arrangements. Sole proprietors and partners may be eligible for disaster assistance programs and trade re-adjustment allowances. Independent contractors, by definition, are self-employed and thus the same rules that apply to sole proprietors would apply to independent contractors.[9]

Likewise, many individuals hired under flexible staffing arrangements are ineligible to receive unemployment insurance because of the qualifying requirements, which specify that an employee work a minimum number of weeks and/or earn a certain minimum amount within a base period. The purpose of these requirements is to prevent those with insufficient attachment to the workforce from receiving benefits. Effectively, the requirements preclude many in temporary positions from being covered.

The exclusion of sole proprietorships, independent contractor and those under flexible working relationships from this program suggests that the vast majority of vessel owners

8 Discussion summarizes information obtained from http://www.dol.gov/dol/topic/unemployment%2Dinsurance/.

9 The criteria for independent contractor status are: 1) The individual who performs the work is free from control and direction over its performance both in fact and under the contract; 2) The individual customarily is engaged in an independent business or occupation of the same nature as that involved in the work; and , 3) The work is: (a) outside the usual course of business of the person for whom the work is performed, or (b) performed outside any place of business of the person for whom the work is performed.

and their crew not qualifying for unemployment insurance benefits.[10] Additional exceptions occur if either of the following situations exist:

- An individual's services as an officer or a crew member are performed in catching, taking, harvesting, cultivating, or farming of any kind of fish, shellfish, crustacean, sponges, seaweeds, or other aquatic forms of animal and vegetable life (including service performed by any such individual as an ordinary incident to any such activity), unless
  - service performed in the catching or taking of salmon or halibut for commercial purposes, or
  - service performed on or in connection with a vessel of more than 10 net tons.
- An individual crew member who is remunerated by a share of the boat's catch, and whose share is dependent upon the amount of the boat's catch, receives no more than USD 100 per trip which is paid solely for additional duties (such as mate, engineer or cook) for which additional cash remuneration is traditional in the industry, but only if the average operating crew of the boat on which the services are performed is made up of fewer than 10 individuals.[11]

Self Employment Assistance: Self-Employment Assistance offers dislocated workers the opportunity for early re-employment. The program is designed to encourage and enable unemployed workers to create their own jobs by starting their own small businesses. Under these programs, States can pay a self-employed allowance, instead of regular unemployment insurance benefits, to help unemployed workers while they are establishing businesses and becoming self-employed. Self-employment allowances are the same weekly amounts as the worker's regular unemployment insurance benefits. Participants work full-time on starting their business instead of looking for wage and salary jobs. Participants receive weekly allowances while they are getting their businesses off the ground. Generally in order to receive these benefits, an individual must first be eligible to receive regular unemployment insurance under the State law. Individuals who have been permanently laid off from their previous jobs and are identified (through a State's profiling system) as likely to exhaust regular unemployment benefits are eligible to participate in the program. Individuals may be eligible even if they are engaged full-time in self-employment activities - including entrepreneurial training, business counseling, and technical assistance. This is a voluntary program for States and, to date, only seven states have implemented Self Employment Assistance programs.

California's Unemployment Insurance Program for Fisherpersons: California has a special short-term unemployment insurance program for fishermen that, as an employee of a fishing vessel, are partially or totally unemployed through no fault of his/her own. Employees may qualify for payments who were employed during the entire week and:

- Were engaged in the act of catching or attempting to catch fish on at least one day but less than the seven workdays during the week; or

10 Historical Note: The FUTA and most state laws initially excluded maritime workers, principally because it was thought that the Constitution prevented the states from covering such workers. Supreme Court decisions in *Standard Dredging Corporation v. Murphy* and *International Elevating Company v. Murphy*, 319 U.S. 306 (1943), were interpreted to mean that there is no such bar. In 1946, the current FUTA provision was added

11 Excerpted from http://www.edd.ca.gov/taxrep/de231cf.pdf .

- Had no earnings and performed no services during the week because the vessel was tied up for one or more of the following reasons:
  - Inclement weather.
  - Absence of fish in fishable waters.
  - Lack of order for fish from buyers.
  - Vessel is laid-up for repairs.

See http://www.edd.ca.gov/uirep/de4210f.pdf for more details.

Disaster Unemployment Assistance provides financial assistance to individuals whose employment or self-employment has been lost or interrupted as a direct result of a major disaster declared by the President of the United States. The program is administered by states as agents of the federal government and is available to unemployed U.S. nationals and qualified aliens who worked or were self-employed if they:

- worked or were self-employed in or were scheduled to begin work or self-employment in an area declared as a federal disaster area.
- can no longer work or perform services because of physical damage or destruction to the place of employment as a direct result of a disaster.
- establish that the work or self-employment they can no longer perform was their primary source of income.
- do not qualify for regular unemployment insurance benefits from any state.
- can not perform work or self-employment because of an injury as a direct result of the disaster.
- became the breadwinner or major support of a household because of the death of the head of the household.

Benefits are available to individuals beginning after the date the major disaster began and for up to 26 weeks after the major disaster was declared by the President, as long as their unemployment continues to be a result of the major disaster. The maximum weekly benefit amount is determined under the provisions of the state law for unemployment insurance in the state where the disaster occurred. Disaster Unemployment Assistance is paid out of funds provided by the Federal Emergency Management Agency.

Trade Readjustment Allowances (TRA)*:* The Federal Trade Act provides special benefits under the Trade Adjustment Assistance (TAA) program to those who were laid off or had hours reduced because their employer was adversely affected by increased imports from other countries. The North American Free Trade Agreement (NAFTA) provides special benefits under the NAFTA Transitional Adjustment Assistance (NAFTA-TAA) program to those who were laid off or had hours reduced because their employer was adversely affected by increased imports from Mexico or Canada or because their employer shifted production to either of these countries. These benefits include paid training for a new job, and financial help in making a job search in other areas or relocation to an area where jobs are more plentiful. Those who qualify may be entitled to weekly TRA after their unemployment compensation is exhausted**.**

Other Income Assistance Programs

Farmer's Trade Adjustment Assistance (Farmer's TAA): The Farmer's TAA is administered by the U.S. Department of Agriculture (USDA) and provides cash benefits for farmers, ranchers, fish farmers, and fishermen competing with imported aquaculture products. TAA provides producers of raw commodities, who have been adversely affected by import competition, free technical assistance and cash benefits of up to USD 10 000 per year. To become eligible, a group of producers must first petition the Foreign Agricultural Service (FAS) for TAA on behalf of all producers in their sector. To satisfy eligibility criteria, producer prices during the most recent marketing year must be less than or equal to 80% of the national average price during the previous 5 marketing years. In addition, FAS must make a determination that increases in imports of like or competitive products "contributed importantly" to the decline in prices. If these criteria are met, FAS will certify the petition and the producers may then apply individually for benefits.

To be eligible for cash payments, producers must satisfy certain criteria. Producers must certify that their net income from farming, aquaculture or fishing has declined, that their average adjusted gross income fell below USD 2.5 million, and that they have received their free technical assistance from the Extension Service. Even if eligible for benefits under multiple petitions, a producer may receive no more than USD 10 000 per year in TAA cash payments. Producers may receive no more than USD 65 000 in combined counter-cyclical and TAA payments.

TAA may be available in subsequent years if imports keep increasing and producer prices remain below the 80% threshold http://www.fas.usda.gov/itp/taa/taaindex.htm.

Department of Commerce Programs: The Department of Commerce can provide disaster assistance under either sections 308(b) or 308(d) of the Interjurisdictional Fisheries Act (IFA)(16 U.S.C. 4107), as amended, or section 312(a) of the MSA (16 U.S.C. 1861). See http://www.nmfs.noaa.gov/mb/financial_services/disaster.htm

IFA Section 308(b): Section 308(b) of IFA provides assistance to States determined by the Secretary of Commerce (Secretary) to have been affected by a commercial fishery failure or serious disruption affecting future production due to a fishery resource disaster arising from natural or undetermined causes. Funds as appropriated may be used either by the States or by the Secretary in cooperation with the States, for any purpose that the Secretary determines appropriate to restore the fishery affected by such a failure or to prevent a similar failure in the future. Funds authorized for appropriation under Section 308(b) cannot be used for chartering fishing vessels, and the Federal share of the cost of any activity carried out under the authority of this subsection is limited to 75% of the cost of that activity.

IFA Section 308(d): Section 308(d) of IFA enables the Secretary to provide assistance to persons engaged in commercial fisheries, for projects or other measures to alleviate harm determined by the Secretary to have been incurred as a direct result of a fishery resource disaster arising from a hurricane or any other natural disaster. This assistance may be provided either directly to those affected persons or indirectly through State and local government agencies and nonprofit organizations. As used in this subsection, the term 'person' means any individual or any corporation, partnership, trust, association, or other nongovernmental entity.

Section 308(d) requires the Secretary to determine the extent, and the beginning and ending dates, of any fishery resource disaster. Eligibility for direct assistance is limited to persons with less than USD 2 million in net revenues annually from commercial fishing.

Assistance may not be provided as part of a fishing capacity reduction program in a fishery unless the Secretary determines that adequate conservation and management measures are in place for that fishery. The Secretary is required to publish a notice for public comment, describing the limitations, terms, and conditions for receiving assistance under this subsection.

MSA Section 312(a): Under this section, a commercial fishery failure can be declared due to a fishery resource disaster of natural or undetermined causes, or manmade causes not related to fishing. A commercial fishery failure must be shown in order to provide assistance.

Upon determination of the commercial fishery failure, funds are authorized to be available for use by affected States or fishing communities or directly by the Secretary in cooperation with the affected State or fishing community to assess the economic and social effects of the commercial fishery failure. The funds may also be used for any activity deemed appropriate by the Secretary to restore the fishery or prevent a similar failure in the future, and to assist a fishing community affected by the failure.

The Secretary must determine that any activity authorized for these purposes must not expand the size or scope of the commercial fishery failure in that fishery or into other fisheries or other geographic regions. The Federal share of the cost of any activity authorized under section 312(a) must not exceed 75% of the total cost of that activity. The Secretary is authorized to make sums available for this purpose as necessary for FYs 1996 through 2006.

Alaska Fishermen's Fund: Established in 1951, the Fishermen's Fund provides for the treatment and care of Alaska-licensed commercial fishermen who have been injured while fishing on shore or off shore in Alaska. Benefits from the Fund are financed from revenue received from each resident and nonresident commercial fisherman's license and permit fee. The Commissioner of Labor and Workforce Development oversees administration of the program with the assistance of the Fishermen's Fund Advisory and Appeals Council.

The Fund is an emergency fund payer of last resort, which means that benefits are awarded only after full consideration of other coverage from private health or vessel insurance, and public programs, including Veterans' Affairs or Medicare. (Medicaid is an exception.) Except for compelling reasons, benefits for the care of any one person involving a single injury or disability will not be paid beyond one year from the date of initial allowance, and cannot exceed USD 2 500. Requests to exceed the benefit limit or the duration of care must be in writing. Compelling reasons to exceed USD 2 500 are not defined in law but must be sufficient to justify the requested benefit or time extension and must include:

- the financial status of the fisherman;
- the impact of injury or illness on the fisherman's ability to earn a living while undergoing required treatment and to continue to earn a living commercial fishing; and

- any other compelling factors that affect the fisherman's ability to pay for related expenses in excess of USD 2 500, or that result in conditions that require follow-up treatment beyond one year.

For more details, see http://www.labor.state.ak.us/esd_unemployment_insurance/faq.htm

Social Security Retirement Program

The U.S. Social Security benefits program is funded through a tax on wage earnings and earnings from sole proprietorships.[12] For most current and future retirees, the Social Security Administration averages each worker's 35 highest years of earnings to determine benefits. In 2006, Social Security retirement benefits were capped at USD 2 053 per month based on individual contributions into the system over their years of employment. Given the limited amount of income provided by the Social Security system, many U.S. workers and their employers provide for additional private savings to supplement this income at the time of retirement.

In concept, both vessel owners and crew are covered under the Social Security retirement program. However, the seasonal nature of most fisheries coupled with the more variable nature of fishermen's income relative to other occupations raises the question of whether vessel owners and crewmembers will receive Social Security retirement benefits at rates comparable to workers in other sectors. Further, common labour practices in commercial fisheries that results in most crew hired as independent contractors or even more "casually" as day laborers, places the burden on the crewmembers to handle the record keeping and payroll taxes. There is concern that this places too great of a record keeping and reporting burden on the individual crewmembers and that under-reporting may occur. If true, this would directly impact crewmembers future Social Security retirement benefits, which are based on payments into the system.

Case Study: Assessing Whether Fishermen Face / Will Face a Retirement Income Gap

To address the issue of whether fishermen are likely to face a retirement income gap due to relatively low Social Security retirement benefits, one would ideally want information on vessel owners and crewmembers' wage earnings and sole proprietorship income for their entire work history. Unfortunately, that information has not been compiled by NMFS or any other agency. NMFS does have, however, a limited national economic dataset that includes information on each vessel owner's earnings by income source, *e.g.*, wage income, sole proprietorship income, capital gains, etc. In addition, in some instances, there are multiple years of information available for the vessel owner. While the data does not cover each vessel owners entire work history, it does permit income comparisons between this group and other segments of the population.

There are two key drawbacks, however, to using this data collection to address whether fishermen face potential shortfalls in Social Security retirement benefits. First, the data only includes information on vessel owners. Vessel owners' earnings are not likely to be representative of crewmembers' earnings, which limits the inferences one can

12 In 2006, taxes are paid on earnings up to USD 94,200. Currently, the full retirement age is 65 and 8 months, which will increase gradually each year until it reaches age 67 for people born in 1960 or later. For more details on this program, see http://www.ssa.gov.

draw about fishermen from such an analysis. All else equal, one would expect that, on average, the vessel owners, as the owners of the primary business asset, would tend to have higher incomes relative to crewmembers. Second, it is not known whether the vessel owners included in the dataset is a representative sample of the broader population of commercial fishing vessel owners. Once again, care must be taken in drawing any inferences about vessel owners from this limited analysis.

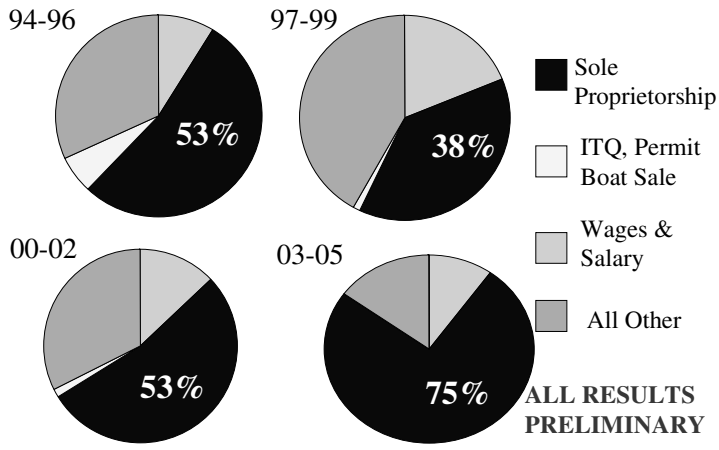
Alaska Pilot Study: Given the caveats posed with using this economic survey to make general inferences about the degree to which fishermen may receive Social Security retirement benefits comparable to workers from other sectors, a pilot study was deemed the preferred approach. In this section, a pilot analysis focusing on Alaska vessel owners provides some initial insights into both the fishermen's situation and the potential for further analyses.

Alaska is a highly appropriate case study for this pilot given its importance in U.S. fisheries (57% by weight and 33% by value of all U.S. fisheries). In addition, the fishery sector is the number one private employer in Alaska. Despite this high level of fishing activity, Alaskan fishing communities are characterized by high unemployment and low incomes. Half the fishing communities in Alaska have unemployment rates twice the national average and poverty rates 30% higher than the national average. Furthermore, very few of Alaska's coastal communities are economically diversified. The economic dependence on fishing activities implies that fishery management measures will have broad economic implications for both the fishing communities and the states. (See Sepez *et al.* for additional information on Alaskan fishing communities.

Data: The dataset used in this pilot study included information from 60 individual vessel owners living in some 19 fishing communities of Alaska (excludes only Northern Alaska). There were a total of 309 observations covering these 60 owners for a multitude of years.

Looking at vessel owners' earnings by source (Figure 4.1), it appears that dependence on fishing income has increased over the past decade, going from 38% of total income to 75%. In addition, income from ITQ, permit and boat sales appears to have declined over the past decade. While these results are preliminary, the increased dependence on fishing suggests that fishery management measures will have a significant impact on vessel owners' household income.

Figure 4.1. Alaska Vessel Owners Earnings by Source: 1994-2005



Comparison between Alaska fishing vessel owners' income and average income for the state reveals that vessel owners are faring better than the general population on average (Table 4.3). In 2004, vessel owner income averaged over USD 85 thousand while average Alaska household earnings were USD 67 105. To some extent, this may be a result of the potential bias of arising from using this data, which may (or may not) reflect more successful fishermen.

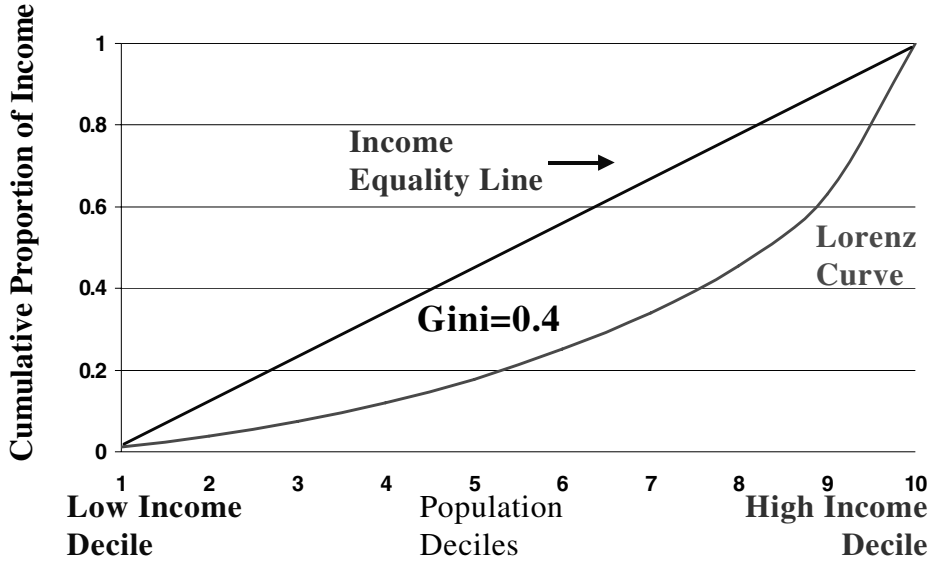
Table 4.3. Alaska Vessel Owners vs. Alaskans 2004 Earnings by Source

(USD -- all results preliminary)

Average vessel owner household earnings	
Wages and salary	4 462
Sole proprietorship	77 580
Total income	85 210
Average Alaska household earnings	
Wages and salary	51 536
Sole proprietorship	3 085
Total income	67 105

Finally, Alaska commercial vessel owners' income was plotted on a Lorenz curve to determine the distributional aspects of their income (Figure 4.2). Surprisingly, the income distribution is close to that of the U.S. national average, notably a Gini coefficient of 0.4 (vs. 0.43 for the nation). These preliminary results indicate a fairly heterogeneous fleet in the Alaska fisheries. The result is consistent with the general profile of the Alaska fleet, with vessels varying from small salmon trollers to very large pollock draggers.

Figure 4.2. Alaska Commercial Vessel Owners' Lorenz Curve: 1994 – 2005 (preliminary results)



Discussion

Focusing on the central research questions, will older vessel owners fish longer due to lack of Social Security retirement benefits and/or will they become more dependent upon social services then might have previously been recognized, the answer to both questions based on this initial pilot study is no. Alaska vessel owners included in the economic survey are not likely to stay in the fishery longer due to lack of old-age benefits. In fact, they may be eligible for the maximum benefits possible under Social Security. However, they may stay in the fishery due to the lack of comparable economic opportunities. Given the poor economic status of the communities in which they live, and their higher income on average, the fishery is a relatively attractive profession for these vessel owners. To the extent that these results can be generalized, this suggests that the lack of comparable economic opportunities may be a factor that should be considered when designing fleet reduction programs.

Unfortunately, data on crewmembers are not available at this time. However, it is possible to conjecture that their economic situation is potentially worse than that of the vessel owners. Given that 10% of vessel owners in this study are below the poverty line, and the poverty rates of fishing communities in which the vessel owners reside is about 30%, it is likely that the fishing vessel crew members are worse off than vessel owners. Therefore, it is also likely that the crew may be at risk in terms of old-age benefits and therefore more reluctant to leave the fishery and/or they may become more dependent seniors than might otherwise have been assumed.

Future work

In terms of looking at vessel owners' retirement income and its effect on fishery participation, future analyses will be expanded to cover a larger number of vessels within Alaska and other regions, while addressing the representativeness of the underlying data. In addition, it may be possible to develop an entry-exit model to further examine vessel owners' decisions to leave the fishery.

To make a definitive statement about whether crewmembers will face retirement income gaps will require, however, new data collection efforts. Without such data, it is impossible to know whether crewmembers are likely to receive Social Security retirement benefits comparable to workers from other sectors. While inferences were made in this study that suggested that it is likely that crewmembers are more likely to face retirement income gaps than vessel owners, the extent of the problem is unknown. Reliable estimates on the degree to which crewmembers may be facing a retirement income gap is important to both fishery managers for understanding effort decisions as well as local and state planning agencies which are responsible for meeting the needs of their dependent residents.

In addition, this study identified a second labor issue that may affect fishery managers' ability to implement conservation measures. That is, because of how unemployment benefit programs are typically designed, fishermen are generally not eligible for unemployment benefits. Unless rebuilding programs or other conservation measures restricting harvest are also implemented with income supplements, fishermen will be forced to seek employment in other fisheries or in occupations. The immediate hardship this imposes clearly discourages fishermen from supporting such measures, thereby imposing a stumbling block for reaching stewardship goals. Effective fisheries adjustment programs must consider the labor implications of management measures

designed to transition from overfished stocks to healthy, sustainable rebuilt stocks. The better we understand these impacts and the persons and communities affected, the better we can design meaningful programs to ease this transition.

Bibliography

Alaska Department of Labor and Workforce Development (November 2006), "Unemployment Insurance in Alaska", http://www.labor.state.ak.us/esd_unemployment_insurance/faq.htm

California Employment Development Department (2004), Information Sheet, "Commercial Fishing Industry", http://www.edd.ca.gov/taxrep/de231cf.pdf, California, U.S.

Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265 as amended through October 11, 1996, http://www.nmfs.noaa.gov/sfa/magact/

NOAA Office of Management and Budget, Fishery Disaster Assistance, http://www.nmfs.noaa.gov/mb/financial_services/disaster.htm

NOAA (2005), "NOAA Fisheries Reducing Bycatch Report" available at http://www.nmfs.noaa.gov/bycatch.htm

NOAA Fisheries, (2006) Office of Science and Technology, Commercial Fisheries Landings Data, http://www.st.nmfs.noaa.gov/st1/commercial/index.html

Sepez, J.A., B.D. Tilt, C.L. Package, H.M. Lazrus, and I. Vaccaro (2005), "Community profiles for North Pacific fisheries – Alaska. U.S. Dep. Commer., NOAA Tech. Memo. NMFS-AFSC-160, 552.

Sullivan, Joseph M., (2000), "Harvesting Cooperatives and U.S. Anti-Trust Law: Recent Developments and Implications", presented at International Institute of Fisheries and Trade Symposium, Corvallis, Oregon, U.S.

Terry, J.M. and J.E. Kirkley editors (2006), *Assessments of Excess Fishing Capacity in Select Federally-Managed Commercial Fisheries*. Office of Science & Technology, NOAA Fisheries.

U.S. Department of Agriculture Foreign Agricultural Service (FAS), http://www.fas.usda.gov/

U.S. Department of Agriculture, (August 2006), Trade Adjustment Assistance for Farmers http://www.fas.usda.gov/itp/taa/taaindex.htm

U.S. Social Security Administration, information on benefits and taxes http://www.ssa.gov/ .

Walden, John (2006), *Northeast Multispecies Fishery Management Plan* (FMP), Northeast Fisheries Science Center, NOAA Fisheries.

Chapter 5

Structural Adjustment in Australia's South East Trawl Fishery[1]

Frank Meere, FRM Consulting Pty Ltd., Australia

Background

Scope and value of Australian fisheries

Australia's overall maritime jurisdiction which includes the Australian Fishing Zone (AFZ) and continental shelf extensions onto adjacent high seas is the third largest in the world covering almost 14 million square kilometres. It is in fact larger than the Australian land mass (Commonwealth of Australia 2003). The productivity of these waters is however low compared with other parts of the world, and Australia ranks only about 50th in terms of volume of fish landed.

The fishing industry ranks fifth among Australia's primary industries with a Gross Value of Production (GVP) in 2004-05 of AUD 2.05 billion[2] on total production of 287 000 tonnes (ABARE 2006). Australian fisheries produce a range of high value exports including rock lobster (AUD 440 million), pearls (AUD 291 million), abalone (AUD 263 million), prawns (AUD 163 million) and tuna (AUD 162 million). In 2004-05 Australia exported AUD 1.54 billion of fisheries products. In the same year Australia imported AUD 1.17 billion of fish products with major components comprising prawns (AUD 201 million), canned fish (AUD 189 million), frozen fillets (AUD 187) and pearls (AUD 146 million). In 2005 direct employment in the catching and aquaculture but not the processing sector is estimated by (ABARE 2006) at approximately 19 000.

Jurisdictional arrangements

In Australia's federal system, jurisdictional and fisheries management responsibility is shared by the Commonwealth, state and territory governments. There are six states and

1 Grateful thank for the helpful comments of my Australian colleagues Martin Exel, Mary Lack and Gail and Stuart Richey in preparing this paper. The conclusions reached and opinions provided are of course my own and I take full responsibility for any errors or omissions in the paper.

2 As at 19 September 2006 AUD 1 is equal to approximately USD 0.755c

two territories[3]. State/territory jurisdiction extends from the low water mark to 3 nautical miles and Commonwealth jurisdiction from 3 to 200 nautical miles. In order to enable a rational approach to natural resource management, an Offshore Constitutional Settlement (OCS) arrangement is in place which allows the Commonwealth, States and the Northern Territory (NT) to develop fisheries management arrangements based on the range of the stock to be managed, rather than the artificial boundaries established by lines on the water. There are four types of fisheries management arrangements established by these OCS arrangements.

- Commonwealth management of the entire fishery;
- State or Territory management of the entire fishery;
- Status quo management with responsibility split between the State(s)/NT and the Commonwealth at the 3 nautical mile boundary; and
- Joint Authority management with the Commonwealth, States/NT forming a single legal entity.

This has resulted in the Commonwealth and States/NT sharing responsibility for managing fishery resources with the States/NT usually managing sedentary species or those which occur solely off their coasts and the Commonwealth managing offshore fisheries or fisheries which extend over two or more state/territory jurisdictions. The Commonwealth also has a leading role in managing straddling and highly migratory fish stocks. The South East Trawl Fishery (SETF), the focus of this paper, is a Commonwealth managed fishery.

Commonwealth fisheries policies

New Directions for Commonwealth Fisheries Management in the 1990's – the 1989 Fisheries Policy Statement

For many years now the Commonwealth Government has adopted progressive fisheries management policies. In 1989 a major policy statement which still underpins Commonwealth fisheries management was unveiled. The document, *New Directions for Commonwealth Fisheries Management in the 1990s – a Government Policy Statement* (Commonwealth of Australia, 1989) provided the management principles and structures still used today to manage Commonwealth fisheries.

The fundamental objective of the statement was to set up efficient and effective fisheries management arrangements. The Policy examined the role of governments in fisheries management and concluded that as a result of the nature of common property (fisheries resources are publicly owned, being at once everybody's and nobody's) "when resources belong to nobody, nobody will look after them; when resources belong to everybody, everybody must look after them" (Commonwealth of Australia 1989). In addition to a major role for government, it concluded that it needed to strengthen industry involvement in fisheries management decision making and long term custodianship of the resource.

[3] The states are Queensland, New South Wales, Victoria, Tasmania, South Australia and Western Australia and the territories – the Northern Territory and the Australian Capital Territory.

The three overriding objectives of management controls outlined in the policy were:

- To ensure the conservation of fisheries resources and the environment which sustains those resources;
- To maximise economic efficiency in the exploitation of those resources; and
- To collect an appropriate charge from individual fishers exploiting a community owned resource.

The policy concluded that achieving these objectives will create a stable economic and biological environment in which fishers can operate with greater confidence and economic security.

Underpinning these broad objectives were the following key policy principles:

- Economic efficiency – management controls should not distort the way economic resources are allocated;
- Fair treatment of all involved – similar people in similar circumstances should receive similar treatment;
- Efficient management – management controls should contain clear objectives which should be tested periodically; and
- Efficient administration – management controls should be straightforward.

The objectives and policy principles would be achieved via the restructuring of industry to improve economic efficiency and conservation of fish stocks using government assistance to reduce over capacity. In addition there would be a range of new administrative arrangements including the passage of new legislation and the establishment of the Australian Fisheries Management Authority (AFMA), a new Commonwealth statutory authority. Importantly, AFMA was designed to enable the government to affect its responsibilities in a flexible, open and less bureaucratic way (Commonwealth of Australia 1989). It also meant that day to day fisheries management would be removed from the direct control of the Minister for Fisheries and be vested in the Authority, which would have an expertise based Board to oversight and direct its operations, consistent with its governing legislation.

Importantly to achieve these outcomes the Statement concluded that output controls in the form of individually transferable quotas (ITQs) were the preferred management control. This would ideally allow efficient fishermen to expand their activity at the expense of the less efficient and would allow market forces to operate. It went on to state that before other management controls could be used, fishery managers would have to demonstrate that these other management controls are superior to individually transferable quota for a particular fishery.

Another important policy principle developed in the Statement and subsequently implemented was that "those who benefit from management should pay the cost of management" (Commonwealth of Australia, 1989). Over the years since the release of the Statement there have been a number of reviews to determine the appropriate level of cost recovery. The commercial fishing industry now pays all the attributable management costs in their fisheries. Importantly however, a clear distinction was made between who pays the management costs and who owns the resource. The resource belongs to the Australian community and just because the commercial fishing industry pays necessary management costs does not give them ownership of the resource.

A vital part of the new policy was the desire to strengthen the access rights provided to fishermen and provide greater ownership and involvement in ongoing decision making. The Statement concluded that "the Government will formally recognise the ongoing nature of rights in existing developed fisheries" (Commonwealth of Australia, 1989). New legislation provided the tools to implement formal management plans (strong subordinate legislation) with the provision to provide "Statutory Fishing Rights" (SFRs) which exist for the life of the management plan. These rights have been subsequently recognised as a form of property and are now frequently referred to as "property rights".

The Statement also specifically addressed the need for enhanced restructuring and concluded that for those fisheries already overcapitalised the management solution to address economic and biological objectives invariably involves reducing fishing capacity. It foreshadowed significant restructuring and concluded that where restructuring is unacceptably slow the government should assist and commit financial resources.

Looking to the Future - A Review of Commonwealth Fisheries Policy June 2003

Some 10 years after this initial policy statement the government initiated a review of Commonwealth fisheries policy which concluded "the fundamentals of the policy and management framework set out in the 1989 policy statement remain relevant today" (Commonwealth of Australia, 2003). This new statement built on and further developed the 1989 statement and outlined a series of strategies and recommendations aimed at further integrating Commonwealth fisheries policy with a range of broader emerging environmental issues and policies. Importantly, its focus continued to be primarily on the fisheries and aquaculture sectors.

Fisheries management is not to implement social or regional development policies

An important point to note in relation to Commonwealth fisheries policy is that it has and continues to have a specific natural resource management focus and does not seek to achieve other government policy objectives. The emphasis of Commonwealth fisheries policy is very much on ecologically sustainable development and economic efficiency (and a range of associated issues) and it does not seek to achieve social or regional community or development outcomes. In fact as far as is possible it aims to treat the fishing industry and the use of a community owned resource as just another economic activity within the broader economy.

The 1989 Policy Statement (Commonwealth of Australia 1989) provides the following broad aims with respect to equity and the social effects of managing fisheries resources:

1. to ensure that the controls determining access to fisheries resources are not subject to manipulation;
2. to ensure that fishermen contribute to the cost of managing fisheries in proportion to the benefits they receive from that management and pay an appropriate amount for the right to exploit a community resource for private gain4; and

[4] While the 1989 Policy Statement proposed that fishermen should pay a resource rent tax for the use of a community owned resource, it acknowledged that this should only occur once the fisheries were operating efficiently. Government policy changes over the years now provide

3. to take appropriate actions to relieve social impacts of adjustment in the fishing industry.

The Policy goes on to say that the Government believes it should take responsibility for the development of policies for i) and ii) but that the fishing industry could play a larger role with respect to iii).

There is a strong view within policy circles that to seek to achieve multiple and competing objectives will result in at best, sub optimal outcomes and in respect to managing a scarce community owned resource, failure. In this regard anyone who has worked in fisheries management or broader natural resource management knows just how difficult it is to achieve stated fisheries management objectives let alone to also produce desirable outcomes in other policy areas. Kaufmann *et al.*, (1999) conclude "Whether it is prudent to ask a management agency, to manage fisheries in order to attain social objectives is an open question. Arguably, it would be better for government to further such social objectives directly, as opposed to using the fishing industry as a vehicle for wealth redistribution."

In this sense the focus in Commonwealth fisheries is very much on the use of fisheries management tools to achieve desired fisheries management outcomes and not seek to achieve other non fisheries outcomes using these tools.

The Fisheries Management Act 1991

In 1991 as part of the implementation of the Governments 1989 policy statement, the Australian Parliament passed a suite of new fisheries legislation. The two key pieces of legislation in this suite were the *Fisheries Administration Act 1991* (the Administration Act) and the *Fisheries Management Act 1991* (the Management Act). The Administration Act established AFMA and provided all the necessary powers to allow it to undertake fisheries management on behalf of the government. The Management Act provided all the necessary fisheries management "tools" and established a legislative framework to provide ongoing secure access rights to fishers.

The access rights created by the Management Act are in the form of Statutory Fishing Rights that is rights created under statute – in this case the Management Act and subordinate legislation. SFRs are established in formal statutory management plans which set out all the necessary management arrangements and are subordinate to the Management Act. Management plans are "disallowable instruments" which means they need to sit before both houses of the Australian Parliament for a specified period and can be disallowed if they are considered inappropriate. By virtue of this process once they have been endorsed by Parliament they are very strong legal instruments. Importantly, the Management Act sets out a very detailed process, which must be followed in making a management plan and detailed arrangements for the grant of SFRs. Exactly the same process needs to be followed to amend a Management Plan or to revoke it, which provides a high level of security to the community, fishing industry and the finance sector.

The above explanation of what is a fairly complex process is provided to emphasise the long term nature of Management Plans and SFRs created under them. While initially

that this should only be in "new" fisheries and this is currently being pursued by auctioning a portion of SFRs issued under new management plans for such fisheries.

governments and government agencies used the term "access rights" to describe SFRs, increasing it is being acknowledged (including by the courts) that they are a form of property. So much so that the Management Act, following an amendment, now has a section dealing with "Compensation for acquisition of property" (Section 167A) which provides that if a section of the Act results in the acquisition of property other than on "just terms"[5] the Commonwealth is liable to pay reasonable compensation.

The legislation creates long term secure access rights and together with government policy encourages the use of management tools which provide for market forces to operate and autonomous adjustment to occur, hence the preference for ITQs. In fact the policy is such that ITQs are the preferred management method and proponents of some other form of management need to demonstrate why it is better and why ITQs are not preferred. Some Commonwealth fisheries are managed using individually transferable effort (ITEs) units, but where these are used it requires regular intervention by AFMA to determine and set the appropriate number of effort units. This means AFMA must regularly assess the level of effort in the fishery and how this correlates with biological sustainability of target species and the impact of this effort on the broader marine environment. This requires a detailed assessment of effort creep and regular adjustment of effort units. Due to the complexities involved and the processes which must be pursued this can cause delays to necessary adjustments and damage to stocks and the broader environment. The emphasis of government policy is therefore very much on management tools which, by allowing market forces to operate, let operators make commercial decisions and as far as possible encourage autonomous adjustment within the fishery, without the need for direct management intervention.

Structural adjustment within the broader fisheries management context

Against the background of the fisheries policy outlined above, structural adjustment in Commonwealth fisheries was considered to be something which might need to be undertaken in order to initially redress overcapacity and reduce pressure on overfished stocks. This would be followed by the introduction of management arrangements which facilitated autonomous adjustment with minimal government involvement, such as ITQs. If ITEs were used there was a clear understanding that the fishing industry would bear the cost of future reductions in units[6]. While the outcome is not dissimilar under both management regimes ITQs remain the preferred management tool as they facilitate autonomous adjustment without the need for the government to regularly review and set effort levels.

The other important change foreshadowed in the *New Directions* statement (Commonwealth of Australia, 1989) and implemented under the Management Act was the creation of long term SFRs. These rights are very different to the rights which existed

5 ***Acquisition of property*** and ***just terms*** have the same meaning as in paragraph 51(xxxi) of the Australian Constitution.

6 Since the early 1990's this has been the case in the Northern Prawn Fishery which was managed under a system of underdeck volume and engine horsepower units but is now managed using net units. With each subsequent reduction in total fishery units individual operators have had to purchase additional units to remain at their existing level of operation or alternatively downsize their operation accordingly. It is interesting to note however that the NPF is included in the current structural adjustment program (see Section 7 below) and operators are eligible for assistance.

under previous Commonwealth legislation. Under previous legislation fishermen were issued with Commonwealth Fishing Boat Licences (CFBLs), which were essentially a one year licence to fish, with no guarantee that they would be renewed – although there was a clear expectation on the part of fishers that they would be renewed each year. The uncertainty created by such arrangements did not help establish a stable long term management environment as future access was not secure and there was little incentive to work, plan and invest for the longer term.

CFBLs allowed fishers to operate with relative freedom and complete flexibility, although as more formal arrangements (including limiting entry) were introduced for individual fisheries, CFBLs had to be "endorsed" to allow fishers to operate in those fisheries. Many fishermen both Commonwealth and State held multiple CFBLs on the basis that it didn't cost much and they might come in handy at some time in the future (and in many cases they did). When the Management Act came into effect in 1992 there were some 5 800 CFBLs, by the mid to late 1990s this had been reduced to 1 500 fishing permits, with further reductions occurring as fisheries were brought under Statutory Management Plans and SFRs issued. Over time, quota amalgamations also lead to unused boat SFRs being surrendered.

Under the Management Act there is a clear recognition that the fishing concession (the SFR or fishing permit) is the fishers asset (see the earlier discussion on the long term nature, legal status etc) and the concession is viewed as his/her financial security. When adjustment occurs in a fishery, the fisher has a choice to remain in the fishery and purchase additional rights to continue operating at their current level, to reduce his/her operations in line with the reduction required for the fishery as a whole, or to exit from the fishery and sell the right provided under the management arrangements, thus providing a source of exit funding. The value of these rights can be significant, for example in the Northern Prawn Fishery the entitlement for an "average" vessel is worth in excess of AUD 1.5 million. In the SETF average quota and licence values per boat are greater than physical capital values, representing 50-60% of total business capital (Aslin *et al*. 2001).

A brief history of the South East Trawl Fishery[7]

The SETF is located in the Australian Fishing Zone and stretches over a very large area from Barrenjoey Point just north of Sydney to cover all the waters around the NSW, Victorian and Tasmanian coastlines to Cape Jervis in South Australia encompass all waters off the coasts of Victoria and Tasmania until just beyond the eastern border of South Australia (see Figure 5.1 below). The fishery has some 100 or so fishing vessels producing 25 000 tonnes with an estimated GVP of approximately AUD 59million in 2004-05. Overall, the fishery accounted for nearly thirty percent of the landed value of Commonwealth fisheries in that year. The Fishery is now managed as one sector of the Southern and Eastern Scalefish and Shark Fishery (SESSF) under the Southern and Eastern Scalefish and Shark (SESS) Management Plan[8] and comprises fishing by otter

7 This section draws heavily on the comprehensive management history outlined in Grieve et al., 2001.

8 *Southern and Eastern Scalefish and Shark Fishery Management Plan 2003* (SESS Management Plan)

board trawl, midwater trawl and Danish seine. For completeness I provide a very brief outline of arrangements in the non trawl sector of the fishery in Appendix 1.

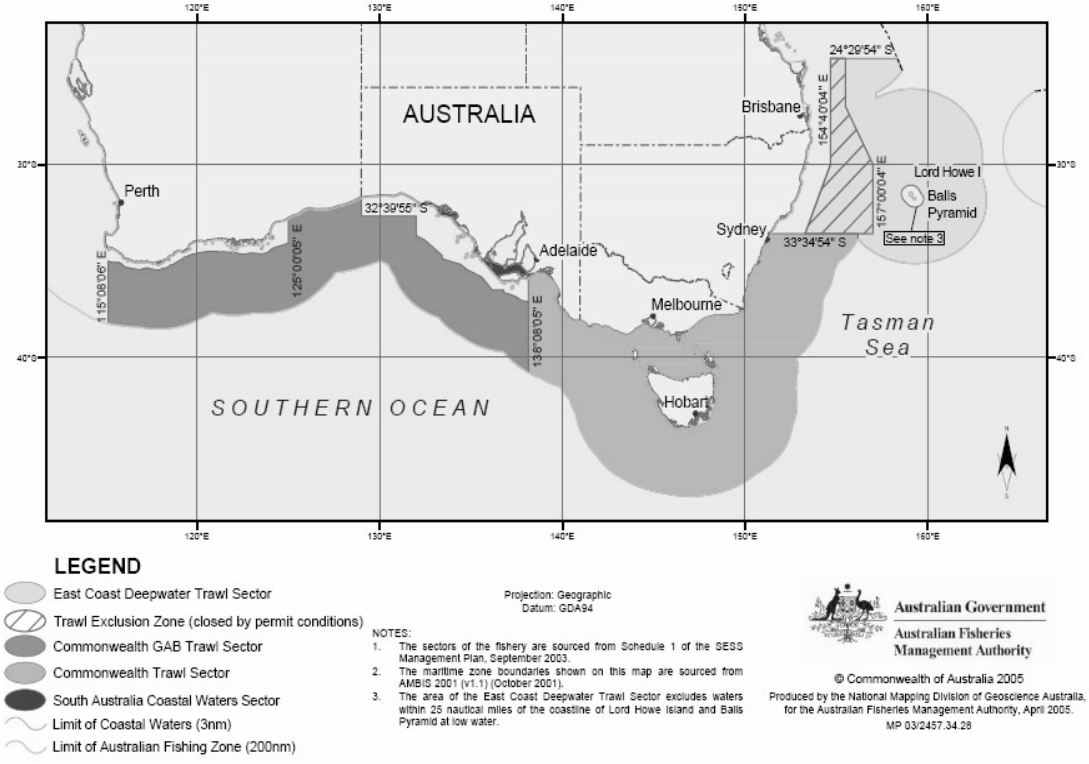
The SETF is a complicated fishery characterised by a wide geographical area, multiple species, multiple methods, operating in a variety of habitats from shallow coastal waters to depths over 1000 metres with over 100 species of fish and invertebrates sold commercially (Tilzey 1994).

Successive governments encouraged the development of the trawl fishery. The New South Wales government imported three steam trawlers from the United Kingdom in 1915, built four more in 1920 and then sold the fleet to private concerns in 1923. This was the beginning of the SETF as we know it today (Grieve *et al*. 2001).

The day to day management of the fishery was left to State governments for the first 80 or so years. By 1952 the Commonwealth government had enacted the *Fisheries Act 1952* and the trawl fishery had expanded from Sydney southwards to other large coastal towns in New South Wales and into Victoria. Despite the enactment of Commonwealth law the States (now NSW, Victoria, Tasmania and South Australia) continued to manage the day to day operations of the fishery until 1985. Minimum trawl net codend mesh size restrictions were brought in by the NSW government in the 1950s to limit the catch of juvenile flathead and later extended to the whole SETF. In the 1970s vessel length was limited to 32 metres overall and in 1979 one vessel per State (*i.e.* 4 vessels in total) of between 32 and 45 metres were allowed to fish in the fishery. The management of the fishery for most of the century was open access with minimal management arrangements.

In 1979 Australia declared the 200 nm Australia Fishing Zone and the *Fisheries Act 1952* was amended to include management objectives consistent with Australia's signature of the UNCLOS. These required the Minister to ensure 'that the living resources of the AFZ are not endangered by over-exploitation' and to have regard to 'achieving the optimum utilisation of the living resources of the AFZ'. From about 1980, by which time trawl fishing effort had expanded southwards and outwards into the deeper waters of the continental shelf concern started to grow about the increasing fleet size, the level of capital invested in the trawl fishery and the apparent declining economic position of operators (Grieve 2001). A task force consisting of State and Commonwealth fisheries management agencies was convened in 1983 to determine the need for additional management intervention.

Figure 5.1. Southern and Eastern Scalefish and Shark Fishery
Commonwealth Trawl Sectors



In 1985 the Commonwealth government defined the area of the South East Trawl Fishery (Barrenjoey Point, NSW to Cape Jervis, South Australia - see Figure 5.1) and limited entry to the fishery. Vessel length restrictions and the trawl net mesh size restrictions were retained. Three management areas were created (Eastern Sectors A and B, and the South Western Sector) and vessels were granted Commonwealth Fishing Boat Licences (CFBLs) endorsed to fish in one or more of these regions. In October 1985 a scientific logbook was introduced and operators were required to complete shot by shot catch records. By the end of 1986, 151 vessels had recorded catches in the fishery, employing approximately 84 000 hours of trawl effort.

A boat replacement policy which introduced units of capacity to the fishery was implemented in 1986. The stated aim of the policy was to reduce fleet capacity over time and ultimately control fishing effort. Units were based on hull dimensions and propulsion engine power and when introduced there were approximately 22 000 units. When operators replaced or upgraded a vessel they had to obtain additional units from another operator to cover any increased capacity in the vessel as well as enough to account for the forfeiture of a proportion of those units to the government. By 1989 the number of units of capacity in the fishery had *increased* to 24 086 with about 10% of these units not attached to operating vessels. Successful litigation which challenged the limited entry policy was largely responsible for the increase rather than the expected decrease in units of capacity in the fishery.

The input control regime came under increasing pressure during the late 1980s due to two unrelated events in the fishery. At the same time as the eastern gemfish (an important specie for inshore NSW fishers) began to show signs of recruitment failure, large aggregations of orange roughy were discovered off Victoria and western, southern and eastern Tasmania. This precipitated a shift of trawl licences and units from the traditional NSW east coast operators who typically used small vessels (< 20 metres in length) to larger steel hulled vessels working in the south western sector. Concern over increasing catches resulted in the setting of competitive TACs for orange roughy in 1987 and eastern gemfish in 1988. ITQs were introduced for eastern gemfish in 1989 (Kaufmann *et al* 1999).

It is now widely recognised that the objectives of the input control management regime in the trawl fishery were not being achieved and that management of the fishery had to change. In the 1989 Australian Fisheries Council Sub-Committee Report on Management of the South East Trawl Fishery, the task force summarised the fishery as being characterised by:

- a persistent and worsening economic situation while management continues to be based on control of inputs which relies on reducing economic efficiency;
- a number of species under severe biological stress …. while existing arrangements do not appear to be able to contain aggregate effort;
- the need for an increasing number of management measures; and
- a reliance on quantity of product rather than attempting to increase returns from smaller quantities by improving quality[9].

There was a definite need for a change in the management of the fishery and the timing of this crisis coincided with the release by the Commonwealth of its policy statement New Directions for Commonwealth Fisheries Management in the 1990s (Commonwealth of Australia 1989). In that Statement there was a clear preference for the use of ITQs as the preferred management method, although it is fair to say there was some concern about the use of ITQs in a multispecies trawl fishery. Initially seven target species were to be placed under quota, but despite this, on 1 January 1992, ITQs were introduced for 16 trawl species or species groups. This occurred via the new and highly controversial management plan for the fishery, the *South East Fishery (Individual Transferable Quota) Management Plan, 1991* which had been determined by the Minister for Primary Industries and Energy under section 7B of the subsequently repealed *Fisheries Act 1952*. Shortly thereafter in February 1992 the Australian Fisheries Management Authority (AFMA) was created under the *Fisheries Administration Act 1991*. AFMA inherited the controversy surrounding the implementation of the Plan which became known by many, including the inaugural AFMA Chairman, as "the poisoned chalice".

The ITQ management regime in the SETF got off to a disastrous start. There was widespread dissatisfaction with the results of quota allocations and in March 1992 the newly formed AFMA Board put a moratorium on permanent transferability of quota

9 In the preparation of the Australian Fisheries Council Sub Committee Report, the Australian Bureau of Agricultural and Resource Economics was asked to do a benefit cost analysis of a number of buy-back options and the findings of the sub-committee noted the need for the urgent removal of capacity, recommending adjustment via a buy-back scheme and the introduction of ITQs.

while an independent review was conducted. Seasonal transferability was permitted. In the meantime court action had been initiated by a fishing company against the allocation formula in the case *Austral Fisheries Pty Ltd v Minister for Primary Industries and Energy* and a majority of quota holders had appealed to AFMA for internal reviews of their quota allocations.

In the court case, the judge found that the allocation formula contained a statistical fallacy which produced an irrational result and the formula was found to be void in law. The offending allocation formula was a combination of catch history and units of fishing capacity, which averaged averages.

The allocation formula was changed by AFMA to the "averaging method", considered to be more rational and statistically valid, in October 1992. The averaging still used the same combination of catch history and units of fishing capacity, but the catch history component was based on the sum of each operator's best five years of catch history for a species as a percentage of the total of all operators best five years of that species. Full (*i.e.*, seasonal as well as permanent) transferability of quota was reintroduced in 1994.

Despite these changes many operators were extremely dissatisfied with the introduction of the Plan and their quota allocations.

Some input controls were retained after the introduction of ITQs including a limit on the number of vessels and minimum mesh sizes. To operate in the fishery operators needed both a fishing permit to use a vessel as well as quota units to catch quota species. The fishing permit also enabled the take of non quota species. Until 1997, the maximum vessel length of 32 metres (with the exception of the four vessels up to 45.7 metres), was also retained. This regulation was successfully challenged in a court case (*Bannister Quest Pty Ltd v Australian Fisheries Management Authority*) on the basis that restricting vessel length was contrary to AFMA's objective of seeking to maximise economic efficiency in the exploitation of the resource.

Despite government expectations, autonomous adjustment did not occur upon introduction of ITQs. Grieve *et al.* (2001) concluded this was for two reasons i) the initial freeze on permanent transferability of quota; and ii) the resistance of disgruntled operators who continued to appeal against their quota allocations and resist the new management arrangements. Is it possible that there was also an expectation that if they held on long enough a government funded structural adjustment program would be forthcoming and they were right – see below.

Despite attempts to limit effort over many years the results had been ineffective – during management under input controls despite increasing constraints, the total number of boat units remained more or less constant, while effort increased. Likewise, after ITQs were introduced, a series of legal decision relating to imputed catch and the inadequate operation of the quota trading market meant little if any reduction in fishing effort on key species occurred (SEFAWG 1996).

Hand in hand with this failure to reduce effort, profitability in the SETF has declined steadily since the mid 1990's. The report "*ITQs, Ageing Boats and the Price of Fish – profitability and autonomous adjustment in the South East Trawl Fishery*" (FERM 2004) concluded "Profitability in the SETF has worsened over the last five years. Costs have been increasing, catches have declined and most operators have faced stable or falling real prices for fish". Increasing fuel prices and repairs and maintenance for an aging

fleet[10] are major factors in this decline. There has been little new investment in the fishery.

Details of previous adjustment programmes

1996 Report of the South East Fishery Adjustment Working Group (SEFAWG)

In October 1996, the then Minister for Resources and Energy[11] announced the appointment of a working group to look at adjustment options for the South East Fishery (Parer 1996). The Ministers media release stated that "…a number of operators have argued that some aspects of the original quota allocation were unfair and reduced the value of their fishing entitlements" The working group was asked to consider "whether any of the operators in the SEF should receive adjustment assistance" and if appropriate "it will develop options for adjustment" (Parer 1996).

The SEFAWG report concluded that the implementation of ITQs management and transition from boat units to quota was "appallingly" handled, that five years on and following some eight reviews (both internal and external) the problems remained and showed little signs of being resolved and the continuing instability and uncertainty was far reaching, imposing additional costs on both industry and government (SEFAWG 1996). The report highlighted the following adjustment pressures:

- Reductions in the value of fishing concessions resulting from the change in the regulatory regime;
- Reductions in the total allowable catches (TACs) as a result of scientific assessment; and
- "normal" economic forces affecting costs or returns.

The Working Group came to the conclusion that adjustment assistance was justified to help create a profitable commercial fishery which can survive and prosper in the tough international market-place, while safeguarding the stocks and environment which support the fishery. The Working Group report recommended targeted financial assistance to selected operators, plus more general assistance as part of a restructuring package designed to move the SEF forward and assist quota trading. This restructuring package would have four objectives (SEFAWG 1996):

- To reduce effort (both latent and active);
- To facilitate non viable operators to adjust out of the fishery;
- To stimulate the quota trading market and allow it to encourage autonomous adjustment; and
- To restore confidence in management, provide greater certainty and stability in the rules under which fishermen operate.

In reaching its conclusions the Working Group report stated "It is important that all fishermen realise that restructuring is a continuing phenomenon and requirement – within

10 40% of the vessels are over 30 years old (FERM 2004)

11 At the time the Minister with responsibility for fisheries.

the SEF as it is in all other economic activities. It is not and can never be a one-off matter. For the most part, restructuring should and does occur autonomously, without the need for government intervention. Indeed it is more likely to be effective if this is the case. The need for government intervention and assistance should only arise when there has been a major breakdown in the natural mechanisms. This justification for government intervention is usually described as being needed to correct a "market failure". It should then be designed to overcome the breakdown (or market failure) and ensure a return to autonomous adjustment as soon as possible." (SEFAWG 1996).

The Working group recommended three principal measures at a estimated total cost of AUD 9.24 million:

- The dequotaing (removal of quota species) of three of the sixteen quota species in the SEF which they believed should not have been included in the ITQ scheme originally (estimated cost AUD 1.04 million);
- The provision of financial assistance to those operators whose values of fishing entitlements were reduced in the transition from boat units to quota (a total of 25 operators at an estimated cost of AUD 3.2 million); and
- The introduction of a buy-out scheme with the objective of reducing effort in the fishery by about 30%. This would involve the purchase of up to 50 fishing permits (both active and latent) at a price of AUD 25 000 per permit plus 10% of the value of the associated quota allocation, up to a maximum of AUD 75 000. Maximum cost AUD 5.0 million

The report was delivered to the Minister on 30 November 1996 and the South East Trawl Management Advisory Committee, AFMA Board and the fishing industry were then asked to provide advice on its recommendations to the Minister. The report was sent to all SEF operators and the Working Group held follow up port meetings to discuss the report.

1998 SEF Adjustment Program

In early September 1997, the Government announced an AUD 6.9 million adjustment program to "provide a new deal" for SEF operators (Parer 1997). In announcing the program the Minister said he had considered the SEFAWG Report, advice from government agencies and submissions made by fishing operators. The package comprised two key elements consistent with the SEFAWG Report:

- Financial assistance to 18 operators who were disadvantaged in the move from boat units to quota (total AUD 2.35 million); and
- AUD 4.4 million fund to buy out SEF fishing permits.

The program did not proceed with the dequotaing of the three species as recommended by the SEFAWG, it provided financial assistance to 18 and not 25 operators and provided slightly less (by AUD 0.6 million) than recommended (AUD 5.0 million) for the permit buy-out.

Offer letters were sent to operators in September 1997 and the program closed on 21 October 1997. The program was implemented in 1998.

A total of 18 operators accepted the targeted financial assistance totalling AUD 2.35 million, while permit buyouts fell well short of the target of up to 50 fishing

permits, buying out 27 permits only. The program removed less than 5% of effort as 13 of the 27 permits were inactive and the remaining 14 comprised only 1% of the effort in the fishery in 1997 (AMC Search 2000). However, one of the major objectives of the program had been to put an end to the ongoing litigation which was preventing the implementation of a management plan. In this respect, it was successful.

Was the adjustment program a success?

An evaluation of the SEF Adjustment Program was commissioned by the Department of Agriculture, Fisheries and Forestry in 1999 as part of the overall adjustment program. The report *An economic assessment of the South East Fisheries Adjustment Program* (AMC Search 2000) assesses the impact and effectiveness of the program on the fishery and the quota trading market using a survey of recipients of the South East Fishery Adjustment Program (SEFAP) funds and an economic model to review of catch and effort data.

Permit buyout and targeted financial assistance

The AMC Search report provides the following useful information on the buyout and targeted financial assistance.

Permit buyout payments totalled AUD 1.7 million with seven fishermen receiving both targeted financial assistance and funds from the buyout. The vessels associated with the permits bought out by the program were all trawlers ranging in size from just under 10 meters to 24 meters with an estimated market value of AUD 7.3 million, although seven vessels remained in the SEF using different permits. The buyout removed latent effort[12] with the operators of only 7 permits receiving their full annual income from the SEF, however buying these permits did not remove real effort as many held more than one permit. Ninety per cent of the permits bought out were attached to other licence packages which provided access to other Commonwealth and State managed fisheries.

The report concluded that the impact of the SEFAP on total permits and hence vessel crews were less than expected due to a range of previous business adjustments resulting from the move to ITQ management in 1992. Permits were surrendered from 21 vessels potentially impacting 20-30 crew. At least 11 continued to work in the SEF on different permits. The most noted impact on crew was in small ports with limited vessels resulting in crew having to move to another port to find work.

The majority (80%) of operators who participated in the permit buyout were owner operators who directed individual or family based fishing operations. These operators were generally small scale with a turnover of less than AUD 1.0 million. Most had at least 20 years fishing experience. The average age of the buyout participants was 57 years (range 35-71 years) (AMC Search 2000).

Targeted financial assistance was paid to 17 operators. The payments ranged from AUD 5 000 to AUD 350 000. This assistance was paid against a background of continuing legal action following the introduction of ITQs and the strong view by some operators that they had been disadvantaged in the move. It had also created discontent and uncertainty and meant that many fishermen were reluctant to actively participate in

12 13 of the 27 permits purchased were either latent or part time effort.

the quota market and support the new management arrangements. The funds provided for targeted financial assistance were not tied and it was thought they would be used to purchase quota, which would further free up the quota market. In fact operators did not use the funds in this way applying the funds instead to rebuild engines and refit vessels, pay off debt and invest for retirement. The operators indicated that the payments were insufficient to regain their loss in quota value, some commenting it was "too little too late" (AMC Search 2000).

The AMC Search assessment concluded that despite shortcomings in design the program was responsible for clearing the logjam which developed following the introduction of ITQs in the SETF. It achieved this by curtailing litigation[13] and demonstrating willingness by government to assist in the adjustment process. The report stated that the use of public funds may have been justified in these circumstances given the background to the allocation of quota and the need to stabilise the ITQ management system and restore confidence in the management agency (AMC Search 2000).

Autonomous adjustment since the introduction of ITQs

There have been a number of studies which have sought to examine the success or otherwise of ITQ management in the SETF and whether or not this has facilitated adjustment. There is no doubt that change was required in the late 80's to deal with what was increasingly a serious decline in many of the key target species. It is very difficult if not impossible to definitively conclude whether or not ITQ management has been more or less effective compared to an alternative management scheme in securing the biological resources which underpin the fishery. I would argue that ITQ management has provided important associated economic signals and benefits which would not have occurred under alternative management arrangements. What we do know is that by the late 80s there was already too much effort in the fishery and significant additional input controls would have been necessary to safeguard the resource if ITQs had not been introduced. Indeed, there was broad agreement at the time that further manipulation of the existing range of input controls could not deal with the issue facing the fishery and acceptance of output controls, which had already been introduced for two species.

Under either type of management arrangement effort had to be reduced. In my view, given the circumstances that existed in the fishery it was clearly preferable to use a management system which allowed for adjustment to occur autonomously over time. This was in contrast to imposing ever increasing input controls every few years with the associated difficulties in their implementation (resistance by sectors of industry to the change and delaying tactics) and the resulting decreasing economic efficiency.

The study *Economic efficiency in the South east Trawl Fishery*, by (Elliston *et al*. 2004) concludes that the rate of adjustment in the fishery has been slow, but cautions against a further decommissioning scheme noting that the costs may well outweigh the benefits. It states that "The ITQ based management system currently in place is likely to result in autonomous adjustment over the longer term.…"

The study *Structural Adjustment in Australian Fisheries*, (Newby *et al*. 2004) concludes that buyback programs have no impact on fish stocks or the sustainability of the fishery in an output controlled fishery with individually assigned rights. It notes "The

13 Those who received targeted financial assistance had to sign a declaration indicating that they would cease existing litigation and not commence any new litigation.

program will encourage resources to move to more efficient operators improving the financial returns of those who remain in the fishery; however, stock improvements will only result from changes to the TAC." Nevertheless, it concludes that despite the amount of latent effort surrendered in the SETF adjustment program there is evidence to suggest that the combination of the move to ITQs and the buyout has reduced effort in the fishery and increased returns to remaining operators.

(Fox *et al*. 2003) examined the ex-post profitability and productivity of vessels following the adjustment program. They conclude in the three years following the program all vessels benefited from a rise in output prices but do not believe this is associated with the program. Their results do indicate a substantial increase in vessel productivity immediately following the buy out despite a decline in catch per unit of effort. They note smaller vessels benefited more than larger vessels. They state "The findings suggest that the buyout, coupled with individual tradeable harvesting rights, have been successful at improving economic performance. Such a desirable outcome is in direct contrast to the long term outcomes associated with vessel and licence buyback in fisheries managed exclusively by input controls."

The report *ITQs, ageing boats and the price of fish - profitability and autonomous adjustment in the South East Trawl Fishery*, (FERM, 2004) conclude that autonomous adjustment is occurring in the SETF – however the rate of adjustment is slow. They note that there is an active quota market, the number of vessels in the fishery is declining and vessels are being used more intensively. Fishing practices and marketing have changed also, focusing more on maximising the value of the catch and not the quantity. They state that the economic costs of this slow adjustment may not be significant as there is very limited scope to use the excess resources (in particular old wooden vessels and relatively non mobile labour) elsewhere in the economy. The study found there were a number of factors which have impeded adjustment and investment in the SETF including:

- *Lack of market for SETF vessels* – noting many operators are reluctant to sell quota and fishing permits without a buyer for their vessel. There is an extremely limited market for these vessels. Unable to find a buyer, but still covering direct costs fishermen continue to operate in the fishery.
- *Expectations of future profitability* – with declining quota values and little new investment, operators have chosen to invest in lower risk shore based activities rather than modernise vessels and purchase additional quota. This is symptomatic of falling fishery profits and a lack of future confidence. This suggests many operators are simply running down their business and will eventually retire from the fishery.
- *Future TAC levels* – anticipated future TAC levels are a key factor in operators expectations for profitability and hence investment. The report suggests there are a number of uncertainties which are affecting operators medium term planning.
- *Confidence in management arrangements* – potential changes with new and expanding environmental requirements, including new marine protected areas, are contributing to uncertainty about future management arrangements.

Interestingly the study found "…that other factors considered likely to be potential impediments to adjustment or barriers to investment such as the availability of alternative employment, the functioning of the quota market, the legal framework, the availability of bank financing and transaction costs, were not significant".

In conclusion, most if not all studies conclude that adjustment is occurring in the SETF but at a slow pace, no doubt slower than anticipated when ITQ management was introduced in early 1992 (see Table 5.1). Generally they conclude that the economic case for speeding up this adjustment process is weak as there is little or no alternative use for the excess resources in the fishery. However, it is suggested that there may be significant ecological benefit in speeding up the rate of adjustment (FERM, 2004)[14]. FERM state that such a decision would need to be carefully considered and costed and note that as most of the economic benefits resulting from accelerated adjustment would accrue to the operators who remain in the fishery they should contribute to the costs of such a program.

Table 5.1. Number of vessels in the SETF

Year	Vessel numbers
1986	151
1991	138
1992	122
1998	102
2003	102

Source: FERM, 2004

Some other observations/issues

Should adjustment have taken place prior to the introduction of ITQs?

In reflecting on the conclusions reached in a number of the studies above and more generally I can't help but think that adjustment should have been undertaken prior to the introduction of the new management arrangements. Newby *et al.* 2004 in their paper on *Structural Adjustment in Australian Fisheries* comment that "….if the fishery requires urgent adjustment to avoid serious or irreversible damage, it may be desirable for the government to become more actively involved in the process to ensure that sustainability objectives are not postponed". There was obviously a view at the time that if ITQ management were introduced in the SETF, adjustment would take place with little or no need for government intervention and at no cost to the taxpayer - although this was not universally the view. It does seem at odds with the *New Directions* policy statement (Commonwealth of Australia 1989), which clearly foreshadowed a role for government in restoring the balance between effort and sustainability where there was a significant imbalance. This did in fact occur in another Commonwealth fishery at this time, the Northern Prawn Fishery. Arguably the SETF was a candidate for such a program also and, had this occurred and more attention been paid to the introduction of the new

14 This may be more important for environmental outcomes than for fisheries sustainability, relating to such things as reducing the frequency of trawling and the quantity of bycatch taken.

arrangements (in particular the transition from boat units to quota), the last 15 years in the SETF may have been very different.

Acceptance of ITQ management by industry, managers and the scientific community

One of the serious side effects of what was a very poorly managed move to ITQs in the SETF was a view particularly among industry but also in the scientific community and to a lesser extent in some fishery managers, that ITQs were not a particularly good or useful fisheries management tool. Until fairly recently when ITQs were discussed for managing other fisheries, industry would point to the SETF and say that they had not worked in that fishery why would they work in their fishery? Some in the scientific community also implied that management by ITQs was far more difficult (from a scientific assessment point of view) than more traditional input controls, citing different, more demanding and more costly data and scientific requirements. In effect, I would argue that if a fishery is being managed effectively under any management regime the data and scientific assessments will be significant and costly. Obviously they differ depending on the management arrangements, but setting a TAC is no more or less demanding than understanding and measuring movements in effort and controlling the impact of fishing operations on target species.

The role of non fisheries income in helping or hindering adjustment

There is no doubt for a range of reasons (some discussed below) fishermen in the SETF have not responded too many of the economic signals being generated by management arrangements, and changes in the economy more generally. Two factors which have had a direct influence on their behaviour are the investment in and returns from non fisheries (*i.e.* on shore) income and the additional income earned by some during the years of the orange roughy boom.

Many fishermen have invested in non fisheries related on shore activities (in particular commercial and residential property) over the years, and have used income from this source to supplement poor or negative returns from fishing operations. Likewise, in the years preceding ITQ management and for a period after 1992, large catches of orange roughy enabled some operators to amass significant additional income which was either applied to their fishing business, or invested elsewhere.

It is worth noting that there was substantial new investment in the fishery in the late 80's based on the expectation of large orange roughy resources. These expectations were not realised and this in fact increased the pressure on the rest of the fishery to deliver returns against that investment. This environment was not conducive to reductions in TACs on these other species nor for autonomous adjustment more generally, as few of even the most efficient fishers were in a position to commit resources to buy out others.

In more recent years with further reductions in TACs, increases in fixed costs and an increasing range of other pressures, returns from the SETF have continued to decline. In many cases even with additional non fisheries income, this may not have been sufficient to support fishing operations - resulting in increasing pressure to leave the fishery.

Cultural factors

The Australian fishing industry comprises a diverse mix of people from all over the world. Many in the SETF are of Mediterranean background and come from families who have fished for generations. Fishing is a significant part of their history, identity and culture. In many cases this history and identity has shaped their responses to management arrangements and economic conditions. This "history" has a number of potential effects including: *i)* a reluctance to leave what is a traditional family pursuit – "my family have been fishermen for generations and I don't know what else I could do"; *ii)* an identity impact – "we have always been good (the best) fishermen" and to leave the industry would be to loose that identity and superior recognition in the local community, even if this means subsidising fishing operations from other pursuits; and *iii)* "traditional fishers (the core of the fishery), many of whom are from Italian families, have been slow to move and are very conservative, and as a result may have been selectively disadvantaged" (Aslin *et al.* 2001).

As a final comment on cultural factors the view has been expressed that the move to ITQs forced fishers to approach fishing as a business, ITQs forced "people from a hunter-gather framework to being business people whether they liked it or not" (Aslin *et al*. 2001). This, and the co-management framework which involved the fishing industry directly in the management of the fishery, has seen a huge change in fishermen's understanding and approach to fisheries management.

Perceptions about the value of fishing vessels and permits and the future productivity of the fishery

The SETF fleet is an old fleet, with an estimated 40 % of vessels over 30 years old and just over 80% 20 years or older (FERM 2004). FERM conclude "There are extremely few opportunities to use the old inshore wooden trawlers elsewhere. Compounding this, many operators appear to have unrealistic expectations as to what their sometimes poorly maintained vessel is worth and are reluctant to sell their permit or quota until they have a buyer for their vessel……".

Against the backdrop of a world where there is overfished and declining fish stocks, substantial overcapacity in the form of vessel and labour and in a country which has had few vessel decommissioning schemes (of limited success) it is curious that perceptions about the value of assets and, in particular, fishing vessels is often far removed from reality. I can only suggest that it stems from a lack of awareness of what is happening in general across Australian fisheries (including the broader marine environment pressures) and the world fisheries scene, and this results in an overly optimistic view of the future. Although the fact that many fishers may have little or no alternative employment options and are approaching retirement may also influence this thinking.

"Non binding" nature of the SETF TACs

The initial TACs for most species in the SETF were set based somewhere between the average and maximum historical catch levels, and most subsequently increased in the initial years of 1992-97. In the period 1999-2004 there has been a 20% fall in total SETF TACs. Despite claims by industry that a catch rate of 70-80% should be considered fully utilised, in 2003 the TACs for 14 of the now 20 ITQ stocks were not fully utilised (FERM 2004). FERM concludes that "In the main, the TAC levels set since 1992 have not restricted many SETF operators from continuing to operate as they did previously".

Indeed the "non binding" nature of these TACs until more recent years may of itself acted to slow the adjustment processes sought in this fishery.

It is interesting to reflect on why the TACs have not more effectively assisted the adjustment process. It has been suggested that this is in part because of the huge economic pressure that the fishery was under when ITQs were introduced and the consequent significant political pressure that would have resulted from attempts to further reduced the TACs in the early 1990's. This to me further supports the argument that a structural adjustment package should have been made available in 1991 prior to the introduction of ITQ management. While involving industry in the TAC setting process is an important part of the co-management model, I believe they actively sought to maintain TACs during this difficult period to ease the financial situation many of them were facing. This unfortunately just put off the inevitable day of reckoning and resulted in a slower rate of adjustment.

Elliston *et al*., conclude that "One of the most significant improvements which could be made to the economic efficiency of the fishery involves the setting of TACs for key species". Their analysis suggests that economic (cost of production and price received) as well as biological information should be used in setting TACs. They point out that current TACs are not set in this way and believe that inappropriate TACs are dissipating potential economic returns in the fishery. This suggests a further lowering of TACs for key species would further improve the economic efficiency of the fishery.

Impact on fisheries dependent communities

There appears to be mixed views on the likely impact of fisheries management changes on fisheries dependent communities. Under any management regime effort needs to be reduced over time as fishers become more efficient. This results in fewer vessels operating from fewer ports with possibly greater regionalisation. There can be little doubt that the poorly handled introduction of ITQs in the SETF, and the long period of destabilisation which followed, had an impact on individuals and their communities. On the other hand the greater security afforded by ITQs and subsequently SFRs issued under the SESS Management Plan have provided increased retirement security.

The *New Directions* policy statement (Commonwealth of Australia 1989) recognised a variety of possible social impacts stemming from vessel reductions including:

- Inability of owners to sell fishing boats and realise on capital assets;
- Reductions in the number of people employed in the industry;
- Flow on effects of loss of employment to regional communities; and
- Impact on other fisheries where boats were permitted to operate in several fisheries.

It concludes that while care must be taken to minimise the impact of restructuring, it should nevertheless be undertaken, with the likely outcome to be of overall benefit to both local communities and more generally the Australian community. It notes that few, if any, regional communities are solely dependent on fishing, and any adverse impacts will be minimised if the restructuring is gradual.

These conclusions are supported by a study undertaken prior to the introduction of ITQs in the SETF (Powell *et al.* 1989) which concluded:

- for the four towns considered, economic flow-on effects of trawl fishing income were modest because of the few linkages between fishing and other economic activities, and the small overall contribution of trawl fishing to town economies;
- total contribution in employment terms from trawl fishing was 4% of the Ulladulla economy; 12% for Eden; 13% for Lakes Entrance, and 5% for Portland;
- the introduction of ITQs was expected to lead to fewer boats in the SETF, and increased effort and efficiency among remaining boats – reduced employment on boats overall, possibly resulting in boat relocations;
- economic effects of changes resulting from ITQs were likely to be modest – total fishing industry employment would be reduced 15-25% (only 2-3% of the total economy of towns considered);
- because of better infrastructure and processing facilities, Eden was likely to benefit slightly while other ports would lose slightly;
- higher output from orange roughy catches in 1989 was expected to produce substantial economic gains swamping any negative effects of the policy change; and
- while overall effects were likely to be small, there may be a need for measures to aid adjustment and help disadvantaged individuals.

Other external factors – new environmental legislation and the introduction of marine protected areas

This paper would not be complete without acknowledging the significant changes which have occurred since the release by the Australian Government of its Oceans Policy in 1998. Flowing from this was a program of regional marine planning (establishing marine protected areas - MPAs) and extensive and updated environmental legislation[15]. The implementation of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) means that the Commonwealth Department of Environment and Heritage now plays a significant role in promoting ecologically sustainable management of fisheries and assessing their environmental performance.

The Department is responsible for assessing fisheries managed under Commonwealth legislation and state export fisheries in accordance with the EPBC Act. This includes:

- the strategic assessment of fisheries under Part 10 of the EPBC Act;
- assessments relating to impacts on protected marine species under Part 13; and
- assessments for the purpose of export approval under Part 13A.

More generally, Australia's governments are working together to set up a national system of protected areas throughout the entire marine zone. The primary goal of the National Representative System of Marine Protected Areas (NRSMPA) is to establish and manage a comprehensive, adequate and representative system of marine protected areas to contribute to the long-term ecological viability of marine and estuarine systems, to maintain ecological processes and systems, and to protect Australia's biological diversity at all levels. Within this framework the Commonwealth government manages an estate of

15 The Environment Protection and Biodiversity Conservation Act 1999

marine protected areas that are Commonwealth reserves under EPBC Act. Strategic assessment and development and implementation of MPAs have had a major impact on the SETF.

Fuel prices, repairs and maintenance and the price of fish

Fuel prices, the cost of other major inputs and static or declining returns for fish have had a major impact on the SETF over the last five years. Key costs have increased steadily with a major increase in fuel costs in the last two years. Repairs and maintenance on an ageing fleet are unavoidable and costly. The FERM 2004 study concludes "Adapting to changes in external factors is an unavoidable part of the business world".

As these costs have increased, catches have declined and the real price of fish has in general remained stable, or fallen, due to increased competition from domestic and international producers (FERM 2004). This trend is likely to continue and given current Australian government trade policies, there is unlikely to be any relief using trade measures. This calls for a new approach to maximise the value of each fish caught – for example increasing mesh sizes and different approaches to marketing of product. This may involve further short term losses in catches and revenues with the benefits flowing in the medium term.

Lessons learnt and future programs

Some comments on structural adjustment in fisheries

Structural adjustment in fisheries is no different to adjustment elsewhere in the economy. Structural adjustment is the ongoing shift in the distribution of activities and resources within and between individuals and firms, in an attempt to improve efficiency, contribute to economic growth and raise living standards[16] (Newby *et al* 2004). However, unlike other sectors of the economy, fishermen do not have control of all the inputs in their "production" processes - specifically the level of fisheries resources that they can access.

In the fisheries context, because of the market failure which occurs if fisheries are not regulated, a primary role for governments is to establish management regimes that remove incentives that lead to overcapacity, and to facilitate autonomous adjustment in response to changing economic and biological conditions. This is very much the philosophy which underpins the *New Directions* policy statement and current Commonwealth fisheries policy.

Fishing and fishermen should be treated in the same way as other sectors of the economy and should be exposed to the risks of the market, make investment decisions and adjust accordingly. That said, there is also a strong case that where previous government actions have lead to overcapacity and management changes have not adequately addressed this, then there is a role for governments in facilitating necessary

16 Productivity Commission 1999, *Structural Adjustment – Exploring the Policy Issues*, Workshop Proceedings, AusInfo, Canberra.

adjustment *prior* to implementing new management arrangements. This did not happen in the case of the SETF.

Newby *et al.* conclude in relation to their Australian case studies that "…capacity problems originally exist in fisheries due to the historical management regimes and the associated economic incentives they created. Unless these underlying incentives to create overcapacity are addressed, any benefits of structural adjustment schemes, on both fish stocks and economic rents, will be short lived. The primary role of governments is to design and implement a management regime that addresses the incentives that lead to capacity problems and facilitates autonomous adjustment."

So in a new fishery, the role of government is to implement sound market-based management arrangements which do not encourage overcapacity to develop and which facilitate autonomous adjustment. In established fisheries where overcapacity is already a problem they need to assess the nature and extent of this, develop and implement a structural adjustment scheme if considered appropriate, and then establish market-based management arrangements. There is no substitute for sound long term management arrangements.

The 2005 Commonwealth Fisheries - Securing our fishing future initiative

The *Securing our Fishing Future* package announced by the Minister for Fisheries in November 2005 is aimed at addressing the profitability and the sustainable future of the fishing industry in Commonwealth managed fisheries. The centerpiece of the package is AUD 150 million for a one-off, capped, fishing concession buyout focused on reducing overcapacity in those Commonwealth fisheries that are subject to over-fishing - or at significant risk of over-fishing in the future. The following fisheries are being targeted in this process:

- the Southern and Eastern Scalefish and Shark Fishery (excluding the Great Australian Bight Fishery, which is not subject to overfishing);
- the Eastern Tuna and Billfish Fishery;
- the Bass Strait Central Zone Scallop Fishery, and
- the Northern Prawn Fishery.

The package will also assist in reducing the impact of the displaced fishing effort arising from the creation of Marine Protected Areas in the south east marine region.

In a significant departure from previous Commonwealth fisheries adjustment programs a further AUD 70 million in complementary assistance will be available for other activities including:

- AUD 30 million to offset the impacts of reduced fishing activity on onshore businesses most directly linked to the fishing industry (e.g. fish processors, ships chandlers) as well as other targeted assistance including;
  - grants of AUD 5 000 and AUD 3 000 respectively to skippers and crew who lose employment as a result of the catch cuts to offset the costs of job seeking, relocation and retraining;

  - AUD 1 500 per fishing or directly related business to offset the costs of obtaining professional business advice on their best options under the package;
- AUD 20 million to establish a Fishing Communities Programme aimed at generating new economic and employment opportunities in vulnerable regional ports affected by reduced fishing activity;
- AUD 21 million to offset the cost of AFMA management levies and for improved science, compliance and data collection.

In announcing the package the Government said it was "responding to industry pleas and stepping in as a circuit-breaker so as to ensure all Commonwealth fisheries are sustainable and those remaining in the industry are able to earn a decent living." Importantly the Minister emphasized that the Government has not changed its policy of preferring management arrangements which facilitate autonomous adjustment in Commonwealth fisheries.

Tenders for Business Exit Assistance were called in March 2006 and closed in early June 2006. The results were announced by the Minister for Fisheries on 15 September 2006:

- Around AUD 90 million will be used to purchase over 400 fishing concessions (permits and SFRs) in the SESS fishery and the Eastern Tuna and Billfish fishery
  - 140 Boat SFRs from the scalefish and shark fishery (close to 50 percent of all Trawl Boat SFRs); and
  - 100 longline fishing permits;
- The tenders offered in the Bass Strait Central Zone Scallop Fishery and the Northern Prawn Fishery were generally not considered to be value for money and very few offers were accepted in these fisheries.

As a result, the Government will open a second round of the Business Exit Assistance from Thursday, 19 October 2006 to give operators in these fisheries another opportunity to tender their concessions. Fishers will have five weeks to tender. Implementation of the other elements of the *Securing our Fishing Future* package will follow this process.

Concluding remarks

Adjusting to change is difficult in any sector, but change is inevitable. Structural adjustment is a continuous process and any industry or sector which believes it can be isolated from it, is misguided. This is particularly the case when accessing a scare community owned natural resource for which we have limited knowledge. Fisheries management arrangements which facilitate autonomous adjustment should be implemented whenever possible and governments should allow market forces to operate within this framework rather than seeking to achieve other social or regional development objectives at the expense of the resource. Transparent, stable management arrangements and secure on-going access rights will help facilitate desired fisheries management outcomes.

I do however believe there is a case for adjustment assistance to be more forthcoming rather than less in some circumstances; specifically where previous government action, or

inaction, has lead to a blow out in effort and resulted in an "unsustainable" fishery. In these circumstances a well-targeted adjustment program at the right time can create an environment which facilitates better ecological and economic outcomes.

Structural adjustment has and is occurring in the SETF. The process is slow, it has been painful (death by a thousand cuts!) and has caused additional pressure on target and non target species and the marine environment. There does not appear to be a strong economic case for government intervention to speed up this process. There may however be environmental grounds for such action but the costs and benefits would need to be carefully assessed.

So with hindsight what would I have done differently? I strongly believe that an adjustment package should have been implemented in 1991 prior to the introduction of the ITQ management. The package should have dealt with the already identified problem and given operators a clear indication of the environment (both resource and economic) they would be facing after the package. Ideally, the package would have been reasonably generous and combined with targeted, focussed consultation, would have reduced or eliminated many of the problems seen in the SETF during the 90's. Once new arrangements were implemented, binding TACs on key target species should have been set and enforced, leaving operators to work in this new environment. I believe this would have given the operators remaining in the fishery the best chance of dealing with the other external pressures which have appeared over time.

Any move to new management arrangements and reallocation of access rights is fraught with danger. This is borne out by experience in many Australian Commonwealth fisheries as we have moved over the last 15 years to implement new management arrangements. Particular care must be taken in developing the new management package and consulting as widely as possible. Arrangements must withstand legal scrutiny and be as transparent as possible. An independent process to determine the transition from one form of access rights to another is essential as most litigation is about new allocations and not new management arrangements. Be thorough, be careful, be open in your processes and consultation but be aware it is not going to be easy!

Annex

Non-trawl sector

Prior to 1985, the non-trawl sector was a series of small, open access fisheries. In July 1985, a freeze was placed on issuing new Commonwealth Fishing Boat Licences (CFBLs), but by this time thousands of such licences were in existence providing access to scalefish by gillnet, demersal line and trap methods, in Commonwealth waters. Many of these licences were not used to any great extent, creating a large pool of latent effort. In 1988, gillnet operators were brought under input controls which restricted fishing effort by a system of gear units designed to limit the take of school and gummy shark. This also had the effect of reducing the gillnet effort which could be directed at scalefish.

In 1992, with the establishment of AFMA, approximately 550 Fishing Permits were granted to previous holders of CFBLs allowing for the take of demersal scalefish using non-trawl fishing methods. At the same time a trip limit for eastern gemfish was introduced, in response to concerns about the stock and in line with the limits which already applied to the trawl sector.

In 1994, AFMA commenced developing more specific access criteria and long-term management arrangements for the non-trawl fishery. Specific concerns had been raised regarding the non-trawl catch of three trawl quota species; blue eye trevalla (*Hyperoglyphe antarctica*), blue warehou (*Seriolella brama*) and ling (*Genypterus blacodes*). After a lengthy consultative process, the access criteria were finalised and applied in October 1996, further limiting the number of operators with access to the fishery to around 160.

Following further consultations, TACs were set for the non-trawl sector and individual quotas were allocated to non-trawl operators for the three key species; blue eye trevalla, blue warehou and ling on 1 January 1998. In contrast to the trawl sector, the transition to ITQ management and the allocation of quota in the non-trawl (scalefish) sector was relatively free of litigation.

The SESS Management Plan covering the trawl, non trawl, the Great Australian Bight Trawl and shark fishery was introduced in September 2003 and brought all fisheries under a single management plan and complementary management arrangements.

Bibliography

ABARE (2006), *Australian Fisheries Statistics 2005*, ABARE, Canberra, July 2006.

AMC Search Ltd (2000), *An Economic Assessment of the South East Fishery Adjustment Program (SEFAP)*, Australian Maritime College, Launceston, Tasmania, May 2000.

Aslin, H.J., R.D. Connor. and M. Fisher, (2001), *Sharing the catch or cashing in the share? Social impacts of Individual Transferable Quotas and the South East Fishery,* Bureau of Rural Sciences, Canberra, 2001.

Commonwealth of Australia, (1989), *New Directions for Commonwealth Fisheries Management in the 1990s – A Government Policy Statement*, Australian Government Publishing Service, Canberra, 1989.

Commonwealth of Australia, (2003), *Looking to the Future – A review of Commonwealth Fisheries*, Department of Agriculture, Fisheries and Forestry, Canberra, June 2003.

Elliston, L., P. Newton, D. Galeano, P. Gooday, T. Kompas and J. Newby, (2004), *Economic Efficiency in the South East Trawl Fishery*, ABARE *e*Report 04.21, Fisheries Resources Research Fund, Canberra, November 2004.

Fisheries Economics, Research and Management (FERM) Pty Ltd (2004), *ITQs, Ageing Boats and the Price of Fish – profitability and autonomous adjustment in the South East Trawl Fishery*, Fisheries Resources Research Fund, Canberra, November 2004.

Fox, K. J., R.Q. Grafton, T. Kompas, and N. Che, (2003), *Capacity Reduction and Producivity: the case of a fishery*, Economics and Environment Network Working Paper, Australian National University, Canberra, July 2003.

Grieve, C. and G. Richardson, (2001), *Recent History of the South East Fishery – A Manager's Perspective*, in Marine and Freshwater Research, Volume 52 Number 4, A Complex Quota-managed Fishery: Science and Management in Australia's South East Fishery, pp377-386. 2001

Kaufmann, B., G. Geen and S. Sen, (1999), *Fish futures: individual transferable quotas in fisheries,* Fisheries Economics, Research and Management Limited, Kiama, NSW, Australia, 1999

Newby, J., P. Gooday and L. Elliston, (2004), *Structural Adjustment in Australian Fisheries*, ABARE eReport 04.17, Fisheries Resources Research Fund, Canberra, November 2004.

Powell, R., R. Jensen and L. Horwood (1989), The effects of policy change on South East Trawl fishing communities. Report to the Steering Committee on long-term management of the South East Trawl Fishery. University of New England, Armidale.

Senator Warwick Parer (1996), media release DPIE 96/71P, October 1996 accessed 24 July 2006 at http://www.daffa.gov.au/__data/assets/pdf_file/23762/ministers_parer_releases.pdf

Senator Warwick Parer (1997), media release DPIE 97/202P, September 1997, accessed 24 July 2006 at http://www.daffa.gov.au/__data/assets/pdf_file/23762/ministers_parer_releases.pdf

South East Fishery Adjustment Working Group (1996), *Report of the South East Fishery Adjustment Working Group*, Minister for Resources and Energy, Canberra, November 1996.

South East Trawl Fishing Industry Association Ltd (2005), *Structural Adjustment proposal for the trawl sector of the Southern and Eastern Scalefish and Shark fishery*, unpublished proposal to the Minister for Fisheries, Forestry and Conservation, Tasmania, February 2005.

Tilzey, R.D.J. (1994), *The South East Fishery: a scientific review with particular reference to quota management,* Bureau of Resource Sciences. 360 pp.

Chapter 6

Implications of an Ageing Fisheries Labour Force in Japan

Nobuyuki Yagi, Assistant Director, Fisheries Agency MAFF, Tokyo Japan

Introduction

Japan is made up of 7 277 islands. Mountains and forest cover approximately 70% of the land; arable space is limited. The traditional Japanese diet is made up of food resources from the ocean. Around 40% of the protein consumed by Japanese people comes from seafood.[1] Japan's traditional fishing communities are located in nearly all the coastal areas nationwide. About 6 200 fishing villages exist along Japan's coastlines, which extend for 35 000 km.

These remote coastal communities face grave socio-economic problems today. Fisheries are the most important sources of revenue in remote coastal communities, but their production has been steadily declining in recent years. The number of fishery workers is also decreasing and the workforce continues to age rapidly.

The implications of an ageing fishery workforce are not limited to social problems. It has often been pointed out that the ageing of fishery workforces may create adverse effects for the rational use of resources. Let us take the example of small coastal trawlers operated by 2-3 man crews. During the operation, the crews frequently hoist the net completely on board to gather the catch and release the untargeted species. However, as crews become older, their physical strength wanes and they are unable to pull the net up as frequently. As a result, the trawling net could stay underwater for hours. The fish would then be compressed in the cod-end of the net and their commercial value would decrease. In addition to this the survival rate of undersized fish or by-caught species would also fall, because the untargeted species would not be released in time.

Alleviating the effects of an ageing workforce would, therefore, bring about certain positive socio-economic and environmental effects. This paper examines the current state of the ageing issue in Japan and describes the government's attempts to deal with the problem.

[1] Figures are from the *Food Balance Sheet*: Ministry of Agriculture, Forestry and Fisheries, Japan. December 2002.

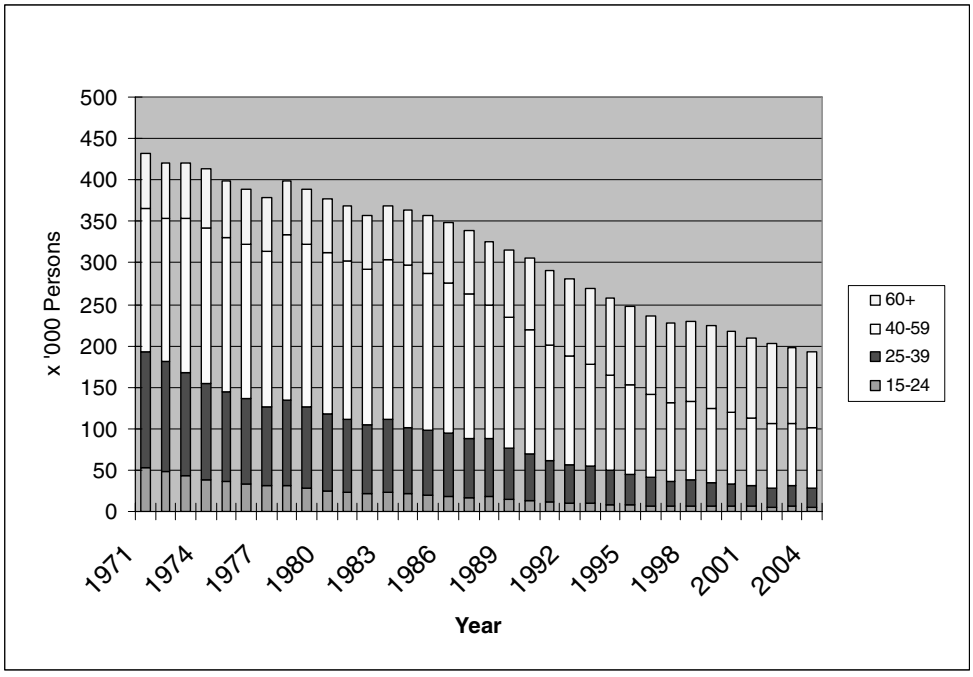
Ageing and Diminishing Japanese Fishery Workforces

The number of fishery workers in Japan has been decreasing for decades (See Figure 6.1). It fell from 525 000 in 1971 to 231 000 in 2004 according to government statistics[2]. The gender ratio of the fishery workforces has remained relatively stable. A proportion of male workers represented 84% of all fishery workforces in 2004, while in 1971 it was 82%.

The data on age composition for male fishery workers is available from the same statistics used above. According to these statistics, the ageing fishery workforce has been increasing over the same period. The percentage of male fishery workers over 60 years old went up from 14% in 1971 to 47% in 2004. Furthermore, in 2004, 38% of them were between the ages of 40 and 59, and 13% of them were between the ages of 25 and 39. The proportion of young workers is extremely low. In the same year, only 3% of male fishery workers were between 15 and 24 years old.

The number of female workers has also been declining. In 1971 there were 93 000. In 2004 the number fell to 37 000. Although no annual statistics on age-class data for the female workforce is available, the ageing of female fishery workforces is recognized by the Fisheries Census conducted every 5 years.

Figure 6.1. The Number of Male Fishery Workforces in Japan (by Age Class)



Source:. Annual Report on the Movement of Fisheries and the Fisheries Census, MAFF

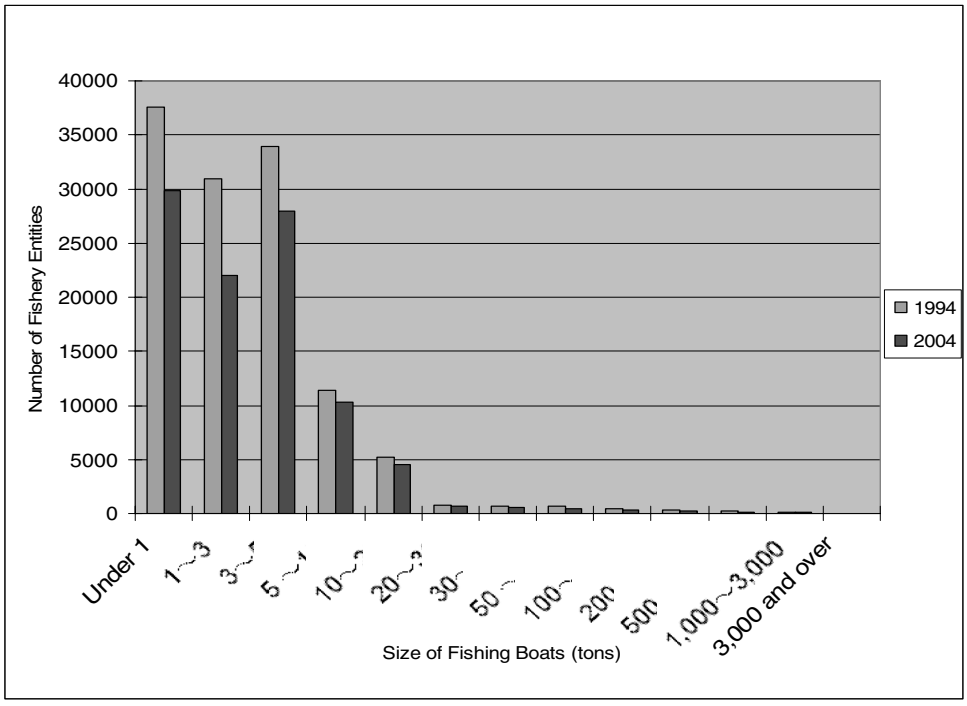
[2] Under these statistics, a "fishery worker" is a person who commercially operates fishing activities more than 30 days a year.

Changes in the Number and the Size of Fisheries Entities

The number of entities engaged in fishery production has also been decreasing in Japan. Figure 6.2 indicates the number of fishery entities in 1994 and 2004. The decrease can be observed in all the entities regardless of the size of the fishing boat they own. In other words, the number of both small and large sized entities has decreased simultaneously (when we assume the size of the boat owned by fishing entity also represents the size of the entity itself).

Judging from the above, no tangible shift (from small businesses to large businesses, for example) has been observed with respect to the size of fishing entities. In 1994 a large majority of Japanese fishing entities were small businesses that owned fishing vessels of less than 5 tons. The predominance of the smaller fishing entity remained unchanged in 2004. During the past decade, the number of fishing entities in Japan has gone down significantly, while unused fishing ground has gone up.[3] The data also suggests that no enlargement of the size of the fishing business has actually taken place during this period.

Figure 6.2. The Number of Fishery Entities by Boat Size in 1994 and 2004



Source: Annual Fishery Production Report, the Government of Japan

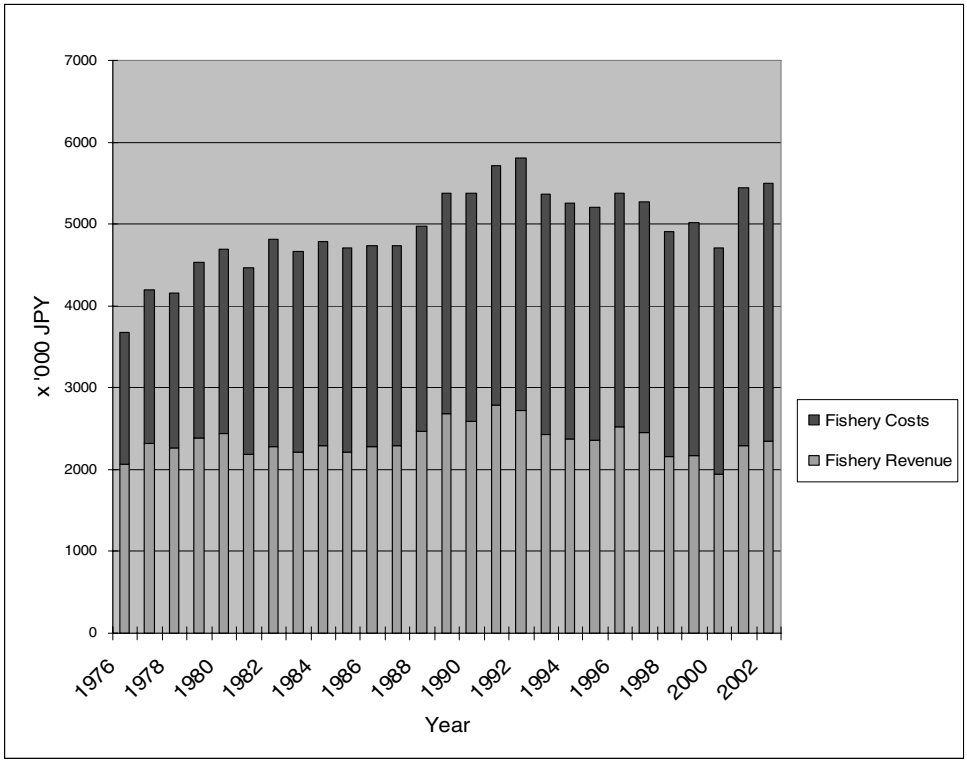
[3] Under Japan's right based fishery management system, the fishery rights are usually held by local fishery cooperative associations. Fishery cooperative associations divide the rights according to the number of the individual members of the associations, and entrust individual members with a task to exercise the rights. In most cases, the individual member is allowed to exercise the right to operate certain fishery/aquaculture within a limited ocean area allocated by the fishery cooperative association, based on the allocation policy agreed by the cooperative members. If the individual member does not exercise the right in a given period of time, it means that the allocated ocean areas will not be used for certain fishery/aquaculture operations during that period.

Changes in Sales, Revenue and Costs of the Average Fishing Family

Costs and revenues of an average fishing family in Japan have not changed much during the period after the 1990's, as shown in Figure 6.3 below. The average sales were around JPY (Japanese Yen) 5 million[4] throughout the 1990's (please note that revenue is equal to sales minus cost, and therefore the sum of revenues and cost represents the sales). The average number of fishing days per year, which is around 130-150 days, did not change throughout this period. Thus, the level of sales from the per-unit fishing activities have not significantly increased or decreased.

This data could support the previous findings that no enlargements of the size of the fishing business have actually occurred during the past 10 years, despite the fact that a significant number of fishing entities in Japan has been reduced and the amount of unused fishing ground is going up.

Figure 6.3. Average Sales, Cost and Revenue of a Fishing Family



Source: Annual Report on Economy of Fishery Families, the Government of Japan

Recent Decrease in Japan's Fishery Production

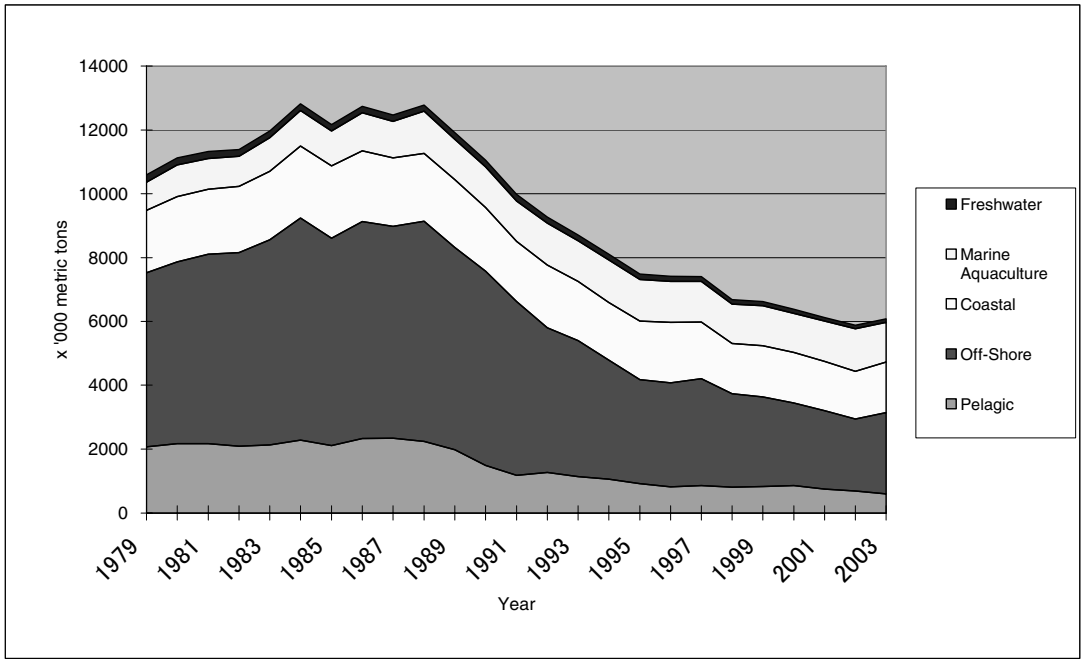
Since the mid-1980s Japanese fishery production has steadily declined. In 2003, production was 6.1 million tons, which is about half of what it was in the 1980s.

4 Recent exchange rate is: USD 1 equals approximately JPY 115.

Figure 6.4 below shows the changes in the production volume of freshwater, coastal, offshore, pelagic fisheries, and aquaculture. The decrease in production volumes of coastal fishery has been relatively slow, while the productions of offshore and pelagic fisheries experienced sharp declines after the 1980's.

This data is consistent with previous findings that show how the number of fishery workers has declined without any tangible increases in size of the per-unit fishery during the past 10 years. In other words, the reduction in the number of the fishers directly corresponds to the decrease in Japanese fishery production after the mid-1980s.

Figure 6.4. Domestic Production of Japan's Fisheries



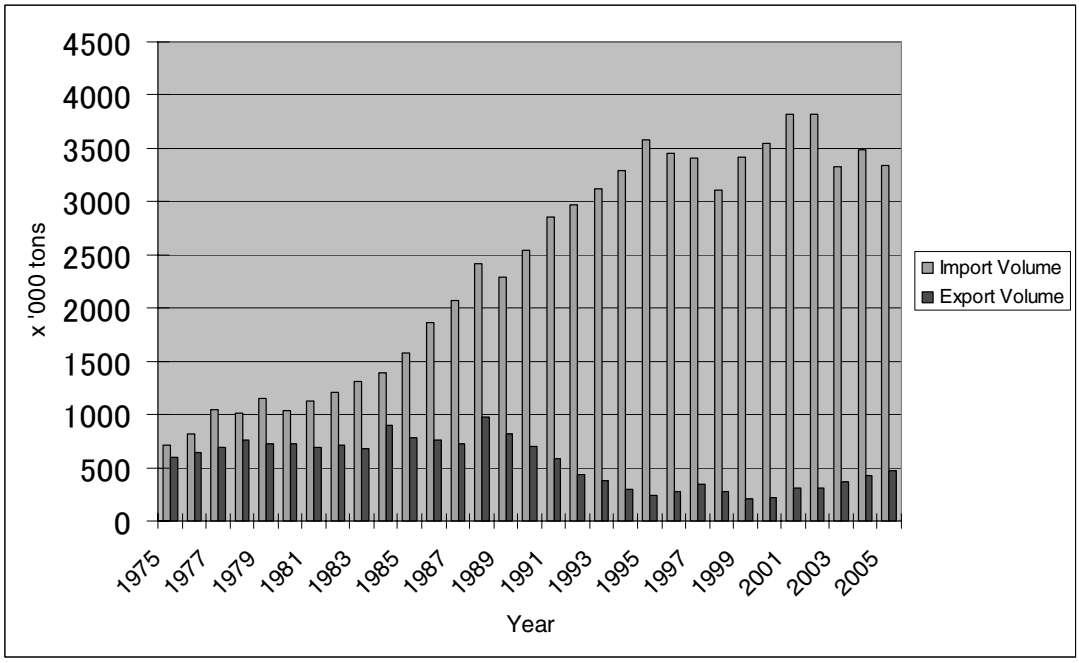
Source: Fishery Production Statistics, Government of Japan.

6. Increasing Imports in Fishery Products

The value of import fishery products in Japan drastically increased after the 1970's, see Figure 6.5 below. Currently Japan is the world's largest importer of fish products. Thirty seven per cent of the world's fishery production is exported, and Japan's imports account for one quarter of it according to FAO statistics. The reduction in domestic production is counterbalanced by the increase of imports.

Exports of Japan's fishery products are relatively small. The volume of Japan's import and export in fishery products is 334 and 468 000 metric tons respectively in 2005.

Figure 6.5. Import and Export Volume of Fishery Products



Source: Trade Statistics, Government of Japan

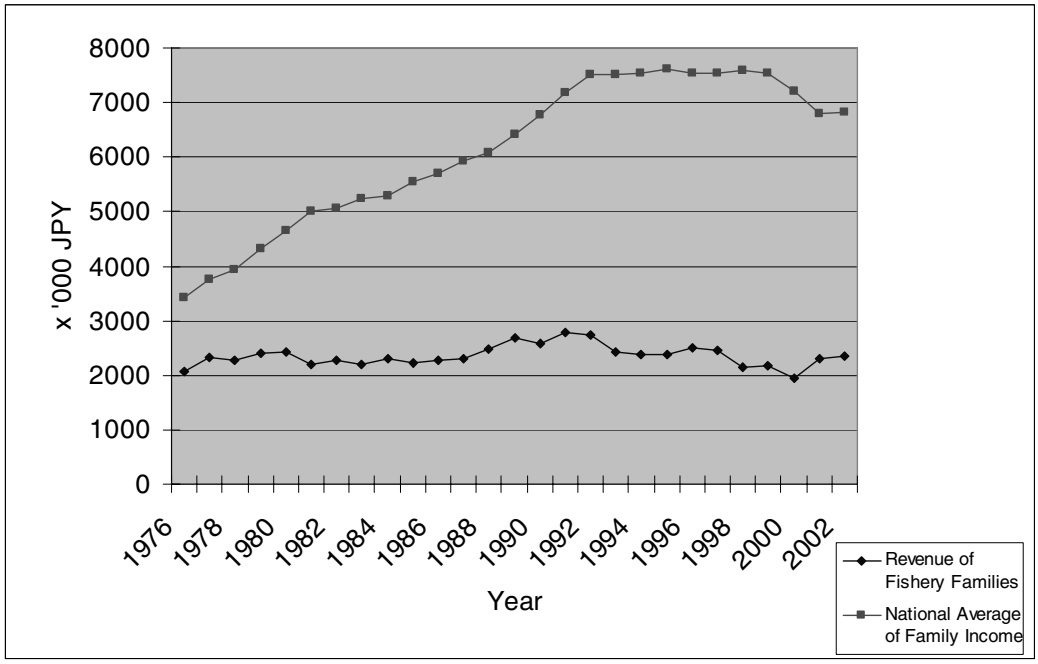
Possible Reasons for the Ageing Workforces (Economic Aspects)

The fishery workforce is ageing because the number of new recruits diminishes every year. The Basic School Research Report of the Government of Japan indicates that only around 600 high-school graduates entered the fishing sector every year from 1994 to 2004. The Fisheries Census conducted every 5 years provides the number of annual recruits. It is between 1 500 and 4 500 people. The number fluctuates according to the research (the lowest recruitment was recorded in 1980's[5]). In any case, the number of recruits represents less than 1-2% of the fishery workers currently employed. This amount is not enough to sustain the current number of workers.

What are the reasons for this low recruitment rate? One possible explanation is the low-income level of fishery workers. Figure 6.6 compares the annual revenues of fishery families to the national household income average. While the annual revenue from fishery households remain constant at JPY 2 million, the national household income average in Japan increased to a level of JPY 7 million per year in 1990's. This difference could explain the low recruitment rate for the fishery sector.

5 Dr. Kazutoshi Kase suggested that not only the recruitment rate but also retirement rate or volatilities in the job market should be examined. Kazutoshi Kase "The Restructuring Process of Japan's Fisheries" 2001, p. 124, The Norin Tokei Kyokai (available in Japanese only).

Figure 6.6. Annual Revenues of Japanese Fishery Families and the National Average of Household Income



Source: Annual Report on Economy of Fishery Families and the Household Survey, Government of Japan

In addition, it has often been noted that income in the fishery sector is more volatile than income in other sectors. Sales from fishing largely fluctuate depending on natural conditions (*i.e.*, weather conditions or fish abundance).

Possible Reasons for the Ageing Workforce (Institutional Aspects)

The last section demonstrated that the low income prevalent in the fishery sector could contribute to the low recruitment rate in the sector. This finding raises questions regarding why business integration (or enlargement of fishery operations) has not yet taken place, since doing so would enhance the sales and revenues from fishing. As we have seen in the previous section, a significant number of fishing entities in Japan has been significantly reduced, but unused fishing grounds have been left more or less untouched.

One explanation for this is that, because old license holders do not release the fishery rights (license) even though they do not exercise the rights, newcomers or neighbouring peer fishers are not able to receive the right. Consequently, unused fishery grounds covered by these un-exercised rights remain untouched. The reason why right holders do not forgo their rights is that they hope their children or grandchildren, who live in Japan's urban areas, will eventually return to the coastal communities of their origin[6].

Fishery management in coastal areas is based on traditional local fishery rights: a group of fishers/fishery workers (fishery cooperative associations) traditionally assume

6 This information is based on an author's interview with local fishery authorities. The same point was referred to in "Changes and Issues on Production Structure in Coastal Fisheries" Masaharu Demura 2003, Norin Kinyuu 2003.11.

exclusive rights for operating certain fisheries and, thus, assume all the responsibility for the long-term sustainability of resources. Although it does not provide an exclusive right per se over sea areas, a right to engage in fisheries is provided under limited conditions with regard to the fishing season, species and fishing methods. The fishing right is non-transferable. Leasing of the rights is prohibited and there are restrictions on the creation of mortgage rights. Detailed regulations for coastal fisheries are implemented through local fishery cooperatives, and so are the rules on releasing and redistributing fishery rights. The rights are authorised by the governments through the licenses issued by prefectural governors. The governors may revoke or revise the fishery rights in light of the public interest. In this case, however, the government has to pay a substantial compensation.

An Attempt to Encourage Recruitment

From 1997, the Japan Fisheries Association and the National Federation of Fisheries' Cooperative Associations started to place regular job announcements through their standing job information offices (the latter is for coastal fisheries and the former is for offshore or high seas fisheries). The Japan Fisheries Association has been holding annual conferences for recruitment purposes since 2003. From this year (2006) the recruitment program has been stepped up. It now includes annual information dissemination sessions and internship sessions for prospective new comers to the fishery sector.

The Fisheries Agency of the Government of Japan provides financial support to these activities. The form of support is to compensate travel costs for fishermen and women/fishery workers who come to Tokyo and/or Osaka for the information dissemination conferences from remote fishing communities. Although the government does not pay interns a salary, some of the logistical costs born by local fishery communities associated with the intern project are financed under the government support program. In May 2006, 152 and 72 prospective fishermen and women/fishery workers showed up at the conference venues in Tokyo and Osaka, respectively. Approximately 100 persons took the internship.

According to reports, this centralized program has reduced the individual local fisheries associations' financial burden for recruitment activities[7]. Newcomers and local associations that welcome them show their appreciation for both the internship and training programs at local fishing sites. Basic knowledge and skills regarding professional fishing operations (for example, skills related to operating equipment safely or knowledge about the local migration of target fish) can be more efficiently transferred to the newcomers through this program.

Discussions and Conclusions

To overcome the problem, certain programmes are carried out through the joint effort of the government and fishery associations in Japan. It can be argued, however, that increasing the annual revenue of families in the fishing business so that it is more in line with the national household income average is an important step towards solving the problem of low recruitment and ageing.

7 Makoto Otani "Research on the Newcomers to the Fishery Sector (an Example at Uragou District in Shimane Prefecture)" 2004, Tokyo Suisan Shinkoukai (available in Japanese only).

This task represents many challenges. The price of fish cannot be easily increased for domestic fishermen and women/fishery workers given the current circumstances whereby imported fishery products and Japanese domestic products compete with each other on the same market. Reducing the production cost is also problematic. Japan's labour and other business costs are usually higher than the international average. This sort of business environment cannot be changed through efforts made by the fishery sector alone.

Furthermore, the complex system of fishery management in Japan is prone to inefficiency. Other major players in the international fishery communities most likely have higher productivity rates. For instance, under the right-based management scheme, Japanese local fishery cooperatives usually employ input regulations such as: *(1)* entry limitation to fishery operations, *(2)* the establishment of closed areas and closed seasons, *(3)* prohibition on specific gear use (including mesh size restrictions), and *(4)* restrictions on the size or horsepower of fishing vessels. Some output control (catch control) systems coexist with the traditional input control.

Nevertheless, revising the fishery management system by changing the social factors that underpin the industry would be difficult. It is also necessary to review potential environmental effects as fish stocks that could be brought about.

It has also been pointed out that the current inactiveness regarding business integration in the coastal fishery may contribute to the sector's inefficiency. In fact, as noted above, the current right-holders tend to keep their fishing rights no matter how old they become. However, it is extremely difficult for the government to revise fishery rights, unless fishermen and women/fishery workers and their local fishery cooperative associations agree to release the rights. At the same time, even when business integration has been successful, the early breakup of integrated entities is frequently reported[8].

In any case, various points have been raised regarding what causes low recruitment. It should be noted, however, that the cause of the ageing has not been fully examined yet. Further analyses are necessary regarding the social and economic aspects of the causes behind ageing in order to examine the necessity of additional policy measures. To this end, certain statistical testing to check this assumption will be needed to prove the causal relationship between ageing and other independent economic parameters.

8 Shiro Tanaka "Co-management of Fishery Business under the 200 mile zone regime" 2003, Seizando, p.146 (available in Japanese only)

References

Demura, Masaru (2003), "Changes and Issues on Production Structure in Coastal Fisheries", Norin Kinyuu 2003.11 (available in Japanese only).

Kase, Kazutoshi (2001), "The Restructuring Process of Japan's Fisheries", p.124, The Norin Tokei Kyokai (available in Japanese only).

Otani, Makoto (2004), "Research on the Newcomers to the Fishery Sector (an Example at Uragou District in Shimane Prefecture)", Tokyo Suisan Shinkoukai (available in Japanese only).

Tanaka, Shiro (2003), "Co-management of Fishery Business under the 200 mile zone regime", Seizando, p.146 (available in Japanese only).

PART III

ENSURING COHERENCE BETWEEN FISHERIES MANAGEMENT AND SOCIAL POLICIES

Chapter 7

Matching Fisheries Policy and Social Policy in the French Fishing Sector

Thomas Binet, Fisheries Policies Division, OECD

Introduction

Like many OECD countries, the French fishing industry is relatively marginal from a national perspective, accounting for only 0.14% of GDP in 2003 (FAO 2003). However, this masks the economic and social importance of the sector along the coastline. Many areas along the French coastline are dependent on the fishing sector to maintain economic activity and provide an economic base for the population. For example, the fishing sector in the Quimper region, southern part of Brittany, accounts for 5.25% of the regional GDP and 8.51% of the regional employment of which 3.8% is onboard employment (Cofrepêche 1998).

Also in common with many other OECD countries, the French fishing sector has been under economic pressure over the past few decades. Resource depletion has played a major role in reducing the economic performance and viability of many parts of the French fishing fleet. In addition, falling product prices coupled with increasing operating costs, especially oil prices, have adversely affected the profitability of many fishing companies and have placed significant pressure on the industry to undergo structural adjustment. Between 1990 and 2004, the French fleet declined from 8 745 to 5 412 vessels, with much of the decline occurring in the early 1990s. Around 40% of the fleet is located in Brittany and 19% in the Mediterranean Sea. In 2004, catches reached 693 000 tons of which 51% was produced by Brittany, 30% by the north region and Normandy, 11% by the south-west region and 8% by the Mediterranean Sea coast-line. The total sales turnover is more than EUR 1 100 million, of which EUR 715 million was through the fish auctions (corresponding to 277 000 tons sold). The total catches have not shown any particular trends since the early 1990s, but fluctuate in a range between 616 000 tons in 1998 and 712 000 tons in 2002 (FAO 2002).

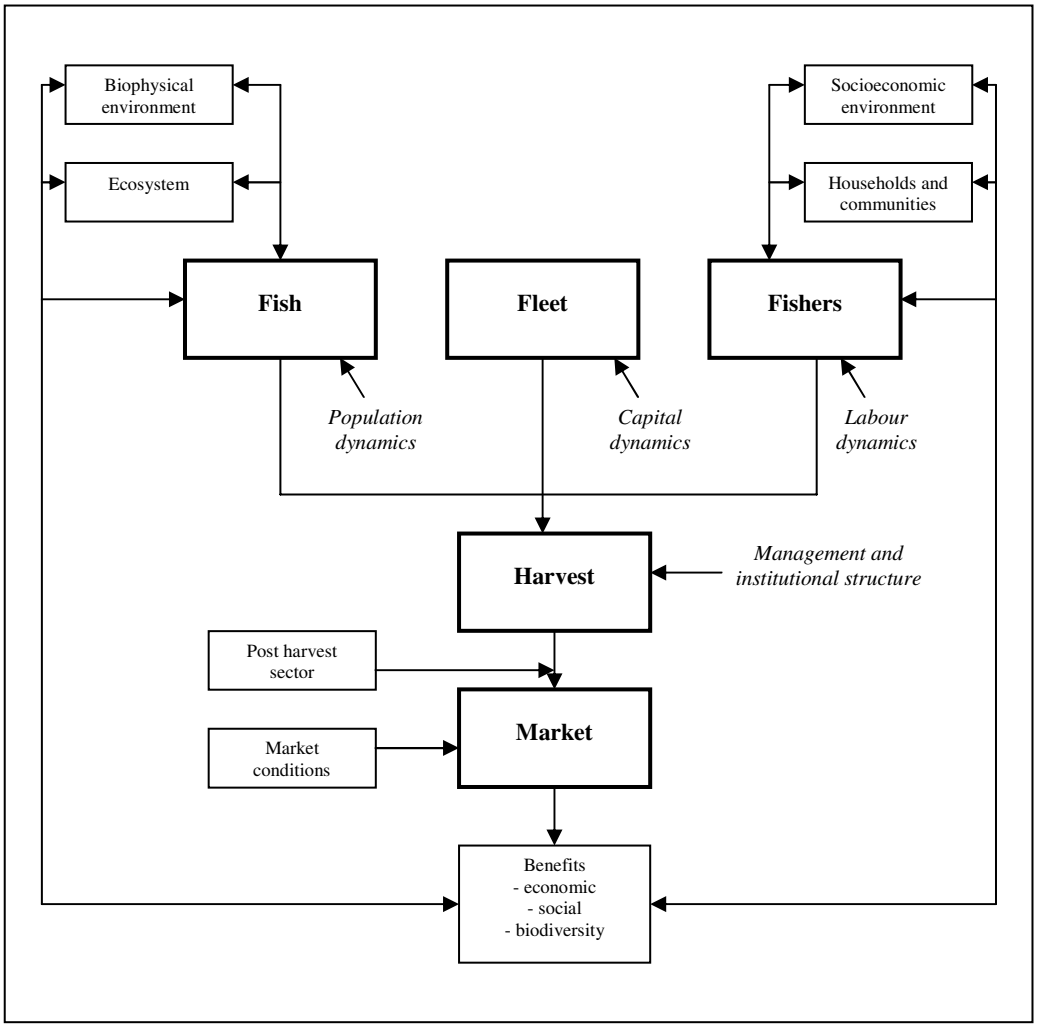
The structural changes that have been underway in the French sector since 1990 have been accompanied by significant pressures on the fisheries labour market and the communities that depend on the sector. This paper examines the process of adjustment in the French fisheries sector and the way in which the fisheries management policies used to govern the sector work together with the social and labour market policies that are also applied to the sector (as well as to other sectors). Coherence between these two policy spheres is critical so that they are mutually supportive in ensuring that a viable fisheries

sector coexists with resilient communities. The case of southern Brittany, the most fishing-dependant area in France, is used to illustrate some of the issues and challenges raised in the paper.

Fisheries labour market in France

Previously to any study on matching social policy and fisheries policy, it is crucial to set the background of such an analysis. Here this background is essentially made up of the labour market dynamics, the socioeconomic environment and issues concerning households and communities. This plays a key role by influencing the fishers' behaviour. Figure 7.1 shows the key position of those issues in the general system of fisheries. Consequently this paper gives a large part to the labour behaviour and its description.

Figure 7.1. The organisation of the fisheries sector



Source: Adapted from Charles (2001, p.13).

Since the early 1990s, the fishing industry in France has experienced major structural change that has radically reshaped its characteristics. The harvesting and processing

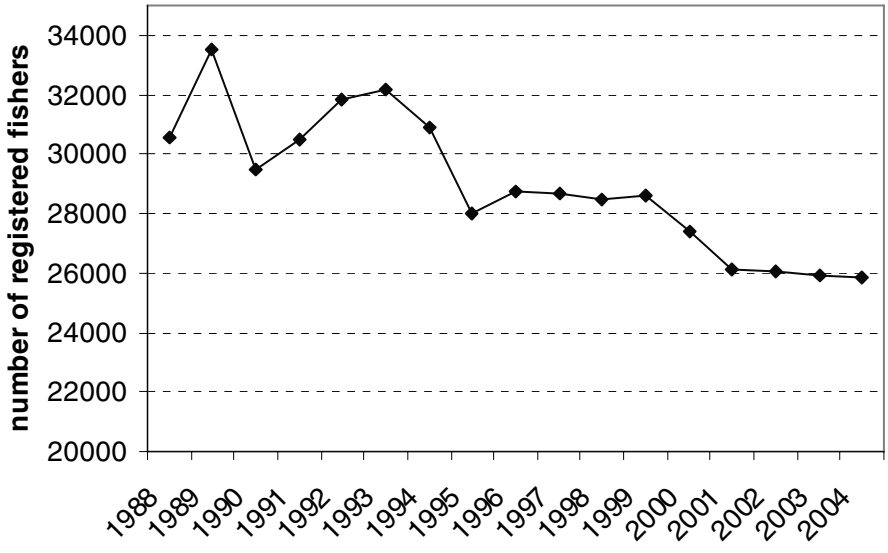
sectors have evolved with many consequences on the socioeconomic environment in the coastal areas, and on the labour market in those areas. The declining labour engaged in fish harvesting is the result from a complex interplay of economic, technological, biological and policy-related forces. The evolution of technology in fishing has been aimed both at substituting capital for labour and at offsetting the consequences of hunting after ever scarcer fish resources. Within a context of rising labour costs, declining fish stocks - and, in many cases, grants and other forms of assistance for fleet modernization - such technological innovations have fed a gradual process of capital accumulation in fish harvesting.

Employment trends

The number of fishers[1] in France decreased significantly between 1992 and 1997 with a sharp drop between 1993 and 1995, and then more slowly to reach around 25 500 fishers in 2004 (Figure 7.2). This data refer to the total number of fishers registered at the ENIM (Etablissements National des Invalides de la Marine) and provide a very broad indicator of employment in the sector.

Figure 7.2. Evolution of number of registered fishers in France

(1993-2004)



Source: DGMT/DAM.

1. Data presented are exclusively from the French Directorate of Maritime Affairs (DGMT/DAM), whose role is to enumerate the fishers registered at the ENIM (Etablissements National des Invalides de la Marine) in order to manage the access to the social security. Those data have to be interpreted with caution as registered fishers do not necessarily mean active fishers; this sometimes leads to estimations in the paper.

It appears to be difficult to come to an exact number of fishers working during a year, as simple counting during one period is not representative due to the on-going changes in the number of fishers throughout the seasons. However, a relevant way to study the labour could be a tri-dimensional approach to it (CEREQ 2003), which divides the labour into:

- The number of onboard posts, set by the authorities, which is the minimum crew to get for an owner before going at sea.

- The number of full-time equivalent jobs, which is the real number of fishers needed (including vacations replacement, working hour reduction, etc.).

- The number of registered fishers, which is the effective number of fishers that went fishing at least one day during the year.

There were an estimated 16 000 onboard positions in 2004, calculated from the number of fishers at sea for more than 9 months a year (CEREQ 2003). In addition, it has been estimated that there were 19 500 full-time equivalent jobs for fishers, which is calculated from the number of fishers at sea more than 6 months a year, and is an indicator of the amount of full-time work that is available for fishers in the sector (CEREQ 2003). These estimates are presented in Table 7.1, together with two ratios that help to describe the evolution of key characteristics of the labour market.

The employment ratio is the number of full-time job equivalents to the number of onboard positions and indicates the number of full time equivalent jobs that are needed to undertake a given amount of work (which is proxied by the number of posts required onboard vessels to take the allowable catch). This ratio declined from 1.27 to 1.22 over the 1997-2004 period. The number of full-time equivalent posts has declined at a faster rate than the number of onboard posts, which is largely a result of capacity adjustment, technological development, and a concentration of positions on board vessels. The rotational ratio is the total number of fishers to the number of onboard posts and gives an indication of the trend in the mix of fulltime and seasonal or part time fishers. This ratio has declined from 1.66 to 1.61 over the 1997-2004 period, highlighting the increasingly seasonal and part-time nature of the work in the sector.

Table 7.1. Evolution of employment indicators from 1997 to 2004 in France

Year	Estimated number of posts	Estimated number of full-time equivalent jobs	Total number of registered fishers	Employment ratio	Rotational ratio
	(A)	(B)	(C)	(=B/A)	(=C/A)
1997	16 251	20 579	26 951	1.27	1.66
1998	16 536	20 552	26 878	1.24	1.63
1999	16 313	20 258	26 603	1.24	1.63
2000	16 479	20 060	26 136	1.22	1.59
2001	16 336	19 972	26 130	1.22	1.60
2002	16 071	19 772	26 033	1.23	1.62
2003	16 080	19 551	25 897	1.22	1.61
2004	16 051	19 571	25 856	1.22	1.61
Average change from 1997-2004	-1.23%	-4.90%	-4.06%	-3.71%	-2.87%

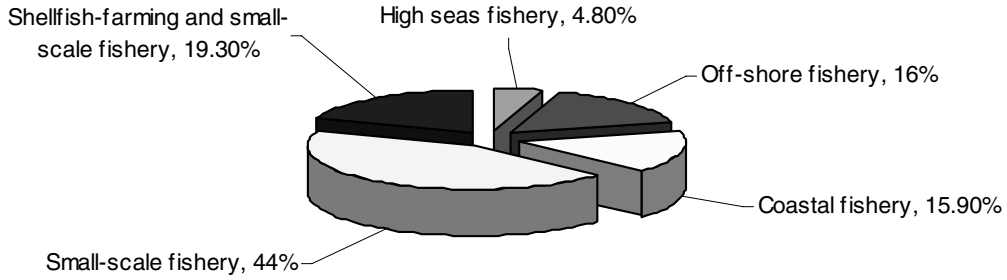
Source: DGMT/DAM.

An administrative breakdown of employment by fishing category helps studying some particular aspects of the French fishing sector, depending on the vessels and the duration of activity at sea. The French fishing sector can be divided into 5 categories:

- High seas fishery: vessels of more than 1 000 GRT, whatever the period at sea, and vessels below 1 000 GRT that are at sea for more than 20 days;
- Off-shore fishery: vessels at sea for more than 96 hours and less than 20 days;
- Coastal fishery: vessels at sea for 24 to 96 hours;
- Small scale fishery: applies to vessels on a daily trip or less; and
- Shellfish farming and small-scale fishery: applies to vessels used for both shellfish farming and small-scale fishing (multipurpose fleet).

The small-scale fishery has historically been the main source of employment in the French fishing sector (Figure 7.3). Small-scale vessels dominate the French fleet and the crews on these vessels are few in number, usually between 1 and 3 people onboard, and usually the owners-operators of the vessel. The off-shore fishery, coastal fishery and shellfish-farming have almost the same importance, between 16-19% of total employment. Employment in the high seas fishery is relatively marginal, accounting for around 5% of total employment.

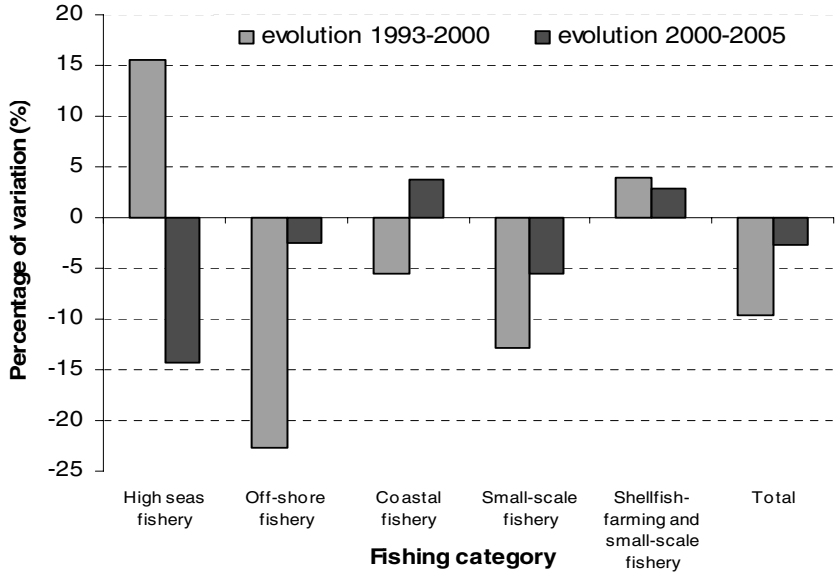
Figure 7.3. Breakdown of employment by fishing category in 2004



Source: DGMT/DAM (2005)

The evolution in employment in the 1993 to 2005 period by category of fishery illustrates the behaviour of French labour market over the recent past (Figure 3). It is interesting to look at two different periods: 1993-2000 and 2000-2005 in order to compare the different trends observed. The high seas fisheries saw an increase in employment between 1993 and 2000 (around 15% over the period). But over the 2000-2005 period, the employment in those fisheries has declined by almost the same. Both off-shore and small-scale have declined in employment over the whole 1993-2005 period but the decrease was much more significant until 2000. For the last 5 years, the coastal fishery has shown a rise in employment, together with the shellfish-farming and small-scale fishery.

Figure 7.4. Evolution of employment from 1993 to 2005 by fishing category



Source: DGMT/DAM (2005)

Education requirements

The fisheries labour market in France may be described as a "closed" market that requires entrants to possess specific qualifications. The whole system from education to retirement is very specific compared with other resource extraction sectors. To become a fisher, some specific diplomas are required. Concerning the initial training for young people, *Certificat d'Aptitude Professionnelle* (CAP)[2] and *Brevet d'Etudes Professionnelles* (BEP), special and applied certificates prepared in two years, give the right to embark as a deck hand first but with special options as mechanic or operator for the BEP. The training consists of alternate attendance at theory courses in a specific school, a *Lycée Maritime,* and practicing on an operating vessel during fishing campaigns. Another diploma, the *Certificat d'Initiation Nautique* (CIN), was introduced in 1992 for people more than 20 years in age who hold a non-maritime CAP or BEP level. It consists of an 8 week course that is an equivalent of the CAP and gives the right to embark as a deck hand. Recently, the introduction of the *Validation des Acquis par l'Experience* (VAE) seems to be a good way to get diplomas from a working experience. This allows getting certificates from only working experience at the equivalent position of the diploma provided.

In spite of the implementation of the CIN, the education system is still very hierarchical and regulates access to the labour market and progression through the various levels of responsibility within the sector. Once in the industry, the positions of deck hands, mechanic, operator, etc. are well defined and need specific certificates progress in levels. Thus, access to the labour market in fish harvesting sector is very regulated by compulsory certificates and training. While this system guarantees a high level of safety and experience onboard, it can also lead to problems in access to the sector and career progression. In practice, operators can apply for derogations from the regulations in some circumstances if there is a problem in finding the right qualified person for the appropriate position. This allows them to hold the position even if the fisher does not have the relevant diploma or qualification. This is especially the case for people who never embarked but are waiting to get the CIN courses. Such practices highlight that the labour market is being partially forced open due to a lack of suitable labour and financial pressure from companies to obtain staff to undertake fishing activity.

The problem of recruitment

Paradoxically, in spite of strong reductions of labour employed in fish harvesting, the sector is confronted with problems of recruitment. Many ship owners have difficulties in obtaining complete crews to go fishing. In a recent analysis, around 30% of fishing firms declared some problems of recruitment and 10% did not manage to embark the sufficient crew. The lack of complete crew may prevent vessels from going fishing for statutory reasons. Indeed, a minimum size of crew is fixed for each vessel by the maritime affairs (*i.e.* the number of posts described earlier). If the sufficient number of seamen is not gathered, a vessel may have to stay inactive. This minimum size is considered as important by the administration because it is a way to keep safety, comfort and good

[2] Abbreviation meanings:

CAP: certificate for professional aptitude
BEP: diploma for professional studies
CIN: certificate of nautical initiation
VAE: validation of skills by professional experience

working conditions onboard. However, those statutory crew sizes are a source of conflict between operators and authorities.

The number of new fishers that are currently entering the sector (around 1 200 every year) easily compensate for the number of fishers leaving the fleet for natural reasons (retirement or death) which was around 950 per year on average between 1988 and 2000. However, it is not sufficient to replace the number of fishers leaving for other reasons (such as resignation, inactivity, annual leaves, etc.), which is around 1 150 on average between 1988 and 2000. To counterbalance this phenomenon, the owners have recourse to derogations for fishers without the proper qualification. The CIN described above has been developed to improve labour access to the sector. Although the use of such derogations has become increasingly common, it does not seem to be enough to stop or even decrease this tendency. There is still a real need for opening the sector to entrance as well as to departure. For instance, there is no bridge for young adults specialized in mechanics in a non-maritime sector to easily enter the maritime activity.

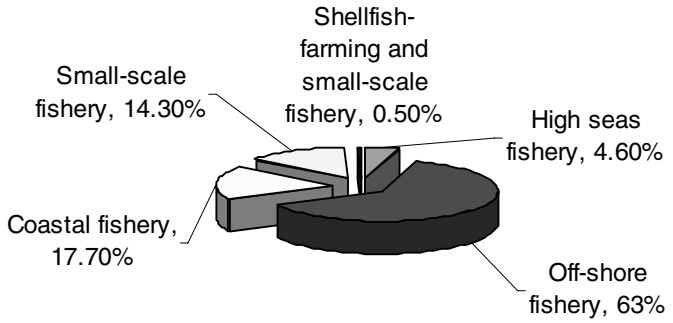
Problems of recruitment seem to be linked to the poor image of fishing as an occupation. This lack of attractiveness is mostly due to a rigidity of the access to posts, but also to the inertia of the internal mobility rules. The fishing job is known to be a hard-working job with extreme conditions, very high number of working hours and high risks compared to other sectors. In the past, these conditions were compensated by the high level of wages in the fisheries. However, due to the rise of operating costs (mostly oil prices levels) and the fact that they are deducted from the total amount to share for wages, the fishing activity is not as lucrative as it used to be. This element is to be considered as it can be an important part of which led to a lack of interest from the young people.

Foreign fishers

One other noticeable aspect of the fisheries labour market is the increasing number of foreign workers in the industry. Even if foreigners are not recorded by the establishment governing the social security regime for the sector, ENIM, Maritime affairs information system has recorded data since 2000. In the French fleet, there are 24 774 French fishers, 1 082 from the EU and 781 from other countries. Consequently, foreigners constitute 7% of the total number of fishers.

Foreign fishers are mostly employed in the off-shore fishery: 26% of off-shore fishers are foreigners, representing 2/3 of the total foreign workers (Figure 5). This could be explained by the fact that off-shore fishing provides harder conditions of work longer periods of fishing and lower wages. French fishers prefer to work in coastal or small-scale fisheries, which means daily trips or 2 to 4 days trip in better working conditions. Remuneration is also higher in these sectors.

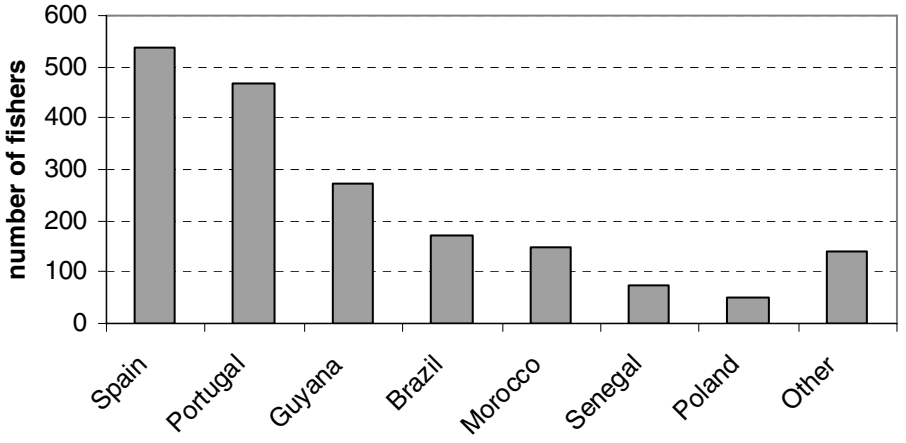
Figure 7.5. Number of foreign fishers by fishing category in 2004



Source: DGMT/DAM (2005)

Sixty eight percent of the foreign workers are nationals of Spain, Portugal and Guyana. It is important to note that foreigners from Guyana and Brazil work mainly in the overseas regions – *i.e.* in the DOM/TOM- and Moroccan nationals are mostly concentrated in the Mediterranean fisheries (Figure 7.6). Spain and Portugal are the main countries represented on the Atlantic coastline fisheries.

Figure 7.6. Origin of foreign fishers working in France in 2004



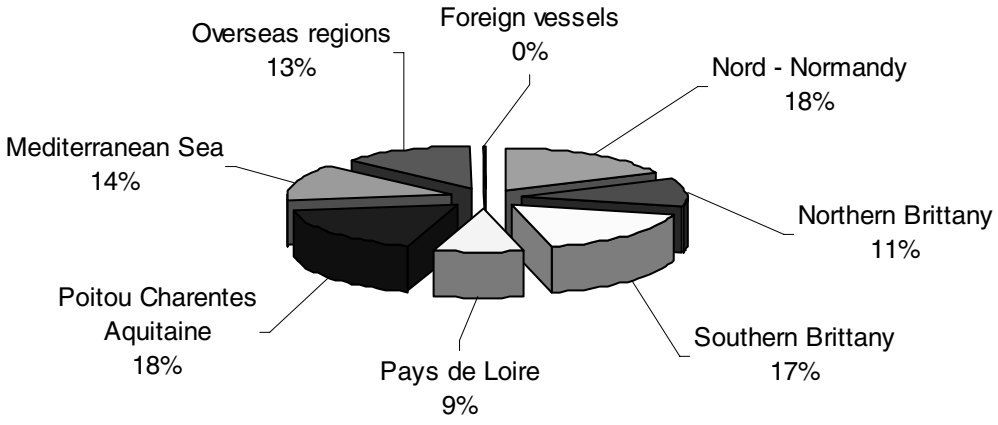
Source: DGMT/DAM (2005).

Fishing activity distribution and fishing-dependant areas

Fishing activity is relatively well-distributed along the French Atlantic and Mediterranean coastlines, although there are some regional concentrations. Brittany is one such regional concentration, accounting for a quarter of the volume of total French production and one third of the total value. Brittany also accounts for the largest share of total fisheries employment in France (Figure 7.7). Three main regions appear in this graph: Brittany (both South and North), Nord, Normandy and Poitou, Charentes,

Aquitaine, accounting for 28%, 18% and 18% of total employment, respectively. It is worth noting that Poitou, Charentes, Aquitaine is involved in shellfish-farming mostly, whereas Brittany and Nord, Normandy are mainly involved in small-scale or off-shore fisheries.

Figure 7.7. Employment breakdown by region in 2004



Source: DGMT/DAM (2005)

The fishing activity, for historical reasons mainly, is concentrated in small fishing communities along the coastline. In those areas, the ratio toward the fishing sector may be very high and the whole social fabric greatly depends on local fisheries. In certain regions, communities have reached a "critical mass" below which the fishing activity is threatened. Within those communities, withdrawing some more vessels would lead to the stop of the whole local economy: auction, shipyards, insurers, etc. This feature is to consider when studying the resilience of the community toward capacity adjustment.

Regional characteristics: the example of Southern Brittany

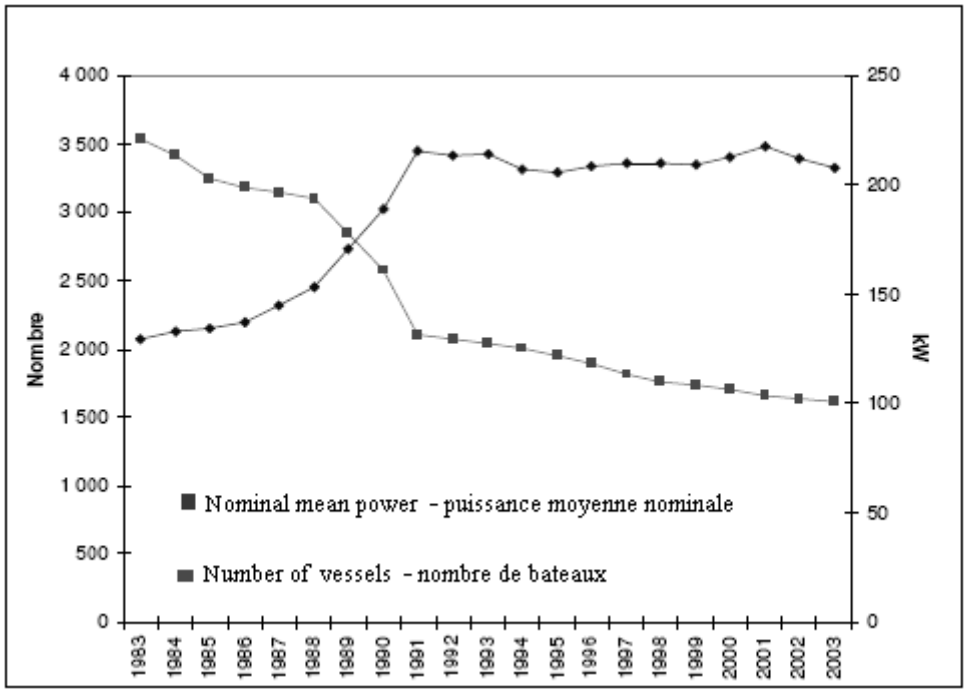
Southern Brittany is the region with the highest level of employment in the capture sector and has a strong fishing tradition, which implies a high level of dependency from the coastal communities towards the fishing economy. In the early 20th century, Southern Brittany was very dependant on fishing activity and fish processing. Brittany (north and south) is today the most productive region, accounting for more than 40% of the total volume of French production. Southern Brittany represents 43% of the Atlantic fleet (from Camaret in western Brittany to the Spanish border) and 48% of the jobs in the Atlantic fishing activity.

The fleet based in ports of Southern Brittany (administrative districts from Camaret to the North, to Vannes to the South) operates mainly in the Bay of Biscay (ICES area VIII) and in the Celtic Sea (ICES area VIIh-k). Key species targeted include anglerfish, nephrops, hake, megrim, cod, sole and sea bass. Total landings have been decreasing in volume over the period. The decrease of total landings in volume has entailed a decrease in the value of total landings, although to a somewhat lesser extent after 1998, due to an

increase in the average prices of landings. Average landings per vessel have fluctuated significantly over the period, both in volume and in value. After a marked drop in the early nineties, average quantities landed have increased to a peak in 1997, and decreased again since then. After reaching a minimum in 1993, average values of landings have known a regular increase, due from 1998 to the increase in average prices fetched by the species landed by the fleet on the first sale market.

Historically, southern Brittany fisheries were constituted of sardine fisheries that were practiced seasonally and close to the coast. After the Second World War, there was a switch to trawling activity, with a permanent off-shore fishery. Over time, a tuna fishery, both seasonal and off-shore, was developed. Over the last 20 years, the fleet size in Brittany has halved from 3 500 fishing vessels in 1983 to 1 600 vessels in 2003, but the total fishing power of the fleet has only declined by 19% (that means an increase in nominal mean power by 60%). This trend was particularly important for less than 12 meters vessels (2 629 in 1983 to 1 094 in 2003). However, this category of vessels is still the most representative accounting for 70% of the fleet in 2003. Figure 8 shows the decrease in number of total vessels from 1983 to 2003 in Brittany and the evolution of nominal mean power. The five years prior to 1991 saw a significant increase in mean vessel power, indicating a major increase in capitalisation in this region sector. Since the early 1990s, the mean nominal power of the vessels has stayed constant while the number of vessels has steadily declined.

Figure 7.8. Evolution of number of vessels and nominal mean horsepower (hp) from 1983 to 2003 in Brittany



Source: IFREMER – SIH/DPMA.

The significant decline in the fleet in Brittany can be explained at the national scale, in the early 1990s, by the implementation of the "plan Mellick". The European Community's decision to reduce total EU fishing effort by 40% within 5 years was

followed the plan Mellick at the national scale by the French Ministry of the Sea. This plan involved decommissioning a considerable proportion of vessels, and some socio-economic measures were added to help fishers to go through the sale or redeployment of their vessel.

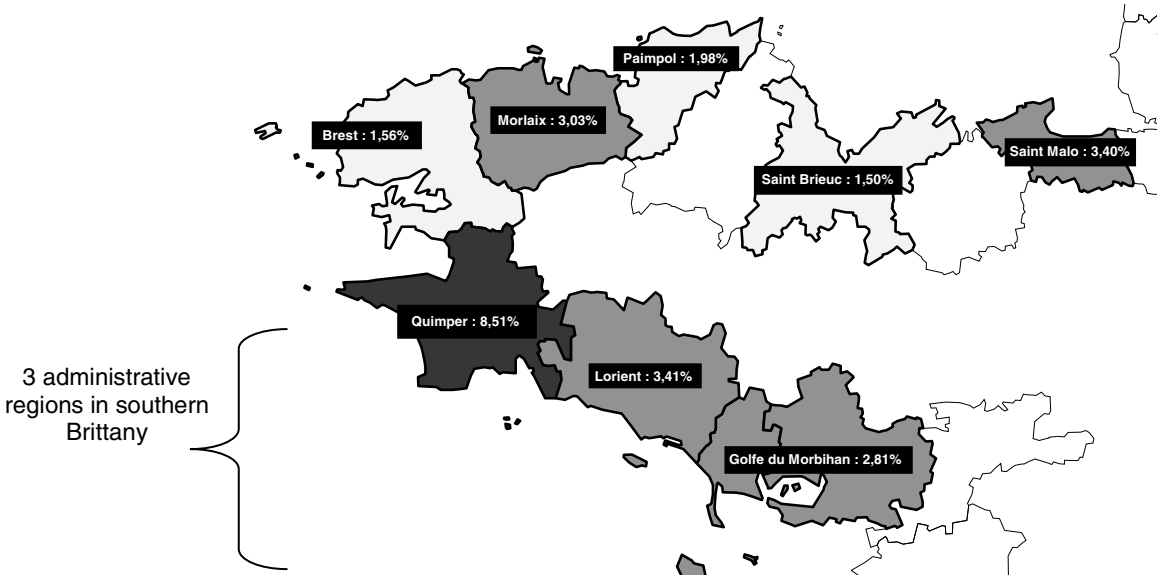
The 1993-1994 policy changes had major consequences on the fleet structure in Brittany:

- Changing in the size and number of off-shore trawlers, some have disappeared and others have improved in power and competitiveness.

- The creation of large fishing firms comprising a large number of 22 to 25 meters vessels with small-scale characteristics.

Figure 7.9 shows the labour market ratio for the different maritime areas of Brittany (Cofrepêche, 1998). Southern Brittany is the most dependant region on fisheries in France with a maximum of 8.61%[3] of labour insured by the fishing activity in Quimper which has a production of 56 000 tons at a value of EUR 116 million for 2 415 fishers and 524 vessels in 2005. The Quimper maritime quarter is centred around the landing of fresh fish at Concarneau and Le Guilvinec for initial sale at the fish market but also on the refrigerated cargoes of tuna caught by Concarneau vessels operating in distant waters (gathering 100% of the national tropical tuna production).

Figure 7.9. Labour market ratios in Brittany in 1998



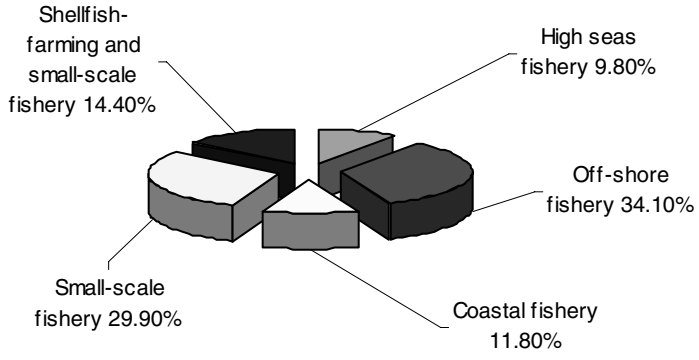
Note: Ratio refers to fisheries employment as a percentage of total employment in the sub-region.
Source: COFREPECHE (1998)

In the case of southern Brittany, most employment took place in the off-shore fishery in 2004 (34.1%) (Figure 10). The small-scale fishery accounted for 29.9% of the total fisheries employment, while the coastal and high seas fisheries accounted for 11.80% and

[3] This ratio aggregates the whole employment related to the fisheries sector (upstream and downstream) and divides it by the total number of workers in a specific area close to the shoreline. It gives an idea of the economical weight of such an activity.

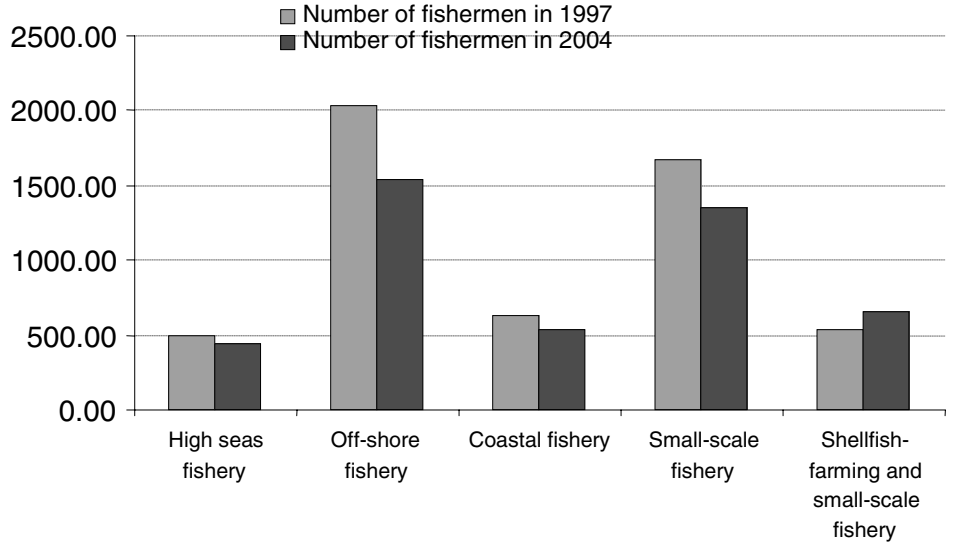
9.80%, respectively. This pattern differs somewhat from the national distribution of employment, as the off-shore fishery is main source of employment. With the exception of the shellfish farming practiced with small-scale fishery, employment in each fleet category has declined since 1997, with the main decrease observed for the off-shore fishery (Figure 7.10).

Figure 7.10. Employment in southern Brittany by fishing category in 2004



Source: DGMT/DAM

Figure 7.11. Evolution of employment in Southern Brittany by category from 1997 to 2004

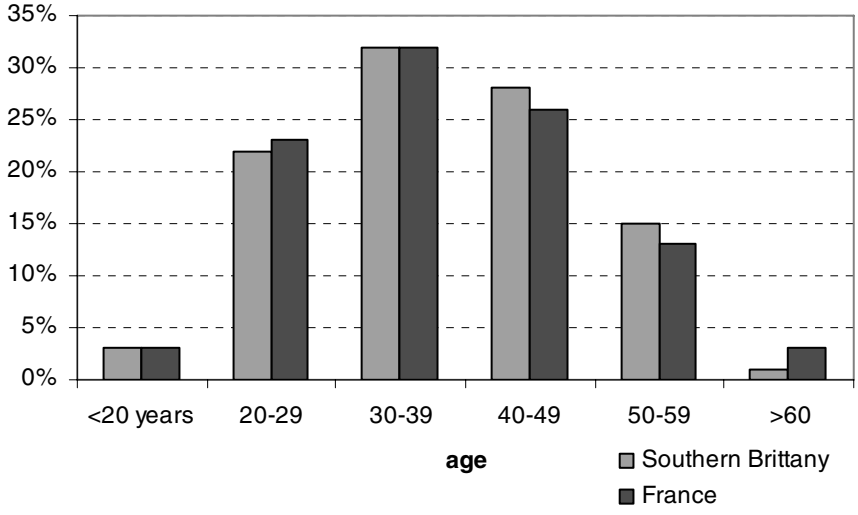


Source: DGMT/DAM

The age structure in southern Brittany also provides some interesting insights. The age distribution of fishers in southern Brittany closely mirrors that of fishers in France (Figure 7.11). There bulk of the working force is aged between 20 and 50, with a

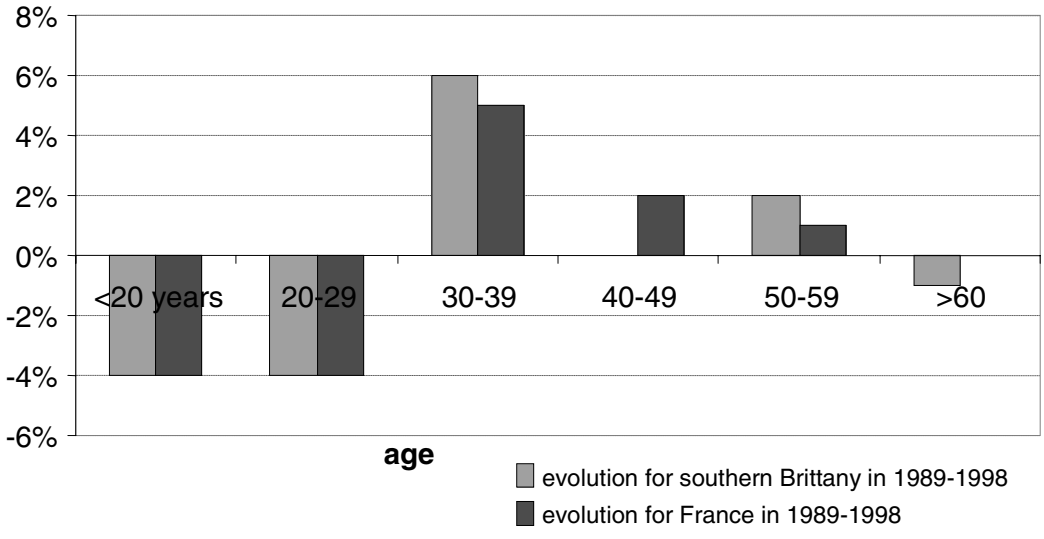
significant decline in the proportion of fishers aged over 50 and minimal over 60. This is in stark contrast to some other OECD countries where there is a much more skewed age distribution with the majority of fishers being over 50 years of age. The evolution of the demographic structure between 1989 and 1998 is depicted in Figure 7.12.

Figure 7.12. Age structure of fishers in Southern Brittany and France in 1998



Source: DGMT/DAM

Figure 7.13. Evolution of age structure for Southern Brittany and France from 1989 to 1998



Source: DGMT/DAM

Box 7.1. Differences between artisanal and industrial fisheries employment: the example of the Concarneau's offshore trawlers in southern Brittany

Concarneau, important fishing harbour located in southern Brittany, is renowned for its off-shore trawling fleet, as well as its tropical tuna seiners. Trawlers in Concarneau constitute the heart of the local fishing activity, with 41 vessels in activity. There is a distinction to be made between artisanal and semi-industrial or industrial fisheries that will be illustrated by this fleet. Artisanal vessels are from 17 to 24 meters for a 5 to 6 crew and semi-industrial vessels are 30 to 33 meters long for 9 fishers onboard. Those two segments are different from a technical side, as well as for administrative and institutional framework.

On the semi-industrial vessels, work is more automated, more organized. Positions offered are more varied and more specialized compared to artisanal trawling. Wages for both are crew shared but there is a special provision for industrial sector: the existence of a guaranteed minimum wage. However, strong profitability constraints in the industrial trawling fishery have led to financial difficulties and fishers onboard earn most of the time no more than this minimum wage.

There is a different trend in the way the employment is managed for those two segments. Indeed, the mobility of artisanal workers is within the artisanal trawling fleet. It is determined by proximity relationships that constitutes also the basis for the initial education. The mobility for older fishers is managed by a retired fisher who gathers job offers and demands at the local level. Concerning the semi-industrial segment, the fishers' mobility occurs among vessels within the same firm. It is managed by operators and skippers from this firm. The recruitment of young fishers is more institutional. With the help of agreements with continuous education centers, the new fisher's education is followed by the recruiting firm with an apprenticeship formation. Yet this recruitment is sometimes confronted to a lack of interest from the new recruited fishers who prefer to join the artisanal sector for profitability reasons.

Thus, there is a difference to be made between those two segments. Features are different when dealing with employment and labour market regulation. While the industrial segment provides more secured position and provides better career improvement and guaranteed incomes, the artisanal segment is preferred due to a better profitability and an open access to labour in the whole fleet.

Source: CEREQ, 2003

The social system

General organisation

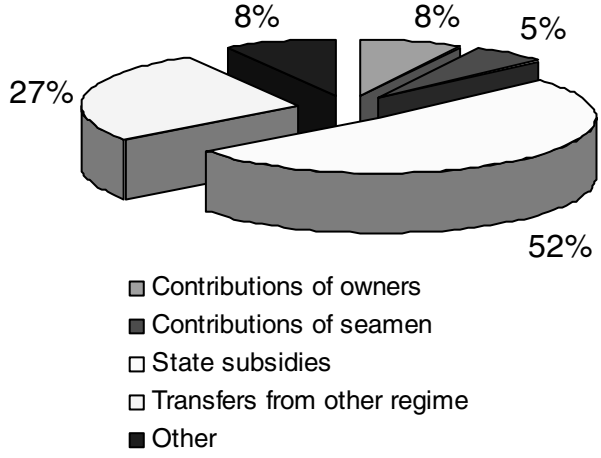
French fishers have benefited from a social security regime since1670. The people of the sea were progressively provided with a particular social status, which was restructured in 1945 when social security was generalized. ENIM (*Etablissement National des Invalides de la Marine*), the organism in charge of the social security, was created in 1930. The history of ENIM shows the crucial position of fishers over history from a military and a strategic point of view. From then, fishers have taken advantage from that past and their social security is still very particular compared to other regimes. Thus, there is an historical coherence between fisheries policies and social policies, as a great concern for social protection of seamen appeared 340 years ago. The ENIM works both as a central administrative division of the ministry in charge of the merchant marine and as a public administrative establishment. In its capacity as central administrative division, ENIM develops the governing doctrine and proposes to the public authorities and the Parliament the legislative and regulatory evolutions necessary for the social security of seamen. In its capacity as public administrative body, with civil status and financial autonomy, it manages the social security of seamen.

Several public divisions take part to the social and labour market policy. ENIM is the most specific one, as it was created only to provide fishers with a social security regime. But others are involved in those policies as follows:

- The division of maritime affairs and people of the sea –DGMT/DAM- (of the Ministry of Equipment), whose decentralised departments (regional or departmental divisions) always have a "sea people/ENIM" specialized department. On the coastline, these departments constitute necessary intermediaries that frame the seamen and ship owners. Those departments assume the administrative duty at the local scale.
- The maritime transport, harbour and coastal division -DTMPL- (of the Ministry of Equipment)
- The maritime fishing and fish farming division -DPMA- (of the Ministry of Agriculture) which manage, each in their respective area, various measures of economic aid and assistance to the maritime outfitters in association with ENIM.

The ENIM expenditures are paid by seamen and owners contributions (13%) but especially by the State subsidies (50%). Another source of funding is the transfers that come from other regimes and especially the general regime, namely the "*Caisse Nationale de Sécurité Sociale*". They constitute one quarter of the ENIM budget. As it appears on figure 7.14 showing the breakdown for ENIM budget, this regime is not balanced by contributions but greatly depends on the State participation and the contributions from other sectors. This figure highlights the highly subsidised aspect of the social security's funding and the need for exterior help to maintain the current regime.

Figure 7.14. Breakdown of contributions to the ENIM budget



Source: ENIM (2004).

France's passive system of social protection is complex, and is based primarily on the 'standard employment relationship' – *i.e.* full-time, permanent work with lifelong insurance contributions (Eardley *et. al.*, 1996). Within the general social security system are several occupationally-based schemes for different categories of workers and their families. The core scheme, the *Régime général*, provides insurance-based coverage for sickness and occupational injuries, maternity leave, old age pensions and death benefits for about 70% of the population. Unemployment benefits are not strictly part of the social security system; rather, they are administered at the local level by Associations for Employees in Industry and Commerce (*ASSEDIC*), which work within a national

structure called UNEDIC. Both the *Régime général* and the *ASSEDIC* apply to wage earners and salaried workers in the fish processing sector and those who work for firms that transport the fish. Self-employed people working in these industries are covered under special schemes that provide for old-age pensions but not unemployment insurance. Seasonal workers are also excluded from the unemployment insurance scheme. All people who work on fishing vessels and in aquaculture, and those working for companies that supply and service the fleet, are covered under a separate labour law (the *Code du Travail Maritime*) and system of social security. Nonetheless, many features of this special regime are similar to the general regime. A minimum wage applies, pegged to the general minimum wage (SMIC), according to the number of hours worked each week. In the fish harvesting sector, the *Régime general* do not apply for most of the social security regime. Indeed, the ENIM is organising the social security regime common to all professional sea-going personnel in commerce, fishing and yachting. This special regime covers all family branches, except those insured by the Family Allowance Maritime Fund attached to the general regime, and covers:

- Risks of health, maternity, incapacity, death and work-related injuries
- Pensions of the elderly, insured by the Retired Seamen's Pension Fund (code of pensions for retired seamen)

This does not include the unemployment insurance that is covered by the *Régime général.*

Ssocial security

Unemployment insurance

Unemployment insurance is available to all fishers, but is compulsory for those working on vessels longer than 25 meters or over 50 GRT. Thus, the small-scale fishers and most of the coastal and off-shore fishers do not have to contribute and, considering the financial difficulties they have to cope with, they generally do not take part to this scheme. However, a special fund is provided in case of unemployment, the "specific allocation of solidarity" that provides them with a small financial support, compared to the unemployment insurance. The maximum allocation for the "specific allocation of solidarity" is EUR 13.56 per day, which is very low compared to the average wage of fishers. This difference in unemployment coverage between artisanal and industrial is important, as fishers will not benefit from the same protection by social passive policy in the context of adjustment. This may create some tensions in the artisanal sector's employment while the labour market in the industrial sector would evolve more fluidly. At the same time, most people in the industry would answer to that feature that there is no unemployment for competent fishers in the industry. In fact, unemployment is real hard to evaluate and no precise data are available to conclude on its size.

Retired seamen's pension

The retired fisher's pension benefits both fishers from merchant marine and fishing activity and the persons who inherits those rights (widow or orphan). The contribution of fishers to the fund is based on fixed-price incomes that depend on the position of the fishers onboard and the average annual income. The fishers are classified within a range of 20 categories.

The rate of contribution for fishers is:

- for fishers: 10.85% of the fixed-price income for the corresponding category;
- for owners: it depends on the vessel category.

The conditions for benefiting from the retired seamen's pensions are:

- seniority: partial from 50 years old if 25 annual fees have been paid or total from 52.5 years old if 37.5 annual contributions have been paid;
- proportional: from 55 years old if 15 annual fees have been paid;
- special: from 3 months to 15 years as a fisher, in addition to another pension regime anticipated: if declared inapt to navigation and have paid at least 15 annual fees.

In 2004, the retired seamen's pension benefited a total of 122 772 people for 39 748 active seafarers (of whom 15 454 are commercial or yacht workers and 24 294 are fishers). Having a look on the ENIM budget, old-age pension represents EUR 1 billion, approximately two thirds of the total expenses. As the proportion of both active seamen in the fishing industry and in the merchant marine has decreased, it now only represents one third of the pensioned people. The fact that pension rates are based on fixed-price incomes is an advantage for the fishers in activity. Indeed, fixed-price incomes are generally not corresponding to the real income earned. Due to its historical importance, the social security for fishers has always been very advantageous for the activity. Fishers can benefit from a retirement pension from 50 to 55 years old maximum and some of them still go on fishing while taking advantage of the pension. The age limit and number of annual contributions were not included in the general reform that occurred in 2003 for the major part of the retirement pensions and changed the number of annual fees needed from 37.5 to 40 (retirement pension for fishers is still mainly 37.5 annual fees). Thus, the successive reforms did not concern the fish harvesting sector that was protected by its special regime. This feature is also due to the fact that fishing is very laborious and that may have prevented it from a minimum limit of retirement at 60 years old or more.

Fisheries management policies

The fisheries sector is structured by both communitarian (EU) and national rules. From the communitarian framework, the fishing activity is ruled by the Common Fisheries Policy (CFP) that is generally built on 4 pillars: natural resources conservation with the help of TAC (Total Allowable Catches) and quotas to control the fishing effort, the respect of commercialization and sanitary norms, structural and modernization measures concerning the fleet and international agreements. From 1983, objectives for structural measures were defined over several Multi Annual Guidance Programs (MAGP) and readapted progressively. At a national level, the framework is more focused on the production means, with the use of fishing permits (PME). PME is the way to achieve the limitation of entry into the fleet. They are permits delivered by the French administration on the basis of a total available amount defined according to the different MAGP objectives.

In France, some 46% of all commercial catches in the North-East Atlantic Ocean and Mediterranean Sea (over 213 000 tonnes in 2002) consist of stocks subject to Community TACs. The TAC regime is the main pillar of the "conservation" part of the European Union's Common Fisheries Policy. "Conservation" also includes technical measures

relating to gear or catches, together with measures to manage fishing effort (in particular under the stock rebuilding plans instituted in 2002). For the stocks not subject to TACs under the CFP, measures are taken at the national or regional level to ensure that stock productivity is maintained at sustainable levels; these include quotas, opening/closing dates and special technical measures (authorized mesh, types of vessel and gear, area controls).

With regard to the stocks subject to TACs under the CFP, each year the French authorities, after consulting the National Committee for Sea Fisheries and Aquaculture (CNPMEM), allocate the EU fishing quotas awarded to France to Producer Organizations (POs); the sub-quotas are drawn up on the basis of producers' catch histories, market trends and socio-economic equilibriums. In practice, therefore, the sub-quotas are allocated to the members of each PO largely according to their share of output, although to date none have been allocated to individual fishing firms. Nevertheless, Community and domestic regulations provide for the POs to draw up management plans specifying how their sub-quotas are to be managed and used. Here, some POs have opted for an approach whereby quotas are allocated to individual members.

A number of stocks not covered by TACs under the CFP are subject to relatively strict access controls aimed at preventing overfishing and the development of excess capacity. The main market-type instruments among them are Limited Non-Transferable Licenses (LNTL), individual non-transferable effort quotas (which limit hours of fishing, for instance, or the number of traps per vessel) and catch limits per vessel/person. These measures mainly target stocks of shellfish (*e.g.* scallops, clams and whelks) and large crustaceans (*e.g.* spider and other crabs). To grasp their full scope, it is important to note that access to the vast majority of "non-Community" fisheries is closed, in particular by means of limited licenses and special fishing permits (*Permis de Pêche Spéciaux,* or PPS).

Among the fisheries management tools, the structural measures concerning the fleet seem to be the one that have more impact on the labour market. While TAC and quotas have an influence on the vessel profitability and a temporary one on labour and fishing permits (PME and PPS) on the vessel market, the structural adjustment appears to be the one that requires special provisions for social impacts. Adjustment has a direct and permanent action on labour. Initially, depending on how much lower the quota is set below current harvest levels, introducing a TAC will cause a decline in harvesting employment. But ideally, as the stock recovers, effort will increase and so will employment, perhaps to above the previous level. Because no limits are placed on effort, however, a "race-to-fish" ensues, shortening the season and creating a higher degree of variability within that season. This may lead to an increase in seasonal employment rather than a full-time one. The general social passive policy implemented in France provides a general protection from the effects of such management tools. The TAC introduction in the CFP was not followed by any socioeconomic measures.

Dealing with adjustment

This section addresses the ongoing context of capacity adjustment in the French fisheries sector. Once the different adjustment programs have been described, this section will try to analyze their implementation and consequences on the fishers and their communities. It is important to note that the capacity adjustment here only deals with the fishing sector and not with the fish processing or trading sector.

Source of adjustment pressure

It has been widely recognised that the subsidisation of fishing fleets and open access to marine resources have been the major factors contributing to overcapitalization of fishing fleets, which has contributed to unsustainable harvests in many fisheries worldwide (OECD 2006; FAO 1993; WTO 1997). While overcapacity will occur in open access fisheries without the provision of subsidies, the use of subsidies in some cases has contributed to the speed and degree of overcapacity and overfishing (Porter 2001). Revenue enhancing or cost reducing subsidies would result in an increased fishing effort if management regimes do not effectively limit catch and effort.

In its early stages the common fisheries policy comprised measures for the establishment of a common market in fish products and for the restructuring of the catching sector. The role of structural measures was primarily to help modernize the catching sector. In 1983, a comprehensive structural policy was set up for the whole sector. One of its tasks was to ensure that a balance be kept among Member States' fleets in line with the principle of 'relative stability' which allows for the stable allocation of fishing opportunities among Community members. New challenges came with the completion of the Community single market, combined with the growing globalization of the world market, the effects of overfishing and the growth of aquaculture. The review of the common fisheries policy in 1992 showed the need to restructure the whole sector. A financial support to the fishers' communities was made available through the Financial Instrument for Fisheries Guidance (FIFG), created in 1993 to bring together all the structural budgets available to the fishing and aquaculture sectors. This move allowed for greater coherence in multi-annual programming in what was now a comprehensive structural policy with its own financial instrument. Funds are available for scrapping or reconverting fishing vessels.

Implementation of adjustment in France

Since 1989, the decommissioning schemes have generally lasted for 2 years. Importantly, they have occurred successively and constituted a continuous process of adjustment in France for a number of years. The schemes have changed in some respects. For example, they were modified from 1991 to become more efficient and targeted. The objectives have been redefined and readapted to the evolving situation. As a result, buyback subsidies are now targeting vessels fishing threatened or overexploited species. In the 1990s, a great part of the vessels that took advantage of schemes were either in a bad shape or not competitive enough. Such vessels with low production capacity jumped at the opportunity to leave the fleet with important funding. During the recent schemes, the implementation of scales depending on production capacity and targeted species made them more efficient.

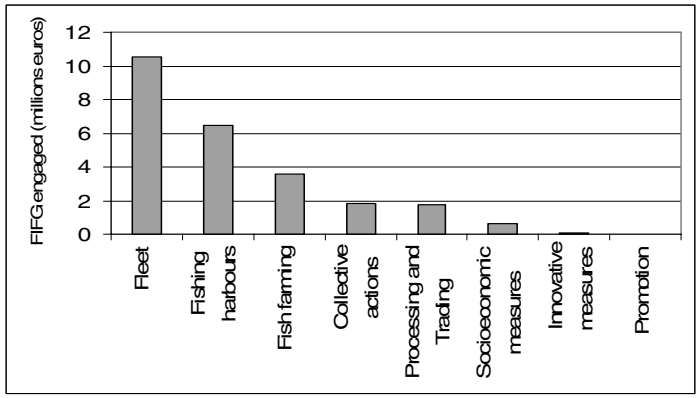
Such a continuous system of capacity adjustment has enabled the adaptation of the fleet to occur at a progressive rate. As a result, the labour market is adjusting more gradually to the capacity adjustment and unemployment peaks are avoided. However, the continuous provision of assistance creates perverse incentives for investment. Owners that did scrap their non-productive vessels may reinvest their aid in another more modern boat. This negates the intended effects of decommissioning schemes in terms of fishing effort reduction. The knowledge that the government provides ongoing assistance with adjustment provides a financial backup in case of bankruptcy. If owners would not be able to predict the renewal of a decommissioning scheme, they would be reluctant to invest in another fishing vessel whose value is fluctuating. Jorgensen and Jensen (1999)

have shown some empirical evidences about the stimulus for expansion of fleet capacity by EU buyback subsidies, and also the influence on investors' bankers, who offer better credits than usual in that particular situation.

Box 7.2. Structural adjustment in Brittany

Brittany, as the first region for fishing activity, has seen the main impacts of the European capacity adjustment programs (see Figure below). To soften the effects of adjustment programs, the FIFG is the financial support that covers the accompanying measures to this adjustment. It is interesting to have a look at the FIFG expenses for the Brittany region and thus understand the position of the fleet management in the fisheries and aquaculture management policy from a financial perspective.

FIFG resources for the Brittany region in 2004



Source: Région Bretagne (2005).

The fleet expenses are taking a great part of the FIFG expenses. This includes both modernisation and capacity adjustment expenses. The socioeconomic measures' expenses engaged in the FIFG are in sixth position and are approximately 7% of the fleet expenses.

Capacity reduction from 1990 to 2003 for Brittany

	France (Atlantic and Channel)	Brittany
Number of vessels	-32%	-37%
Total engine power (kW)	-32%	-31%
Total tonnage (GT)	-32%	-33%

Source: IFREMER SIH – DPMA.

The capacity reduction that occurred in Brittany has had consequences mostly on the vessel number rather than on power or tonnage, occurring on small vessels with lower production capacity. This highlight the fact that this fleet decrease in Brittany happened in the small-scale fishery and far less in the large-scale fishery.

Dealing with impacts of adjustment on employment and communities

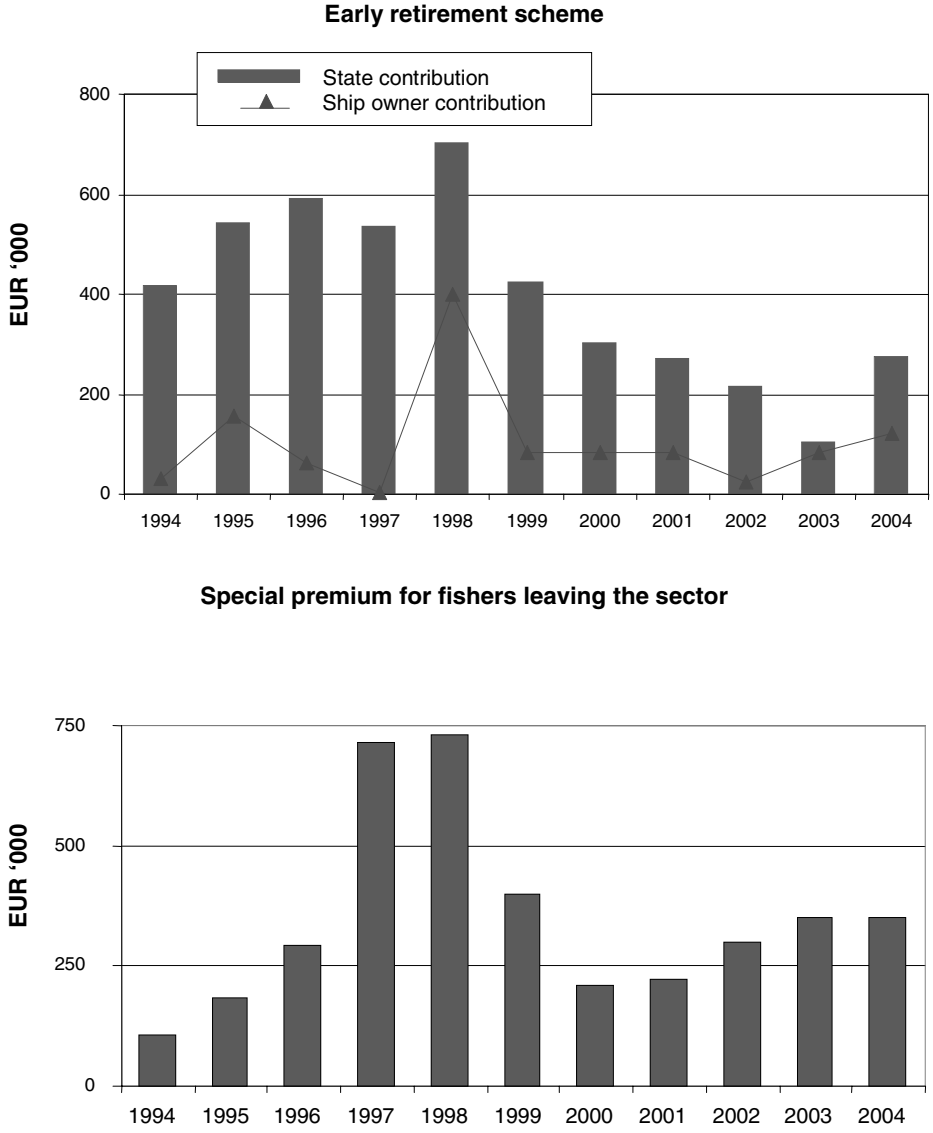
In order to address the adverse effects of capacity adjustment programs, some socio-economic measures were provided in the European adjustment policies. The implementation of those measures was under national responsibility. In France some measures were added to the permanent passive social policies for unemployment and retirement: the early retirement scheme and special premium for fishers leaving the sector. Those measures do not depend on the vessel (size and tonnage) but rather on the engagement of recipients in fishing activity.

In 1991, socioeconomic measures have been decided as a helping measure to the decommissioning schemes. Those measures have continued with the renewal of the 2-years duration buyback programs. In case of redundancy, the early retirement scheme is insuring the fisher to get a replacement income if he has not enough annual fees paid to apply for the retirement pension. Since 1991, 213 seamen have taken advantage of the early retirement plan. This support benefited both skippers and sailors and amounted to a total amount of EUR 7.014 million, of which 76% (EUR 5.35 million) was financed by the Ministry of Transports, Equipment, Tourism and the Sea and 24% (EUR 1.664 million) by employers-owners (through the National Committee of Fisheries). This support is guaranteed for the fishers until 55 years old. Incomes consist of 50% of their fixed-price salary based on their category of career if the seamen are between 50 and 51.5 years old. If more than 51.5 years old, in addition to this income, the seamen earns 65% of the 10^{th} category income (on 20 categories). The conditions to meet are: being more than 50 years old and have paid contributions to ENIM for 30 years. As the general case for the total retirement pension is to be at least 52.5 years old and have paid 37.5 annual contributions, this particular scheme provides a helpful link to the normal retirement scheme and absorbs the most difficult part of fishers to reallocate.

The special premium for fishers leaving the sector is another socioeconomic measure to help fishers. Since 1994, 450 fishers have taken advantage from this scheme. This represents a total amount of more than EUR 4 million, totally funded by the Ministry of transports, equipment, tourism and the sea. This support can benefit to both skippers and sailors and is financed only by the state. The indemnities last 456 days if the fisher is less than 50 years old, 639 days if he is more than 50 years old. The income is comprised between 57.4% and 75% of the fixed-income by category.

Once defined, the conditions of those socioeconomic measures, it is relevant to observe their importance in the sector. Studying the graphs below reveals low expenses for those measures compared to the structural funds used for the fleet. Moreover, those expenses have remained approximately constant or have increased only slightly over the last 5 years after a peak in 1998 (Figure 7.15). This can be related to the evolution of fishers over this period that shows a strong fall between 1998 and 1999. This decrease was followed by an increase in demand for socio-economic measures. From then, expenses are lower and the stock remains the same. The ship owner's contributions are interesting as they reveal, for each year, the part of the financial support for fishers taken by professionals. These contributions are not proportional with the State expenses and depending on the year may be very low compared to the State expenses or take a considerable part of the total funding.

Figure 7.15. Evolution of both socioeconomic measures' costs in France



Source: DGMT/DAM

Temporary and permanent schemes interaction

The two different means for the State to deal with adjustment are from two different fields: the passive policy that constitutes the general social security for fishers and the active schemes implemented to temporarily cope with adjustment programs. The aim of the following part is to study how they match together and to conclude on their potential incoherence or symbiosis.

Adding to the general framework of the social and labour market policy, the State has put in place some additional measures to help fishers cope with structural adjustment policy and soften the impacts of such a policy on fishers and communities. That's why a paragraph of the CFP's structural program has included socioeconomic measures that had

to be organized at the national level. Those measures described earlier are following the decommissioning schemes implemented from the early 1990's. Whether those two schemes work together is a difficult question to answer and information about such an interaction are difficult to gather. It is recognised that French social insurance model aims at maintaining income levels when absent or retired from the labour market. The fishing sector is particularly threatened by financial difficulties and socioeconomic measures are needed to maintain those income levels. Such measures help fishers that loose their job because of buyback programs until they get a new vessel to embark or the proper age to retire. In that sense, both active and passive schemes seem coherent since the system constituted by them creates a high-quality protection for fishers in financial difficulties. In that sense, the resilience of the labour market is increased by such policies.

However, those financial supports do not directly provide fishers leaving the industry with an opportunity to find another activity. The effectiveness of such active policies in terms of relocation and development of new opportunities remains difficult to evaluate. In that sense, active policies have been implemented as a supplement to the passive policies, a financial support added to the existing schemes. Socioeconomic measures do not interact with unemployment insurance or retirement pension by developing relocation of workers or new openings to other sectors but rather by adding financial aid to the already existing schemes.

Policy insights, synthesis of the findings

Coherence between the institutional policies and the management policies

This section will depict the insights that can be drawn after studying the French fishing sector. This will deal with the relationship between social and management policies, as they have been described separately earlier.

Coherence of social policies in the fisheries management context

Generally speaking, both unemployment and retirement schemes seem to protect to the fishers in France. The retirement age limit (within a range of 50 to 55 years old but 52.5 years old for a total pension if enough annual contributions are gathered) is very early compared to other OECD countries, which possess an average age limit of retirement of 64 years old minimum. Back to the age structure of fishers in Brittany, very few fishers are over 60 years old, which can be interpreted as being an advantageous regime in the sense that retired workers get a sufficient retirement income and do not need to stay in the industry. Moreover, the French policy for unemployment provides workers who have lost their job with a significant financial support. However, unemployment contributions are not compulsory for small-scale fishers. This is the only support from the French authorities that need involvement from workers. Since very few of them contribute to such a scheme, they could find financial difficulties in case of redundancy.

There is no or little tradition of research in France about the adequacy of social assistance (Eardley *et al.* 1996) and especially the adequacy of benefit levels. From the existing documentation on the topic, it is then difficult to evaluate the level of coherence of the social and labour market policies with the fisheries situation in France. However, when comparing benefits with the general regime, the social system for fishers may be

considered as advantageous. The social contributions are low compared to the real incomes of fishers. Consequently, the contributions paid are much less than the normal rate of contribution in the other sectors. The rate of contribution is also used as an important lever for lowering exploitation costs and increase fishing firms' profitability. The government often uses this tool to compensate oil price rises for example. This has had consequences on the ENIM budget. Only a quarter of the budget is funded by fishers' contributions, which happens to contribute to some incoherence in the social security governance. This phenomenon of State-funded regime is commonly observed in agriculture or in the heavy industry, sectors that meet financial difficulties and crisis. However, this assistance from the State may normally consist in short term granting, accompanying the transition to a sustainable exploitation. This does not seem to be the case in the French fisheries sector. Indeed, after around 120 000 people who benefit from the retirement regime, if no change in the age limit of retirement happens, they will be 130 000 in 2017 and 89 000 in 2050 (*Le Marin* n° 3072, May 2006). Consequently, the State will have to deal with a greater number of retired fishers in the short and middle term unless the age of retirement is reviewed. It is crucial to recall that the lower the average effective age of retirement, the larger the benefit population and the smaller the tax base on which the funding of social protection schemes depends (Blöndal and Scarpetta 1999).

Dynamics of the labour market in fisheries: the outcomes of the social and management policies system

One of the key points in the French fisheries sector is that the dynamics of the labour market is enhanced by authorities. When studying the labour market, it appears to be adapted to people who leave the sector, in terms of conditions and benefits. But the labour market policy also has to be interested in the entrance to the sector. It needs to be integrated in the general context of fisheries and include constraints like the structural adjustment programs as well as problems of recruitment.

As for recruitment there is a need for the sector to open its labour market. There have been some improvements made in that way from 20 years with the CIN, which allowed non-maritime persons to enter this sector of activity. The VAE, by ratifying a working experience as a certificate, adds some flexibility in the industry. Moreover, the creation of professional maritime "*baccalauréats*" (with option in fishing firm management or marine electro-mechanic) is a good start for widening the exit to the sector. By leaving the fish harvesting sector, fishers have a sufficient level of education that allows them to apply for qualified jobs. In that sense, entering the fishing industry may not constitute a professional dead end any more and may encourage young people to choose this sector. This highlights the strong will of policy makers to open the sector instead of closing the exit doors, which was the case before. In 1999, the Standard of Training, Certification and Watchkeeping for seafarers (STCW), an international convention, allowed a complete reshaping of the maritime education. This was made possible through the creation of bridges between the merchant marine and the fishing activity. This convention was recognised by French authorities and French fishers could go from one sector to another at an equivalent professional level.

One important point to develop is the resilience of the labour market to fisheries adjustment. The resilience to adjustment in France is important due to the help of the State which limits the impacts of adjustment by providing financial support, so that the labour market adapts itself more smoothly to the new situation. The resilience is also

dependant on the labour market behaviour. The easy access to relocation within or outside the fishing industry is an important characteristic that increases mobility of fishers and the general resilience of the human capital. However, there is no real relocation policy in the sector.

Co-ordination between governing bodies

France has a system of assistance which appears complex and confusing to outsiders. Although an arguable strength of the system is its commitment to decentralised provision, there is some concern about co-ordination between the various schemes and the levels of the government which administer them. The department of maritime affairs, at a local scale, plays an important administrative role and covers both the social system and the fisheries management local implementation. It constitutes a central element of the local fishing activity. Both the French social and fisheries management systems, though organized and acting separately, have the same top-down implementation. The fisheries management system, as described earlier, is elaborated at the European level, and then the national bodies relay the decisions made through the regional bodies until the execution in the maritime quarters. The passive social system is also highly framed from the national to the local level. The active schemes are drawn up at the national level to be proposed along the coastline. It is difficult to conclude on the efficiency of coordination between central and decentralized governing bodies. The administrative framework appears to be somehow rigid and heavy by involving several divisions from different ministries that implement. Co-ordination between fisheries managers and those responsible for the social welfare is an important feature. This is particularly true for the French case where those two authorities are well separated into different ministries. Such coordination and communication is vital if government's role in facilitating adjustment in the sector is to become more proactive and less reactive. If social service agencies and labour departments are to anticipate the needs of fishing communities they need to be given adequate warning of major changes in fisheries management regimes.

Nationally, social and fisheries management policies are run by several bodies, from the Ministry of equipment or the Ministry of Agriculture. This multi-head administration may appear as non compatible with coherence in the overall fisheries sector management. But the relationships between those bodies are relatively close and, in spite of some conflicts of interests, duties of each division are well defined. Furthermore, the advantages of this multi-head governing for fisheries are the various roles dedicated to each body in terms of TAC negotiations at the European level, budget or social security managing. However, though relatively complementary, this administration implies a heavy system with important human and financial resources. This raises the question of whether the fisheries sector, considering its limited economical weight from now on, still worth such a special system of management or rather be part of the general regime. Nevertheless, this is a question hard to treat because of the special nature of the system (crew-shared incomes, hard working conditions, financial difficulties, etc.).

Concluding remarks

As a new program for 2007-2013, the European Fisheries Fund (EFF) will replace the FIFG for its structural adjustment chapter. The background is quite similar to the former fund but readapted to the present situation. There is a will from the EU to develop their concern for environmental measures and include them in the new fund. Training, further

education and early retirement of fishermen are a concern of the new European policy. They have also the desire to simplify fund management to establish a management plan adapted to each member country depending on its own features. For France, the main evolution is that the EFF will include the overseas departments (DOM) in the management plan. At a national scale, a recent study asked by the Minister of Agriculture and Fisheries on the operation of social system in the fisheries sector has revealed some incoherence in the way it is managed. Some reorganizations of the system need to be considered. The special social security for seafarers that is costly and non relevant considering the weight of fisheries in France has been questioned. They have also raised the problem of fixed-income rates for social contributions that turn to be very low compared to the advantages provided. The reform of retirement programs has also been raised in the study. However, such reforms are very difficult to implement as explained earlier, due to the unique characteristics of the sector and its hard working conditions. That sets the fisheries sector apart from other sectors.

In the future, policy-makers will need to smooth the path of structural adjustment – not only to facilitate the transition to responsible fisheries, but also to reduce the need for costly adjustment programs. In the transition to a sustainable fishery, the French fishing sector needs to ensure that it is largely capable of adjusting its structure automatically and autonomously. This should become one of the primary tenets of fisheries policy. Moreover, minimizing the role of government in the structural adjustment process is important for two reasons: to control government spending and to avoid moral hazard. That means changing social protection and fisheries management policies (including transfers tied to non-labour inputs) so as to eliminate incentives that encourage labour to remain attached to fishing (that is, able to resume fishing) long after fishing has ceased to be profitable.

All governments may need to take a fresh look at how their resource management, social protection, and labour market policies interact in the fisheries sector. In particular, they should review the rules governing eligibility for benefits and the amount of entitlements for which fishery workers qualify under state financed social insurance schemes with a view to ensuring that the policies are no more generous than they are for other occupations. Likewise, when contemplating alternative approaches to fisheries management, they should seriously consider management regimes that contain built-in incentives for continuous adjustment of labour and capital inputs. Otherwise, they may find themselves having to deal with structural adjustment problems in the fisheries sector for a considerable long time.

Bibliography

Anonym, (1997), "The economic evaluation of the fishing vessels (decommissioning) schemes", Nautilus Consultants, Edinburgh, 106 p.

Blöndal, S., S. Scarpetto (1999), Early retirement in OECD Countries: the role of social security systems. *OECD Economic Studies*, No. 29, 1997/II: 7-54.

CEREQ/BRETAGNE, Université Rennes 1, coordinated by G. Podevin with information from research centres: LESSOR, LEN-CORRAIL, ITHAQUE, (2003) *Le secteur des* pêches maritimes, Coordination Prospective Formation Emploi; La Documentation Française.

Charles, A. (2001), *Sustainable Fishery Systems*, Blackwell Science, Oxford, UK

Clark, C.W., G.R. Munro and U.R. Sumaila (2005), *Subsidies, buybacks and sustainable fisheries*, in *Journal of environmental economics and management* 50, pages 47-58.

Commission des Communautés Européennes (2004) *Proposition règlement du conseil : Fonds européen pour la pêche*, Bruxelles

Daures, F., O. Guyader (2000), Economic analysis of the impact of buyback programs and the role of financial incentives schemes: application to a limited entry French fishery.

Direction générale de la mer et des transports / Direction des affaires maritimes (DGMT/DAM) (2006) *L'emploi et la formation des marins à la pêche.*

DGMT/DAM (2005) Situation de l'emploi maritime à la pêche en 2004

DGMT/DAM (2005) Situation de l'emploi des marins étrangers à la pêche en 2004 et évolution

Eardley, T., J. Bradshaw, J. Ditch, I. Gough and P. Whiteford Peter (1996), *Social Assistance in OECD Countries – Volume I: Synthesis Reports*, Department of Social Security Research Report No. 47, London: Her Majesty's Stationary Office.

Eardley, T., J. Bradshaw, J. Ditch, I. Gough and P. Whiteford, (1996), *Social Assistance in OECD Countries – Volume II: Country Reports*, Department of Social Security Research Report No. 47, London: Her Majesty's Stationary Office.

Food and Agriculture Organization (FAO) (1993), "Marine fisheries and the law of the Sea: a decade of change", in *The State of Food and Agriculture* 1993, Rome.

Gouzien, A. (2004) Pénurie de marins et carrières professionnelles à la pêche maritime in Les journées d'études 2004 de l'observatoire des droits des marins, Nantes.

Gouzien, A. (2006) La pêche artisanale comme ressource du développement local et durable des territoires.

Gouzien, A. (2006) *L'avenir de la formation maritime en Bretagne, enjeu de l'adaptation de la formation professionnelle*, Comité Des Pêches du Quartier Maritime du Guilvinec.

IF IFREMER-SIH (2002) *Synthèse des pêcheries 2002, flotte Mer du Nord-Manche-Atlantique*.

REMER-SIH (2003) *Synthèse des flottilles de pêche 2003, Mer du Nord-Manche-Atlantique*.

Le Marin, hebdomadaire de l'économie maritime, numéro 3072 du vendredi 26 mai 2006. *La sécu des marins remise en cause.*

OCDE (2000) *Pour des pêcheries responsables : implications économiques et politiques*

OCDE (2005) *Vieillissement et politiques de l'emploi : France*.

OECD (2006) *Using markets mechanisms to manage fisheries: smoothing the path*

OFIMER (2006) *Les chiffres clés de la filière pêche et aquaculture en France édition 2004*.

Porter, G. (2001), *Fisheries Subsidies and Overfishing: Toward a Structured Discussion*, Paper presented at the UNEP Fisheries Workshop, Geneva, Switzerland, 12th February.

Serondon, A. (2005) *Diagnostic Pêche-Mer-Aquaculture*, GREF Bretagne

UNIJURIDIS (2005), *The French social protection system against the loss of employment*.

World Trade Organization (WTO) (1997), *Environmental Benefits of Removing Trade Distortions: Note by the Secretariat,* WT/CTE/W/67, Brussels.

Useful websites:

Details about the French social security system:
http://www.cleiss.fr/docs/regimes/regime_france/an_5.html

Details about French public subsidies from the French direction of fisheries and aquaculture (*Direction des Pêches Maritimes et de l'Aquaculture*):
http://www.agriculture.gouv.fr/spip/ressources.themes.budgetsoutienspublics.soutienspublicspeche_r967.html

Chapter 8

Always Too Many?
The Human Side of Fishery Capacity Adjustment in Norway

Bjørn Hersoug, Professor, College of Fishery Science, University of Tromsø

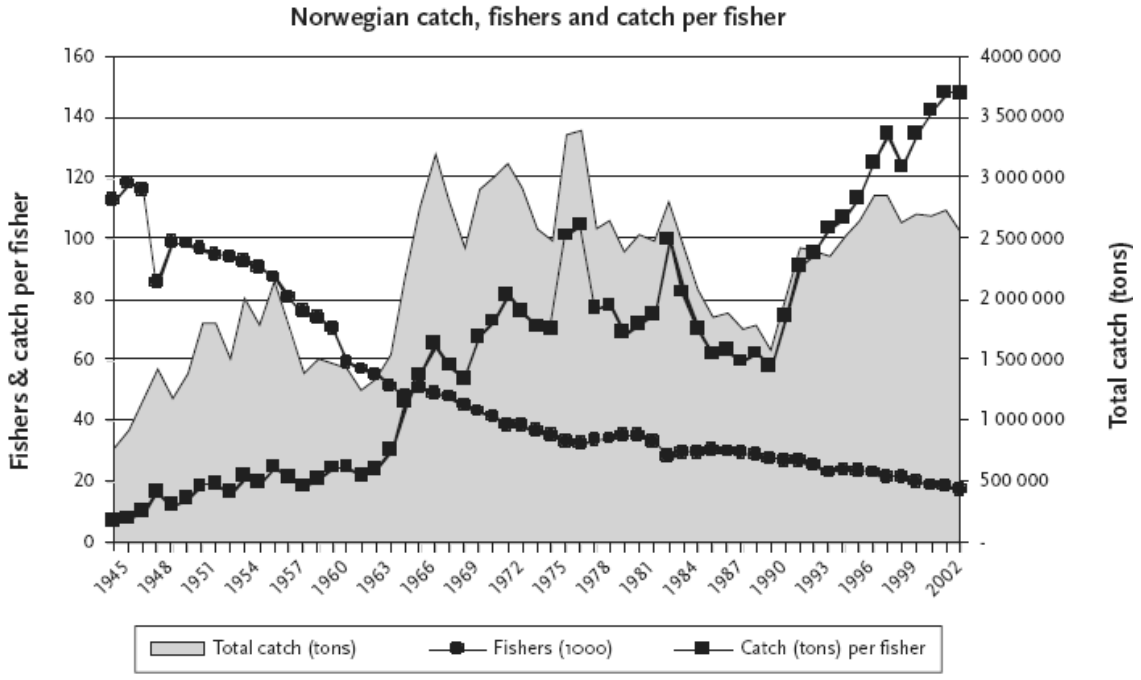
Introduction

In 1945, just after WWII, Norway had 115 000 registered fishers, while at present (2005) the number is approximately 15,000. In the meantime total catch has increased threefold, indicating that catch per fisher has increased from approximately 8 tons to 160 tons (see Figure 8.1). At the same time, there has not been massive unemployment in coastal areas during this period. Hence Norway could serve as an interesting example of how to manage structural adjustments in fisheries. Structural adjustments have been managed in various ways. While adjustment in the first part of the period was implemented through the market, scrapping schemes paid by the state were introduced in the 1960s. In 2003 a new system of shared responsibility for scrapping was introduced, with 50% paid by the fishers and 50% paid by the state. Throughout the period there has been various schemes based on merging rights and quotas, originally developed for the larger ocean-going fleet (trawlers and purse seiners), but from 2003 extended also to the larger vessels in the coastal fleet (vessels larger than 15 m).

The paper is divided into eight sections. Following the introduction, the second section presents some insights from labour market studies in coastal communities. The third section illustrates development on the macro level, related to the number of fishers, unemployment as well as migration. Recognizing that fishing is a marginal economic activity on the national level, the fourth section presents the need for a regional or a local approach, focusing on coastal areas where fishing, fish processing and aquaculture play an important part. The fifth section presents the Norwegian system for labour market and social policies, together with the more long-term policies for rural development. The sixth section deals with how we can measure success and failures in fisheries adjustment, while the seventh focuses on the incompatibility of the processes involved; fisheries adjustment as a gradual process whereas management measures may produce sudden shocks (such as the closing of a specific fishery). These effects are, however, intertwined with natural and market variations, whereas the mitigating effects of unemployment as well as rural development policies tend to be long-term and often targeted to more central places. The last section deals with the lessons to be learnt from the Norwegian experiences, both in terms of how to frame fisheries policies as well as unemployment and regional policies. A central point here is to understand the strong position of a stable coastal settlement pattern in Norwegian policy, as well as the extremely favorable conditions offered by postwar economic development with large public funds available both for rural development as

well as labour market policies, combined with a limited number of people affected. Ultimately the effects of globalization and the "education society" are briefly discussed, claiming that fisheries capacity reduction is still a complicated challenge, not least because the fisheries (including fish processing) can no longer be used to mitigate the effects of economic transformation of coastal communities. The fisheries sector and in particular the actual fishing is no longer an "employer of last resort".

Figure 8.1. Norwegian catch, fishers and catch per fisher



Source: Hersoug 2005: 242.

Labour market theory applied to fisheries

Neo-classical economic theory may serve as a starting point for understanding labour market behaviour in the fisheries. According to this theory, somewhat simplified, employment in the fisheries is a result of supply and demand. Expansions of the model due to imperfections, such as monopoly situations, limited information or transaction costs, may be useful as these modifications allow the existence of *several labour markets,* divided according to geographical or occupational barriers (Colbjørnsen 1980). But even with these modifications in mind, neoclassical economics gives a limited understanding of how the various labour markets function. First of all because the actual labour transaction takes place in social networks, where friendship, kinship and neighbourhood influence both who are recruited and the actual remuneration. Jentoft (1976) and Wadel (1980) characterize this process as *network recruitment*, and consequently as an alternative to market recruitment. Instead of perceiving the market and networks as two

separate ways of recruiting, it is probably more fruitful to see them as two extremes on a continuum, or alternatively that market recruitment is *modified* by social networks.

In addition there are three characteristics traditionally influencing labour markets in the fisheries. The first is connected to the actual recruitment. At least up to the 1990s, learning in the fisheries did not rely much on formal education. The necessary knowledge and abilities were acquired through doing, through the gradual socialization following the actual cooperation on board (Hetland 1984). It is typical that in a large national survey of fishers, 83% had a father that was a fisher and 95% had their upbringing in a fishing community (Hersoug 1984). On the importance of kinship, Hersoug (1984) demonstrates how 75% of a large sample of fishers started their career with family members, neighbours and community members, that is, in a "protected situation". The same is found in many other countries as well (Firestone 1967, Stiles 1979)**.** Shortly summarised, the recruitment situation was characterised by an early start, little formal education and with a large influence of kin and neighbours onboard.

The second characteristic applies to the importance of networks and cooperation, not only onboard but among vessels from the same community or on a higher level, between the fleet, the processing factories and the households. Jentoft and Wadel (1984) have introduced the term *employment system,* where the fishing industry and the fisheries are constituted by sets of reciprocal roles and activities. A diversified fleet can serve to employ different members of the community, such as when older boats are used for recruitment or for fishers who are scaling down their level of activity. In some communities there is a close cooperation between fleet, processing factory and households, all trying to optimise their income within given constraints, while in others lack of internal coordination may imply recruitment, capacity or career problems. While natural conditions, markets and technological developments will determine the aggregate level of employment in the fisheries, the local network will to a large degree determine the success or failure of the separate fishing community.

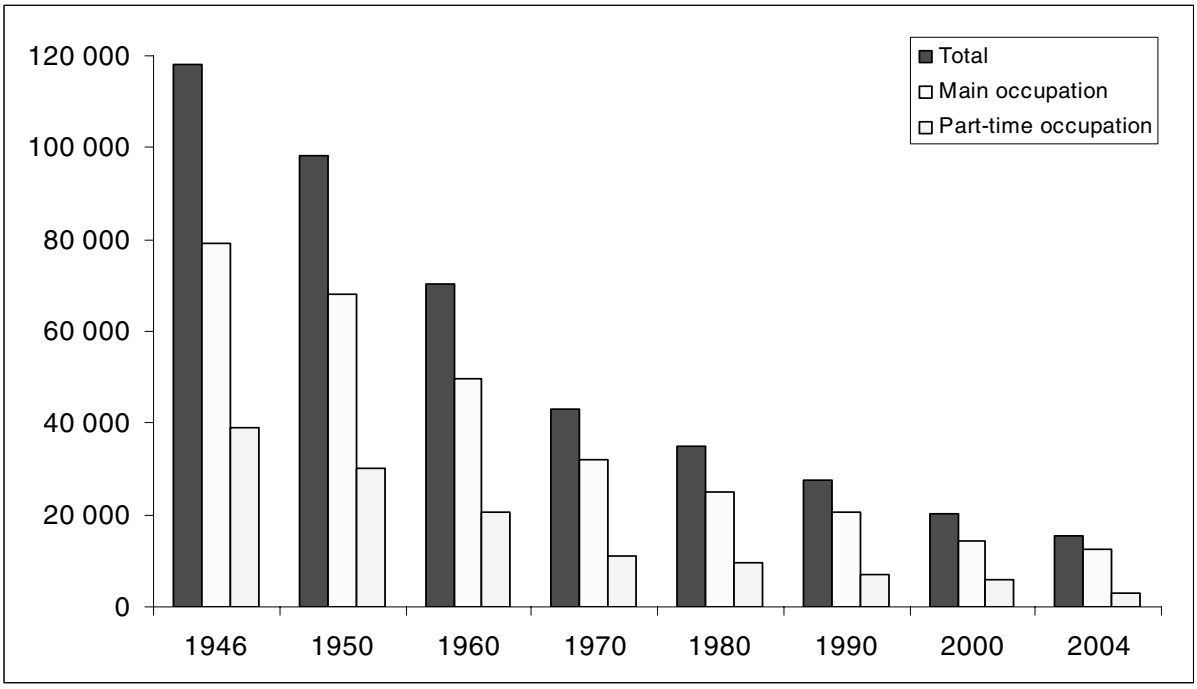
The third characteristic applies to fishing as part of a coastal labour market system. Fishing has for years been an *employer of last resort*, but also a buffer system, meaning that the fishing sector has lost manpower when other sectors have expanded, but received workers when other sectors contracted. As shown in Figure 8.2 the general tendency in the whole post WWII period has been reduction, but the annual fluctuations have been influenced by a close cooperation between certain sectors, so that fishers temporarily may work as construction workers, processing workers, in shipbuilding or sea transport. These occupations have been characterised as coastal occupations (*kystyrker*) or a domain of coastal employment. The typical trait of such a coastal system of occupation is that it is flexible. Reduction in one sector does not necessarily result in unemployment. The individual has an occupational mobility which contributes to stability of the coastal settlement pattern, because even if a former fisher starts commuting, the family remains in the fishing community. These occupations were characterised as flexible, as they all required little formal education and few specific certificates. Today, this flexibility is considerably reduced as most coastal occupations have been through a process of professionalisation, where more formal education and certificates are required.

There is little doubt about the general decline in the number of fishers, but labour researchers have for years debated whether push or pull factors have been the most important. While Brox (1966, 1984) has stressed that fishers have been *forced out* of their occupation due to highhanded fisheries policies by the authorities, Seierstad (1983) describes how the coastal economy over time has become more inflexible, with fewer

possibilities of changing jobs. His main point is, however, that fisheries in the entire period since WWII has been an "employer of last resort". The availability of more attractive jobs in towns and more densely-populated areas can be considered a "scarce commodity", where there at any time has been a queue of potential employees from coastal areas. Bad times in the fishing industry may certainly explain why many quit and why few are recruited, but good times in other industries (such as construction, oil and gas, and public and private service), may be equally important.

Based on these characteristics Hersoug (1985) makes a distinction between "life-time fishers", "employment switchers", "employment commuters" and "tourists", where only the first group is stable in the fishing industry throughout their lives. Consequently, the migration of the fishers may therefore be as complicated as that of the fish.

Figure 8.2. Number of Norwegian Fishers (1946-2004)



Source: SSB

Fishers – fewer and older

As can be seen from Figure 8.2, the number of fishers has decreased steadily since 1946. While natural variations and market conditions may have caused short-term fluctuations, the long-term trend has been steadily downward. This points to the enormous increase in technical efficiency over time, since the actual catch level is three times higher than in 1950, although the number of fishers have been reduced to a mere fraction of the original (15 000 left in 2004 out of 118 000 in 1946).

However, there are more to the numbers than can be seen by simple computation of the three categories (main or sole occupation versus part-time occupation). There is, as pointed out by Apostle *et al*. (1999), a puzzling paradox in the development of the

Norwegian fishing industry compared with the Canadian. Between 1945 and 1990, 90 000 fishers "disappeared" in Norway, while the number in Atlantic Canada increased slightly. This has happened in spite of the Canadian fisheries being reorganised along industrial (Fordist) lines in these years, which would normally require both technological development and rationalisation. However, even though Norwegian fishers succeeded in fighting off the extreme versions of the Fordist regime, the petty capitalist model also had a double edge:

> "On the one hand, it entailed fierce resistance against Fordist solutions. On the other, it undermined the traditional economic adaptation, as it put the fisherman-farmer under pressure to become either a professional farmer or a professional fisherman. In this way, the rejection of the Fordist model did not mean a retreat to tradition, but a quick transformation from occupational pluralism and domestic commodity production to specialisation and technological innovation within a petty capitalist framework" (Apostle *et al.* 1999:61).

While the number of fishers needed in Norway has always been a disputed point, the issue can be seen from at least two different angles. The first one is; how many fishers are needed to catch the available quotas? That of course depends on the fleet structure and the choice of technology. The second one is; how many fishers are needed to maintain the coastal settlement pattern, or more precisely, to secure a critical minimum of employment to maintain the small coastal communities? When the modernisation drive started after WWII, there were indisputably too many fishers around, with the sector acting as an *employer of last resort* all through the crisis years in the 1930s. The question was how the reduction should take place (push or pull) and how fast. In spite of generous subsidies throughout the period 1950-1990, which undoubtedly kept more manpower in the sector than was strictly needed, the reduction continued and most politicians and administrators seemed to see this as a natural law. Today there are, according to the former Minister of Fisheries, still too many fishers, although the fisher organisations have started questioning whether there is indeed a "minimum critical mass" in certain fisheries.

According to the settlement perspective, fisheries and hence fisheries policy has always been an important part of rural development. Fishing, processing and more recently aquaculture have been essential in securing basic employment in a large number of coastal communities. When the numbers are drastically reduced and the recruitment made difficult through the actual closing of the fisheries (requiring a much higher initial investment in order to buy rights and quotas), this undermines these coastal communities. Here it should be added that even if the service sector (public and private) is much larger than the primary fishing sector or the secondary processing sector, the tertiary sector is largely based on fishing, processing and aquaculture. Without the fisheries there are few reasons to maintain a substantial public infrastructure in many of these communities, as tourist activity is limited and mainly seasonal.

Table 8.1. Percentage registered fishers by age, with fishing as their occupation[1]

Age (year)	1990	1995	2000	2005
<20	5.9	3.2	3.1	1.8
20-29	26.8	25.6	18.2	15.9
30-39	20.5	21.8	22.8	22.8
40-49	20.6	21.3	21.3	22.7
50-59	14.4	17.9	22.9	22.8
>=60	11.7	10.4	11.7	14.0
Total %	100.0	100.0	100.0	100.0
Total number	20 475	17 160	14 262	11 848

Note:
1. The figures given in table 8.1 have to be treated with caution, because being registered is connected to several benefits. An investigation from 1989 showed that only 75% of the registered fishers delivered fish that particular year (Hersoug 2001). In 2000 fewer than 10 000 fishers were responsible for more than 90% of the total catch, a figure that has decreased even further over the last five years.

Source: Directorate of Fisheries.

The recruitment situation can be illustrated by a simple computation of fishers by age over the last 15 years. As can be seen from Table 8.1, the number of fishers younger than 20 years decreased from 6% in 1990 to 2% in 2005, while the number in the age group 20-30 years decreased from 27% to 16%, a clear indication that the recruitment of new fishers is steadily on the way down. This impression is further strengthened if we consult the so called Group I fishers (in the coastal cod fisheries), the ones with guaranteed harvest rights. Here only 89 out of 2 500 are younger than 30 years, indicating that younger fishers find it increasingly difficult to buy not only the vessel but also the accompanying rights (Hersoug 2005:133).

What happened to the fishers that left the industry? Judging from the national figures for unemployment there were no significant increase in the number of unemployed in the most important fishing regions. As can be seen from Table 8.2 the level of unemployment in the most fishery dependent counties (Finnmark, Troms and Nordland) has always been higher than the national average, but on the other hand lower than the OECD average. The same is illustrated by Figure 8.3, where we compare unemployment in North-Norway, the most fisheries dependent region, with unemployment in the entire country in the period 1980 -2005.

Table 8.2. Unemployment According to County (North Norwegian counties and Norway overall)

(% of available labour force)

	1960	1970	1980	1990	1995	2000	2004	2005
Nordland	2.3	2.3	3.0	4.7	5.7	3.5	4.4	4.3
Troms	2.8	2.5	3.0	4.9	5.2	2.9	3.8	3.7
Finnmark	2.9	2.6	2.9	5.4	6.1	4.9	5.7	5.5
Norway	0.9	0.8	0.0	4.3	4.7	2.7	3.9	3.5

Source: The Norwegian Public Employment Service (*A-etat*): Historical statistics

However, even on this level it is difficult to connect development in the fishing sector to the level of unemployment. As explained in the previous section, unemployment figures depend not only on *push* factors (losing jobs in the fisheries) but on *pull* factors as well, which often means the availability of work in other counties, frequently in the south. Figure 8.4 demonstrates the "paradox"; when unemployment figures increase, migration out of North-Norway is reduced and vice versa.

Figure 8.3. Number of unemployed as percentage of labour force (1980-2004)

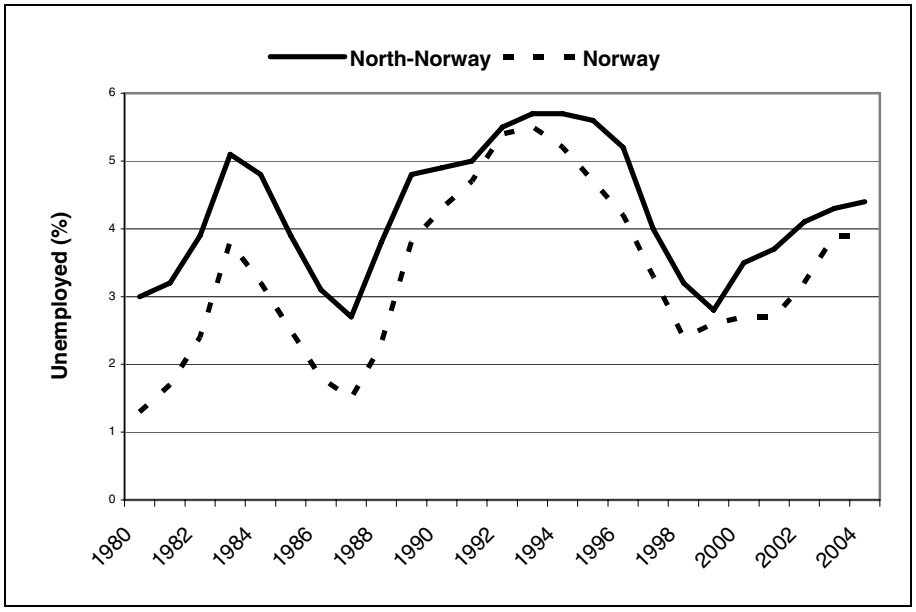
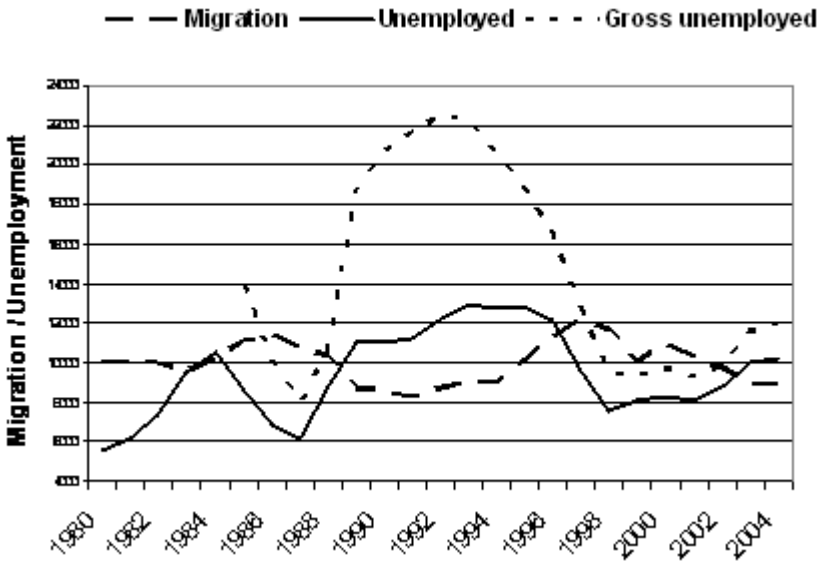


Figure 8.4. Number of migrants, number of unemployed and the combined number of unemployed and people on employment training programmes in North Norway (1980-2005)



In the latest publication from a public committee analysing the effects of structural adjustment measures in the Norwegian fisheries the problem is described as follows:

> "Reduction of the fleet will imply reduced employment. The ones made redundant that do not find new employment, represent a social cost to society…..It is not given that this represents a major problem. If we study the history of the fishing industry we find a reduction in employment similar to most other industrial sectors; they are in a situation of continuous adjustment and have been so for the last 50 years. The development of unemployment benefits for fishers does not indicate that fishers have major problems with unemployment and manpower projections indicate that there will be scarcity of available labour in the relative near future." (NOU 2006:16:81, own transl.).

Unemployment on the local level

While a macro economic perspective of the fisheries labour market will indicate minor problems (some unemployment due to friction in the labour transfers and some mismatches regarding qualifications), the perspective of the local fishing communities may be more dramatic. Having experienced 10-15% unemployment for years, as is the case for many coastal communities in the north, this is bound to affect the communities negatively. The municipalities get a "crisis stamp" in the public opinion, affecting both the present inhabitants as well as the prospective entrants, the ones that possibly could move into the municipality. Last but not least, such a situation with a permanent high degree of unemployment, largely connected to fishing and fish processing, also influence recruitment into the industry. The implicit message to young people is that the fishing industry has no future and that they should try their luck in more modern and promising sectors, such as IT, services or oil and gas. In the next round this is bound to influence also their choice of where to settle. Crisis communities do not appear to be attractive

places for settlement, as the downscaling of the fishing and processing activities normally is accompanied with a gradual downscaling of public and private services as well.

In Norway we have experienced several resource crises over the years, with the most dramatic connected to the cod crisis in 1989/90 when drastic cuts in the TAC were made and the former open access fishery was closed. The actual process is described in detail in Hersoug (2005), Holm *et al.* (1996) and Holm and Raanes (1996). What should be highlighted here is how the closing and the dramatic quota cuts affected the fishing communities, what type of remedies that were offered and how they succeeded. To get an impression of how the situation was perceived in the fishing communities, listen to the leader of the Norwegian Coastal Fishermen's Union (*Norges Kystfiskarlag*):

> "Today we write 17 January 1990. The coastal fleet is tied up. The processing factories are silent. The fishers and their families have great economic problems. They fear the winter, the spring and the autumn for next year, five years - many years. They fear the message from the bank, the sound of the auction hammer, and most of all they fear the authorities that refer to democracy while ruining thousands of livelihoods - making the coastal population refugees in their own territory"(Jentoft1994:46, own transl.).

The crisis was serious, incomes were dramatically reduced, unemployment soared, and the number of bankruptcies increased and people in the coastal communities started migrating. Representatives of the coastal communities demanded "disaster aid" immediately and the public authorities responded positively. A number of measures were put in place, ranging from debt relief (support for interest and instalment payments in the State Fishermen's Bank and the State Housing Bank), extraordinary support to the processing industry for further capacity adjustment, support for alternative fisheries as well as specific labour market measures such as training and education and the establishment of a specific zone in the north with reduced taxes and fees, all meant to provide new employment possibilities.

While 1990 and 1991 undoubtedly represented a tough period for many fishing communities (see Table 8.3), the crisis was, unlike in Canada, not long-term. Already in 1993 the TAC for cod was more than doubled. Increased prices also mitigated some of the worst consequences of reduced quantities. The Norwegian fishing industry was also assisted by the dismantling of the old Soviet Union, with Russian fishing vessels starting to deliver in the north of Norway, thus obtaining hard currency while the processing industry received additional raw material (Arbo and Hersoug 1997).

Table 8.3. Unemployed as percentage of all employees in Norwegian fishing municipalities

Fishing municipalities	Average 1986-88 %	1989 %	1990 %
Finnmark	8.8	15.8	22.9
Troms	7.7	12.3	11.5
Nordland	6.9	10.5	13.0
Southern Norway	3.9	7.4	8.8
Norway (all municipalities)	3.9	6.7	7.4

Source: Jentoft (1994:64).

As an act of fisheries management the whole operation took the character of "muddling through". Both fisheries authorities and fisher organisations had originally proclaimed that this was a *crisis measure* and that the industry would return to business as usual as soon as the crisis had passed. However, the closure of the cod fisheries initiated a long-term development of an Individual Vessel Quota (IVQ) system for the coastal fleet, resulting in a situation whereby all major fisheries have been effectively closed by 2005.

As can be seen from Table 8.3, unemployment soared in the fishing communities, especially in Finnmark where alternative occupations are scarce, but so did also the national average, where 1990 marked a particularly bad year (see Figure 8.4). This implied, all other factors being equal, that unemployed fishers (due to the cod crisis) encountered problems entering most other sectors of the economy.

In terms of meeting the challenge of the crisis, the public policy was relatively successful. By 1994/95 the most affected municipalities and communities were back to normal, that is, back to a situation whereby the number of fishers was gradually reduced and with relatively small effects on the local labour markets. The crisis measures had worked, while the more permanent measures (the closing of new fisheries and the IVQ regime) should be strongly contested in the coming years. Jentoft (1994) summarises the lessons from the cod crisis management in terms of *flexibility*. The fishing industry should be prepared for boom and bust cycles and increased flexibility is an important measure to meet such fluctuations. Jentoft (*Ibid.*) was not only referring to numerical flexibility, but also *functional flexibility*, where fishers have access to several resources and the processing factories can produce several products for different markets. In the Norwegian setting both sectors were assisted by the rapid expansion of the aquaculture industry.

More recently the effects of the new fleet adjustment scheme (introducing an individual transferable rights system) in the period 2004-2006 have been measured and evaluated. As already indicated the employment effects on the national level have been minor while at the local level, the effects have been varied. Due to greater flexibility in buying, selling and merging rights, also in the coastal fleet, many coastal communities have lost vessels and rights, while others have gained. In many fishing communities employment has been reduced but unemployment has not reached the level witnessed in the early 1990s. Some effects have been mitigated by establishing two crews (or 1,5) per vessels in the larger coastal fleet, while others have found alternative employment, often after a certain period on unemployment relief. An attempt of analysing fleet reduction in relation to fisheries dependency (fishers as percentage of total work population) does not show any clear trends. Reductions hit both fisheries dependent and less dependent communities (Hermansen 2006).

It is, however, difficult to analyse the effects more in detail after only two years. Effects can turn up at a later stage, and in most cases there is a considerable time-lag between the actual occurrence of unemployment and the decision to relocate. What is important (and extremely difficult to study) is whether certain fisheries are based on a *local* network of actors. According to Jentoft (1984) such societies experience a sort of "domino effect" when the number of active fishers falls under a certain critical minimum, whereby the remaining group of fishers resign within a short period of time. Such effects have been difficult to substantiate, not least because the fisheries are highly diversified and many fishermen/vessel owners belong to *virtual networks* that to a very limited degree depend on the actual local community. They get their information through other

networks (mainly national organisations) and they cooperate with partners located in different coastal communities, depending on the task at hand.

From unemployment benefits to training and education

What happens when the fishers loose their employment as a result of fisheries capacity adjustment? This is definitely not a new challenge, and the Fishermen's Guarantee Fund (*Garantikassen for fiskere*) was established as early as 1936, in order to meet the needs of the fishing families when the fisheries failed. Hence, a certain guaranteed share (*lott)* is still an important part of the social security system. Fishers who have been fishing as their full time occupation for a certain period, without obtaining a minimum (approximately NOK 115 000 per year) are eligible for payments to make up for the loss of income. In our context the unemployment social security is more important. Fishers who become unemployed as a result of decommissioning or downscaling may apply for unemployment benefits and at present the daily rate is NOK 315 (which is hardly enough to survive as a family). Fishers may receive such support for a maximum of 40 weeks per year and in 2005 altogether 2 000 fishers were receiving benefits from this scheme. However, most of these fishers became unemployed (temporarily) due to other events, such as ship wrecks, sales of vessels, etc. Finally the Fishermen's Guarantee Fund has a system whereby fishers may obtain partial pension from 60 to 67 years of age (when the general pension fund takes over responsibility of all Norwegian citizens). This arrangement is meant as a gradual phasing out of the fisheries for people having worked most of their lives within the fishing occupation and in 2005 a total of 2 000 fishers were involved, a number that has increased over the last few years. Together these arrangements take care of the immediate effects of restructuring of the fishing fleet, at least if we are referring to the full timers. While independent coastal fishers before 1980 were poorly covered by social security benefits, they have gradually been enrolled into the Norwegian social security system, which in principle grants people a descent support.

However, after maximum three years of unemployment fishers can no longer be a member of the Fishermen's Guarantee Fund and they will have to find their way into the general labour market system. Here the traditional conflict was whether people could be required to move to a new place (with available employment) or whether they could remain in their original coastal villages and still receive unemployment benefits. The conflict raged for years and ended in a sort of compromise, whereby labour market authorities required tough implementation in times of great demand for labour in the Norwegian economy while a more lax practice was tolerated when demand for labour contracted.

Norwegian labour market policies have always had a double edge: On the one hand it has been imperative to facilitate the smooth exchange of labour from low productive sectors to more highly productive sectors, while on the other hand securing redundant workers an acceptable social security. Right up to the 1970s the public employment service concentrated on facilitating job transfers, while the structural crisis in the late 1970s/1980s changed effort more in direction of temporary employment and then in the 1990s, more in direction of qualifications and training. Behind this scheme there has always been a rather generous system of disability pension, presently used by some

325 000 Norwegians or 10.5 % of the entire workforce.[1] This is not the place to review the large field of Norwegian labour market policies, but suffice to say that over the years policies have been much more flexible and diversified, ready to meet different challenges. But even if few experience extreme poverty, unemployment is still considered a dramatic handicap in a culture characterised by a strong work ethos. This is even more so in small and transparent coastal communities where it is fairly evident who are working and who are not.

So while the short-term effects are managed through various employment policies, the more long-term challenges are met by rural and regional policies, both of which have long traditions in Norway. Whereas the specific rural policy (*distriktspolitikk*), presently largely managed through Innovation Norway, has a specific target area, regional policy (*regionalpolitikk*) is in principle applied for all Norwegian regions. And while rural policies aim at strengthening the business sector as its main target through various subsidy schemes, regional policy contain the coordination of all public policies. With regard to coastal communities, rural policies were for years concentrated on expanding the fish processing sector. (Until 1997 the fishing fleet had its own loan and subsidy schemes administrated by the State Fishermen's Bank, later to be taken over by what is now called Innovation Norway). When it was evident that price subsidies had to be scaled down and labour costs in Norway escalated way beyond the level of most competitors, structural adjustments had to be made also in the processing sector, and more of the specific rural policy was geared towards other sectors, such as tourism and the private service sector. While the effects of both rural and regional policies have been debated for years, there can be little doubt that the main effect has been to slow down the migration away from coastal and rural areas.

Adjustments, whether on the individual, business or societal level always entail gains and costs, and they do not necessarily accrue to the same people. In a dynamic industry like the fishing industry, there will always be adjustments, in terms of having to adapt to changing conditions, in terms of resources, markets and technology. As pointed out by Hansen and Selstad (1998) there is often a tendency to believe that crisis are short-term, where short-term support is needed until we can return to "business as usual". In the fishing natural variations may often produce such short-term crises, but quite often crises are structural, as in the case of *e.g.* frozen products, which no longer attracts consumers to the same degree as before. A crisis can be "solved" by the market, ending with bankruptcies and unemployment, or by public authorities trying to *manage the adjustment process.* And management can again be based on an *offensive* or a *defensive* attitude. Meeting structural adjustment in the fisheries by social support in terms of unemployment benefits is definitely on the defensive end, while rural policies trying to diversify

[1] A point that is often forgotten is that the costs of transformation are often borne by other ministries, that is, not by the Ministry of Fisheries. This has particularly been the case in the processing industry, where unemployed and underemployed personnel after some time have been transferred to the category of disabled pensioners (*uføretrygdede*), recognizing that alternative employment in a particular fishing community is difficult or impossible to obtain. This may be the case also in other single occupation societies (company towns) as well, but the point is that capacity adjustments may entail considerable costs as well, especially when the labour force is unable to transfer to more productive work in other sectors.

This is not an argument against capacity adjustment, but may have consequences for the speed of adjustment processes. When costs have to be measured directly against gains, calculations may turn out differently from the situation characterized by "privatizing gains, while socializing costs".

employment in the coastal communities may be characterised as offensive, trying to meet adjustments that are seen as inevitable. The drive towards larger efficiency in the fisheries seems to be inevitable, but as will be demonstrated later, this does not rule out the possibilities of making a choice. Adjustments can be managed in various ways and with quite different results.

How do we measure success or failure?

As already indicated there are complex measurement problems connected to vessels and fishers, sorting out the active ones and deciding on who should legitimately be counted as *fishers*. Even more complicated is the issue of how to measure success or failure in fisheries capacity adjustment. A simple starting point can be that gradual transformation processes that do not appear in the public as problematic have been successful. Fishers have retired or quietly got another job, which from an economist's point of view is a contribution to increased general welfare. The same global quotas (TACs) are divided by fewer fishers, which, all other factors equal, means more fish per remaining fisher. Unfortunately most of fleet reductions do not occur in this manner. Reductions come in chunks, suddenly affecting a particular fleet group, a particular fishery or a particular area, creating unemployment on a large scale, locally.[2] A successful administration of such shocks would imply the gradual movement of these former fishers to other gainful employment within a certain period of time. The greatest success would be if these former fishers continued to live in the same communities, municipality or region, given the strong political commitment to a stable settlement pattern. An outright failure would be if such capacity adjustments led to long-term unemployment and eventually to migration from the region (accompanied with no or minimal immigration).

Normally we measure success or failure according to what degree the goals have been fulfilled. Looking at the goals for the Norwegian fisheries policy over the last 30 years, there has been a remarkable consistency. In 1977, laying the foundation for the new 200 miles EEZ regime there were three development goals:

- "The main features of the settlement pattern shall be maintained
- The marine resources shall be protected
- People should have secure and good employment opportunities" (St.meld. nr.18 (1977-78)).

Four years later these goals were supplemented by a fourth:

- "The real earning capacity shall be improved" (St.meld. nr.93 (1982-83)).

Fifteen years later the main goal is formulated as:

> "The fisheries policy shall arrange for a profitable development of the fishing industry. A sustainable development is a prerequisite to reach this goal. Through market orientation and increased value added the fishing industry shall contribute to good employment opportunities and settlement along the coast" (St.meld. nr. 51 (1997-98)).

In the most recent program document the vision for the fishing industry is the following:

[2] Losing 50 jobs in fishing in Berlevåg, in Finnmark county, is comparable to the loss of 30 000 jobs in a city the size of Oslo

> "The Government's vision is a sustainable marine industry constituted by profitable and adaptable entities with considerable innovative capability. A marine industry that together with other economic activities is able to develop robust and viable coastal communities and an industry that is able to compete on the international market." (St.meld. nr. 19 (2004-2005)).

The problem with these and most other policy goals is that they are formulated in such a general manner that it is hard to measure performance against them. Take for example the goal of a stable settlement pattern. Should it refer to settlement on the regional, county, municipality or community level? And what is precisely meant by "the main features"? Could it be acceptable with a 5% reduction or even 10%, and what is the time perspective; five, ten or twenty years? One way of making such goals operational can be illustrated by the latest Structural Commission, tasked with the difficult question of how to implement future adjustments in fisheries capacity. Here the effects of the various structural measures are analyzed according to the dimensions indicated in Table 8.4.

Table 8.4. Evaluation criteria (fleet adjustment through structural measures)

1. Common property	2. Activity along the coast	3. Modern, differentiated and profitable industry
1a. Legitimacy	2a. Geographical distribution of rights	3a. Profitability
1b. Allocation of fishing rights	2b. Geographical distribution of landings	3b. Capacity reduction
1c. Recruitment	2c. Employment	3c. Fleet structure
1d. Aboriginal rights		

Source: NOU 2006:16:53 (own transl.).

In this case the structural measures have been evaluated according to their contribution to the three main goals specified by the government, namely; to which degree the fish resources still can be considered public property, to what extent they contribute to fishing activities along the entire coast and finally, to what extent they contribute to a modern, diversified and profitable fishing industry.

As can be seen, there are obvious contradictions between the goals, and goal attainment can only be measured as some form of compromise. Greater attention to profitability will for example lead to less employment and most probably to legitimacy problems. (In this case sustainable resource utilisation is taken as given, that is, quotas have to be fixed at levels securing sustainable stocks also in the future).

This way of evaluating a larger array of societal concerns is also found in international approaches. Fleet reductions imply that former fishing villages over time may become redundant. Some manage to take up new occupations, such as aquaculture or tourism. Other coastal communities experience a long drawn-out death rattle, gradually losing the public and private service institutions (the school and the local shop), ending up as a retiree dwelling place or a community of vacationers, taking over existing houses or constructing new cabins. While such changes by most economists are considered "business as usual" (just like mining communities die when metal resources are exhausted), new management approaches, such as the Ecosystem Approach to Fisheries (EAF), have also started to imply *social and economic sustainability.* Taken literally this

implies that fisheries management must include considerations with regard to how these measures affect the social and economic well-being of the communities involved. While EAF cannot reduce the need for continuous adaptation of fishing fleets, the principles involved could affect the allocation of rights and quotas. Larger quotas to the small-scale coastal fleets would imply that more fishing communities could survive, granted that the TACs are given.[3]

Lessons to be learned from the Norwegian experience

As already indicated, the value of the Norwegian experience may be somewhat limited, pointing to the extremely favourable conditions surrounding the adjustment process in the Norwegian fishing fleet. Few other OECD countries can provide similar resources to meet the negative effects of unemployment and migration. Nevertheless, there are lessons that should be learned, although the recipe may have to be adjusted when applied to other countries and other coastal communities.

The first lesson refers specifically to the *speed* of the adjustment process. While economic calculations demonstrate that the fishers will have to increase efficiency by 2-3% per annum, in order to maintain income on par with the remaining labour force, fleet adjustments works best if implemented gradually, escaping sudden shocks where particular fleet groups or communities have to face massive unemployment. Fleet adjustment through market mechanisms (transferable fishing rights or quotas) or through long-term state financed scrapping schemes (or a combination, as in Norway) both have the advantage of securing a gradual process, whereby fishers who retreat from active fishing may obtain a premium (the price of fishing rights or quotas), which in turn may assist the transformation process, either as a retirement bonus or as security when transferring to a new occupation. The serious problems occur when crisis decisions have to be made, as in the case of the cod fisheries in 1989/90. Generally, also TAC reductions should, if possible, be made in a gradual manner, as illustrated by the "harvest rules" in the annual negotiations in the Norwegian-Russian Fisheries Commission, where it was agreed to adjust the TAC for cod (either up or down) by a maximum of 10% each year in order to produce greater stability.

The second lesson refers to the timing and availability of labour market measures and rural development policies. To the extent these are flexible, and able to be implemented on short term notice, chances of a successful transformation are considerably increased. If fishers lack formal qualifications, certification courses may serve as entry ticket to new occupations, for example in the aquaculture industry. While generous unemployment payments may ease the situation in the short run, only new qualifications may assist the previous fishers in the longer term when they try to access the labour market, either locally or in other regions of the country.

With rural development policy it is more difficult to act on short term notice, having to deal with projects which may take years from initiation to finalization. However, having recognized that fishing (and processing) cannot "save" most fishing communities in the future; it is of utmost importance to diversify their economic structures, obtaining

[3] In practice this allocation issue is of course more complicated as a successful reallocation is dependent on other factors as well, such as the availability of fish, the availability of processing plants, etc.

more employment in other sectors, be that oil and gas, aquaculture, tourism or private or public services.

While in former years (1960s, 1970s) labour market policies were largely geared towards the creation of alternative employment, primarily in industry, more recent policies in the 1990s, have concentrated more on *education and training*, aiming at qualifying former fishers for the new labour market. In the Norwegian economy formal education serves as an entry ticket to an increasing segment of the good jobs, thus acting as a barrier for fishers who are characterized by informal skills, having few formal diplomas. Considerable funds have been used over the last ten years in giving coastal dwellers more formal education, thus increasing their chances on the national labour market. The paradox is of course that the majority of these new jobs are located in towns and generally in the south and central part of the country. What is then a successful outcome on the individual level (the former fisher gets a job) may turn out to be a loss to the community (when the former fisher family migrates to a new locality).

While greater stability in the fisheries, combined with flexibility in the labour market policies may ease the adjustment processes in fishing societies, there are still some special characteristics in the Norwegian case. The first applies to the complexity of the labour market in the fishing industry. Not all fishers are full time fishers. Norwegian fisheries are still characterized by fishing in combination with other occupations. For some fishing is also a way of life, thus indicating that their requirements for income may be different from ordinary wage earners. Many fishing societies still seem to have a *shock absorbing capacity* which is not found in other more "modern" communities. This means that moderate changes in the fishing occupation often go unnoticed, without demands for heavy state intervention.

The second characteristic is the strong standing of a stable coastal settlement pattern, thus focusing on mitigating measures. While for example a country like New Zealand, easily will accept that transformation of the fishing industry will imply changes in the settlement pattern, such effects are less tolerated in the Norwegian setting. This is not to say that the goal of a stable settlement pattern has been successfully achieved, not even on a regional level, but it implies strong incentives in the direction of creating alternative occupations for fishers and processing workers, and if not successful, disability pension is an alternative increasingly used, not only in the north and in the coastal communities but in the entire country.

Finally, we have the problem of *who* should maintain the local structures. From WWII onwards the challenge has been to provide alternative employment possibilities in the coastal communities, when the fisheries contracted. Industry, aquaculture and tourism were considered appropriate substitutes together with public services, thus securing the local employment and consequently the settlement pattern. However, due to demographic processes, impacting all marginal rural societies and the effects of the new education society, ethnic Norwegians may be less interested not only in fishing and fish processing, but in the substitute employment as well. Then the challenge is much more formidable; the question is not how to provide substitute employment in coastal communities for 2-5% of the fishers each year, but how to maintain the coastal communities when local recruits no longer return.

In the industry this has been solved by bringing in refugees and immigrants, while foreigners are still scarce in the actual fishing. This may seem as a paradox, in a situation with unemployment Norwegians prefer to be unemployed (or on social benefits) while foreigners do the actual job! From the point of view of the local community, municipality

or processing factory, this may seem like a good solution. Employment is maintained and the population is more or less stable while economic multiplier effects increase. However, as a political strategy, this is risky business. If special treatment is required, mainly to obtain work for people that are only in transition, the political goodwill required to maintain special privileges for the industry may soon erode. In the debate over fish resources it has for a long time been claimed that "a dead cod is a dead cod", no matter from which fleet group it originates, but in the case of workers, origin seems to make a difference, at least in political terms. Considering that fishing, even in the most isolated municipalities in the north only constitutes maximum 20% of the active work force, the substitution of these "lost" work places is within manageable proportions. The maintenance of the remaining 80% is a much more formidable challenge.

This challenge is indeed increased by the effects of the education society. During the last generation the share of young people attending higher education in Norway has increased from 10.7% in 1970 to 25.1% in 1995. The same is the case in the most fisheries dependent regions. In North-Norway the share of young people 19-24 years of age attending higher education is now on par with the remaining country, having experienced a dramatic increase over the last 25 years. So while the discussion in the 1980s largely revolved around the effects of extending education to secondary school (from 6 to 9-10 years), postponing the entry of the younger generation into the fisheries and educating them "out of the local communities", the present challenge is how to attract young people with university and college education to the coastal communities.

The situation in the fishing communities is in many ways paradoxical; the main challenge is to meet the effects of a steady rationalization in the fisheries, finding jobs for redundant fishers, preferably in the same geographical area, while at the same time also attracting qualified young people into fishing (and fish processing and aquaculture). Fishing, especially the more specialized version, with advanced vessels and gear, require qualifications. Fishing is in general no longer "an employer of last resort", and competing industries like oil and gas are more than happy to recruit the most qualified ones. In short this means that policy makers, be they at a local or central level, need to have two thoughts in their heads at the same time; finding jobs for redundant fishers leaving the industry and recruiting the most qualified youths into the fishing industry.

In economic theory the phenomenon of job-less growth is well known. This is largely the case also for the Norwegian fishing industry; export income increases every year, but the number of employees keeps falling. In such a situation some communities are more successful than others. In a situation where subsidies cannot be used to the same degree as before, it is a battle not only for quotas and rights but also for the best brains, the ones able to connect to new markets, invent new products or combine resources in a new manner. Here public authorities can level the playing field and assist the new entrepreneurs, but in an open world economy it is difficult to take the full responsibility for keeping people in the established communities. The dynamics of the fisheries sector is strong, no matter how the public authorities intervene. Or as formulated by one of the old-timers in the industry: "The only stable truth in the fishing industry is change!"

Bibliography

Apostle, R., G. Barrett, P. Holm, S. Jentoft, L. Mazany, B. McCay and K. Mikalsen (1998), *Community, State, and the Market on the North Atlantic Rim.* University of Toronto Press, Toronto.

Arbo, P. and B. Hersoug (1997), "The globalization of the fishing industry and the case of Finnmark", *Marine Policy*, Vol. 21, No.2, pp. 121-142.

Brox, O. (1966), *Hva skjer i Nord-Norge?* Pax forlag, Oslo.

Brox, O. (1984), *Nord-Norge fra allmenning til koloni.* Universitetsforlaget, Oslo.

Colbjørnsen, T. (1980), Sysselsettingsproblemer – noen teoretiske hovedsynspunkter. In Halvorsen, K. (ed.): *Arbeid og sysselsetting foran 80-åra*. Pax Forlag, Oslo

Firestone, M. (1967), "Brothers and Rivals: Patrilocality in Savage Cove". University of Newfoundland, St. Johns.

Hermansen, Ø. (2006), Notes on quota transfers between municipalities. Unpublished annex to NOU 2006:16 Strukturvirkemidler I fiskeflåten.

Hersoug, B. (1984), Oljevirksomheten – trussel eller redning? In Jentoft, S. and C. Wadel (eds.): *I samme båt. Sysselsettingssystemer i fiskerinæringen.* Universitetsforlaget, Oslo.

Hersoug, B. (1985), Fiskernes vandringer – om yrkesskifte og mobilitet blant norske fiskere 1971-80. Serie D: Fiskeriorganisasjon nr. 1/85. IFF, Universitetet i Tromsø.

Hersoug, B. (2001), Er fiskeripolitikk distriktspolitikk? In Teigen, H. (ed.): B*ygdeutvikling: Historiske spor og framtidige vegval.* Norges forskningsråd. Tapir forlag, Trondheim.

Hersoug, B. (2005): *Closing the commons. Norwegian fisheries from open access to private property,* Eburon, Delft, The Netherlands.

Hetland, P. (1984), "Med 80 stamper line i halinga". In Jentoft, S. and C. Wadel (eds.):I samme båt. Sysselsettingssystemer i fiskerinæringen. Universitetsforlaget, Oslo.

Holm, P. and S.A. Rånes (1996), The Individual Vessel Quota System in the Norwegian Arctic Coastal Cod Fishery. Paper presented to "Voices from the Commons", The sixth Annual Conference of the IACP, Berkeley, California, 5-8 June, 1996. Norwegian College of Fishery Science, University of Tromsø.

Holm, P., S.A. Rånes and B. Hersoug (1996): "Political attributes of rights-based management systems: the case of individual vessel quotas in the Norwegian coastal cod fishery" in Symes, D. (ed.): *Property rights and regulatory systems in fisheries*. Fishing News Books, Oxford.

Jentoft, S. (1976), Markeds-vs. Nettverksrekruttering av arbeidskraft. ISV, Universitetet i Tromsø.

Jentoft, S. (1981), *Organisasjon og ansvar. Lokale koordineringsproblemer i fiskerinæringen.* Universitetsforlaget, Oslo.

Jentoft, S. (1984), Hvor sårbare er fiskerimiljøene? In Jentoft, S. and C. Wadel (eds.): *I samme båt. Sysselsettingssystemer i fiskerinæringen.* Universitetsforlaget, Oslo.

Jentoft, S. (1993a), "Dangling lines: the fisheries crisis and the future of the coastal communities: the Norwegian experience". Social and economic studies. Institute of Social and Economic Research. Memorial University of Newfoundland, St. Johns.

Jentoft, S. (1993b), Hvordan forløp fiskerikrisen? In Otterstad, O. and S. Jentoft (eds.): *Leve kysten? Strandhogg i fiskeri-Norge*. ad Notam, Gyldendal, Oslo.

Jentoft, S. and C. Wadel (1984), *I samme båt. Sysselsettingssystemer i fiskerinæringen.* Universitetsforlaget, Oslo

NOU (2006),16 Strukturvirkemidler i fiskeflåten. Fiskeri og kystdepartementet, Oslo.

Pedersen, P. (2005), 25 år med konjunktursvingninger og samfunnsendringer. In Konjunkturbarometer for Nord-Norge. Sparebank 1 Nord-Norge, Tromsø.

Seierstad, S. (1983), Funksjonsmåten til en stiv, nordnorsk utkantøkonomi, i nåtid og oljeframtid. AI-dok- 24/83. Arbeidsforskningsinstituttene, Oslo.

Stiles, G. (1979), "Labour recruitment and the family crew in Newfoundland" in Andersen, R. (ed.), *North Atlantic Maritime Cultures.* The Hague, Monton.

St.meld. nr.18 (1977-78), Om langtidsplan for norsk fiskerinæring. Fiskeridepartementet.

St.meld. nr. 93 (1982-83), Om retningslinjer for fiskeripolitikken. Fiskeridepartementet.

St.meld. nr. 51 (1997-1998), Perspektiver på utviklingen av norsk fiskerinæring. Fiskeridepartementet.

St.meld. nr. 19 (2004-2005), Den blå åker. Fiskeridepartementet.

Chapter 9

Linkage between Fisheries and the Aquaculture Sector in Mexico's Rural Development Strategy

Claudia Stella Beltran Turriago, Economic Consultant, University Santo Tomás de Aquino, Colombia

Background

The Organisation for Economic Co-operation and Development – OECD - has undertaken a revision of the issues and challenges that exist in the fisheries and aquaculture sector in Mexico and its link to the Mexican rural development strategy (OECD 2006). Consequently, a literature review based on information from different governmental organisms, the academic sector, international organisms and specialist documents was undertaken. This information, alongside the author's own experience gathered in other countries of Latin America, contributed to the following analysis.

This document has been organised as follows: *a)* general description of Mexico's economic and social context until 2005, with a brief diagnosis of the current situation in its fisheries and aquaculture sectors, *b)* presentation of the institutional, legal and political framework for fisheries, aquaculture and the rural sector, *c)* the issues and most important challenges that the country has to overcome to ensure the development of even the most vulnerable communities.

Social, economic and demographic aspects of Mexico

The Federal Republic of Mexico borders the United States of America to the north, the Gulf of Mexico and the Caribbean Sea to the east, Guatemala and Belize to the southeast, and the Pacific Ocean to the southwest. It has 1 964 382 km^2 of surface, 3 149 920 km^2 of Economic Exclusive Zone, 8 475 km of coast line on the Pacific Ocean and 3 294 km of coastal line on the Gulf of Mexico and Caribbean Sea.

According to 2005 statistics from the *National Institute for Statistics, Geography and Data* (*INEGI)*, Mexico has approximately 103 263 388 habitants, of whom 76.5% live in urban areas and 23.5% in rural areas. 7% of the population is indigenous. Fifty eight per cent of the population is economically active; 15% work in the primary sector (agriculture, livestock and fishing), 26% in the secondary sector (industry and mining) and 59% in services. Among people that are employed, 65% have a formal wage, 23% are independent and 9% are informal workers without fixed incomes. On the other hand,

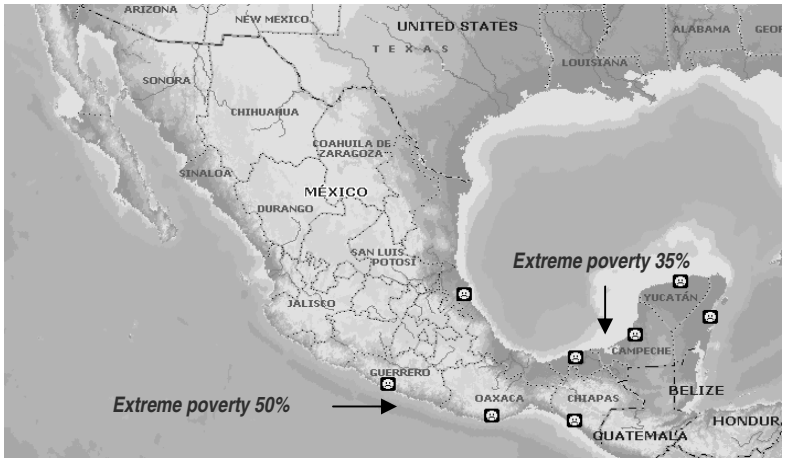
the national unemployment rate is 3.5% and the illiteracy rate is 8.4%, although in rural populations this increases to 23%. The participation of women in the economy is gradually increasing; women as head of household have increased from 17% to 23% from 1990 to 2005.

The average rate of growth of Gross Domestic Product (GDP) between 2001 and 2005 was 1.9%. The Mexican economy is highly diversified and is one of the four most important in Latin America. Over the last decade, there has been an important change in the primary sector (agriculture and mining) due to improved technology. In addition, growth has occurred in the manufacturing industry, oil industry, trade, communications and transport sectors. Strong foreign investment exists in renewal of these sub-sectors. It is also important to highlight remittances by Mexicans relatives who live outside Mexico and who have become an important variable in the economy; for 2005 remittances reached USD 20 million.

The World Bank's study on "*Poverty in Mexico, an evaluation of the conditions, tendencies and government strategies",* reports that in 2004, the proportion of households classed as living in extreme poverty was 20.3%. Those with moderate poverty were 51.7%, predominantly made up of the highly vulnerable indigenous population. This represents a reduction of 3% from 1996, although positive effects are more noticeable in rural areas than urban ones due to remittances and increasing government transfers. Despite this, national income levels remained relatively constant.

There are many differences in poverty between states. The south of the country continues to be one of the poorest areas, despite advances in basic social infrastructure. Poverty is higher in the states bordering the south Pacific (Chiapas, Guerrero and Oaxaca), where 50% of the population is extremely poor, followed by the south Gulf and Caribbean regions (Campeche, Quintana Roo, Tabasco, Veracruz and Yucatan) where 35% are extremely poor (World Bank 2004).

Figure 9.1. Map of poor rural areas



Source: Digital encyclopedia "Encarta 2006"

General situation of fisheries and aquaculture in Mexico

To elaborate on this diagnostic, diverse authors and bibliographical sources were consulted and are cited at the end of the document, including FAO (2003, 2004, 2006), SAGARPA (2000, 2001, 2003, 2005), INP (2005), the Commission of Fishing of the Camera of Deputies (2001); Caso, Pisanty & Ezcurra (2004); Fitzsimmons (2000), DeWalt (2000), Díaz de León (2003) and Salas & Gaertner (2004), and Beltrán (2005), among others.

Around 320 species sustain fishing and aquaculture activities in Mexico. Since the 1990s, average production has been 1.2 million metric tons (mt), despite variations caused by diverse natural phenomena that occasionally increase or diminish the capture of some important resources. Since the middle of the 1980s, a gradual reduction in fishing has been noticed. This is due to sustained effort on the most important resources, a rise in the number of fishers, the use of gears and non-authorized fishing equipment and the weakness of management measures. An alternative to controlling over-exploitation of the resources, particularly the riverside ones, is to explore the utilization of new species such as shrimp in deep waters, green jack (*Caranx sp.*), sand weakfish (*Cynoscion sp.*), flatfish (*Ancylopsetta sp.*), etc.

Although Mexico is one of the main Latin American producers of tilapia and marine shrimp due to its abundant bodies of water and technological developments since the 1980s, aquaculture is still an activity that is not fully developed. Nevertheless, the country can increase production because national demand is high and because rural producers can work with new species for cultivation in fresh and marine waters. As a result, the government and some universities are carrying out research in order to adapt some fishing resources to cultivation conditions.

Coastal lagoons have particular importance for the country and occupy around 1 567 500 hectares of estuary surface, most of them adequate for fishing and aquaculture. They are characterized by their high productivity and for their fragility under inappropriate capture practices as well as the effects of natural phenomena and contamination that have modified their fishing capacity, biodiversity and quality of water. The coastal lagoons of the Gulf of Mexico have a high production of oysters (50% of national production). In the Pacific, the main resource is shrimp (60% of total production). In both regions, there is fishing activity and also cultivation of these species. In addition, on the western coast of Baja California, mollusks such as clams and mussels are cultivated.

With the last changes to the institutional framework in 2001 as a result of the transfer of fishing authority from SEMARNAP to SAGARPA (as is explained in the next chapter), one of the objectives has been to strengthen inspection and surveillance activities to ensure that management measures are fulfilled and reduce infractions of fishing legislation. In CONAPESCA's structure there are two departments responsible for the administration of fishing resources (the Direction of Fisheries and Aquaculture Management, and the Direction of Inspection and Enforcement). If, at federal and state level, these are not well integrated and do not define joint priorities nor coordinate at high, middle and low levels as well as at the federal and state level, there is a risk that a legal or authority gap is created. Free-riders may take advantage of this, as is already occurring (Vidal 2000).

Advancements on this matter have not been effective. Implementing restrictive actions has not been enough to control free-riders as well as illegal, unreported and

unregulated fishing (IUU). It is also necessary to involve the producers linked to fishing and aquaculture and encourage them to participate actively in a concerted way on the design of management schemes and ensure their commitment to the implementation of regulatory measures. To fulfill this goal, it is necessary to design a strategy of communication for the communities, allowing them easy access (radio messages and printed pamphlets) to local meetings in order to explain current measures and those in development. In this way, it would be possible to receive their opinions, circulate more effectively the principles of responsible fishing and reduce infractions where they occur as a result of ignorance of the rules.

Changes in fisheries has generated modifications in the behavior and fishing methods of fishers (particularly of small-scale fishers) that are not always known nor considered by managers when they design long term measures. As a result, they fail when they are implemented. These changes usually happen in the case of fishing resources, for natural phenomena or socio-economic hinge-points. The criteria, preferences, abilities and access opportunities of each fisher have a direct influence on capture behavior and distribution of fishing effort as a whole (Salas, 2004).

On the other hand, neither the economic impact of management measures, nor social and political effects or the collaborating or aggressive attitude of fishers in front of fishing authorities, are usually measured. This is particularly the case where measures motivate or force fishers to diversify their economy, or if the implementation of a measure generates political pressure on fishing authorities in order to modify or postpone management measures.

In reference to marine fisheries, the country is divided into three regions: the north Pacific ocean - Gulf of California - that has cold waters and stocks of migratory species with high biomasses; the south Pacific Ocean with deep and warm waters; and the Gulf of Mexico - Caribbean Sea - with a wide continental platform, warm waters, abundant coral reefs and great diversity of fishing resources but with lower population density that restricts the volume of production of their fisheries.

Levels of capture indicate that the Gulf of Mexico is maybe less productive and more fragile than the Mexican Pacific because it only contributes 21% to total marine fishing. However, this is explained in part because 79% of resources of more commercial interest have already reached their Maximum Sustainable Yield. The industrial fleet has diminished but it has more technology to improve its capture. Also, the number of artisanal fishers has increased and this implies that more management measures are required to recover fishing resources from the Gulf of Mexico and transform fishing into a sustainable activity in the future.

At a commercial level, the main marine resources are sardine, tuna and shrimp. For these species, there have been norms and management plans in place since 1994, with some specific dispositions regarding environmental attention. The number of participants in the tuna fishery has increased, while this has decreased for shrimp and sardine as a result of the high exploitation of these two fisheries, as well as the effects of regulation measures such as closures, gear specifications and effort limitations. Of the total fleet in 2003, 90% were catching shrimp, 6% tuna and 4% sardine.

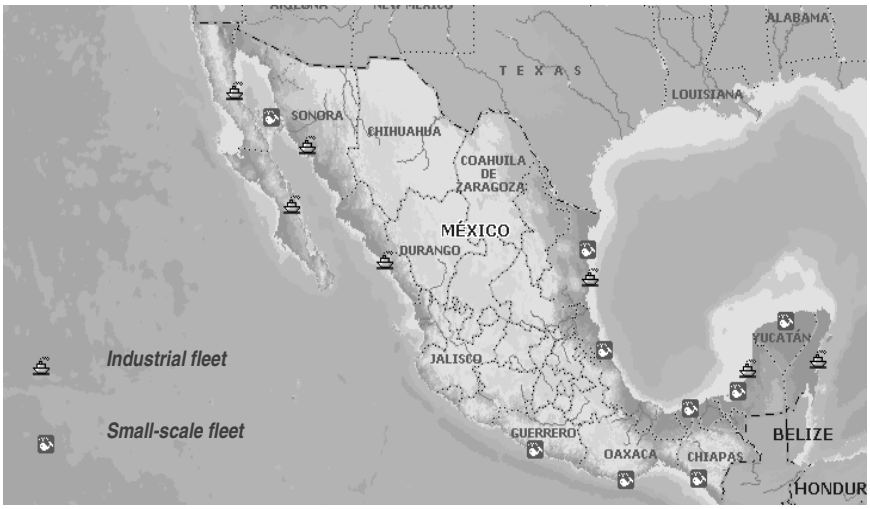
At the artisanal level, the main marine fisheries are giant squid, shark, octopus, lobster, demersal fishes and oyster, among others. Shrimp is captured by the small-scale fleet in some fishing communities despite a total closure in estuarine areas has been established since 1994. Some of the other species have management plans but most are

mainly open access. During the last decade, the number of small-scale fishers has increased in most of the coastal areas because people have perceived fishing as a potential source of income. Some of the species targeted by them are very profitable (lobster, conch, and oyster). Others are sold nationally or for local consumption.

The distribution of the fleet (industrial, semi-industrial and small-scale) varies between regions. One of the most important is the Gulf of California. In 2003, 70% of shrimp trawlers (2 407 vessels), 78% of tuna purse seiners (132 vessels) and 100% of sardine seiners (89 vessels) operated in the marine waters of the States of Sonora, Sinaloa, Baja California and South Baja California. Shrimp trawlers in the Gulf of Mexico operate mainly in the waters of Tamaulipas, Campeche and Quintana Roo States.

The small-scale fleet does not concentrate on a particular region but along coastal and riverside areas, albeit with an emphasis on traditional fishing areas. Ninety seven per cent of the small-scale fleet (102 800 units) is composed of fiberglass boats with outboard-engines (up to 36 feet long), popularly called *"pangas"*. The other 3% (3 600 units) are wooden boats. This fleet is distributed as follows: 54% is based on the Pacific coast (half of them in the Gulf of California) and 46% in the Gulf of Mexico, which has increased by 700% since the 1970s. The States with largest small-scale fleet are Veracruz, Tabasco, Tamaulipas, Campeche and Yucatan (Díaz de León 2003).

Figure 9.2. Location of industrial and small-scale fleets



Source: Digital encyclopedia "Encarta 2006"

According to statistical information from CONAPESCA, fishing and aquaculture production was 1 555 000 mt in 2003. Of this, around 90% originated from marine landings, 5% from inland fishing and 5% from aquaculture (marine shrimp from the Pacific and carp, trout and tilapia from bodies of fresh water).

Inland fisheries capture was 77 800 mt in 2003, 90 400 mt in 2001 and 128 000 mt in 1990, demonstrating a gradual decline in capture as a consequence of over-exploitation and meteorologically adverse conditions that have increased in frequency over the last five decades. In addition, the weak application of management measures and bad quality of seed used to repopulate some water bodies have also contributed to this decline. In this

context, the species of more commercial interest are tilapia, carp, trout and catfish, among others. However, aquaculture statistics could be misleading and only be 70% of the given amount. This is due to the fact that some records assume cultivated fish are used as seed to repopulate bodies of water for public use. Official records indicate that in 2003, marine shrimp represented 83% of cultivation, trout 5%, tilapia 4.7% and oysters 3.5% (FAO 2003).

Tilapia cultivations exist throughout the country and almost all production is for national consumption. It is the third product in volume after sardine and tuna and the fourth in value after shrimp, tuna and octopus. The first projects in 1970s were carried out for home consumption, but as production increased, demand also increased for fresh fish through producer cooperatives that worked jointly to process, pack and transport the products. However, the current trend of rural aquaculture production is to work independently or in small groups. The seed to cultivate tilapia and some native species come from State hatcheries. Tilapia cultivation is common on land with irrigation systems where natural instead of processed food is frequently used. In some cases, water that has already been fertilized is used for the cultivation of grains and vegetables (Fitzsimmons 2000). Shrimp cultivation has had an important social impact since 1992, when the government declared the end of agrarian reform and began to privatize public land in order to modernize production and to motivate investments, granting rights to those who worked the land.

At the moment, 80% of shrimp farms are semi-intensive projects with few technologies and operated by peasants who generate 48% of national production. Contrary to other Latin American countries, in Mexico rural producers are the main participants of this activity. However, some private producers interested in this cultivation have made agreements with peasants in States such as Sinaloa and Nayarit, where the private sector contributes capital and construction while the peasants contribute the land and labour. In the cases where cooperatives or *ejidos* have sold or leased their rights, they have achieved excellent business relations but with other peasants some conflicts have ensued because of not fulfilling their commitments (DeWalt 2000).

Regarding women in rural areas, their participation in fishing and aquaculture varies according to region. For example, in Yucatan they have more important roles, while in Veracruz their participation is limited as men prefer administrative, commercial and production functions continue to be led by them, although seemingly they recognize that women can participate. Nevertheless, women are in charge of elementary functions in fish cooperatives or work in occupations like sewing and hairdressing as well as looking after their homes. On the other hand, the objective of many teenagers and young people is to migrate to the United States or Canada, as they believe that their towns have no attractive or high wage earning opportunities.

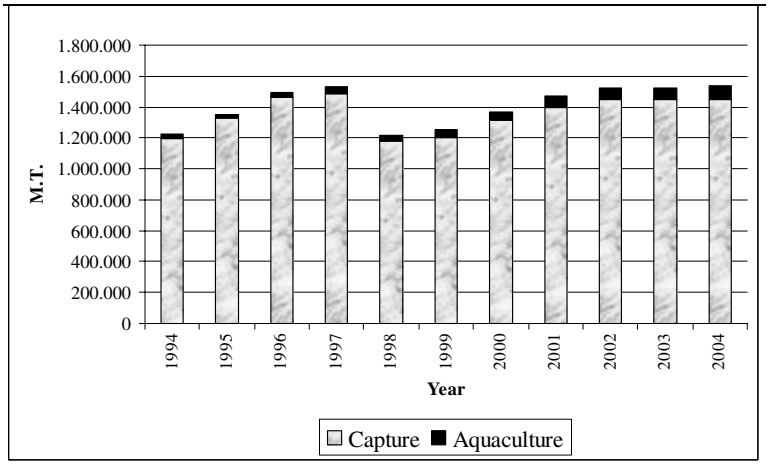
Mexico has high demand for fresh and frozen fish and shellfish, as well as canned tuna and sardines. For many consumers, prices dominate their purchase decisions more than quality and choice. This is due to the low education of consumers and the relatively low tradition of consumption of fish products. In fact, Mexicans prefer to consume chicken (with abundance) more than fish, beef and pig meat.

The time of major sales is Holy Week (March and April) and a little in December. On the other hand, limitations are that buyers do not fully trust product freshness. They consider fish expensive and sales decrease significantly between May and August, a time popularly known as "months without ‘r’ in their names" because it coincides with the winter season (abundant rains), winds and hurricanes, when catches decrease. It is also

important to highlight that in the 1980s and 1990s, the United States imposed two tuna commercial restrictions on Mexico as a result of incidental captures of dolphins by the purse-seine fleet in the Eastern Pacific Ocean. Consequently, the country promoted the national consumption of canned tuna, which has improved the index of fish consumption.

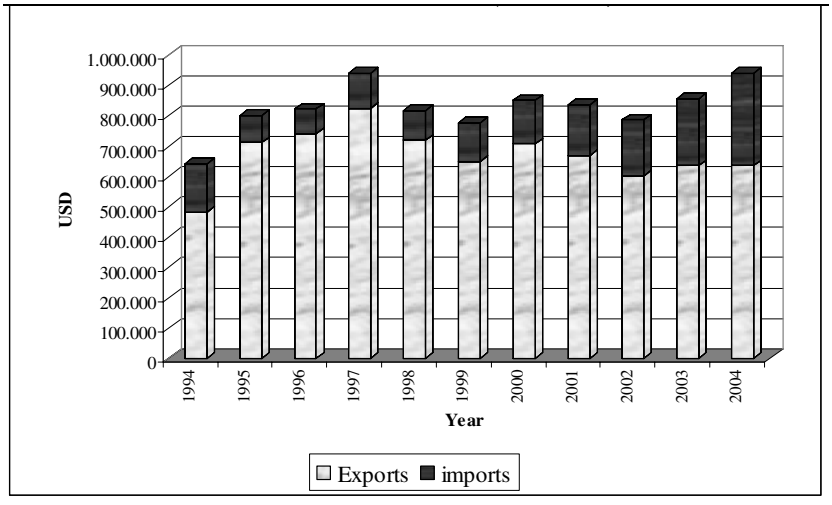
The evolution of the Mexican fishing and aquaculture sectors between 1994 and 2004 is represented in the following graphs, showing production and international trade. It can be noted that fishing contributes 96.3% and aquaculture 3.7% to the national supply of fishing products, while in the international market, exports represent 81.4% and imports 18.6%. It is important to highlight that Mexico is one of the 55 main fishing producers in the world, with resources of high commercial interest. In 2004, it occupied the 16th position in terms of landings and the 28th position in aquaculture production.

Figure 9.3. Mexican fisheries production
(1994-2004)



Source: FAO

Figure 9.4. Mexican international trade
(USD '000)



***Source:* FAO**

Legal and institutional framework for fisheries and aquaculture sector in Mexico

Legal framework

Mexico promulgated fishing laws in 1925, 1932, 1938, 1948, 1950, 1972 and 1986. The first three focused on granting permits and concessions to users. The following two encouraged investment for the development of the activity and improving fleet technology to increase production. From 1948 to 1992, some species of high value (shrimp, lobster, abalone) were reserved for the exclusive use of cooperative groups and subsidies were provided through the *"National Fund of Fishing Cooperative Development"* (law of 1972). However, since 1992, access to this species has changed, allowing fishing permits and concessions to any social or private agent that fulfills the requirements (Díaz de León 2003). This change of emphasis on legislation has made an impact on the way the activity has evolved at industrial and artisanal levels over the last 80 years.

The Federal Fisheries Law of 1992 is still in force and is based on article 27 of the National Constitution. It was amended in 2001 in order to respond appropriately to the evolution and requirements of the sector as well as to current management and development needs. Its objective is to guarantee the conservation and rational use of fishing resources and to establish the bases for its appropriate development and administration.

Nevertheless, some legal gaps have been overcome through the expedition of the National Fisheries Chart 2000 (CNP 2000) and through Mexican Official Norms (NOMs) that are based on important mandates and global initiatives to implant management measures, such as temporary closures of fishing resources and/or bodies of water, protected marine areas, defined fishing seasons, vessels and engine size restrictions, size and type of gears, fishing licenses, limited entry of new fishers and total allowable catch, among others.

NOMs are submitted for public consultation before being applied. Between 1993 and 2005, 31 NOMs for the diverse needs of fishing management were published, as well as three other NOMs related to aquaculture between 1993 and 2000. Besides these, there are also 15 projects for new NOMs or for modification of those in force or in the process of public consultation.

Although the Fishing Law and its regulatory norms govern the sector, there are other related laws such as the Law of national waters (1992), the General law of ecology and environmental protection (1996), the Federal Law on metrology and normalization (1999), the Law of sustainable rural development (2001), the General law of national goods (1994 modified in 2004) and the Law of international trade (1993 modified in 2006), among others.

Institutional frameworks

Since 2001, the directing forces of the fishing and aquaculture sectors has been the *Secretariat of Agriculture, Livestock, Rural Development, Fisheries and Food – (SAGARPA),* a department with ministerial status. SAGARPA is responsible for eight organisms. One of these is the *National Commission of Aquaculture and Fisheries (CONAPESCA)* as the regulatory agency, and another is the *National Fisheries Institute (INP)*, as the research entity. The *National Council of Fisheries and Aquaculture* is the

consultative organisation of the National Government; it is independent and is made up of representatives of the public and private sector, *ad-honorem*.

CONAPESCA is in charge of the implementation of management measures, control and promotion of fishing and aquaculture, while INP carries out scientific and technological research of aquatic flora and fauna in order to provide advice and sustain the formulation of management measures and development of diverse programs.

This implies that the results of INP's research are an important basis for the work of CONAPESCA. Indeed, INP is CONAPESCA's scientific and technological consultation body and also for state government fisheries offices. Likewise, several research centers around the country (CICIMAR, CINVESTAV, CISEDCE, CIBNORT, ECOSUR, UNAM and some State Universities) are undertaking research on marine and fisheries issues. Over time, further interaction has been generated among these institutes and the federal and state governments to support management plans in coastal areas and provide advice for fisheries policies.

Marine fisheries and an important part of fresh water fisheries are under federal jurisdiction and as a result. CONAPESCA and INP have offices throughout the country. Some States have established their own agencies to carry out activities and promotion projects but they do not implant management measures as that comes under federal responsibility. In the specific case of CONAPESCA, their headquarters is not in the capital of the country (Distrito Federal) but in Mazatlán (on the Pacific coast) in order to decentralise institutions and provide institutional presence in one of the most important fishing areas. Delegations exist in a further 32 States.

As a result of the diverse restructuring of institutional frameworks, in November 2000 the environmental authority became the *Secretariat of Environment and Natural Resources – (SEMARNAT)*, before functions were transferred to SAGARPA. As the protection of natural resources is part of its mission, SEMARNAT administers Protected Natural Areas (in some of which there is fishing activity). SAGARPA and SEMARNAT coordinate the formulation and execution of some management measures.

SEMARNAT continues to ensure compatibility between resource conservation and the formulation of strategies for sustainable utilization. With the support of the CNP 200, elaborated jointly between SEMARNAT and SAGARPA that maintains an inventory of fishing resources available in the federal jurisdictions, SEMARNAT defines the maximum fishing effort levels applicable to the resource in specific areas and provides rules for their conservation, recovery and sustainable use in order to neither affect populations nor ecosystems.

In 2000, the CNP published information on 551 commercial fisheries in the Pacific, Gulf of Mexico and Caribbean Sea. Of these, 18% had development potential, 57% had reached the maximum level of exploitation and 25% were over-exploited (Diario Oficial de la Federación, 2000).

At state level, the federal government also relies on the State Committees of Fishing and Marine Resources, as well as the offices that have been created in some municipalities in order to offer more direct attention to users and to respond in a more effective and more punctual way to their needs and expectations.

Policies for the fisheries and aquaculture sector

The rigorous reforms to the fisheries framework influenced the formulation and implementation of fisheries policies. In 2000, public administration of fisheries and aquaculture was transferred from the *Secretariat of the Environment, Natural Resources and Fisheries (SEMARNAP)* to SAGARPA, and more specifically to CONAPESCA. As a result, policies moved from an ecological focus to one more concentrated on production that provides more attention to less favored communities.

During the period of President Vicente Fox Quesada, the National Plan of Development, fed by sectoral programs, was formulated. One of them is, *"the Sectoral Program of Agriculture, Livestock, Rural Development, Fisheries and Food 2001 – 2006,"* also known as *"Alianza Contigo" that* contains the *"Program of Aquaculture and Fisheries"*.

The Program has subsidies for fishers and aquaculture producers and contributes economic resources for training, construction and market infrastructure, as well as the formulation and execution of productive projects to promote the rational use of fishing resources. It is aimed at rural and industrial producers, although the most excluded communities have priority. Consequently, the amount of subsidy diminishes as economic capacity increases.

The exempted items for benefits are land, fishing gear, motors, boats, vehicles, seed and concentrated food. Although it is not convenient to grant subsidies for these items because small producers would not have the opportunity to prove their fight and progress capacity, is necessary to implement a credit system appropriate to their social and economic possibilities. The application of subsidies in project formulation, training and constructions is not enough to give efficient support to the production.

According to reports from CONAPESCA, between 2003 and 2005, 569 support applications for productive projects in rural communities and commercial producers from 26 states, were approved. The total value of these reached USD 59.2 million. The objectives of the Program are:

- To execute and to consolidate the "Program of Fisheries and Aquaculture Management". The participation of the productive and academic sectors as well as the three government levels (federal, state and municipal) is promoted in the definition of outlines for sustainable use and evaluation of development opportunities for fisheries and aquaculture.
- At a federal level, the creation or strengthening of offices in the state and municipal governments who participate in the administration and promotion of fishing and aquaculture. This is to more effectively meet the needs of the population, and also to look for their support to carry out federal government duties.
- To carry out projects aimed at increasing scientific and technical knowledge to define management measures, such as evaluation of fishing resources, the definition of management plans for fisheries and aquaculture projects, the identification of appropriate areas to develop aquaculture, the rehabilitation of coastal lagoon systems and the creation of national advisory committees.
- To promote the expansion from the sector as follows: to strengthen the development of aquaculture and the integrated use of inland water bodies, to

improve sanitary conditions in aquaculture, to modernize capture methods and the fleet itself to allow advanced marine fishing, to evaluate the abundance of available species for marine sport fishing, to promote community organization and the training of producers, to modernize infrastructure linked to fishing and aquaculture, to make more competitive and modern the industrial sector, as well as to develop productive chains of different fisheries and aquaculture sub-sectors.

- To support the commercialization and financial systems through: the improvement of storing centers and channels of distribution of fishing and aquaculture products, campaigns to promote consumption of fishing products and creation of appropriate economic and financial instruments for the sector.
- To carry out the "National Program of Rural Aquaculture – PRONAR", to reduce poverty through the development of the rural economy, to solve problems of food insecurity and to offer new work sources to coastal fishers. The two main strategies are: to promote cultivation projects in inland and marine waters, and to consolidate outlines of financing, insurance and sanitary conditions.
- To adjust the legal framework of fisheries and aquaculture to respond appropriately to the needs and evolution of the sector, as well as consolidating Mexico's presence in the instances and events where fisheries matters are discussed at an international level.

Two of the sub-programs that have increased investments in the sector during the last five years are:

- **PRONAR:** This supports commercial aquaculture projects for family and community units in 22 of the 32 states in the country, through: technical assistance, training, elaboration of studies and consultancies, construction and rehabilitation of physical constructions, endowment of equipment, inputs and creation of demonstrative modules. Their beneficiaries are inhabitants of towns more socially excluded, small proprietors of scarce resources, women's groups, and indigenous and coastal fishers that have not had other Federal Government subsidies. The program began in 2002 and, until December 2005, had assisted 850 projects for 9 000 producers of tilapia, catfish, trout, carp, frogs, shrimp and marine fish at a cost of USD 5.7 million (CONAPESCA 2006).
- **Fund of Fishing Conversion for the Gulf of Mexico – FIRA-FOPESCA:** This began to operate on December 2004. The objective is to improve the production conditions of fishing and aquaculture in the states of Yucatan, Veracruz, Tabasco, Campeche, Quintana Roo and Tamaulipas, through financing for the endowment of equipment and infrastructure for productive projects, incorporation of new technologies developed by research institutes, improvement of commercialization systems, elaboration of feasibility studies, and technical and enterprise development training. Although it is not exclusively for rural producers, highly vulnerable populations can receive maximum financing of 80% of the value of the project, while other producers receive a maximum of 50% support. Projects of USD 12.7 million had been approved until December 2005 (CONAPESCA 2006).

According to an interview of CONAPESCA's Director in the magazine, *"Panorama acuícola magazine"* on December 2004, granting these subsidies has not been a problem but it has been difficult to gather information on how beneficiaries use them, because the

objective of *"Alianza Contigo"* is to support self-sustainable projects instead of just temporary help.

Success depends on the answer of producers and the cooperation of state governments; the most efficient have been Sonora, Sinaloa, Baja California, South Baja California, Tabasco, Yucatan and Campeche. In other states, the problems have been low levels of compromise and a lack of interest by public employees to diffuse and access the Program. Some representatives of fisher groups have weak leadership and potential beneficiaries are not committed to the program. Plus, some people may incorrectly use the Program as political publicity to promote candidates or political parties, which distorts their true meaning, affects the image of the State and of the programs.

Legal and institutional framework for rural development in Mexico

Legal framework

The Federal Law of Sustainable Rural Development was proclaimed on November 13, 2001. Article 3 defines Sustainable Rural Development as, *"the integral improvement of population's social well-being and of the economic activities in territories considered outside the urban nuclei, according to applicable dispositions, assuring the permanent conservation of natural resources, biodiversity and environmental services in this territory"*.

As Article 4 of the same law states, to reach sustainable rural development, the State - with the cooperation of diverse organized agents - will undertake a process of social and economic transformation that recognizes the vulnerability of the sector and drives the improvement of the conditions of the population through the development of productive activities and of social development, offering the sustainable use of natural resources, the diversification and competitiveness of the rural economy and the generation of alternatives of income and employment for the population.

This objective is achieved through the execution of policies and specific programs that should be included in the National Plans of Development, which also change the disparities inherent in regional development and give priority to regions of major poverty. Although the objective is to diversify the economy, it also highlights the relevance of agricultural production (that includes agriculture, livestock, forestry, aquaculture and fishing) as the best way to offer food security and to strengthen the sovereignty of the country.

The law also considers the capitalization of the sector through basic and productive infrastructure, services to production, direct support to producers, and promotion of alliances among the urban and rural environments to facilitate access to support services for the peasants for their production activities and social well-being. All these actions can be executed directly by the Federal Government or in agreement with the state and municipal governments.

The most important aspects that include rural development, besides those dealing with production, are housing, health, food, family planning, school and production education, alleviation of poverty and marginalization, the environment, gender equity, protection for the family and vulnerable populations (children, old men, the terminally ill and disabled), special programs for women and young people, civic culture and against

illegal actions, the insertion of indigenous communities in rural development, land-holding, social security, attention to disasters and social peace.

Planning sustainable rural development has a democratic character; it means that federal and municipal governments participate jointly with producer organizations and other agents that represent rural society. However, it is the responsibility of the State to ensure the necessary financing resources exist in their budget to go ahead with programs and concerted projects, as well as to provide support during emergencies or contingencies that require the execution of special programs. Although planning of rural development is a federal duty, the law promotes decentralization so that each state and municipality defines their priorities according to the needs and peculiar characteristics of each State.

The law creates the *"Mexican Council for Sustainable Rural Development"* as an advisory organisation to the National Government, made up of representatives of the public, private and academic sector, as well as rural society. It also constitutes the *"Inter-secretariat Commission",* which coordinates the administration of government institutions through a complex network composed of nine systems and six services in charge of covering all aspects linked to rural development, integrated with diverse public and private sector organizations, in order to take advantage of their operative capacity. The law also describes the objectives, functions and members of each one of the Systems and Services, denominated as follows:

- National system of research and technological transfer for sustainable rural development.
- National system of training and integral rural technical assistance.
- National system of development for rural social enterprises.
- National system for the fight against desertification and degradation of natural resources.
- National system of rural social well-being.
- National system of information for sustainable rural development.
- National system of sanitary control.
- National system of rural financing.
- National system of support to programs inherent to promotion policies for sustainable rural development.
- National service of normalization and inspection of agricultural products and of storage.
- National service of inspection and certification of seeds.
- National service of agricultural registration.
- National service of arbitration of the rural sector, and
- National service of training and integrated rural technical assistance.

Institutional framework

Inside SAGARPA's structure exists the *Sub secretariat of Rural Development*, whose objective is to improve the well being of the rural population through the support of production processes and the strengthening of producer organisations.

At a higher level, the *Mexican Council for Sustainable Rural Development* and the *Inter-secretariat Commission* exists. In addition to the 15 Systems mentioned before, 12 Programs have been derived, 6 Services and 4 Funds, in which approximately 20 organisations participate. The Federal Government designed the *"Special Attendee*

Program for Sustainable Rural Development 2002 - 2006" to oversee the administration of all the entities that work on rural areas. This includes three financing entities for specific sub-sectors, two universities, four institutions in charge of agricultural sanitation, certification of seeds, statistics and research for specific sub-sectors, two that produce companies of veterinary medications and seeds, two committees for coffee and sugar sub-sectors and a mixed economy company that designs and executes education programs.

As a result of the above, we can conclude that the institutional framework in the rural sector is highly diversified and complex but there are also specific responsibilities for the development of policies. This means that Mexico is concerned about the development of their country and to satisfy the peasantry needs through the design of diverse support alternatives.

Policies for rural development

Around 25% of the Mexican population inhabits almost 190 000 towns in rural areas, with a density average of 2 500 people per town. The rural sector is highly diversified, generally with basic levels of productivity, revenues, well-being and access to services of the State. Many contrasts exist regarding their economic activities and possibilities of achieving integrated development. It implies that the execution of policies in rural development maybe does not have similar challenges, activities and results across the whole country.

López and Graillet (2002) indicate that 80% of agricultural properties have less than 5 Ha. Of these, only 7% have modern technology (industrial producers), 41% are transition agriculturists and 52% are traditional agriculturists. This is explained by the resistance to technological change that many peasants have as they have scarce formal education and little practical training as well as incipient community organization. This maintains cycles: Low yields – Inefficient marketing – Low revenues – Food insecurity – Poverty – Socio-economic and political marginality.

Historically, paternalistic and discontinuous government policies have existed with a high number of political actors who distort the true objective of those who should receive assistance. Most of these policies seek to push technological development but do not solve structural and basic socio-economic issues such as illiteracy and low motivation. This reduces the understanding of peasants regarding the technical assistant's teaching which will therefore limit commitment to a new project. Consequently, many cooperative projects fail a short time after they have finished, despite considerable investment carried out by the Government or international cooperation organisms.

In addition to fisheries and aquaculture policies, rural policies are included in the *"Alianza Contigo"*. Their more important aspects are:

- To advance from a strictly productive focus (agriculture, livestock, fisheries, aquaculture) to integrated rural development. This means elaborating non-food products that satisfy the market's requirements, to produce healthy foods for consumers and profits for producers, to achieve human development and of rural communities, as well as to conserve and to improve the environment.
- The federal government requires coordinated activities between state and municipal governments to ensure participation by the production sector in taking decisions and also to apply policy instruments that allow a more appropriate

response to the necessities of each region, considering the high heterogeneity of the Mexican country.

- For marginal rural areas and indigenous communities, it seeks to create new employment opportunities and to encourage the creation of small and medium enterprises not based exclusively on agricultural activities; this means exploring other alternatives such as eco-tourism, trade and handicrafts, among others.
- To promote the appropriate access by marginal and indigenous communities to services such as education, health, housing, technical assistance, culture, recreation and participation in political decisions related to rural development.
- To support the different productive chains in each one of their phases: production, processing, quality control, transport, commercialization and financing, in order to improve their competitive advantage at a national and international level.
- To adjust legislation related to marketing and reduce the costs of a rural economy that has traditionally been higher than the urban economy, due to the non-existence of stable markets, high costs of transport and the precariousness of property rights.
- To evaluate the possibility of diversifying or changing the productive vocation of some rural areas due to their land, water and climatic characteristics. Also, historically, marketing has been difficult due to disasters as a result of the periodic occurrence of climatologic changes.
- To include supports aimed at implementing good agricultural and fishing practices, as well as to reduce the polluting effects that these projects can generate.

The Program *Desarrollo Rural de la Alianza Contigo* has three sub-programs and two of them can also benefit fishing and aquaculture communities. In that sense, PROFEMOR and PRODESA are complementary to the *Program of Aquaculture and Fisheries,* as they are not aimed at financing productive projects but supporting enterprise development and strengthening the skills of communities. On the other hand, the PAPIR sub-program is for investments, and their beneficiaries are basically farmers and cattlemen:

- **Sub-program to strengthen enterprises and rural organizations - PROFEMOR**: Their general objective is to help rural producer organizations to formally enter the economy through the creation and consolidation of rural enterprises, as well as of the "Councils of Sustainable Rural Development", which are organizations in charge of elaborating plans for rural development in each municipality and of the Rural Financial Institutions (IFR),. For this, the Subprogram also dedicates economic resources that allow them to cover operative costs and to offer loans to rural organizations that require them and fulfill the requirements established by IFR, that are adapted to each local reality.
- **Sub-program of development of capacities in rural areas - PRODESCA**: Was created to subsidize training services, technical assistance and consultancy advice provided by certified professionals. These services are aimed at peasants and organizations interested in the creation and strengthening of rural enterprises, production and micro-financing projects, and to identify new opportunities for production or commercial activities.

- **Sub-program of support to projects of rural investment - PAPIR**: It assists the investment in capital goods (except purchase of land) by the rural population via the presentation of production projects aimed at generating new employment, services and modernizing production and commercialization systems.

According to reports from SAGARPA (2005) published on their website, the *Program of Rural Development* finances activities that are not covered in the *Program of Aquaculture and Fisheries*. In 2005, it supported two projects and in 2004 it financed 16 at a total value of USD 2.9 million, representing 10% of the execution of the *Program of Rural Development* over the last two years. The applications were made to build tilapia, catfish, marine shrimp and oyster cultivation infrastructure, as well as processing of fish products, store ornamental fish, capital and motors for the fishing fleet in Sonora, Tabasco, Morelos, Guerrero, Sinaloa, Durango, Puebla, Veracruz, San Luis Potosí and Tamaulipas States.

In addition to the programs for the agriculture and fisheries sector already referred to, Mexico has executed other social programs with important budgets that impact on the development of rural communities. According to the government report in 2005 by the President of the Republic, some prominent achievements are:

- The Program of Rural Housing awarded 33 269 subsidies at a cost of USD 45.4 million; 72% of these subsidies were assigned to the states of Chiapas, Guanajuato, Guerrero, Mexico, Michoacán, Oaxaca, Puebla and Veracruz. Four of these have high indexes of poverty, as was mentioned in number 2 of this document.
- The National System of Social Protection in Health is not a financial insurance for people covered by the social security system. In 2005, it had USD 781 500 (87% more than in 2004) for domestic cover. For December of that year it hoped to cover more than 3.6 million families.
- The Program of Support to Training covers small producers who want to improve their labour abilities. In 2005, 114 300 people benefited at a cost of USD 4.6 million.

Issues and challenges for policy makers

Focus of fisheries and aquaculture policies

Policies for the fisheries and aquaculture sectors are generally formulated from biological and fishing concepts with the purpose of responding to management and technological development requirements. However, they disregard the social and economic aspects linked to communities that are normally excluded. Several examples can be cited, but this is more evident on the south coast of the country.

The orientation of fisheries and aquaculture policies has been changing. 60 years ago fishing was promoted, but during the last 15 years, regulators have been facing a decrease in catches around the coast and even inland waters. Measures aimed at regulating and organising the activity include: *(a)* to protect the most important fisheries which are reaching their maximum yield or are close to over-exploitation; *(b)* to stop the entry of new vessels to critical fisheries in order to control fishing effort; *(c)* to organise fisher access (artisanal, industrial and sport) to areas and/or fishing resources, among others.

On the other hand, aquaculture policies are oriented to the development of: *(a)* increasing the supply of fish for human consumption; *(b)* optimizing the use of bodies of water and of non-irrigable land for agriculture; *(c)* to diversify and to supplement the production of agricultural farms.

In some ways, aquaculture policies have more concordance with rural development because both of them basically refer to the rural population, who has traditionally worked the land (in fact, most aquaculture producers were or are also farmers) who know how to cultivate and wait patiently for crops. Due to their geographical location, they may also have more chance of enjoying the benefits of the State related to physical infrastructure (such as highways, aqueduct services, sewer systems, electric energy, telephones, etc.) and social well-being services (schools, hospitals, programs of governmental help, etc).

Furthermore, fishers are not limited to the land and many of them live in remote towns or even in areas with minimum industrial or tourist development. Due to the reduction of harvests and the effects of natural phenomena such as hurricanes and storms, they are searching increasingly for alternatives of diversification such as eco-tourism, trade, ranching, and small-scale agriculture. Historically, fishers have been one of the most vulnerable groups and least assisted by governments. However, the policies in force over the last five years have opened new development opportunities for them.

The *Program of Fisheries and Aquaculture Management* promotes the sustainable use of resources and implies due environmental consideration. Mexico is perhaps the Latin American country that has granted the most importance to the execution of global agreements and world conventions on responsible fishing over the last decade, reflected in the NOM's produced since 1993. Also, SAGARPA and SEMARNAT are, respectively, the environment and fisheries sector authorities. They coordinate the formulation and execution of some management measures and they define the rules of sustainable use in the Fishing National Chart – CNP. This means that there is coherence between both policies.

In this context, it would be convenient to undertake a new version of the CNP as their only formal publication was in 2000, although some upgrades have been made based on INP's reports. It is possible that the dynamics of some resources have changed or perhaps new development needs for the sector exist, particularly in advanced marine fishing. Although protection of resources is fundamental, it is also essential to ensure that the preventive principle of the CNP does not restrict fishing development. This is because it could predominantly affect artisanal communities, which require alternatives for diversification in order to improve their profitability and to reduce the pressure on coastal resources.

Regarding user participation in the management system, it is normal that representatives of the industrial and artisanal sector participate in the process in an advisory capacity that partially shares the responsibility of management, but these are not formally established co-handling outlines. It means that participatory processes usually are not an official and necessary part of the management of fisheries resources and consequently, these procedures are not routine.

Regarding transparency of management processes, interested actors (unions and associations) have access to meetings where proposals and management measures are discussed. However, their opinions are not imperative in making decisions. The State discloses the proposals and decisions in printed form (notes, pamphlets, folding), mail (postcard and electronic), and on the CONAPESCA website. When they become law,

they are also published in the country's official paper (*Diario Oficial de la Federación*). Nevertheless, the government's good intention, many artisanal fishers really cannot participate because the diffusion is sophisticated for them; maybe to appeal to radio messages and simple pamphlets with drawings can be more illustrative for illiterate people.

Linkage with policies of rural development

Another important challenge is to harmonize the objectives of management and diversification of fisheries with those of rural development in order to formulate an integrated proposal. This would be included in the National Development Plans with specific and realistic programs and projects that have estimated budgets for fisheries, cultivation and/or discrete regions. These could be developed during each government's period, or even better, become part of State policies instead of Government policies. State policies respond to medium and long-term development needs and structural issues that traverse individual government tenures, while governmental policies are formulated by each President of the Republic and respond to the objectives outlined in the development plans proposed for their period of government.

It is normal that the Presidents of the Republic, chosen every six years in Mexico, formulate their own development plan. However the risk is that some important projects begun by previous governments may be interrupted and thus the opportunity to obtain results aimed at solving structural problems in the communities and rural towns is lost. Therefore, another challenge is to design instruments to protect those policies, programs and projects that are strategically important, from the usual effects of government changes. A possible alternative could be that authorities work during pre-electoral periods with the different presidential candidates and their planning teams, in order to try to insert strategic State policies into potential future government proposals, independent of the political affiliation of each one of them.

In the case of the fishing sector, aquaculture and rural development, this task can be undertaken by SAGARPA as it has their global vision of management and development needs at national and state level. However to achieve a successful result, it also requires picking up information from other topics that directly affect the rural population, such as health, education, gender equity, housing, public services and physical infrastructure. This would allow SAGARPA to contribute to protecting policies that require continuity in the medium and long term, and simultaneously better organise their priorities and internal work methodologies.

Because fishing policies and rural policies are part of the same *"Sectoral Program of Agriculture, Livestock, Rural Development, Fisheries and Food 2001 - 2006"*, coherence and similar objectives exist between them. Maybe the main difference resides in the type of beneficiaries they assist, but both policies, economically and through training, support the rural population, and particularly the most vulnerable. The government of President Vicente Fox has dedicated an important quantity of economic resources and it has promoted the participation of the state and municipal governments. But the main problem is perhaps primarily due to the attention that has historically been offered to farmers and cattlemen. Fishers and aquaculture producers have been the last to access these programs.

To this is added the fact that some people wants to use the government's programs in an incorrect way for political objectives. To attack problems of corruption is one of the biggest challenges whose solutions escape the reach of the present document. This matter

is so delicate that SAGARPA's website, where it publishes rural programs, has the following textual legend: *"This program is of public character, it is not sponsored neither promoted by any political party and its resources come from the taxes paid by contributors. It is forbidden to use this program with political or electoral ends or for lucre or for reasons other than the established ones. Whoever makes undue use of the resources of this Program, will be denounced and sanctioned according with the applicable law of the competent authority".*

Support programs such as PRONAR and FIRA-FOPESCA that are part of the *"Program of Aquaculture and Fisheries",* have less than three years of full execution. Therefore, it is still not possible to conclude whether they are contributing to the true development of communities, or if beneficiaries are assuming the investments are non-reimbursable Government subsidies, albeit there are mechanisms designed to verify their effective contribution to projects.

In order to build new relationships and expectations between the government and peasants, it is necessary to work with the communities in order to promote a new attitude; they must face their responsibilities and abandon the idea that the State must be paternalistic. This task requires the incorporation of programs involving integrated training (technical and enterprise development matters). It would perhaps also be convenient to include banks or other financial entities that could administer funds and implement a control system by partial payments when it has been verified that investments are being executed by the beneficiaries according to the chronogram of activities included in the projects.

Social investments carried out by the National Government for the rural population in matters such as health, education and housing during 2005, reached USD 50.8 million. This demonstrates the interest of the State in improving the conditions of less favored populations. There are not enough elements to conclude whether these subsidies are producing a real change, but based on bibliographical revisions carried out for this report, there is no information that shows how the users invested housing subsidies, if they have improved the indexes of public health in rural areas, or if training activities are reflected in better levels of administration in small and medium enterprises.

How to support strengths and overcome weaknesses of an institutional framework

To strengthen institutional frameworks, it is necessary that CONAPESCA and INP improve their capacity through the appropriate quality and quantity of their technological and financial resources, as well as the best qualified human talent to efficiently fulfill their duties. It is also necessary to coordinate these entities with state and municipal governments in order to be able to efficiently implement management instruments established in an opportune and appropriate way. Among the weaknesses identified that should to be overcome are:

- Inside INP, a renovation program of technical and scientific personnel is necessary. This is because, according to the results of an evaluation carried out jointly by SAGARPA and FAO on 2005, 60% of the professionals in the Institute are close to retirement and, additionally, the incorporation of economic and social evaluations in research projects are very low. Historically, research in fisheries and aquaculture has focused on biological and technological aspects but not socioeconomic ones, which are increasingly necessary in order to identify the true

impact of management measures for users, as well as to have a more realistic vision regarding the socioeconomic well-being possibilities that a fishery or an aquaculture project can offer communities. However, it is also necessary to impart training to professionals in economic and social disciplines, to be able to know and understand the particular characteristics and behavior of fisheries and aquaculture, and in this way, to build successful interdisciplinary work teams.

- As INP has been operating for more than 40 years, its experience has concentrated more on fishing projects than aquaculture ones, so it is necessary also to reinforce technical capacity as aquaculture is an activity of high impact in programs of rural development.
- Due to institutional restructurings, it is possible that CONAPESCA has undertaken smaller actions compared to its predecessors because it does not have an independent budget, the quantity of personnel is insufficient to fulfill their management and development duties, and its officials are less well remunerated than in other dependences of SAGARPA. Experience of Mexico and other Latin-American countries such as Colombia, Peru and Panama, has demonstrated that because of macroeconomic or public administration policies, governments decide to reduce the status of the fisheries institutional framework alongside reductions in human and financial resources. This immediately affects their administrative capacity. Paradoxically, this happens when there are more and more demanding commitments on the State regarding the implementation of management measures, the generation of clean technologies in fishing and aquaculture, and of working with the most vulnerable communities in order to reduce their poverty indexes and food insecurity, more so in a country like Mexico that is highly complex and has an extensive territorial and marine sovereignty.
- A solution to the current weaknesses of CONAPESCA could be to establish strong alliances with state offices in charge of applying federal policies, as well as NGO's or international cooperation organizations that are technically and logistically able to execute development projects with communities. Nevertheless, to achieve a real synergy among public institutions, it will be necessary to work first of all with official employees at the federal and state level in order to create an appropriate working climate between them. This is because, sometimes, the execution of programs and projects can be affected or delayed, due to differences in work objectives or when people have opposing political affiliations.

The capacity of coordination by SAGARPA could also be a risk if the same attention to fishing and aquaculture communities is not given compared to traditional attention offered to farmers and cattlemen. In addition, to create the synergy between these three sectors and the fisheries and aquaculture sector requires time, training, and work as an integrated team, will and comprehension at the management and technical levels. This is because the specificity of the sector in research and management matters can not always be coordinated with agriculture and livestock, though this could be possible for promotion activities with rural communities in inland areas, more than with fishers established in coastal localities.

As for an institutional point of view, fishers often have the image that government employees wish to impose new norms instead of helping them to solve their problems. This is more common in communities more distant from cities and important towns, so another challenge of policies makers is to change the vision that fishers have of them and

thus to win their trust, commitment and intention in order to execute fishing in a responsible way. Such collaboration facilitates the execution of management measures.

Participation of the private and academic sectors

To achieve the development of fisheries and aquaculture linked to rural development is not an exclusive responsibility of the State. It is also necessary for the private sector to show commitment to supporting the provision of inputs, production, commercialization and financing for rural producers. It is not advisable to create a paternal model of the State or of cooperation organisms for producers. Instead, theoretical and practical training should be the priority, perhaps complemented with minor donations for equipment and inputs. The main idea should be to help communities to create and strengthen their abilities, which will allow them to become small or medium enterprises. Indeed, the creation of new self-sustainable projects is a way of contributing to rural development because new alternatives of direct and indirect employment, food security and wealth are generated.

This means that the capacity of communities to go ahead with profitable and sustainable projects that represent a challenge for policy makers must be ensured, as often the good intention of donators (even of the State or international cooperation) who seek to facilitate the work and to reduce poverty through subsidies or donations of physical infrastructure, equipment, inputs and capital, do not always produce good results. This is because it is part of human nature to appreciate more things acquired by our own effort than received as a gift. People need to be empowered by building capacity in different areas and acquiring commitments. These principles should be part of policies in fishing, aquaculture and rural development, in order to replace medium or long term credits with low interest rates instead of subsidies.

In conclusion, assistance should be focused on the following areas and requires alliances between competent public and private groups:

- To carry out rural diagnoses about productive vocations in each region; their socio-economic context, the endowment and lack of physical infrastructure and basic support services for production, processing and commercialization of products. This information is constituted in elements to formulate development programs that respond to the real needs and expectations of the population of each region.
- To involve a Social Work or Anthropology specialist who works full time with each community for at least six months in order to detect their strengths and weaknesses, to help to build a good labour climate in the group, to generate respect for the importance of independence from governmental support, to establish roles for women, particularly in marine-coastal communities where family structures are more traditional and the status and productive capacity of men are appreciated, as well as other aspects that the professional considers important for successful groups.
- Theoretical and practical training in topics such as enterprise development, marketing, market research for fishing and aquaculture traditional and potential products; business plan formulation adjusted to the needs and possibilities of each producer or rural enterprise, improvement of production systems and process of products with added value, quality control and good manufacturing practices, financing sources and duties that enterprises should fulfill in Mexico (including

payment of taxes, application of permits and identification of public and private entities which they will need to be in touch with), amongst others.

- To recognize the abilities and preferences of community members in order to design programs that can lead to improve their skills and learning new ones if necessary, so that they can move from primary production to another level that allows them to be involved in management, production, marketing, advertising, administration and finances. This also implies to support and advice given to the community during the initial phase of new micro-enterprises or formal businesses that could be created as a result of integral training.
- Support for the formulation of new projects for communities to be able to request banking credits or participate in governmental support programs or of organisms of international cooperation.

Subsidies and donations could affect the desire and commitment of beneficiaries to undertake efforts for their own development. However, the most vulnerable communities need some level of support (preferably in training and such elements) to undertake new activities that allow them to diversify or to improve their productive projects. In the case of fishing and aquaculture, is important that government and NGO's linked to rural development promote activities that do not affect over-exploited resources, or cultivate aquaculture that is technically and economically viable for small producers.

As an example in 2001, an integral study was conducted in Colombia for the rural cultivation of three species (tilapia, trout and ray-finned fish). In the case of tilapia it was concluded that: a profitable cultivation should produce at least 9 tons per month of gutted fish, which requires 2 hectares of land for 28 ponds, an area for processing products and a water body of 24 - 30ºC with a flow of 70 liters/second. The cycle takes 7 months and results in 400g fish. The project needs two people full time, another four people for crops and ten for processing for six days per month. Total investment in land, construction, equipment, materials and financial costs during the first seven months of the project are USD 82 900. The monthly average profitability during the first three years is 6% and for the following three years it increases to 9% (Beltrán and Villaneda 2001).

The bureaucratic schemes at federal, state and municipal level are not often as efficient as they should be. Thereby, it could be convenient to include competent civil or international organizations with experience of working with rural communities in Mexico, selected according to their experience, professionalism and transparency in administering governmental financial resources. Thus, it could be more efficient to aim cooperation at fishing and aquaculture producers and to guide technical, social and enterprise assistance according to the real requirements of each community.

Although the public sector is principally responsible for the formulation and execution of policies on fisheries and aquaculture research, since the 1990s there has been large participation of the academic sector which has been able to form highly qualified personnel. At the moment, there are diverse work groups inside both public and private universities in specific topics such as ecology, fisheries and aquaculture. Nevertheless, the emphasis has been on scientific and technological topics more than on socio-economic ones. It is necessary to generate technologies in fishing and aquaculture validated with an integral perspective in order that the work of promoters with rural producers can be more effective in the development of projects adapted to the reality of small producers that also need to be technically viable, profitable and truly sustainable according to their economic possibilities and marketing capacities.

Though there is important infrastructure by research institutes, centers and universities in Mexico, not all of them work in a coordinated way, hence overlapping efforts can exist. Important issues can also be misleading if they do not fall within the priorities of the National Council of Science and Technology (CONACYT) or the goals of each center or university. Consequently, it could be useful to assign duties of research coordination for fisheries and specific cultivations to some entities already existent (assigning them the necessary budget if so) or to international cooperation organizations who can take charge of this task. However, the viability of this alternative depends on the objectives and methodologies of each research institution, as well as the will of integration of the scientific personnel's in different organisms, and of the specific characteristics of each fishery, cultivation or geographical area subject to research.

Conclusions

According to official statistics, the rural population has diminished gradually due to migration to coastal zones, urban areas or to the USA or Canada. Currently 23.5% of Mexicans are classed as rural population with a high level of poverty, particularly in the south Pacific where 50% of the population is rural and poor. This group registers a high level of illiteracy (23%), scarce formal participation in sectors of major wealth (manufacturing, the oil industry, trade and services) but rather on primary production. The rural population has a marked tendency to migrate out of the country looking for better personal opportunities and to contribute to the support of their families with remittances from abroad.

Although the Government has carried out important investments to improve people's lives, it is still necessary to reinforce social work and integral training to generate changes of attitude and development of new skills in people that allow them to overcome poverty through profitable projects. It would be convenient to build new relationships and expectations between the Government and peasants in order to strengthen the concept that Government subsidies are to impel the creation of new projects instead of being considered as a mandatory and long term source of money.

Mexico’s effort to advance on the development of rural communities is admirable. This is reflected in the policies and programs in force, as well as the important quantity of financial funds and organisms working on specific topics. Although advances have been made, there are still many communities to assist. These include artisanal fishers who continue to be the poorest among rural producers. Although some rural areas have problems of food security and even a lack of water, it is perhaps only natural that historically Mexico has given greater attention to farmers because there is a larger interest in land, wider knowledge about its evolution, issues and because there are more people linked to agriculture than fisheries.

However, during the last six years, the country has turned its attention toward fishing and aquaculture, presenting a new opportunity for the sector. However, care should be taken in not adopting paternalistic schemes as the results could be frustrating due to the possible lack of commitment of the community beneficiaries because they have not been forced to invest their own money, to respond to formal credits or to inform how they are using equipment and construction that has been donated. It is important to have in mind that development is not a consequence of a high quantity of technical and financial assistance but of training to use them rationally, to choose appropriate technologies and to

apply them correctly, and finally to enable individuals and communities to be autonomous.

Alianza Contigo has included vital aspects of rural development such as: financing for agriculture production, livestock, fishes and aquaculture; animal and vegetable sanitation, promotion to technological modernization, support to rural women and research and promotion for exports, among others. However, the results have been far from expectations due to government weaknesses, a high intervention of political representatives as well as the fact that some communities prefer to continue with the paternalistic model.

This means that there are serious issues in agricultural development that motivate some populations to emigrate to the cities or to other countries like Canada and the USA, or even to practice fishing; an activity they consider as the last employment alternative to obtain immediate income, despite limited profitability. This situation contributes to an incremental rise in effort in fisheries, over-exploitation and consequently the deepening of fisheries management issues.

Not all rural planners know that history, culture, work practices and the problems of fishers are different from farmers, so it is not convenient to outline similar strategies for both types of producers. To this is added the fact that fishers tend to be individualistic rather than trusting cooperative organizations that reduce their approach capacity and negotiation with other entities. This is particularly problematic as the government prefers activities with unions more than with individual fishers. Furthermore, not all communal leaders are truly vocal regarding the expectations of fishers and aquaculture producers, due to the lack of trust generated by their associations.

To simultaneously achieve both objectives of long term sustainable fisheries and fisher well-being, it is necessary to eliminate the open access of small-scale fisheries. Although they have smaller technical capacity than the industrial fleet, the major quantity of small-scale fishers leads to over-exploitation and low yields per capture unit. Management measures should not be based exclusively on fishing criteria but also take into account the connection between resources and their ecosystems, the socio-economic circumstances of the communities and even the political effects of measures, as well as the study of alternatives of economic diversification for fishers when measures impede small-scale fishing.

Marine and fresh water aquaculture has wide possibilities of growth with traditional species (marine shrimp, tilapia and trout) and other species, thanks to the potential of water bodies and variety of adaptive fishing resources to cultivation. To generate self-sustainable projects it is necessary to identify the really capable areas such as those with suitable soil properties and the presence of enough clean bodies of water in order to develop aquaculture. It is also important to elaborate productive packages and evaluate them integrally, including technical assistance, enterprise development training and accompaniment of social work, which will allow them to transform their traditional activity into a profitable and organized business. It would be also convenient to change or to combine subsidies for cheap medium and long term loans with the purpose of instigating a culture of credit and savings in the rural population.

In the case of artisanal fishers, it would also be convenient to work with a similar methodology to the one described for aquaculture producers in the sense of undertaking a general diagnosis of areas and communities, as well as to teach managerial abilities, offer technical assistance and social work. At a productive level, it is necessary to motivate

coastal fishers toward advanced fishing in order to search resources of high commercial value, while simultaneously diminishing pressure on coastal resources. The training should also include the use of new capture technologies and recommendations about fishing procedures. However, this usually generates resistance among coastal fishers who have little experience in professional fishing and who prefer coming home at night and not spending successive days at sea.

Most fishers and aquaculture producers require training on processing of traditional and high value (fillet, gutted and canned food), quality control, marketing, client's attention and sales strategies, publicity, mathematics, basic accounting and formulation of business plans, among others. Recent experiences of three training projects by the FAO and INFOPESCA in Mexico, Honduras and Colombia with fishing communities, demonstrated that the mentioned topics are not widely disseminated. However, they generate high interest because they are practical, relatively easy to learn, require little investment of money, can be applied immediately and are reflected quickly in better business results.

A frequent weakness of fishing communities is the scarce division of labor and concentration on fishing tasks (or cultivation) and sales, while other administrative, commercial and production tasks are not assisted appropriately due to a lack of training or awareness. Also, women's roles have still not been claimed appropriately in all rural Mexicans areas because prevailing traditionalist ideas privilege the status and economic capacity of men. This attitude can diminish opportunities because women are highly productive in processing, marketing and administration. The fact that women can have the opportunity to work reduces the risk of poverty in the cases where the man of the household lacks employment temporarily or definitively due to family or company re-structuring.

It is also important to consider that the occurrence of non predictable events including natural phenomena change the dynamics of fishing stocks or the presence of illnesses in cultivations like shrimp, which can force producers to change economic activity. For that reason, it is important that men and women have other alternatives such as agriculture, eco-tourism, handicrafts and elaboration of other non grocery products, which are compatible with the rural development policy content.

The relationship between fishing authorities and users is important for the success or failure of government policies; some communities perceive fishing authorities as restrictive more than representatives sensitive to their needs. This means that CONAPESCA, INP and State fishing offices should offer a balance between their role as management and research authority and their role as development promoters and to project an appropriate image in order that communities do not understand this role as a contradiction. To achieve it, the creation of strategic alliances with NGO's and local authorities that participate in the development of promotion and training projects or activities would be useful.

As CONAPESCA and INP do not have enough human, technological and financial resources, it is necessary to evaluate their real needs in this sense, as the quality of service is not dependent on size. It would be convenient to advance training programs and the development of public employee ability to improve work methodology, external coordination with NGOs and other public entities, as well as to advance integration with other dependences of SAGARPA, upgrade technical knowledge and learn about realities in other areas of the country in order to join efforts and to learn from other experiences. This can be a big necessity as a consequence of diverse institutional restructurings where

personnel have received insufficient consideration. An important proportion of professionals with training and experience are already out of these entities or are nearing retirement.

Bibliography

Commission of Fishing, Camera of Deputies (2001) "Informe sobre la consulta nacional del sector pesquero. Enero – abril de 2001". Mexico, D.F.

Caso, M; Pisanty I; Ezcurra E. (2004), "Diagnóstico ambiental del Golfo de México". Mexico, D.F. August.

CONAPESCA (2001) "Programa de Acuacultura y Pesca". Mexico, D.F.

Congreso de los Estados Unidos Mexicanos (1999) "Reglamento de la ley de pesca". Mexico, D.F. September 28.

_____ (2001) "Ley de Pesca". Mexico, D.F. January 8.

_____ (2001) "Decreto por el cual se crea la Comisión Nacional de Acuacultura y Pesca". Mexico, D.F. May 31.

_____ (2001) "Ley de desarrollo rural sustentable". Mexico, D.F. November 13.

DeWalt, B. (2000) "Social and environmental aspects of shrimp aquaculture in coastal Mexico". In: *Conference Mangrove 2000: Sustainable use of estuaries and mangroves: challenges and prospects.* Recife, Brazil. May.

FAO (1993) "Manejo y aprovechamiento acuícola de lagunas costeras en América Latina y el Caribe – Proyecto Aquila II – El caso de México" By: de la lanza, Guadalupe. Rome.

_____ (2003) "México. Resumen informativo sobre la pesca por países". Rome, December.

_____ (2003) "Information on fisheries management in the United Mexican States". Rome, December.

_____ (2004) "Estado mundial de la pesca y la acuicultura 2004". ISSN 1020-5500, Rome.

_____ (2004) "Estado de la ordenación de las pesquerías marinas de captura en el Pacífico Centro-Oriental (México, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica y Panamá)", by Beltrán, C., Bogota.

_____ (2006) Proyecto FAO/LDED-INFOPESCA: Procesamiento y mercadeo de productos pesqueros para la comunidad pesquera de Tamiahua, Veracruz – México. "Informe de consultoría en desarrollo empresarial" by Beltrán, C., Bogotá, March.

_____ Fisheries statistics. Web site FAO www.fao.org .

FAO, SAGARPA. UTF/MEX/053/MEX Project (2005) "Informe de la evaluación para el fortalecimiento del Instituto Nacional de Pesca de México", Rome, September.

Fitzsimmons, K. (2000) "Tilapia aquaculture in Mexico". University of Arizona. Tucson, Arizona, United States.

Froese R. and D. Pauly, (2006) Fishbase Website.

IIESCA (2002). "El desarrollo rural en México. Una breve revisión descriptiva de los modelos aplicados". By: López, B. and E. Graillet, México.

INFOPESCA INTERNACIONAL Magazine (2001). "La institucionalidad pesquera en América Latina y el Caribe". by: Beltrán, C. Montevideo, Uruguay, April.

Instituto Nacional de Estadística, Geografía e Informática. Statistic information. INEGI Website. México http://www.inegi.gob.mx/inegi .

Instituto Nacional de Pesca y Acuicultura (2001) "Fundamentos de acuicultura continental. Capítulo XX – Parámetros técnicos y económicos para un proyecto piscícola rentable" By: Beltrán, C.; A. Villaneda *et.al.* ISBN 9589356060. Colombia, December.

International Collective in Support of Fishworkers. (2000) "Mexico. Women in fisheries" by: Salazar H; I. Castañeda; L. Vidal. In: *Workshop on gender and coastal fishing communities in Latin America*. Prainha do Canto Verde, Ceara, Brazil. June 10-15.

López, B. and E. Graillet, (2002) "El desarrollo rural en México. Una breve revisión descriptiva de los modelos aplicados". Universidad Veracruzana. México.

OECD (2006), *Agricultural and Fisheries Policies in Mexico : Recent Achievements Continuing the Reform Agenda*, Paris.

Panorama Acuícola Magazine (2004), "Entrevista con el Comisionado de CONAPESCA, Ramón Corral Ávila", December.

Presidence of the Republic of México (2005), "Quinto informe de gobierno del presidente Vicente Fox Quesada", Mexico, September.

SAGARPA. (2000) "Acuerdo por el que se incorporan las Subdelegaciones de Pesca a la estructura orgánica y administrativa de las delegaciones estatales de la SAGARPA". Mexico, D.F. December 28.

_____ (2001) "Programa sectorial de agricultura, ganadería, desarrollo rural, pesca y alimentación 2001 – 2006". Mexico, D.F.

_____ (2001)"Reglamento interior de la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación". Mexico, D.F. July 10.

_____ (2003)"Reglas de operación de la Alianza para el Campo para la reconversión productiva; Integración de cadenas agroalimentarias y de pesca; Atención a factores críticos y atención a grupos y regiones prioritarios (Alianza Contigo 2003)", México D.F. July 25.

Salas, S. and D. Gaertner, (2004) "*The behavioral dynamics of fishers: management implications". In: Fish and Fisheries,* Blackwell Publishing, Ltd.

World Bank (2004), "La pobreza en México, una evaluación de las condiciones, las tendencias y las estrategias del gobierno". Washington, D.C. June.

ANNEX

Participants list
Expert Group of the Human Side of Fisheries Adjustment

CHAIR

Ms. Jane WILLING
Manager International and Biosecurity
Ministry of Fisheries, New Zealand

EXPERTS

Mr. Steffen SMIDT
Ambassador, Danish Delegation to the OECD

Mr. Anthony CHARLES
Professor, Management Science and Environmental Studies
Saint Mary's University
Halifax, Nova Scotia, Canada

Mrs. Nicki HOLMYARD
North Sea Women's Network
Argyll, United Kingdom

Mr. Gorazd RUSESKI
Acting Director
Fisheries and Oceans Canada
Ottawa, Canada

Dr. Rebecca LENT
Director, Office of International Affairs
NOAA Fisheries , United States

Mr. Frank MEERE
FRM consulting Pty Ltd
Calwell, Australia

Mr. Nobuyuki YAGI
Assistant Director,
Ministry of Agriculture, Forestry and Fisheries
Tokyo, Japan(MAFF)

Mr. Thomas BINET
OECD Fisheries Policies Division

Mr. Bjorn HERSOUG
Fisheries Management Expert
University of Tromso
Tromso, Norway

Ms. Claudia Stella Turriago BELTRAN
Economic Consultant
University Santo Tomas de Aquino,Bogota, Colombia

Mr. Michael PARK
Executive Chairman
The Scottish White Fish Producers Association Ltd.
Stonehaven, United Kingdom

MEMBER COUNTRIES

Australia

Mr. Roland PITTAR
Minister-Counsellor (Agriculture)
Permanent Delegation

Canada

Ms. Kelly MOORE
International Policy Analyst
Fisheries and Oceans Canada
OTTAWA, Ontario

Denmark

Mr. Henrik HAARH
Head of Division
Ministry of Food, Agriculture and Fisheries
COPENHAGEN

Jonhard ELIASEN
Embassy Counsellor
Mission of the Faroes to the European Union
BRUSSELS

Finland

Kimmo NÄRHINEN
Counsellor
Permanent Delegation
PARIS

Ms. Marju MAKINEN
Permanent Delegation
PARIS

Germany

Dr. Markus BRILL
Deputy Head of Division
Federal Ministry of Consumer Protection, Food and Agriculture
Bonn

Greece

Mme Chryssanth DARLADIMA
Frst Secretary
Permanent Delegation
PARIS

Korea

Mr. Hyun-Jong KIM
Deputy Director
Ministry of Maritime Affairs and Fisheries (MOMAF)
SEOUL

Korea (cont.)	Mr. Chang-Hee LEE Assistant Director Ministry of Maritime Affairs and Fisheries (MOMAF) SEOUL
	Dr. Jung-Hee CHO Associate Research Fellow Korea Maritime Institute SEOUL
	Mr. Yong Jin CHOE Counsellor Permanent Delegation PARIS
Mexico	Mr. Gerardo BRACHO CARPIZO First Secretary Permanent Delegation PARIS
Netherlands	M. Ancel VAN ROYEN Counsellor Permanent Delegation PARIS
Norway	Mr. Jan Frederik DANIELSEN Deputy Director General Ministry of Fisheries and Coastal Affairs OSLO
	Mr. Sverre JOHANSEN Higher Executive Officer Ministry of Fisheries and Coastal Affairs OSLO
Poland	Ms. Ewa PAWLOWSKA 2nd Secretary Permanent Delegation PARIS
Spain	Mrs. Carmen ASENCIO CASTILLEJO Deputy Director General of International Affairs of Fisheries Ministry of Agriculture, Fisheries and Food MADRID

Spain (cont.)

Ms. María Isabel ARAGÓN
Head, Commercial Department of Fisheries
Ministry of Agriculture, Fisheries and Food
MADRID

Mr. Ramón FRANQUESA ARTES
Counsellor
University of Barcelona
BARCELONA

M. Vicente FLORES REDONDO
Counsellor
Permanent Delegation
PARIS

Sweden

Mr. Niclas LUNDH
Acting Head of Unit
Swedish Board of Fisheries
GOTHENBURG

Turkey

Mr. Erdinç GUNES
Program coordinator
General Directorate for Agricultural Research
YENIMAHALLE-ANKARA

United Kingdom

Mr. Andy GOODWIN
Economic Adviser -- Fisheries Policy
DEFRA
LONDON

Ms. Liz KITCHEN
Policy Adviser
DEFRA
LONDON

Mr. Neil MACPHERSON
DFID
LONDON

United States

Ms. Cynthia Kate VON HOLLE
Foreign Affairs Officer
State Department
WASHINGTON D.C.

Mrs. Helen RECINOS
Advisor for Trade Policy and Agriculture
Permanent Delegation
PARIS

European Commission

M. Antonio FERNANDEZ-AGUIRRE
Policy Desk Officer
BRUSSELS

Mr. Juan RONCO ZAPATERO
Administrator
BRUSSELS

Mr. Erik LINDEBO
Economist
BRUSSELS

OBSERVER ECONOMIES

Argentina

Mr. Juan IRIARTE VILLANUEVA
Director
Ministry of Foreign Affairs, International Trade
BUENOS AIRES

Mrs. Elisa CALVO
Coordinator and Fisheries Expert
Secretariat of Fisheries and Aquaculture
BUENOS AIRES

M. Santiago VAZQUEZ MONTENEGRO
Counsellor
Embassy of the Republic of Argentina
PARIS

Russian Federation

Mr. Nikolay RUBTSOV
Alternative Observer of the Russian Federation to the FAO
ROME, Italy

Chinese Taipei

M. Chung-Hai KWOH
Senior Specialist
Deep Sea Fisheries Division
Fisheries Agency
TAIPEI

Mr. Tsung-Yi CHEN
First Economic Secretary
CAPEC
PARIS

Thailand

Dr. Somying PIUMSOMBUN
Deputy Director-General
Dept. of Fisheries
BANGKOK

INTERNATIONAL ORGANISATIONS

International Labour Organisation (ILO)	Mr. Brandt WAGNER Maritime Specialisat ILO GENEVA, Switzerland
Trade Union Advisory Committee (TUAC)/	Mr. Jon WHITLOW Secretary Seafarers, Fisheries and Inland Navigation Sections ITF LONDON, United Kingdom
	Ms. Katie HIGGINBOTTOM Senior Section Assistant ITF LONDON, United Kingdom
U.N. Food and Agricultural Organization (FAO)	Mr. Angel GUMY Senior Fishery Planning Officer Fishery Policy and Planning Division ROME, Italy
World Bank	Mr. Lidvard GRONNEVET Senior Fisheries Specialist WASHINGTON D.C., United States
World Trade Organization	Mrs. Vesile KULACOGLU Director, Trade and Environment Division GENEVA, Switzerland

OECD

Mr. Stefan TANGERMANN
Director, Directorate for Food, Agriculture and Fisheries

Mr. Carl-Christian SCHMIDT
Head of Fisheries Policies Division

Mr. Anthony COX
Senior Analyst
Fisheries Policies Division

Ms. Candice STEVENS
Senior Economist
Environment Directorate

Ms. Courtney Sara MINARD
Socio economist
Sahel and West Africa Club

Mr. Sbiri Jean ZOUNDI
Head of Unit
Sahel and West Africa Club

Mr. Doan JEONG
Project Manager
Fisheries Policies Division

Ms. Ingrid KELLING
Economist
Fisheries Policies Division

Miss Anna HESSELGREN
Trainee
Central Management Unit

Mrs. Emily ANDREWS-CHOUICHA
Assistant,
Fisheries Policies Division

OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(53 2007 05 1 P) ISBN 978-92-64-03795-3 – No. 55847 2007

Structural Change in Fisheries

DEALING WITH THE HUMAN DIMENSION

Declining fish stocks and expanding fishing fleets have combined with growing competition from aquaculture to put increased pressure on the fishing sector to adjust the size and nature of its operations in many countries. However, in some fishing communities, almost sixty per cent of jobs are linked to fishing and in many coastal areas there are few alternative employment opportunities for fishers. The impacts of adjustment policies on fishers and fishing communities can thus be considerable, but these policies are generally focused on reducing the number of vessels or the amount of fishing activity, and the "human side" is often treated as an afterthought. Fishers and their representatives may then feel that their only hope of defending their communities is to block any proposed changes. Such concerns are sometimes regarded as one of the major reasons behind policy inertia in adjusting fishing activity.

To address these issues, the OECD convened an *Expert Meeting on the Human Side of Fisheries Adjustment* to analyse the social issues and policy challenges that arise from fisheries adjustment policies, and how OECD member countries are meeting those challenges. The meeting was organised as part of the Committee's ongoing project on "Fisheries Policy Reform" and sought to identify the key policy lessons for addressing the human side of adjustment from reform experience in the fisheries sector.

OECD*publishing*
www.oecd.org/publishing

ISBN 978-92-64-03795-3
53 2007 05 1 P