



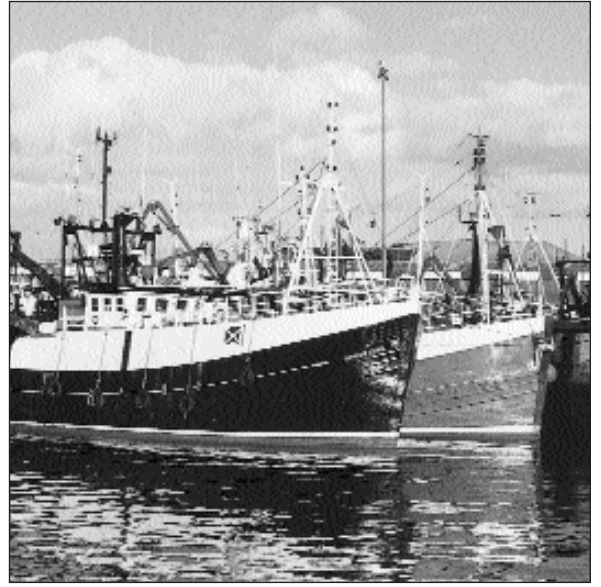
# Reviewing the Common Fisheries Policy

EU Fisheries Management  
for the 21<sup>st</sup> Century

Chris Grieve







# **Reviewing the Common Fisheries Policy**

## EU Fisheries Management for the 21<sup>st</sup> Century

Chris Grieve

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The Institute for European Environmental Policy, London (IEEP) is an independent policy studies institute forming part of a network of partner institutes with offices in several European countries. It undertakes research on the European dimension of environmental protection, land use and nature conservation. The principal activities include policy research, publications, the provision of information and advice and the organisation of conferences and workshops. This report was produced as part of a programme of work on *Policy Measures for the Sustainable Management of Fisheries* which is supported by the Esmée Fairbairn Foundation.

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*Chris Grieve*

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## 1

## Introduction

**Context and structure of the report**

In 1999 the Institute for European Environmental Policy (IEEP) published a report entitled *Sustainable Development and the EC Fisheries Sector: An Introduction to the Issues* (Coffey, 1999). This provided an outline of the European Community (EC) fishing industry and described the basic framework for managing the EC's fisheries sector. As well as identifying the environmental implications of fisheries in European waters, new approaches to pursuing sustainable development in fisheries were drawn out as a starting point for discussion. A number of ways to alter the policy mix in order to promote more environmentally and socially beneficial fisheries management outcomes were suggested.

In recognising the socio-economic importance of fisheries and the fishing sector's complex relationship with the environment, three key findings emerged: 1) that Community fisheries are not sustainable in environmental, social or economic terms; 2) that current EC policies are not sufficient to promote sustainable development; and, 3) these problems are now being recognised by policy makers and stakeholders and attention is beginning to focus on improving the Common Fisheries Policy's (CFP) overall strategic approach, rather than making incremental changes to individual policy tools.

This report develops some of those themes and policy options in relation to the commercial fishing sector and suggests a new integrated strategic framework for managing EC fisheries in a manner that is consistent with sustainable development and the use of the precautionary principle. The occasion for forward thinking is provided by the European Commission's recent Green Paper on the future of the CFP<sup>1</sup> and the Commission's thoughts about why CFP reform is needed are presented by way of introduction. This is followed by a brief re-examination of the challenges faced by governments generally in the management of fisheries systems.

A discussion of the fundamental principles which should underpin the management of fisheries systems precedes an elaboration of the policy options for an EU level integrated strategic framework. These options build upon many that are discussed in the Commission's Green Paper. However, what is contemplated is the integration of these options into a unifying whole – a systemic approach aimed at overcoming what is widely seen as a systemic failure of the current CFP.

**The need for CFP reform**

After consulting stakeholders and interested parties for approximately three years, the European Commission's Green Paper on the future of the CFP was released for public comment on 20 March 2001. In two volumes, the Green Paper articulates the need for reform of the CFP, options and preferences for

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<sup>1</sup> COM(2001)135 of 20 March 2001

the future and reviews the economic, social and biological state of EU fisheries, providing an analysis of CFP implementation.

In describing why it is necessary to reform the CFP, the Commission points to what it calls ‘internal systemic weaknesses’ as well as external challenges being faced by the European Community that have an impact upon fisheries policy.

### *Weaknesses*

These include the following:

- many stocks are outside safe biological limits, especially demersal fish stocks such as cod, hake and whiting;
- available fishing capacity of Community fleets far exceeds that required to harvest fish in a sustainable manner;
- overfishing and overcapacity have resulted from setting total allowable catches (TACs) higher than those proposed by the Commission (based on scientific advice), and fleet management plans have fallen short of those required; and
- stakeholders do not feel sufficiently involved in the management of policy and many believe there is no level playing field in terms of compliance and enforcement.

### *Challenges*

These include the following:

- enlargement of the European Union;
- globalisation of the economy;
- emergence of new players in world fisheries – developing countries legitimately wanting to expand their own fishing industries;
- increased focus on environmental and development policy considerations in fisheries management; and
- growing interest of civil society in fisheries matters.

To more clearly illustrate the shortcomings of the existing regime, the Green Paper describes the current situation and what might happen without change in relation to the following areas of the CFP:

- conservation policy;
- the environmental dimension;
- fleet policy;
- decision-making processes and stakeholders’ involvement;
- monitoring and control;
- the economic and social dimension;
- aquaculture;
- the processing industry;
- the international dimension of the CFP; and
- Mediterranean fisheries.

The fisheries sector is characterised by the Commission as being economically fragile resulting from over-investment, rapidly rising costs and a shrinking resource base. Poor profitability and steadily declining employment also reflect the fragile state in which the Community sector finds itself and if it is



to survive into the future, the Commission points out that it will have to be significantly smaller than it is today.

Strictly speaking, under the basic CFP Regulation (3760/92), decisions have to be made by 31 December 2001 only on access to the 6-12 mile limits, the Shetland Box and the North Sea through the 2002 review process. However, given the problems facing Europe's fisheries and the obligations arising from other European policies such as the EC Biodiversity Strategy, the 'Cardiff integration process' and the implementation of the precautionary principle, the Commission has presented a Green Paper that takes a much broader view of the need for fisheries policy reform.

The following chapters do not dissect the options and preferences set out in the Green Paper in detail. Rather, in standing back from the Green Paper (acknowledging where it discusses a particular subject), they explore the systemic challenges presented by fisheries management and offer solutions aimed at a systemic level.

## 2 The fisheries challenge

Fisheries systems are dynamic, complex, uncertain and poorly understood. These factors contribute to the difficulties in fisheries management experienced by governments and stakeholders. A fishery system encompasses not only fish and the physical environment that supports them, but also all the associated social and economic structures: fishers, fishing companies, processors and suppliers, policy instruments, monitoring and enforcement, etc. We have only a limited understanding of the functioning of the overall system and its various components. On a global scale fisheries are suffering gross depletion of fish stocks, adverse impacts upon the marine environment, escalating overcapacity, declining profitability of fishing fleets and social upheaval. This raises a fundamental question: why does fisheries management fail?

Answers to this question are often framed in economic terms. Fisheries have some of the classic economic characteristics which lead to ‘market failure’, ie the inability of markets to reach a point where resources are not wasted. Market failure in fisheries comes about because:

- fish are, to varying degrees, a ‘common pool resource’, in that traditionally anyone could seek to catch them and, even today, mobile stocks and those in international waters do not belong exclusively to any single body;
- the renewal capacity and requirements of fish stocks and ecosystems are not fully understood – there is ‘imperfect information’ available to those active in the market;
- fisheries activities are associated with significant ‘negative externalities’ where costs and benefits to society have no expression in markets and the external costs are not borne by the ‘individual’ producer.

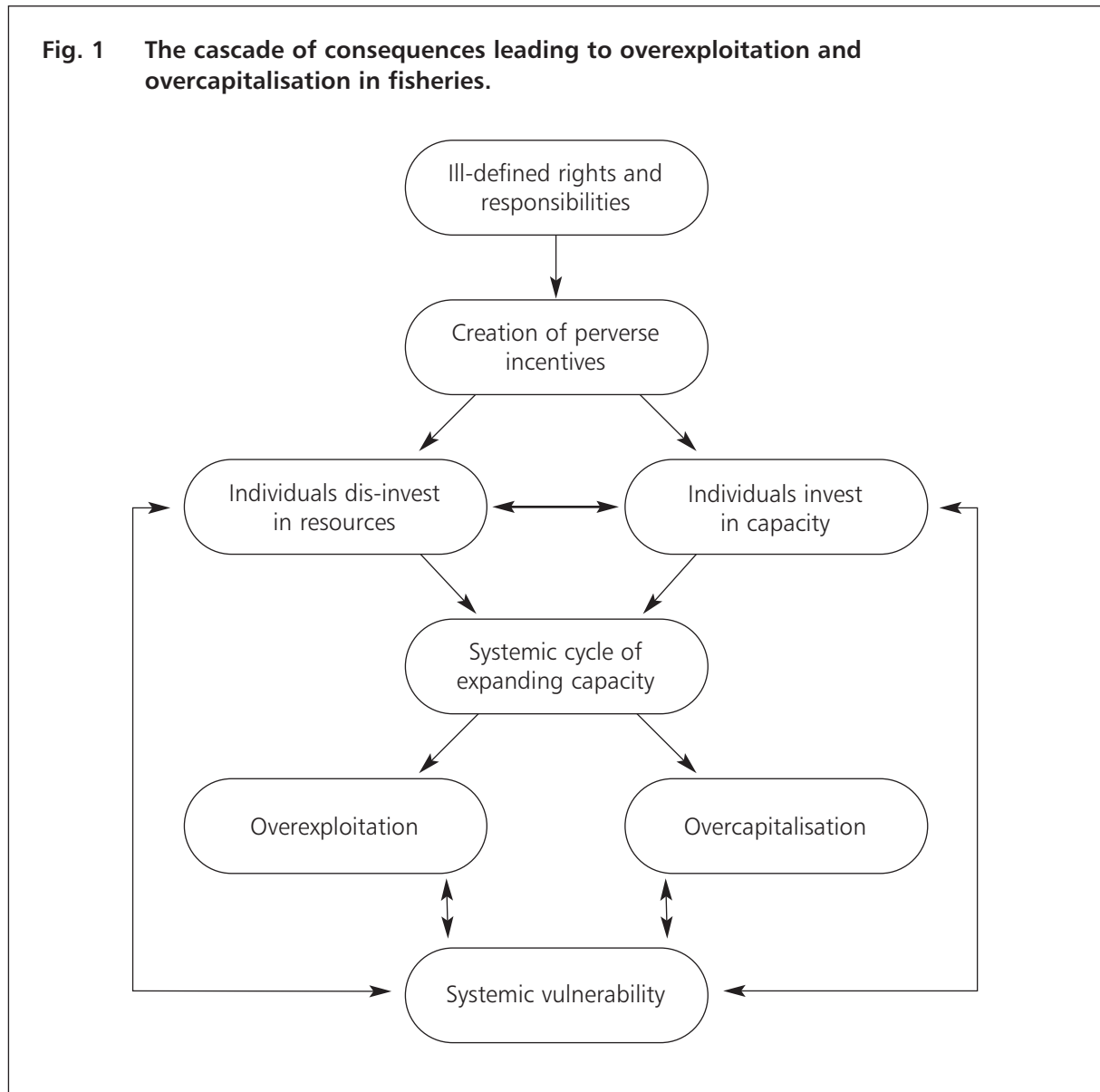
Ill-defined or non-existent property rights<sup>2</sup>, imperfect information and negative externalities create incentives for individuals to operate in ways which may not be in their long-term interest, and thus lead to distorted outcomes such as overexploitation of stocks and overcapitalisation of fleets. These relationships are illustrated in Figure 1. This is drawn from ideas presented by de Young *et al* (1999) and Kaufmann *et al* (2000) and shows a cascade of consequences and feedback loops leading to overexploitation and overcapitalisation of fisheries, and ultimately the failure of fisheries systems.

When the rights and responsibilities of the individual fishing operator are not well defined, incentives are created at both the individual and fishery system level which tend to move fisheries resources away from ecological sustainability, ie perverse incentives are created. For the most part, individual fishing operators act in ways that are economically rational for them. However, with no sense of long-term stability that is brought about by well-defined rights, individuals have little or no incentive to invest in fisheries resources to protect their future returns. While protecting future returns may be the individuals’ desire, any action they might take to ‘save’ fish for tomorrow is wasted because this simply leads to more fish today for their competitors. So there are incentives to actively dis-invest in the resource, or to liquidate the natural capital

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<sup>2</sup> In the economic sense ‘property rights’ includes access and/or use rights and the responsibilities that come with these.

**Fig. 1 The cascade of consequences leading to overexploitation and overcapitalisation in fisheries.**



provided by fishery resources. When individuals behave in this manner collectively it leads to overexploitation.

The situation becomes further complicated when governments intervene to try to prevent overexploitation of the resource using regulations to set annual catch limits. This effectively establishes a competition for an ever-dwindling share of the resource, commonly called the ‘race for fish’. In order to outdo their competitors, the incentive exists for individuals to invest in higher capacity, more intensive harvesting and/or better technology leading often to higher costs and lower returns. Overcapitalisation occurs when individuals behave like this collectively.

Each individual’s actions, while rational to the individual, add up to negative consequences for the fisheries system. A cycle of expanding capacity at the fishing sector level starts to occur. This has been described as “ratcheting” by Caddy and Gulland (1983). Essentially, good catches (and healthy economic returns) lead to an expansion of capacity, which sometimes leads to higher catches in the short term. When stocks decline, government intervention generally offsets the negative effects of downturns in stocks by supporting the industry, and therefore capacity is not reduced. If there is limited stock recovery, catches improve and so the cycle begins again. The general trend for capacity is upwards, while the overall trend for fish stocks is downwards.

Finally, the fishery system is inherently vulnerable to environmental, economic and political changes that are beyond the control of administrators and stakeholders. This can mean it is less well able to respond to overexploitation and overcapitalisation, creating an adverse feedback loop which results in increased pressure at all levels of the system.

### *Other influences on fisheries systems*

Often the argument relating to ill-defined rights is used when describing the failure of fisheries that are managed through ‘open access’ – that is, where there are no limits or restrictions on the number of vessels and little, if any, regulation of fishing activity. But this is clearly not the case in EU fisheries. The CFP includes over 300 pieces of primary and secondary legislation, ranging from the use of output controls on the catch, such as total allowable catches (TACs) and national quota allocations, through to minimum mesh sizes and closed areas, as well as regulations relating to structures, marketing and multilateral relations. And yet EU fisheries are overexploited and overcapitalised.

To appreciate the challenge from a wider perspective, particularly when faced with a fishery system which is regulated and has some features intended to lead to positive outcomes, one needs to examine other influences that can result in fisheries systems ‘behaving’ as if they are open access.

*Marine ecosystems* are complex and dynamic, with the physical environment subject to changes over varying time scales and fish populations being variable in space and time. Humans affect these ecological components of the fishery system, whether through fishing or other activities, and despite a vast amount of scientific knowledge, the interactions within and between these processes are uncertain.

*Economic changes* occur at the micro level, such as fish price, consumer demand and fuel costs which can lead to higher operating costs and lower returns to operators, thus placing more pressure to work vessels more intensely. Economic changes also affect fisheries systems at the macro level, for example through the globalisation of trade markets. The impacts and interactions are uncertain.

*Subsidisation* has a major influence upon fisheries systems and has been blamed for overcapitalisation and overexploitation of global fisheries, including those in the EU. Subsidies can inflate (or prop up) returns to fishing operators, thus altering the behaviour of individuals; fuel the expansion of fishing fleets; create trade/market distortions through subsidised competition and by frustrating the internalisation of costs; and facilitate competition for space and resources between developing and developed countries (Deere, 2000; WWF, 2001).

*Management philosophy* has seen significant change throughout the world over the decades, ranging from development, economic rationalism and privatisation, sustainable development, conservation and the precautionary principle, allied to concepts such as co-ownership and co-management. The process and speed of change is variable and the impacts on other components of the fishery system are uncertain. For EC fisheries management, there is additional complexity brought about by the diversity and traditions of 15 Member States.

Attitudinal factors can also add to the complexity of effective fisheries management. Individual behaviour is not solely dictated by economics. A highly diverse range of people populate the fisheries sector, from small owner-operators to corporate business people who run large scale fishing operations and onshore workers or recreational anglers, incorporating a rich cultural diversity between the different EU Member States. All may be motivated and view fishing differently. For example, de Young *et al* (1999) quote a study by Pinkerton (1989) which showed that small scale operators, relative to corporate scale operators, mainly viewed fishing as a multi-generational occupation with skill and ownership transferred within families and communities; and that fishing is place oriented and dependent on healthy ecosystems with which they are historically familiar. The notions of fairness and natural justice can also influence the way we react and behave, as exemplified by the ‘level playing field’ concept. Inconsistent implementation or

**Table 1. Diagnosis for CFP failure – from *Fishing: a Defence of Politics*, TS Gray (1998)**

1. Epistemological perspective	Scientists seen as the scapegoats. Conflict exists between actors (industry, science, etc) on what is understood or known about resource status.
2. Psychological perspective	Fishing operators seen as the scapegoats. Blamed for serving short-term interests, greed and adhering to TH Huxley's illusion of plenty.
3. Instrumental perspective	Management measures seen as the scapegoats. Five tools in particular: the quota system; technical conservation measures; decommissioning; days-at-sea; and enforcement procedures.
4. Bureaucratic perspective	Managers seen as the scapegoats. An elite seen as wedded to existing structure and excluding fishing operators from participating in decision making. Marginalising operators who don't have a sense of commitment to the rules and who use the rules to justify breaking them. Left out, the industry resorts to lobbying at Ministerial level.
5. Corporatist perspective	Weak Fisheries Ministers seen as scapegoats. Unable to withstand pressure from the fishing industry to reduce TACs and capacity due to short political horizons.
6. Political perspective	Politicians seen as scapegoats. Fisheries seen to be treated by politicians as a pawn by which to advance other political agendas which have nothing to do with fishing. Conservation of fish stocks appears to be sacrificed to serve political ends.

enforcement of fisheries regulations can result in real or perceived advantages to some over others. If fishing operators consider the rules or their implementation to be unfair there is little incentive to comply and the temptation to evade or avoid them is high (Leadbitter *et al*, 1999).

While the Commission's Green Paper outlines the internal systemic weaknesses and the external challenges that they consider to have led to the failure of the CFP to meet its objectives, different groups will perceive the policy's failings from their own, distinctive position. Table 1 describes six perspectives that were summarised by Gray (1998) and that offer a diagnosis in the form of 'the scapegoats for failure'.

Fisheries management is not so much a matter of managing the resource itself, as one of managing people and their activities. Some of the fundamental challenges for managing fisheries involve questions of motivation, of fostering stewardship of the marine environment. That is, making sure that individual and/or group self interest align with long term public good. These issues should be the key considerations for fisheries policy design.

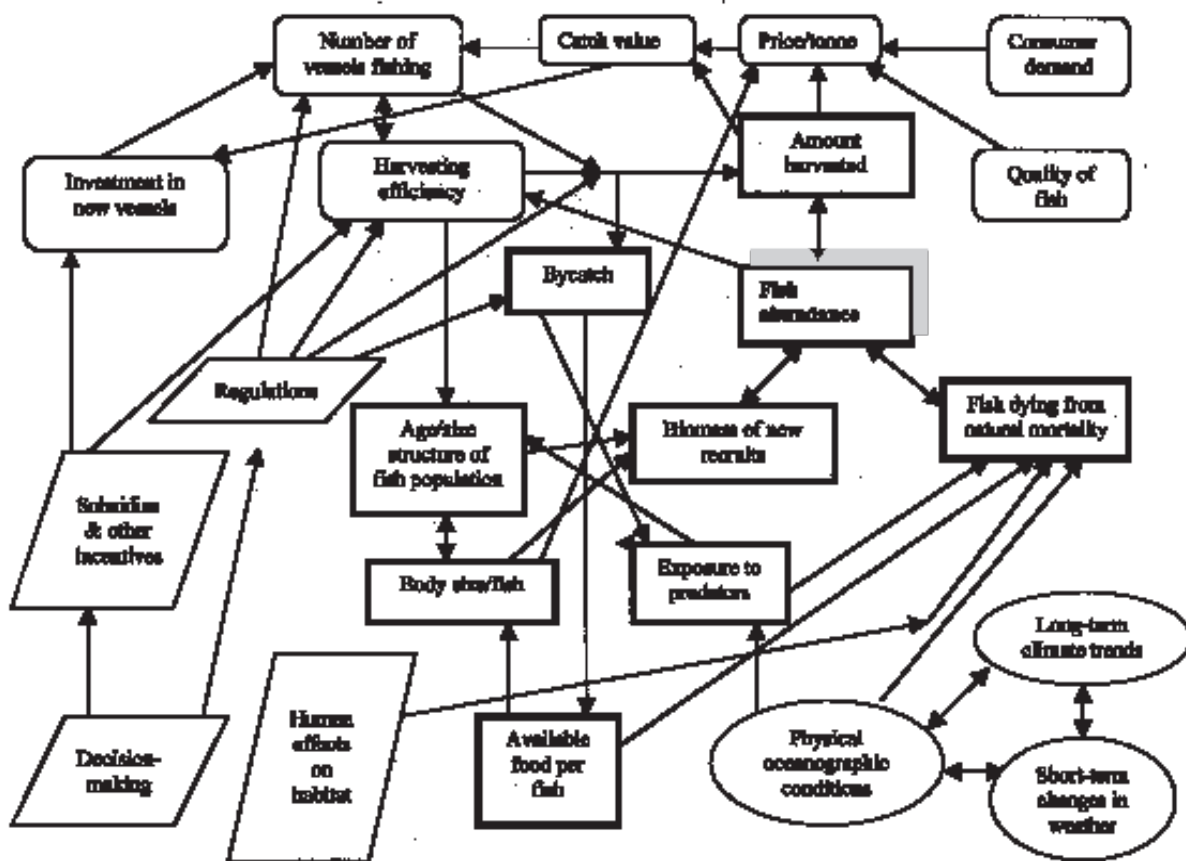
Hanna (1998) made a statement about the main focus of global fisheries management in the late 1990s which still appears to hold true in the EU: "the main focus of management is still population biology, with a minor emphasis on economics, occasional emphasis on socio-cultural attributes, almost no emphasis on ecology, and none on organisational effectiveness." The focus of the CFP needs to be expanded to reflect the range of complexity inherent in the management of fisheries systems.

The chart shown at Figure 2 was drawn and adapted from de Young *et al* (1999) to illustrate the range of complexity in fisheries systems and their management. It is not presented as a definitive guide to all the structures, components and interactions within fisheries systems.

**Fig. 2. Interactions between major physical, biological, economic and socio-political components of fisheries systems, focussing on their effects on changes in fish abundance and amount harvested.**

The different shaped boxes represent, in general, the different components of the system:

boldfaced rectangular boxes = biological;  
 round corner boxes = economic;  
 ellipses = physical; and  
 parallelograms = socio-political.



Adapted from de Young *et al* (1999).

# 3 The CFP: an integrated strategic framework

Confronted with the complexity that characterises fishery systems, is there an optimal way to manage fisheries successfully? Fishery systems should be managed to ensure that the actions of individual resource users are compatible with the long-term sustainability and integrity of the marine environment. The underlying principles of fostering stewardship, as well as ecosystem and partnership approaches provide a foundation for pursuing sustainable development in a strategic and integrated manner.

This chapter explores these themes in more detail, proposes an overarching strategic framework, as well as discusses the objectives of a reformed CFP. The importance of appropriate governance structures for improving fisheries management outcomes is explored, and a European level decision-making structure is put forward. Some approaches adopted in other parts of the world are provided as examples. Where relevant issues and options have been discussed in the Commission's Green Paper this is acknowledged.

## Fostering stewardship

Philosophically, the responsibility for the pursuit of sustainable development in the fisheries sector lies not only with the EU Council of Ministers or the European Commission (although they are legally responsible), nor with the fishing industry which exploits fisheries for profit. The responsibility lies also with all other groups who claim a part in the management process. All stakeholders should be accountable for the maintenance of viable marine ecosystems, as well as the health of fishing communities and enterprises that depend on the resource (de Young *et al*, 1999).

With the challenge of fisheries management frequently characterised by reference to economic theory, often proposed solutions are derived from this approach too. For example, economists tend to favour the creation of better defined property rights through the use of individual transferable quotas (ITQs) in fisheries. Fisheries management in New Zealand is centred around its Quota Management System (QMS) (Shallard, 1997) and Iceland's ITQ system has been in operation for over twenty years (Aarland and Robinson, 1999). Alternative solutions have focussed on increasingly complex regulation and government intervention such as that implemented in the EU. But, property rights-based solutions or solutions based upon regulatory intervention often only deal with the issues of resource depletion and economic efficiency and not the social ecology of fishing (Symes, 1998a). Nor do they necessarily deal with broader ecosystem and biodiversity objectives for the marine environment more recently formulated by society.

In taking account of the social ecology of fishing and trying to devise ways of fostering stewardship of the marine environment, one of the important issues to consider is ways to provide *stability and/or security amidst the uncertainty*. Fishing operators, whether small, medium or large-scale, often express the need to ensure that their investments or lifestyle are secure. For example, the Australian fishing industry supported the use of strategic (and statutory) management planning as a mechanism to give certainty in the goals and rules for management, as well as certainty in rights of access (HOR, 1997). The Commission

acknowledges the EU fisheries sector's desire for greater stability in its paper on the precautionary approach and multi-annual approach to single species management<sup>3</sup>.

Another basic consideration when devising policy instruments that aim to foster stewardship, is *gaining support for the management regime from fishing operators*. Recognition has been growing that no management regime will work unless it is actively supported by those whose behaviour it is intended to affect, ie gaining 'grass-roots' approval of decisions (Mikalsen, 1998).

Bringing about a change in people's attitudes, through management approaches and institutional structures that encourage collective action while allowing individual choice, means designing a system which provides incentives that steer individual decisions in the direction of societal good, ie a system which helps to create consensus between the participants and avoids perverse incentives. According to de Young *et al* (1999), fisheries policies need to be designed so that:

- the roles, rights and responsibilities of all participants are clarified;
- institutions and incentive systems that align individual interests with the goals of ecological sustainability, social stability and economic viability are designed;
- a sense of ownership is enhanced and a secure claim to the resource is provided (ie a market approach); and/or
- users participate in decisions about management and stewardship of the resource (ie a participatory approach).

## **An ecosystem approach to fisheries systems management**

Apart from being a major food source, marine ecosystems provide important services such as the absorption of carbon dioxide by phytoplankton, primary production and energy transfer into protein through the food web. The structure and function of ecosystems and the impact that fishing has upon them are of more interest to stakeholders than ever before. The uncertainty that exists about the impacts of human activity gives impetus to the concept of ecosystem management.

An ecosystem approach to fisheries management has at its foundation a regard for the impacts of fishing upon non-target species, including predators, competitors and prey, as well as the marine environment. A comprehensive ecosystem approach should ideally also incorporate the effects of physical and chemical variables and other human impacts on the ecology and biology of fish stocks. Ecosystem functioning is of major importance to the conservation of biodiversity, with ecosystem stability and resilience potentially affected by human activity. To implement an ecosystem approach adequately requires a real commitment to monitoring, research and assessment as there are significant gaps in knowledge and implementation.

It is not necessary to understand everything about ecosystems in order to implement an ecosystem-based approach; after all, we do not fully understand single species dynamics and yet single species management is common for EU fisheries. As discussed in the Commission's Green Paper, an ecosystem approach (or 'ecosystem-oriented management') could begin with the articulation of objectives and strategies for the medium term. This could be supported by the determination of an alternative set of fisheries management units to replace the current single species stock boundaries determined by ICES, ie define 'new' fisheries. These actions could be underpinned by the development and implementation of an EU bycatch policy; strategic management plans aimed at the 'new' fisheries that include a strong cohesion between technical measures for target and non-target species and the management of fleet capacity; collection of data on the catch of all species (retained and discarded); observations of the broader impacts fishing has upon habitats; and finally, the development of indicators and decision-making processes based upon risk assessment and management.

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<sup>3</sup> COM(2000)803



## An EU level integrated strategic framework

The function of a strategic management structure is to provide stability and consistency for decision making while retaining flexibility and adapting to changing conditions (Hanna, 1998). Within the CFP a revised conservation and management regime amending the basic regulation (3760/92) could provide an overarching strategic framework for the sustainable long term management of fisheries sector activity. This is what the CFP was devised to do in 1992. However, as has been described elsewhere, eg Coffey (1999) and in the Green Paper, its implementation to date has focussed too much on single species management, short term horizons, inadequate implementation of a broader environmental approach, crisis management and political compromise.

Today many actors in the debate are calling for proactive management which integrates broader ecosystem concerns in a precautionary way: a fisheries management system which joins the concepts of long term ecological sustainability with the pursuit of wealth and the maintenance of well being.

A strategic framework should set out the overall objectives of fisheries policy which underpin more detailed objectives and measures required at each level of the fishery management system. It should guide

### Box 1: Strategic framework for the CFP

1. Clearly articulated and prioritised objectives: eg, sustainable development with ecological sustainability the highest priority component.
2. Clearly articulated principles underpinning decision making: eg, stewardship, precaution and partnership.
3. Clearly articulated processes and mechanisms for consultation with stakeholders: eg, formal structures of advisory committees, working groups and sub-committees.
4. Determination of the appropriate management unit: eg, regions, fisheries by method or multi-species assemblages.
5. A requirement to develop strategic management plans for each management unit, specifying short, medium and long term objectives, measures and performance indicators (ecological, social and economic) for the fishery, including clear articulation about how environmental considerations and obligations under EU and international law have been integrated into the management plan.
6. Overarching policy guidelines for measures to be included/considered in the management plan for each management unit (ie fishery) (see Box 2).
7. Strategic environmental assessment processes for management plans.
8. Strategic guidelines for the future use of Structural Funds for fisheries which promote a self sufficient and sustainable sector.
9. Strategic guidelines for Member State management of inshore fisheries (ie inside territorial waters, 6-12nm).
10. Obligations to apply the principles and objectives outlined in 1 and 2 above to external relations.
11. Processes and mechanisms by which management plans and the overarching CFP will be evaluated, assessed and adjusted: eg, the use of harvest strategy evaluation and pre-agreed decision rules.
12. Articulation of EU level control, monitoring and enforcement guidelines and processes.
13. Articulation of EU level strategic research planning processes.

medium to long term decision making, as well as the management of risk and uncertainty. With decision rules built into a strategic framework, adaptive management of complex fishery systems can take place. This ensures a measure of stability and security in an otherwise dynamic environment.

The framework should articulate the overarching objectives, principles and processes by which fisheries management measures are developed, implemented, monitored, assessed and enforced. Box 1 outlines suggestions for a strategic framework for the CFP.

## Objectives of the CFP

In its Green Paper, the Commission acknowledges that the CFP is confronted with contradictory and incompatible objectives and legal obligations. In suggesting that it is now time to think more clearly about the objectives of the CFP as well as to prioritise them, the Commission identifies ten objectives for the future CFP and suggests that the reform debate should focus on the relative weight given to each of them. Heading the list are two that seek to set the CFP on an ecological footing:

- establishing responsible and sustainable fisheries that ensure healthy marine ecosystems maintaining the quality, diversity and availability of marine resources and habitats; and
- contributing to achieving environmental objectives set out in Article 174 of the Treaty through appropriate fisheries management action.

Other suggested objectives include:

- bringing fleet capacity into line with the availability and sustainability of resources as soon as possible;
- promoting better governance and more transparent, accountable and flexible management and decision-making processes which involve stakeholders at regional and local levels;
- ensuring an economically viable and self-sufficient fisheries and aquaculture sector;
- ensuring effective enforcement of CFP rules through transparent arrangements which can guarantee a level playing-field across the Union;
- addressing the problems of structural adjustment resulting from a commitment to sustainable fisheries;
- promoting responsible and rational exploitation of fishery resources in international waters and developing partnerships with third countries in a manner coherent with Community development policy;
- integrating health requirements into the CFP in order to protect public and animal health and safety and to ensure stable supply of the European market at prices reasonable to the consumer; and
- improving the quality and amount of data to support decision-making and promoting multidisciplinary scientific research.

These objectives capture many of the key aspects of sustainable fisheries management but they are clearly focused on the existing policy, rather than setting out more durable, long term goals for the sector. Garcia and Staples (2000) and Smith *et al* (1999) have highlighted the need to consider the following:

- sustaining species assemblages, ecosystems and habitats;
- pursuing a precautionary approach to decision-making;
- maximising long term welfare;
- providing sustainable employment (not maximising employment);

- in the short-term, managing the decline in employment;
- ensuring efficient resource use;
- ensuring cost-effective and efficient fisheries management;
- ensuring participatory decision-making processes;
- ensuring accountability to the community in the management of fisheries resources;
- balancing short term and long term interests; and
- addressing local, regional and global considerations.

As the Green Paper points out, overall objectives for the management of fisheries systems should be clearly set down. They offer a framework for management of individual fisheries regardless of the management unit, eg, ecosystem or region based, species or method based. Objectives provide a direction in which to aim and all subordinate measures, policies or strategies should be consistent with them.

As was suggested in Box 1, the core objective of the CFP should be sustainable development. A recent inquiry into the CFP by the United Kingdom's House of Lords Select Committee on the European Union recommended that the principal objective of the CFP should be *"to ensure that the exploitation of marine resources takes account not only of ecological processes but also social and economic consequences"* (HOL, 2001). The objective of sustainable development has been firmly fixed in the context of resource management in Europe. The EC Treaty of Rome, as amended by the 1997 Treaty of Amsterdam, places sustainable development among the EC's founding principles (Article 6).

Clarification of the scope, definition and relative weight given to the ecological, social and economic aspects of sustainable development is essential, as is suggested in the Green Paper. The ecological, economic and social components of sustainable development should be clearly articulated as separate objectives, as should any hierarchy, prioritisation or tradeoffs between them. Because of the nature of the resource, the objective which should receive highest weight or priority under the CFP should be that of ecological sustainability, eg, sustaining species assemblages, ecosystems and habitats.

## **Governance – a partnership approach**

Governance, as opposed to government, refers to the way in which public policy is made, particularly with respect to processes, accountability, clarity, transparency, coherence, efficiency and effectiveness. Governance is grounded in ideas of interdependence and interaction between various powers at multiple levels, as well as co-operation in the pursuit of shared objectives<sup>4</sup>.

Fisheries policy in the EU has been condemned by many in the fisheries sector as top-down, command and control, unfair, impractical and developed remotely by centralised European institutions. Critics of this approach to fisheries management claim that failure to sufficiently incorporate the socio-cultural importance of fishing and to involve fishing communities in management results in a dysfunctional working relationship between the fishing community and others involved in fishery management, be they scientists, administrators or politicians. Energy is therefore put into conflict resolution rather than into rational strategic planning of fishery systems (de Young *et al*, 1999).

One approach put forward as a powerful way to foster stewardship and underpin the pursuit of sustainable development in fisheries is partnership in managing fishery systems. This means that stakeholders including the industry, scientists, managers and environmental interests have a direct input to, and responsibility for, the decision-making process. The underlying rationale is that the achievement of sustainable fisheries is linked to the level of trust and confidence that exists between the stakeholders, that through the building of positive and productive relationships which accompany sound legislation and

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<sup>4</sup> SEC(2000)1547/7. 11 October 2000. White Paper on European Governance. "Enhancing democracy in the European Union". Work Programme. Commission staff working document.

policy, practical, cost-effective and sensible fisheries management outcomes can be realised (Smith *et al*, 1999). This approach has been adopted in many other fisheries around the world to good effect (Sen and Raakjaer Nielsen, 1997; Smith *et al*, 1999; Lane and Stephenson, 1997; Nielsen *et al*, 1997).

In the EU, most fisheries are supra-national, with cross-cutting issues relevant to multiple Member States. For that reason, devolving decision-making power to Member States is not appropriate. However, the supra-national political structure of the European Community is probably too remote or high a level at which to develop specific fisheries management arrangements for the regions. Wise (1996) points out that tension between 'European' and 'national' concepts of fisheries policy in the development of the CFP have helped to lend support to the idea of managing fisheries at a regional level.

The Green Paper proposes that a network of regional advisory committees (RACs) be established. Membership would be drawn from industry, NGOs, researchers and national officials from Member States with a 'real interest' in the fisheries. The Commission proposes that these committees be co-financed by the Community, national authorities and stakeholders, and their management shared by the players. However, the Committees would have no formal role in the decision-making process under the current institutional framework but would meet regularly to provide input to management discussions before the Commission drafted formal proposals. The Commission also acknowledges the need to forge closer links between scientists and the fishing industry, as well as promoting greater transparency in scientific advice within the decision-making process.

The proposal for RACs goes some way to fostering a sense of stewardship in the resource. However, it does not articulate the roles and responsibilities of participants in detail. A RAC could merely be a forum where each stakeholder presents the Commission and other participants with a 'position statement' and the Commission simply records these statements. Alternatively, a more productive working environment could be created if RACs were tasked with pursuing a clear set of objectives and striving for practical and effective management solutions based upon consensus and the best interests of the 'fishery' as a whole (rather than any particular interest group within the process). Only the latter model would constitute a partnership in the sense defined above.

The Green Paper does not envisage any changes to the institutional structure of EU level fisheries management, thus almost precluding any devolution of decision-making authority to a regional level. However, a strategic framework could be developed at Community level which establishes the 'management unit' eg, regional seas, and specifies a clear partnership role for RACs. As already suggested, the framework would set EU level objectives for sustainable fisheries and provide a menu of strategies/measures aimed at pursuing these objectives, as well as requirements for monitoring, indicators and timeframes. Thus, providing the RACs are making recommendations consistent with the pursuit of the overall EU framework objectives, the Commission could incorporate the outcomes of RACs' deliberations directly into its regional management proposals and Council would then be in a position to endorse these within the strategic framework.

In this proposed 'partnership' approach, greater emphasis is placed on the regional stakeholder partners working together to reach consensus prior to the central EU 'authority' making its decisions, which in theory, should mean formal decision-making becomes a less arduous and less overtly political process. The principle of partnership working could be written into a new CFP framework regulation with policy guidelines set out for its conduct, covering the process, membership structure, obligations and code of conduct of participants in RACs.

An important aspect of a full partnership approach is that it ought to occur at all levels of the management process. This means not only opening up the decision-making process in relation to management or technical measures, but also supporting processes such as fishery/stock assessment, data collection and research, and compliance and enforcement. Potentially, a partnership approach to management could lead to more accurate and reliable data and information, improved stock assessments, lower enforcement costs and fewer conflicts between stakeholders (FAO, 1997). A recent independent review of the Management

Advisory Committee (MAC) structure and partnership process in Australia concluded that while there were criticisms about some aspects of MAC composition and conduct, the fundamental concept was supported by stakeholders as potentially the ‘best available’ (ACIL, 2001).

### *Who should be involved?*

Participating stakeholders from Member States with an ‘interest’ should be chosen for their different perspectives and understanding of the social, economic and ecological aspects of fisheries systems rather than their ability to ‘represent’ a constituency. If RACs are tasked with developing management strategies based on clear objectives and in the best interests of the fishery as a whole, debates should be about the weight of the argument, not the weight of numbers (ACIL, 2001). Careful consideration would need to be given to who decides upon the participants, eg this could be done at Member State level or by the Commission. An objective set of selection criteria may need to be developed.

Consideration should also be given to the appointment of independent chairs, as opposed to the Commission or stakeholder groups rotating this function. An independent chairperson can help to ensure that all stakeholders views are fairly represented to the Commission and Council, and allows stakeholders to fully participate in debate, as well as allowing Commission officials to participate as expert ‘fisheries managers’ providing the necessary legal and policy development expertise as well as guidance on the tradeoffs inevitable in the pursuit of sustainable development objectives.

As the Green Paper contemplates, stakeholders who should be involved as partners in RACs include the industry, fisheries managers (administrators), environmental policy experts (either from NGOs or national authorities) and independent experts and researchers (ecological, biological, economic or social). Given the range of Member State interests, particularly in the fisheries sector, there inevitably would be pressure to include all parties with an interest. However, too many people sitting around the table make it much more difficult to achieve consensus. Careful consideration will need to be given to the total number of participants in RACs in order to ensure that they function effectively. However, a partnership structure that embraces the concept of integrating stakeholders into the fisheries management process at every level could involve different individuals in the process through the establishment of working groups and sub-committees that have specific tasks to undertake in support of the work of the RAC. This idea is elaborated in the following section.

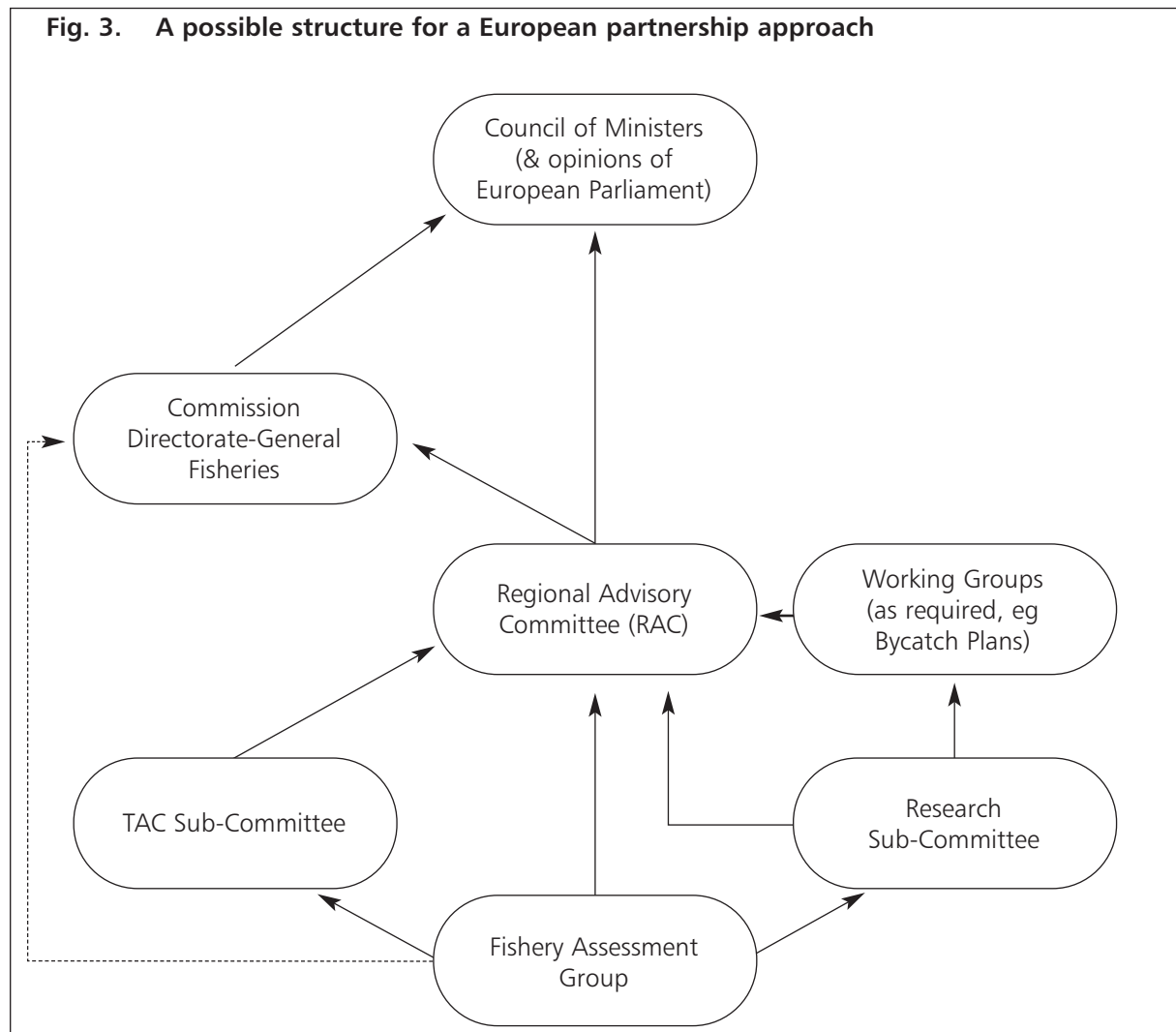
### *A possible structure for a European partnership approach*

Figure 3 provides a simple diagram of a possible partnership approach at European level.

The structure embraces the concept of integrating stakeholders into the fisheries management process at every level. A structure could be established based upon the Green Paper’s suggestion of Regional Advisory Committees. With the addition of sub-committees and working groups within that structure, stakeholders could be more active in developing long term solutions for each ‘fishery’ (region), as well as being involved in the annual management arrangements devised.

A new, independently chaired Research sub-committee is also suggested. This would enable long term strategic research and data collection needs that *contribute to cost-effective fisheries management* to be articulated, prioritised and communicated in an open and transparent manner by all with an interest, not just researchers and the Commission.

A similar TAC sub-committee could provide an important forum for the fisheries sector, NGOs, researchers and administrators to negotiate the particular TAC strategies for the coming years based upon the precautionary approach and working to guidelines set out in the CFP framework policy, including a management strategy evaluation which articulates risks (probabilities) and uncertainties.



The foundation for the Regional Advisory Committee would be the independent fishery assessment group which would be the primary source of scientific, technical and socio-economic advice to the RACs and independently to the Commission. Currently the Commission ‘buys’ its fishery status and stock assessment advice from ICES and the process of developing scientific advice about fishery status is seen by industry and environmental interests as a ‘closed shop’ focussing mainly on the fisheries biology of target species. The Green Paper acknowledges the need for advice to become multi-disciplinary, including ecological science as well as economics and most importantly perhaps, the inclusion of fishermen’s own knowledge.

As the purchasers of scientific advice, it is the fisheries administration (ie, the Commission) that should determine the form in which this ‘product’ is delivered. There may be resistance from scientists to the opening up of a process seen by many as their private domain. However, as the Commission points out in the Green Paper, data funded mainly from the public purse must be in the public domain and open to independent analysis. The establishment of inclusive fisheries assessment groups involving stakeholders takes that notion a step further.

In Australia, fisheries assessment groups involving stakeholders, particularly from the fishing industry, have been in operation since 1992. Established by the Australian Fisheries Management Authority, these groups maintain their independence through well defined terms of reference, a scientist as chairperson and clear reports that differentiate between anecdotal evidence and analytical results, as well as an evaluation of the uncertainties and risks related to various management strategies which are based, in many cases, upon defined reference points.

Smith *et al*, (1999) report that most scientists have adapted well to the new, more open process and cite the following benefits:

- dealing directly with the industry provides useful information and insights into stocks and the marine environment;
- better industry support for stock assessment results;
- opportunities to discuss and evaluate alternative harvest strategies;
- opportunities to discuss and help interpret management objectives; and
- better targeted research with direct industry involvement and support.

The specific remit of these assessment groups should be to undertake fishery assessment (ecological and socio-economic assessment) and evaluate the consequences of alternative measures and decisions, rather than to formulate specific management or TAC recommendations.

### *Implementation issues*

The Green Paper suggests that each participant/group would pay their own expenses in order to participate in Regional Advisory Committees and that the Commission might not be able to provide chairmanship and administrative support in every case. As has been suggested above, the Commission need not provide chairmen for each advisory committee, however, administrative support would be desirable (unless sub-contracted to independent executive officers), and participation by the Commission's 'fisheries managers' would be imperative.

With €1.1 billion in public funds spent on the fisheries sector each year, it is in the public interest to see improved governance structures leading to significantly better outcomes than have been realised to date. Therefore some investment of these resources into creating new structures would appear worthwhile. The Commission may also have to re-deploy some staff within the Fisheries DG in order to accommodate such a new approach to fisheries management, with a competent 'fisheries manager' designated for each of the regional committees.

### *Future governance at the European level*

The Commission has decided to publish a White Paper in mid-2001 to make proposals for improving European governance. In order to define a work programme for the production of the paper, the Commission has articulated six work areas that need elaboration:

- broadening and enriching the public debate on European matters;
- handling the process of producing and implementing Community rules;
- improving the exercise of European executive responsibilities through decentralisation;
- promoting coherence and co-operation within a 'networked' Europe;
- strengthening Europe's contribution to world governance; and
- strengthening the integration and strategic dimension of policies across the continent.

The White Paper on European governance may have some bearing upon the review of the CFP, although the fisheries Green Paper does not foresee this. Indeed, the 2002 review process has the potential to anticipate some of the possible governance reforms.

## 4 Operational tools and issues

This chapter discusses some of the tools and issues which could support the implementation of an integrated strategic framework for managing EU fisheries. The importance of strategic management planning is considered and policy options for a menu of management tools are proposed. Issues surrounding the implementation of a precautionary approach to decision making in an inherently uncertain environment is explored, as is the potential of rights-based management to deliver better fisheries management outcomes. The economic and social dimensions of the CFP are discussed briefly, with particular reference to issues raised in the Commission's Green Paper, as are 'external relations'. The final section of the chapter focuses on the need to develop and use performance indicators in order to determine how well sustainable development is being pursued, as well as informing decision-making under a reformed CFP.

### Strategic management planning

Adopting an integrated approach to strategic management planning can ensure that fisheries management measures in one fishery do not create problems or externalities in a neighbouring fishery (FAO, 1997). Strategic fisheries management planning within a common framework is valuable because it can encompass most of the aspects of fisheries management. These include setting out the rights of fishers and the responsibilities of all stakeholders; identifying a range of measures designed to pursue the objectives; setting out biological or other reference points; and specifying any decision-making rules which are agreed as action to be taken, in the event that a reference point is triggered. A strategic management plan can also articulate data requirements, research programmes, and fishery assessment needs for the system.

Box 2 shows the range of measures which could have guidelines set out in a revised CFP regulation. The measures would be selected for inclusion in strategic management plans and developed by RACs and the Commission in accordance with the overarching guidelines for approval by the Council.

The existing basic CFP regulation (3760/92) already facilitates the development of strategic management plans under Article 8(3). Multi-annual, multi-species management objectives can be established for individual or groups of fisheries. Objectives can be prioritised and management strategies articulated in order to pursue them. A 1994 Commission proposal aimed at introducing a strategic management plan approach was not adopted by Council (Coffey and Grieve, 2000). Even though it is not referred to as 'strategic management planning', the options set out in the Commission's Green Paper under its section '*strengthening and improving conservation policy*'<sup>5</sup> present the opportunity to develop the approach as a core element of the CFP.

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<sup>5</sup> See section 5.1, page 21, COM(2001)135.



**Box 2: Measures to include in management plans – overarching guidelines to be provided in a CFP strategic framework.**

Each management plan should incorporate elements taken from overarching guidelines set out on the following matters.

1. Management plan objectives. Guidelines should specify how ecological, social and/or economic objectives and targets for the region over an agreed timeframe will be incorporated into each management plan. Ecological objectives should be determined for target species/stocks, as well as ecologically related species and habitats.
2. Fleet policy. For example, reducing over capacity in each fishery; addressing how the ‘technological creep’ of fishing effort will be tackled through guidelines giving a choice of mechanisms such as those described in the Green Paper; and specifying how structural adjustment mechanisms may be employed.
3. EU rights-based management system. Guidelines should specify, *inter alia*, the options available, the allocation process and the appeal rights of individuals or groups.
4. Technical measures and TACs. These could include guidelines on the options available for protection of juvenile target species and the requirement for plans to spell out how often measures will be adjusted, based on new information.
5. An EU level bycatch policy (see Box 3). This could be a framework which facilitates the implementation of obligations under wildlife and habitat conservation legislation, helps reduce the capture of non-target/non-commercial species and discarding, and facilitates the implementation of biodiversity conservation measures ranging from technical to protected (closed) areas.
6. Monitoring, control and enforcement. For example, establishing risk assessment processes for each management plan and facilitating the creation of cost-effective monitoring, control and enforcement activity.
7. Data collection, research and fishery assessment. Each plan should incorporate baseline requirements set out at EU level, however, each fishery will require different needs to be met based upon its physical, economic and social dynamics. For example, developing a comprehensive strategic research plan as a complement to the management plan, incorporating the above elements should enable the measurement of performance over the life of the plan as well as informing management actions on an annual or multi-annual basis.
8. Indicators policy. This could provide guidelines for the options available for incorporation into the management plan.

The Green Paper sets out options to develop a ‘multi-annual approach’ to fisheries management. This would involve developing management plans based upon the precautionary approach for the medium term (3-5 years), including the potential to establish multi-species approaches or ‘true effort management regimes’ and a more effective fleet policy in line with multi-annual objectives. These might also incorporate environmental or ecosystem objectives and strategies for key species and habitats. While the Commission also suggests the measures implemented may differ by region, the term ‘regionalisation’ is not discussed. Thus, the Green Paper proposals are consistent with the notion of developing strategic management plans.

A wide range of management measures exists, each of which may have a variety of impacts upon fish stocks, ecosystems, fisher behaviour, local, national and regional economies. Measures should be consistent with the pursuit of the objectives set out in the strategic framework and management plan and appropriate for the management unit, eg, region, fishery, or ecosystem.

Management measures should also be consistent with broader geo-political management approaches and should reflect policies within the broader social and economic context (FAO, 1997); for example, the objectives of economic and social cohesion set out in the Treaty (Article 159). The Commission would be in a position to ensure the consistency of each strategic management plan developed in partnership with the RACs with reference to the overarching CFP strategic framework, other European and international instruments, and other strategic plans developed by ‘neighbouring’ RACs.

Consideration should not only be given to implementing measures which pursue relevant objectives, but also to ensuring that measures are practical, cost-effective and are capable of being implemented by stakeholders. The integration of compliance and enforcement considerations at early stages in the development of management measures is also crucial in order to ensure the measures are enforceable (Hemming and Pierce, 1997).

Strategic management plans could succeed within the CFP if there was an emphasis on drawing together and simplifying the large body of regulation and legal instruments now in force. Integrating and drawing together the various rules and arrangements for a ‘management unit’ will go a long way towards reducing the sense of overburden and complexity experienced by fishing operators, particularly if the RACs and associated committees give them a place at the table.

### **Box 3: Bycatch policies as part of a strategic planning approach to fisheries management**

#### *USA – Managing the Nation’s Bycatch*

Bycatch is defined as fishery discards, retained incidental catch and unobserved mortalities of non-target species resulting from a direct encounter with fishing gear. The principal piece of US fisheries legislation in 1998 highlighted the need for bycatch management to be addressed in fishery management plans. This means that conservation and management measures shall, to the extent practicable, minimise bycatch and to the extent that bycatch cannot be avoided, minimise the mortality of such bycatch. The key goal of US bycatch plan activities is to implement measures that are consistent with this legislative requirement.

Seven national objectives under the bycatch policy include:

1. to determine the magnitude of bycatch and bycatch mortality;
2. to determine the population, ecosystem and socio-economic impacts of bycatch and bycatch mortality;
3. to determine whether current conservation and management measures minimise bycatch to the extent practicable and, if not, select measures that will;
4. to implement and monitor selected bycatch management measures;
5. to improve communications with all stakeholders on bycatch issues;
6. to improve the effectiveness of partnerships with groups and individuals external to the National Marine Fisheries Service (NMFS); and
7. to co-ordinate NMFS activities to effectively implement this plan.

To pursue the above objectives, a range of actions are recommended in the following six areas:

1. bycatch monitoring and data collection programmes;
2. research on population, ecosystem and socio-economic effects of bycatch;
3. research to increase the selectivity of fishing gear and to increase the survival of fish and protected species that are inadvertently encountered by fishing gear;
4. incentive programmes for fishermen to improve bycatch performance;
5. analysis of the implications of conservation and management measures for bycatch; and
6. exchange of information and development of co-operative management approaches.

(NOAA, 1998)

**Box 3 continued:***Australian Commonwealth [Federal] Bycatch Policy*

This policy deals with that part of the fisher's catch which is returned to the sea either because it has no commercial value or because regulations preclude it being retained, and that part of the 'catch' that does not reach the deck of the fishing vessel but is affected by interaction with the fishing gear. The policy is underpinned by guiding principles:

- fostering stewardship of Australia's marine resources to maintain and improve the quality, diversity and availability of fisheries resources, and the integrity of the marine ecosystem into the future;
- promoting co-operative and transparent approaches, involving all stakeholders;
- managing marine resources so that short-term considerations are consistent with long-term goals and apply the precautionary principle in the management of fisheries resources;
- recognising the unique biological, ecological, economic and social nature of individual fisheries by developing bycatch action plans to address bycatch issues;
- encouraging co-operation in the development of complementary arrangements between relevant authorities to ensure that, where stocks overlap or are split between jurisdictions or are migratory, effective management strategies are applied across jurisdictions;
- using robust and practical biological reference points, where possible, to make decisions on bycatch management. Also developing reference points in consultation with stakeholders and using the precautionary principle as the basis for decision making where reference points are not feasible.

Three core objectives of the policy are:

1. To reduce bycatch.
2. To improve protection for vulnerable species.
3. To arrive at decisions on the acceptable extent of ecological impact.

The Policy sets out a checklist for developing a Bycatch Action Plan including the following basic steps:

- determine the availability of data and its usefulness;
- decide what the bycatch issue(s) is/are;
- look at all options (utilise, avoid or reduce) that are available;
- decide how to address the problem (strategies) and determine whether new ways to address the issue need to be developed;
- outline the actions required that are practical and effective to achieve the objectives of the policy; and
- review progress or evaluate the effectiveness of the programme.

(AFMA, 2000)

## **Adopting a precautionary approach**

The concept of the precautionary principle is set down in international conventions, as well as enshrined in European environmental policy. As an underlying principle and cornerstone of successful fisheries management, adopting a precautionary approach should mean that:

- risk and uncertainty are incorporated into decision making
  - taking into account the complexity of fishery systems, including the interactions between the ecological, social and economic components of the system (de Young *et al*, 1999);

- there is a reversal of the burden of proof, such that the lack of scientific certainty is not seen as a reason to postpone implementation of measures to prevent environmental degradation, but rather seen as the reason why environmental measures are needed
  - when confronted with a situation where there are little or no scientific data, waiting for science to prove a causal link between an activity and a particular outcome is no longer acceptable.

Recent communications from the Commission on the implementation of the precautionary principle in EU policy generally<sup>6</sup> and in fisheries policy specifically<sup>7</sup> both tend to focus upon the need for decision makers to have scientific justification for their decisions. The precautionary principle was developed to apply in cases where science and scientific rationality were obstructive to good environmental decision-making and should force public decision makers to identify the limits of science in a legal/administrative framework (Fisher, 2000).

The Commission document on the precautionary approach in fishing advocates implementing the approach for single species within multi-annual management arrangements. The Green Paper on the CFP suggests that medium term environmental and ecosystem objectives and strategies should be implemented in its proposed multi-annual framework, which should also integrate the precautionary principle. In the Biodiversity Action Plan for Fisheries<sup>8</sup>, released in March 2001, the Commission suggests indicators for marine ecosystem health, including fish stocks and other species, will be developed as part of a review of the EU's fisheries data collection framework in 2003<sup>9</sup>.

In support of adopting a precautionary and multi-annual approach to single species management, the Commission sets out the problems with the end-of-year TAC negotiations by the Council of Ministers. Annual negotiations preclude taking a medium term view resulting in the Council repeatedly postponing difficult decisions to reduce catch limits, while citing scientific uncertainty as the reason. With TACs being decided at the very end of the year and often with wide variations between years, the fishing industry has little stability or security to plan business. Finally, an annual system makes it virtually impossible to bring 'conservation policy' into line with a medium to long-term fleet policy.

Essentially the paper on the precautionary approach to fisheries sets out how to deal with risk and uncertainty when there are data to support extensive scientific analysis against specific reference points. The paper does not spell out how a precautionary approach to decision-making will be implemented when there is a lack of empirical data, but knowledge of environmental degradation exists (for example, based upon experience from other parts of the world).

Adopting a highly technical and data reliant approach does not fully embrace the concept of 'reversing the burden of proof'. The debate should not be seen as one limited to the intricate details of risk assessment and risk management but as a more wide ranging discussion about the nature of legitimate decision-making (Fisher, 2000). It is important to acknowledge that the precautionary approach should be based on some objective criteria and not used as a political tool for groups who may be seeking to unnecessarily constrain legitimate economic activity. Nevertheless, if too much emphasis is placed upon precise data, the approach becomes self defeating.

For example, it is known that some forms of unconstrained fishing will have a detrimental effect upon the environment (on target stocks as well as other components of the marine environment). Deep water fisheries for long lived demersal species are a classic example, for which data exist from elsewhere in the world. A precautionary approach to management in this case would entail constraining fishing effort, setting catch limits based, as appropriate, upon limits set elsewhere in the world, or closing areas to

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<sup>6</sup> COM(2000)1

<sup>7</sup> COM(2000)803

<sup>8</sup> COM(2001)162

<sup>9</sup> Council Regulation (EC) No 1543/2000 establishing a Community framework for the collection and management of the data needed to conduct the common fisheries policy.

certain types of gear – ie making ‘risk averse decisions’ and acting with caution. If decisions are deferred or constrained by the need for greater scientific certainty, then they are not consistent with the notion of the ‘reversal of the burden of proof’. Constraining Community vessels may be perceived as unfair, when other nations are not similarly fettered. However, the Community could indicate its seriousness about being a responsible player in the international sphere by acting with precaution and taking the lead so as to encourage others to act likewise. This approach has been demonstrated in similar fisheries elsewhere where it has succeeded in bringing players to the table to discuss rational and effective management arrangements, as well as to establish the necessary research and data collection programmes to manage for the longer term. Once such data are available, more precise approaches to risk assessment and management can come into their own.

In support of a precautionary approach there is a variety of actions that can be implemented in fisheries management regimes, as described below.

- For established fisheries, develop stock specific precautionary reference points and take prompt action if they are exceeded, noting that the Community has developed stock specific reference points for many target species.
- Set down pre-agreed management or decision rules to be implemented if reference points are triggered. For example, if stocks fall below a certain level, then certain agreed action will be taken such as reducing TACs by an agreed percentage or closing areas to fishing.
- Where impacts are uncertain, give priority to the productive capacity of the resource.
- Where impacts are uncertain, make decisions and set reference points based on ‘like’ or similar fisheries around the globe.
- Implement data collection and research programmes to assess the impact of fishing on target and non-target species, as well as the impact of fishing upon habitats.
- As data and information become available, adjust reference points and management strategies accordingly.
- Develop assessment programmes for the impact of fishing upon developmental or exploratory fisheries.

## **Rights-based management**

The Commission Green Paper suggests that as part of a new approach to the economic and social dimensions of the CFP, by 2003 the implications of rights-based management should be explored. It is disappointing that the Commission did not explore this subject in more detail in the paper. The contribution of rights-based management systems to the overall pursuit of sustainable development in fisheries has been well documented over the years (see Wallis, 1998; Kaufmann *et al*, 1999; Symes, 1998a and 1998b; Hatcher and Robinson, 1999). These studies indicate that rights-based management can also prevent the waste of resources (eg, fuel, labour, materials) from the rest of the economy by allowing greater individual choice and flexibility. Important recent studies have focussed on rights-based management in EU fisheries in particular, eg Symes (1998b) and Hatcher & Robinson (1999).

As described in Chapter 2 of this report, solutions for the failure of fisheries management are often couched in terms of defining or strengthening property rights. In fisheries, the term property rights is somewhat misleading. Fish stocks and the marine environment are usually thought to be the property of the community, ie common property resources. What is allocated as a right, whether limited in time or granted in perpetuity, is the right of access to a fishery and/or the right to harvest part of a fishery’s yield (Symes, 1998b).

It is, however, possible to design access or use rights systems in fisheries that have many of the characteristics of real property. Most basic to the nature of property ownership is the right to exclude others (Iudicello *et al*, 1999). As well as defining the rights' exclusivity, enhancing an individual's access or use rights in a fishery by specifying their duration, flexibility, transferability, divisibility and quality of title will, in theory, make the right 'fuller' and some of the problems associated with managing common property resources should be diminished (Scott, 1989). Some types of right to emerge in the fisheries realm in recent years include individual transferable quotas (ITQs), individual vessel quotas (IVQs), exclusive user rights (EURs), territorial use rights to fisheries (TURFs) and community-based quota systems.

As the analysis in Chapter 2 has suggested, clarifying not only roles and responsibilities but also an individual's rights, through providing better defined rights of access, should strengthen the Community's ability to foster stewardship. A high priority should be placed on the investigation of rights-based management and should pick up on work already conducted at the EU level, such as Symes (1998) and the EU FAIR Concerted Action Workshop on the Definition and Allocation of Use Rights in European Fisheries conducted in France in May 1999 (Hatcher and Robinson, 1999).

A framework for rights-based fisheries management in the EU was proposed by Symes (1998b) within the context of the 'elaborate political geography of the European seas' where distinctions are drawn between inshore (inside 12nm) and offshore industrialised fisheries. Symes suggests that rights like ITQs may be more suited to centralised management systems for offshore industrialised fisheries, whereas community quotas and licensing regimes may be better applied in inshore fisheries. In the zone between 12 and 200 nm, Symes proposes that a combination of rights may be most appropriate, depending on the species or the fishing method. It should be noted that this does not have to mean quotas, but can mean rights based upon inputs (gear, vessels, days-at-sea).

The notion of rights-based management and strong government involvement in fisheries management are reconcilable concepts (Symes, 1998b). The social ecology of fishing communities does not have to be eroded through the granting of clearer rights. For example, safeguards such as community based quotas, or maximum quota holdings could be put in place in order to protect fishing dependent communities.

### *Implementation issues*

The allocation of rights to individuals or fishing companies is arguably the most contentious issue facing fisheries managers and the industry when introducing rights-based management, particularly individual transferable quotas. The allocation formula chosen has the potential to have significant economic impact on pre-quota entitlement holders, and a considerable amount of litigation has resulted from allocation decisions elsewhere in the world (Kaufmann *et al*, 1999). An allocation policy that minimises potential conflict is a critical consideration when developing rights-based management regimes.

Another issue which will require vigorous debate is that of the payment of royalties or resource rent. That is, should people who are granted exclusive rights to profit from fish stocks be required to pay a return to the rest of society? Countries operating ITQ systems such as Australia, Canada, Iceland and New Zealand do not charge resource rent, however, the cost of fisheries management is recovered from rights holders (Wallis, 1998).

No one system of rights is going to be appropriate to all of the EU's fisheries, indeed the ecological and socio-economic characteristics of each fishery need to be considered. However, under a regional management structure for EU fisheries, rights-based management could be firmly established within the CFP with a menu of choices for the region (fisheries, method or species). RACs could be tasked with proposing the most appropriate rights for their particular fishery and providing this advice to the Commission and Council as part of strategic, long term management plans.

## The two faces of compliance

Ensuring compliance means creating incentive-based activities, whereas enforcement of the rules can be said to involve disincentive-based actions (Hemmings and Pierce, 1997). Designing fisheries management systems requires both aspects of compliance to be considered. In other words, incentives for individuals to want to comply with the rules need to be created, as well as creating disincentives for non-compliance.

The Green Paper acknowledges that the current monitoring and control arrangements for the CFP are insufficient, discriminatory and cannot ensure a level playing field across the Union. The paper suggests that the causes (ie, driving forces) behind this relate only to the fragmentation of organisation, the lack of a centralised and harmonised control system at Community level and the lack of consistent sanctions across Member States. It is true that better co-ordination and optimal use of monitoring and inspection resources is needed, and the proposals aimed at achieving this, such as a Community Joint Inspection Structure, are justified. However, this approach focuses on the disincentives for non-compliance. There is no acknowledgement that the CFP as an overarching policy needs to have incentives for individuals to comply with the rules built into it, ie fostering stewardship through partnership and ensuring better defined rights, roles and responsibilities within a strategic long-term framework.

Like any section of the community, there are fishing operators who care deeply about the marine environment, its future and their dependence upon it, and there are some who simply do not care. These views are probably influenced by the length of time spent in the industry, levels of investment (both financial and in cultural terms), family decisions and the type of fishing undertaken (Leadbitter *et al*, 1999). Fisheries policy design needs to account for the range of attitudes held by those actively 'on the water' and seek to promote more positive stewardship behaviour among them.

In discussing the strategic response of fishermen to property rights and regulatory systems in fisheries, Davidse (1998) outlines the process undergone by Dutch fishermen when ITQs and days-at-sea regulations were introduced by the government. Three phases between 1976 and 1993 were identified: introduction; enforcement; and the emergence of collective management of quotas by the fishermen. A shift in the strategic behavioural response of fishermen was noted over the period from non-compliance through to compliance, resulting in a greater willingness to accept and work within the rules, especially when the rules were developed by the fishermen themselves rather than imposed by regulators (Davidse, 1998).

## Economic and social dimensions

In considering the economic and social dimensions of the CFP, the Green Paper contemplates two kinds of measures: those that help secure a sustainable and economically viable fisheries sector, and those that help people currently employed in the sector who need to find alternative employment. With overfished stocks, overcapacity and a decline in fisheries employment, the Commission acknowledges that the catching sector needs to be smaller and the Community has to plan for major structural adjustment. These concepts are supported by a major study by the OECD (2000a) on the transition to responsible fisheries (see Box 4). The objectives relating to the economic and social components of sustainable development will require short term pain in managing declines in employment. However, over the longer term gains will be experienced by fewer people and the objective could shift to maintaining sustainable employment.

The Commission suggests that the use of Structural Funds, including the Financial Instrument for Fisheries Guidance (FIFG), should not be directed towards increasing overcapacity. This has also been recommended by IEEP and others (eg, Coffey and Baldock, 1998; Deere, 2000; WWF, 2001). Indeed, short and long term reform of FIFG aid should aim to promote a more sustainable and economically efficient fisheries sector. Reducing or eliminating aid for vessel modernisation and redirecting funds to more attractive financial contributions for decommissioning are important suggestions, as is the welcome proposal to consider phasing out investment aid to the fishing fleet, particularly as it relates to 'counter-productive effects on fishing capacity'.

The Green Paper proposes that small scale artisanal fisheries that have a demonstrably lower impact upon the marine environment than larger scale fisheries could benefit from a specific fisheries aid programme. Such a programme could enhance local communities' abilities to pursue sustainable development by helping with training and education in collective or participative management processes, data collection and research activities and compliance/enforcement activities. In principle the idea has merit. However, as the Green Paper points out, care will be needed in defining 'small scale' fishing and 'fisheries-dependency'. For example, inshore fisheries, generally thought to be 'small scale', can involve the deployment of technologically sophisticated, high powered, high capacity vessels which have significant range and ability to catch increasing amounts of fish. The distinction drawn in the UK, for example, between vessels under and over 10 metres in length has become increasingly meaningless (Symes, 1998b).

Another concept put forward by the Commission in the Green Paper for exploration by 2003 is that of charging access levies for the right to fish for some parts of the Community fleet. This raises the issues of cost recovery and user pays principles (incorporated into the Treaty of Rome in connection with the polluter pays principle). Fisheries management services in the EU are currently provided by the Commission free of charge to individual fishing operators. According to Aarland and Robinson (1998), Member States do not recover the cost of fisheries management either.

One of the underlying principles of cost recovery policy is the belief that beneficiaries of management services should contribute to, or meet the costs of, these services. Some governments around the world have implemented cost recovery policies including Canada, New Zealand and Australia (OECD, 2000b). In fisheries such as the EU's which are 'limited access', fisheries management services include administration, research and enforcement that essentially allow fishing operators to enjoy preferential rights. A study in the 1980s by Australia's Bureau of Agricultural Economics found that at least 90% of the market benefits of fisheries management went to fishermen (DPIE, 1989). In developing a policy on cost recovery, user pays or access fees/levies it will be important to make clear distinctions about the costs that are attributable to industry (ie, costs incurred because a commercial fishery exists) and non-attributable costs (ie, costs incurred regardless of the existence of a commercial fishery and therefore in the public good).

It will also be important to consider how any revenue will be distributed. If levies or charges are introduced, Member States and the Commission will need transparent and convincing ways of accounting to the industry and the wider public for the basis of calculating fees and the expenditure of any revenue arising.

The Commission is planning to co-ordinate an exchange of views with Member States on a number of their proposals for adopting a new approach to economic management and specific measures within it, with a view to preparing a report by 2003 at the latest. These issues should be vigorously debated and the experiences and outcomes of policy choices in other countries should inform the EU debate.

### *Alternative financial incentives*

The Green Paper signals the Commission's intention to launch a debate on eco-labelling of fisheries products as a mechanism to use market or information based methods to promote sustainability in fisheries. IEEP's report on financing environmentally sensitive fisheries in the EU recommends the innovative use of Structural Funds; the introduction of a specific environment measure under FIG; and/or the creation of a new fish/environment incentive measure in order to assist the transition to sustainability and to promote environmentally sensitive fishing practices (Newcombe *et al*, 2000). As well as exploring the potential benefits that eco-labelling might bring to the pursuit of sustainable development, the Commission's debate should also explore the use of such positive financial incentives for environmental purposes.



#### **Box 4: OECD Committee for Fisheries – Transition to Responsible Fisheries**

A study was conducted by the Organisation for Economic Co-operation and Development (OECD) on the environmental, economic and social implications of a transition to responsible and sustainable fisheries.

The transition process was approached from four perspectives:

1. evaluating transition costs and gains;
2. exploring the impact of government financial transfers on resource sustainability;
3. identifying the social implications of the transition; and
4. examining the role of post-harvesting practices in facilitating the transition.

The findings indicated that producers, consumers and society as a whole will make long-run gains from the transition to responsible and sustainable fisheries. Two important challenges emerge for decision-makers during the transition process: (i) dealing with the complexities and unpredictability of the marine ecosystem; and (ii) managing the effects of change on stakeholders.

Tradeoffs between economic, social and biological components of fishery systems are likely to be required in the short to medium term if fisheries are to make a successful transition. In some case studies, overcapitalised fisheries in the short term would be expected to have appreciably smaller harvest sectors. In this context the report recommends that the choice of management frameworks should be carefully examined. Dealing with the inherent uncertainties in fishery systems suggests the adoption of precautionary approaches in determining and implementing management objectives.

The report notes that transition to responsible and sustainable fisheries is likely to lead to contraction in employment, noting that marine fishing employment has been steadily declining since 1970. However, employment in downstream activities may increase. The socio-economic characteristics of the fisheries labour-force and its communities have important implications for the adjustment process, and governments should be prepared to implement adjustment measures before crises hit. More passive policies relating to unemployment and retirement benefits, as well as educational policies can assist adjustment. Governments need to better understand how their resource management, social protection and labour market policies interact.

Transition to responsible and sustainable fisheries is complex and will involve a realignment of policies affecting the behaviour of fishing operators, the post-harvest sector and other stakeholders. The aim should be to alleviate the negative effects of the transition so that future benefits outweigh short term losses. The benefits of responsible fisheries are long term, transition policies should address short term economic and social adjustment costs without compromising long term conservation objectives.

(OECD, 2000a)

## **External fisheries relations**

The objectives and principles of sustainable development, precaution and the ecosystem approach should underpin the Community's participation in external relations. Indeed, the Community could be a leading force in this respect. Some moves towards adopting such a role appeared during the Community's negotiations in 2000 at the North East Atlantic Fisheries Commission, in the ultimately doomed push for deepwater species management. But the same cannot be said for third country agreements where access is granted to Community vessels to the waters of developing countries. Here the EU appears mainly concerned to find additional resources for its increasingly displaced large vessel/factory freezer fleet, to the potential detriment of local developing country communities, stocks, habitats and ecosystems.

The Commission's Green Paper suggests that Community external fisheries policy lacks credibility and its image needs to improve in relation to international public opinion. This is an important issue - the

Community, as represented in multilateral and bilateral international fora, is in a position to be a leading force for co-operation for mutual long term benefit. The Green Paper suggests that when the Community enters into third country agreements they should be consistent with development and environmental policies, as well as being compatible with the 'fundamental mission of the CFP, ie ensuring sustainability of fisheries resources.' It also proposes that developing countries be provided with technical assistance, policy advice, promotion of research, stock assessment, monitoring and surveillance, and that EU resources could contribute to the development of local communities. These proposals are all potentially far-reaching and welcome, and effort should now be devoted to realising them in practice.

In order to have greater involvement of stakeholders in the sustainable development of international/third country fisheries, management advisory committees (MACs) could be established along the same lines as the European partnership structure proposed earlier. Highly Migratory Species MACs and regional MACs could provide a forum for stakeholders (including industry, environmental and social/community interests) to provide guidance to Commission negotiators prior to the development or renewal of third country agreements, or negotiations at regional fisheries organisation (RFO) meetings.

## **Developing and using performance indicators**

Monitoring and evaluating the performance of fishery systems and management regimes is essential for the pursuit of sustainable development. The development and use of indicators to measure economic, environmental and social impacts of fisheries will enhance communication between stakeholders, improve transparency, help in assessing the effectiveness of management processes and outcomes, and promote greater accountability among fishery managers and partners.

A significant amount of work has been undertaken in recent years on indicators for wild capture fisheries. An international technical consultation was organised by the FAO and the Australian Department of Primary Industries and Energy in January 1999 and resulted in two comprehensive publications (FAO, 1999 and MFR, 2000) According to FAO, indicators should provide a cost-effective and practicable means of:

- tracking progress towards sustainable development;
- predicting or warning about potential problems in the future;
- learning by comparing performance between fisheries; and
- informing policies aimed at advancing progress or avoiding problems.

Indicators should reflect the performance of each component of fishery systems: the ecological – beyond fish stocks and fishing activity; the economic – costs and benefits within and without fisheries; society – the non-monetary costs and benefits relating to human welfare; and governance – the institutions as well as the rules governing the system. Indicators should be relevant not only to outcomes or the success with which fisheries management arrangements pursue sustainable development, but also to the organisational processes of developing those arrangements and the efficiency with which goals are pursued. However, indicators should also be easily understood, feasible and cost-effective, as well as scientifically valid and based upon the best scientific information available (FAO, 1999).

The Commission has proposed that a system be developed to monitor and assess the progress of the CFP towards sustainable development and in pursuing the stated objectives. This is complemented by the recommendation that environmental, social and economic indicators and related reference points be developed by drawing on the work of the European Environment Agency and the FAO.

The Green Paper acknowledges the need for interdisciplinary research using knowledge from conventional fisheries research, conservation science, economics and the knowledge held by fishermen. Research priorities need to be better defined, and emphasis needs to be placed on the development of innovative

analytical methodologies which deliver ‘sufficiently robust insights into complex socio-economic and natural ecosystems in cost-effective ways’ in order to improve decision-making.

### *Management Strategy Evaluation – a possible system to track progress of the CFP*

An example of a system that uses indicators of performance to inform decision making in fisheries management is Management Strategy Evaluation (MSE). This approach incorporates uncertainty into decision making and assesses the consequences of management options in a way that is transparent and open about the tradeoffs made between competing fisheries management objectives. MSE uses a precautionary approach, but does not prescribe an optimal decision or strategy. It seeks to provide decision makers with information upon which they are free to apply their own weightings and risk preferences to alternative objectives (Smith *et al*, 1999).

The basic MSE approach has been used in the assessment of fisheries performance by both national and international bodies, including the International Whaling Commission and southern African and Australasian fisheries authorities (Butterworth and Punt, 1999). Within Australia’s fishery assessment process, assessment groups comprising managers, industry, scientists, conservation interests and MSE analysts have applied the approach to fisheries targeting demersal fin-fish, demersal sharks, some tuna and billfish species, and deepwater species (Smith *et al*, 1999).

The MSE approach and Australia’s Federal Government’s partnership approach have been developing hand in hand since 1992 and the two approaches tend to complement one another. All of the participants have had to learn and to adapt to new roles and responsibilities, which takes time. A greater amount of time and effort was spent trying to reach agreement. However, the result has been a greater commitment to act once strategies were agreed. It was found that in order for the process to work at all, trust and credibility had to be established and maintained. This resulted in perhaps slower decision making processes, but outcomes tended to be more secure (Smith *et al*, 1999).

A number of pre-conditions are thought necessary before being able to implement MSE (Smith *et al*, 1999). These include:

- an effective, stable management and regulatory framework;
- clearly specified objectives;
- a commitment to monitoring performance against objectives, including the use of quantitative performance indicators;
- a long-term perspective by stakeholders to develop agreed harvest strategies;
- relatively secure resource access;
- wide ownership of outcomes;
- effective stakeholder participation in process; and
- a reasonable level of certainty that political intervention will not regularly over-rule outcomes.

## 5

## Conclusion

It is clear to most stakeholders in the debate that the Common Fisheries Policy needs significant reform. The Commission itself has proposed a number of bold and significant reforms in its Green Paper on the CFP's future for which it should be applauded. Many of the options, if adopted, could potentially steer a course towards long-term change by committing the EU to the pursuit of sustainable development in fisheries. A key issue of concern now must be whether the coming months of debate and discussion will result in proposals by the Commission to the Council involving only piecemeal change, effectively leaving many of the existing structures and systems in place, or proposals for more strategic and radical reform, such as have been outlined in this report. Beyond this point, there are also many concerns about how the Council might modify any Commission proposals prior to their adoption.

A Canadian fisherman, quoting a Canadian fisheries scientist, asserted that there are four questions in any fishery management system (Beaton, 1999):

1. The biological question: How many fish?
2. The economic question: How many dollars?
3. The social question: How many jobs?
4. The political question: How many votes?

When fisheries are depleted or collapse, when pressure is brought about by sections of industry demanding access to fisheries resources, fish have often been sacrificed at the altar of political expediency to provide short term jobs in boats and processing plants and more votes at polling times, with little regard for the sustainability or longer term economic viability of the fishery (Beaton, 1999).

This report has attempted to outline how a new, partnership-based, strategic framework using an ecosystem approach to fisheries management could help to build greater stability and political consensus in the operation of the CFP. Similar tactics have been adopted elsewhere in the world with some notable success and the key elements presented in this report draw on some of the principles in operation in other countries.

The extent to which real change to the fisheries management regime in the EC will be implemented depends upon the political will in the Council of Ministers and also within fisheries administrations, including the Commission, and their willingness to entertain new approaches and structures. Member States made submissions and proposals to the Commission, prior to the release of the Green Paper, on a range of solutions to the perceived wrongs of the CFP. These ranged from the allocation of a community system of individual rights to regionalisation (zonal management) and devolution of decision-making powers. Some Member States advocated different changes to tackle the same issues, so no clear consensus has yet been established about the way forward.

Some pundits would say that the short term appears bleak for the fisheries sector and the environment alike. On the one hand the industry is facing significant curtailment of fishing opportunities. On the other, there is continued depletion of fish stocks, unknown but probably highly significant impacts upon habitats, and an increasing number of ecologically related species coming under threat, including non-target fish species, marine mammals and seabirds.

However, this report suggests a number of critical changes to the structure and implementation of CFP tools and processes which could help to transform the overall impact of the policy in the medium term, to give more weight to sustainability and longer term management strategies. As with other areas of Community policy, the key to effective EU design and implementation is perhaps more about redesigning the overarching framework and reorganising the decision-making process than about getting overly involved in detailed technical issues or dictating how resources should be allocated or rules enforced at local level. Developments in relation to other sectors and issues (eg, agriculture, rural development and water) offer potential models from which fisheries policy could perhaps benefit.

According to the Green Paper, approximately €1.1 billion of public money is injected into the fisheries sector each year by the Community and Member States through direct intervention in the form of subsidies and state aid, price support and tariff protection, and financing external fisheries agreements with third countries. This does not include payment for fisheries management activities in the form of administration, research, data collection, stock assessment or control and enforcement (Farnell, 2001). Should not the public, as tax payers, be demanding that cost effective and efficient fisheries management solutions be implemented in return? It is possible to envisage the reforms suggested by the Green Paper resulting in continuing or increasing separation between the various policy solutions (implementation in isolation), similar to the disconnection which exists now between fleet policy and conservation policy. This would be a highly undesirable outcome and one to be avoided if the future of the marine environment and fisheries resources is to be secured. A reformed CFP ought to provide a unifying force, an integrated strategic whole which has adaptability and flexibility built into it, in order to respond to individual fishery circumstances.

With the Council having a long track record of political tradeoffs and diminution of measures and proposals in the process of developing Community law, this report urges the Commission to continue with the honesty and openness about the challenges and failures of the current CFP that are characterised in the Green Paper. We also urge the Commission to propose ambitious and bold solutions, to capture the opportunity presented by the reform of the CFP and to fundamentally shift the management regime for EU fisheries in the 21st century. At the same time, fisheries and environmental stakeholders in the Member States need to work together to persuade their representatives in Council that this is the right time to make a real change to the CFP in the pursuit of sustainability.

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# Glossary of acronyms

AFMA	Australian Fisheries Management Authority
CEC	Commission of the European Communities
CFP	Common Fisheries Policy
DFO	Department of Fisheries and Oceans, Canada
EC	European Community
EEA	European Environment Agency
EP	European Parliament
EU	European Union
EURs	Exclusive use rights
FAO	United Nations Food and Agriculture Organisation
FIFG	Financial Instrument for Fisheries Guidance
IEEP	Institute for European Environmental Policy
ICES	International Council for Exploration of the Seas
ITQ	Individual transferable quota
ITE	Individual transferable effort
IVQ	Individual vessel quota
MAC	Management Advisory Committee
MSC	Marine Stewardship Council
MSE	Management Strategy Evaluation
NEAFC	North East Atlantic Fisheries Commission
NGO	Non Government Organisation
nm	nautical miles
NMFS	National Marine Fisheries Service, USA
NOAA	National Oceanic and Atmospheric Administration, USA
OECD	Organisation for Economic Co-operation and Development
QMS	Quota Management System
RAC	Regional Advisory Committee
RFO	Regional Fisheries Organisation
TAC	Total allowable catch
TURFs	Territorial use rights in fisheries
VMS	Vessel Monitoring System

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