



SUSTAINABLE DEVELOPMENT AND THE EC FISHERIES SECTOR:

An Introduction to the Issues

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Clare Coffey

1 INTRODUCTION

Fishing and aquaculture are among the most ancient forms of procuring food, dating back over millennia. Unlike other forms of hunting, the act of catching wild fish and shellfish continues on an enormous scale, with world catches at 95 million tonnes in 1996. Aquaculture, now one of the fastest food producing sectors, brings the total recorded supply of fish to 116 million tonnes (FAO statistics). A significant proportion, around 6.5 per cent or 7.7 million tonnes, originated from European Community (EC) vessels in 1995 (Eurostat, 1997). The EC also imports a further 2.5 million tonnes of fish to meet a growing consumer demand and is consequently seen as a major player in the international fisheries arena.

While the value of the European fisheries sector is generally expressed in terms of final output, this provides a very poor indication of the sector's broader contribution to society. Concepts such as 'tonnage liveweight' do not reflect the sector's role in sustaining or diminishing cultural heritage, nor its socio-economic importance in some of Europe's most peripheral 'fisheries dependent' regions. Nor in any way does it reflect the sector's complex relationship with the environment.

Qualitative aspects such as these are rarely reflected in the policies adopted for managing the industry. Instruments tend to focus on target yields, catch or fleet capacity with little reference to how these targets are to be reached. In practice this means that the activities of more 'efficient' and competitive vessels or processes are frequently favoured, as against less 'efficient' but perhaps more socio-economically significant parts of the sector. At the same time, measures have largely failed to maintain fish stocks at 'sustainable' levels. Many important 'commercial' fish stocks in the EC, including stocks of cod, hake and swordfish, are subject to overexploitation. What little data there is on the state of the marine environment suggests that the sector is having a major detrimental impact there.

Both within and beyond the coastal strip, the activities of the fisheries sector in the fifteen Member States of the EC are heavily influenced by the EC's Common Fisheries Policy (CFP). Consequently there have been repeated calls for review and reform of the CFP from parts of the fishing community and environmental groups alike. To these critics, the shared goal of a sustainably managed fishery with minimum adverse impact on the marine environment appears unreachable without substantial changes to the management of the sector and a rebalancing of environmental, social, and economic factors.

The purpose of this report is to set out some critical issues for the EC fisheries sector from an environmental perspective, and to contribute ideas to the development of alternative policies and management approaches. Chapter 2 provides an analysis of relevant environmental issues and policies, followed in Chapter 3 by an outline of the European fisheries sector. The main structure and workings of the Common Fisheries Policy are detailed and analysed from an environmental perspective in Chapter 4. Chapter 5 looks at the impending review of the fish stock conservation and management policy in the run up to the year 2002 and discusses some options for realigning European fisheries policy towards the goal of sustainable development.

2 ENVIRONMENTAL IMPLICATIONS OF FISHERIES

The environmental impacts of the contemporary fisheries sector are manifold. They include waste and water pollution, impacts on habitats, species and biodiversity and, perhaps most notably, resource management. Some impacts are local, whereas others affect the environment at a regional or even global scale.

The knock-on implications for the aquatic environment of modern large scale ‘capture’ fisheries are complex and as yet little understood, particularly the effects of removing vast quantities of living resources from the ecosystem. They will be significantly influenced by the ecological characteristics of individual fish stocks, so that for example the long-term risks posed to highly fecund cod will differ considerably from the risks to slow-maturing deep water species or to rays and skates.

Fisheries Conservation and Nature Conservation

Fisheries ‘conservation’ as undertaken within the Common Fisheries Policy (CFP) involves managing the harvesting of a renewable resource and trying to maintain commercial stocks at levels which permit their rational and responsible exploitation. This contrasts with nature conservation, the aim of which is to *protect* species and habitats and to contribute to the wider goal of maintaining biological diversity. The idea of conserving species for their own value and not simply as a resource exploitable by man is a comparatively recent departure (Birnie P *et al*, 1992).

The distinction between the use of the term ‘conservation’ in fisheries and environmental policies respectively is often glossed over. In the context of the CFP, the tendency is for rational and responsible exploitation of given stocks to be seen as being synonymous with the sustainable development of the resource base. For example, over the last eight years there has been a sustained annual yield of some 800,000 tonnes of sandeel in the North Sea. Such exploitation levels may therefore be considered as ‘rational and responsible’. However, it is questionable whether this level of activity is in line with *sustainable development* in the longer term, taking full account of the impacts on species and habitats related to the sandeel through the food-chain.

2.1 Identifying the Principal Impacts

For the purposes of this report the environmental impacts of fisheries can usefully be divided into the effects of catching wild fish, and those of farming fish and other aquatic species, as follows:

- *Capture fisheries*

Fisheries are one of several human activities taking place in a highly dynamic aquatic environment. The enormous scale at which fisheries are operated makes them an important factor in determining the state of the environment at a global level. The main environmental impact of fisheries is the direct removal of targeted marine and freshwater stocks, not only those landed legally but also a large quantity of living matter which is landed illegally or returned to the sea as ‘discards’ (see Box below). If practised at levels which are unsustainable, fishing may successively lead to stock depletion, low recruitment of young fish to the population, stock collapse, reductions in genetic

diversity, and consequent impacts on the ecological dynamics and processes of the wider aquatic environment.

In the north east Atlantic, where EC fishing fleets are predominantly active, most of the traditional fishery resources are fully or overexploited, with several stocks in depleted condition (FAO, 1997). There have been dramatic declines in the case of some specific stocks, for example EC landings of Atlantic cod in 1995 were less than 50 per cent of their landings recorded in 1986. Haddock landings suffered a similar decline over the same period. The North Sea herring stock has collapsed twice in the last twenty years. This is in contrast to 'flatfish' such as Common sole, and 'pelagics' such as Atlantic herring, European sprat and European pilchard, which have generally shown an increase in EC landings since 1970.

Discarding

A common feature of almost all commercial fisheries is the discarding of a significant proportion of catches. Discarding is a result of imperfect selection before the catch is taken. Typically, discards include commercial fish which are in some way deficient due to their small size, age, sex, because they are damaged, or because there is no quota to land the fish legally. Other discards include non-target species which are caught as by-catch, including fish, birds and mammals. In many cases discards which are returned to the sea do not survive. (Pascoe, 1997)

Although there may be no direct correlation between the two, the importance of discarding has grown with the increased level of public intervention in the fishing industry through fisheries management (Pascoe, 1997). The rate of discarding by EC vessels is highly variable, influenced by the nature of the fishery itself, the 'gears' and mesh sizes which are in use, as well as by commercial expediency. There is little information on the extent of the problem, though a 1994 UN FAO report estimated discards in the north-east Atlantic to be some 3.7 million tonnes annually (Alverson *et al*, 1994) compared to only 4.5 million tonnes classified officially as 'catch' from that region (excluding aquaculture). Within the North Sea haddock fisheries, it is not uncommon for discards to exceed legal landings. A recent European Parliament report suggests that 10,000 units of fish are discarded annually by shrimp boats operating along a small stretch of the English coast (EP, 1998). However, discard rates tend to be lower in the Mediterranean, where they are thought to be closer to 10 per cent of the catch.

There are several policy options to reduce discarding. One approach would be to improve the selectivity of nets and other gears to reduce the catch of unwanted fish. Alternatively, greater use could be made of closures to protect aggregations of juveniles. Thirdly, some minimum landing sizes or quota restrictions could be relaxed, so that more fish is landed legally or fishing capacity could be reduced further. At the present time, EC rules require that, unless the skipper has a quota to land the fish, fish are returned to the sea before a vessel returns to port thereby adding to mortality rates. A recent survey suggests that there is considerable support within the industry for scrapping these rules, allowing all fish to be landed.

The approach adopted in Norway has been to ban discarding of the most economically important species. However, this is backed up by procedures whereby the authorities close fisheries when the composition of catches reaches undesirable levels. Apart from reducing wastage, this also allows a better record to be made of fish deaths or 'mortality rates'. This can then be reflected more closely in the level of catches which are permitted in future. Any fish which is landed over the permitted quota is sold at below market prices.

While the overall trend in many fish populations may be downward, the threat of extinction may be limited to certain more vulnerable species. Indeed, the skate (*Raja*

bakis) population in the Irish sea is the only documented case of a marine fish population which has apparently disappeared in Europe due to overfishing (EEA, 1995). In most cases, a severe decline in fish numbers will usually lead to the 'economic' collapse of a fishery so that commercial fishing becomes unprofitable *before* the target species is eliminated altogether. The infamous Newfoundland cod fishery which collapsed in the early 1990s provides an example of a fishery which has become economically extinct, without the stock being completely eliminated.

However, this situation does not occur in all cases. Certain species of sharks or rays are particularly vulnerable to overfishing because of their late maturity, and because they have low rates of reproduction. The fact that in the natural environment they have high survivorship in all age classes and long life spans makes them even more vulnerable to sustained fishing. Many of these characteristics are also present in deep-water species, such as the orange roughy (*Hoplostethus atlanticus*) and the roundnose grenadier (*Coryphaenoides rupestris*). Species such as these could, in theory, be fished close to the point of biological extinction. The vulnerability of such deep-water species has led the International Council for the Exploration of the Seas (see Section 4.3) to call for a precautionary approach to be applied in exploiting these fisheries.

Even where species are not actually driven to extinction, so-called 'ecological extinction' may occur whereby species no longer perform their functional role as a key predator or prey in the ecosystem. This too can have potentially serious consequences for the food chain and the wider marine environment (Fowler, 1997). One of the major environmental concerns surrounding the North Sea sandeel fisheries, for example, is their impact on the food chain, which includes other commercial fish and also birds.

As already discussed in relation to discards, most fishing methods have an impact on the wider ecosystem. This can arise from the direct capture of other species, or from other effects of the fishing process. In all cases, the type of fishing gear used will have an important bearing on the extent of the environmental impact, although the intensity of fishing, the season and the area affected are also important factors.

- Capture fishing can increase the *mortality of non-target species*, including fish, mammals, seabirds and benthic species. For example, Baltic salmon gill net fisheries are thought to take at least 20,000 birds annually (Northridge, 1991). Another type of gear associated with by-catch of non-target species is the surface longline, which is thought to result in the deaths of significant numbers of albatrosses, petrels, fulmars and gulls.
- *Physical disturbance* of the seabed may occur through contact with certain types of fishing gear, particularly heavy dragged gear, such as bottom trawls or dredges. This will damage the habitats of a range of other species. Damage may also occur to sedimentary deposits on the seabed which provide suitable habitats for diverse benthic communities.
- Large volumes of *discarded waste and offal* also influence the populations of scavengers, particularly sea birds and benthic species. An estimate by ICES suggests that 65,000 to 70,000 tonnes of offal are discarded in the North Sea each year. This supports increased numbers of scavenger birds but may have adverse effects on other sea bird populations. Furthermore, anoxic conditions may result from waste discards

in certain localised areas which can cause the death of other flora and fauna. Additional debris or litter is also lost or discarded from vessels, including nets made of plastic fibres which may continue to trap commercial and non-target species for extended periods.

The extent of damage which can be caused by fishing to benthic species alone is highlighted by the IMPACT II study of the North Sea and Irish Sea benthic ecosystems. The following Box outlines some of the study's key findings.

Effects of Bottom Trawling on the North Sea and Irish Benthic Ecosystems

An EU funded research project, IMPACT II, was set up to investigate the short-term and long-term effects of bottom trawl gear on benthic invertebrates and fish. The project included an extensive study of the relative physical and biological effects of different trawl types on the benthos in different parts of the southern North Sea and Irish Sea. The effects of fisheries upon scavengers were also assessed, as were possible long-term changes in the marine ecosystem over the last century and particularly in recent decades.

The findings of the study suggest that the direct mortality of discards (catch which is returned to sea) from commercial flatfish trawls varied by species for invertebrates, from less than 10 per cent of the individuals caught (starfish, brittle stars) to almost 90 per cent (bivalve *Arctic islandica*). Discarded fish showed mortalities ranging from 50 to 100 per cent for flatfish, 80 to 100 per cent for roundfish and 100 per cent for gadoids (eg cod, haddock).

The total mortality of invertebrates, including both discards and mortality caused by being caught in the trawl path, was also species dependent. It varied from 10 to 40 per cent for some gastropods, starfish, crustaceans, annelid worms and seamouse, from 10 to 50 per cent for sea potato and masked crab, and from 30 to 80 per cent for a number of bivalves. For all these invertebrate species, mortality mainly occurred in the trawl path, possibly as a direct result of physical damage inflicted by the passage of the trawl or indirectly from disturbance and subsequent predation.

In general, opportunistic (small size, fast reproducing) species increased in abundance due to trawling disturbance, while sensitive (large size, fragile) species declined in numbers. Longer term disturbance effects on epifauna were less easy to quantify, and results were contradictory for some species. The results from one case study suggest that fragile sessile species are adversely affected by trawling disturbance. The ability of mobile scavengers to migrate in and out of disturbed areas makes the detection of trawling effects on these species particularly difficult.

The report suggests that trawling has a long term effect on faunal communities that were previously undisturbed, with results from one site suggesting that some areas fail to recover before further disturbance occurs. Considering the high trawling intensity in the North Sea and some areas of the Irish Sea, it is likely that the benthic community has changed significantly in most of the area, as a result of these fisheries.

Lindeboom, H J and de Groot, S J (eds) (1998)

- *Aquaculture*

Aquaculture involves the farming of aquatic organisms, including fish, molluscs and crustaceans, but also aquatic plants. The environmental impacts associated with aquaculture tend to be more localised than those of capture fisheries, particularly affecting coastal regions, but also inland regions where some farming occurs in lakes and ponds. As in agriculture, aquaculture production techniques may be broadly described as extensive or intensive. Extensive 'semi-natural' farming systems involve species such as shellfish being reared in an environment which is closely aligned to the natural environment. These systems may require little or no additional feed. By contrast, intensive, 'artificial', aquaculture installations tend to have greater impacts on the environment. Most notable are salmon and trout farms, which rely on production systems requiring the use of significant quantities of additional and artificial feed, as well as pesticides, in order to maintain production. The precise environmental impact will be influenced by factors such as operating procedures, stocking densities and feeding regimes. One of the principal impacts of the more intensive production systems is the discharge of water containing chemicals, and suspended matter, in the form of excess food and animal waste. These can lead to eutrophication. Efforts to ensure high water circulation around fish farms can involve substantial use of pumped water, sometimes with associated impacts on ground water levels in neighbouring areas (Kouvelis, 1998).

Another serious and more long-term effect of fish farming is the introduction of non-indigenous species into the local environment, which may compete with, replace or hybridise with native species. A number of diseases of aquatic animals have been introduced to Europe by this method including the crayfish plague which has decimated European crayfish populations (EEA, 1995).

In the absence of local planning for the integrated management of coastal areas, aquaculture can also often compete with other coastal uses, causing conflict with sectors such as capture fisheries, tourism or recreation. In Bantry Bay, south west Ireland, for example, aquaculture is seen as having resulted in a 'privatisation' of the public foreshore, to the detriment of inshore fishermen and detracting from scenic views. This pressure to 'develop' inshore areas for aquaculture can also have significant impacts on sensitive natural or semi-natural habitats, including nursery areas and wetlands.

While the potential environmental impacts of the fisheries sector are numerous, attempts to quantify the actual impacts are notoriously difficult, not least due to the presence of other 'external' pressures such as pollution and changes in climate. Nevertheless, the overall intensity with which fish are being harvested in the EC, both through capture fisheries and aquaculture, means that the sector is now recognised as one of the most significant influences on the Community's aquatic environment and its biodiversity.

In the absence of precise data on the environmental impact of fisheries, there is enough broad evidence to link many of the environmental problems associated with commercial marine fisheries to the high intensity of production, as compared to the environment's capacity to regenerate. A critical step towards environmentally sustainable fisheries must therefore be to reduce this intensity, in accordance with the precautionary principle (see Section 2.2). In practice, this would mean reducing the input of nutrients from aquaculture, and reducing the pressure on fish stocks exerted by fishing fleets. In addition, some environmental problems could be resolved by altering the type of activities pursued and the way they take place, and by preventing new activities and practices which are considered to pose unacceptable risks. In

some cases, such as the use of certain chemicals in aquaculture, the total prohibition of certain substances may be necessary.

2.2 EC Environmental Policies for Sustainable Fisheries

Incorporating environmental considerations within fisheries policy is not just a practical necessity, it is also a legal requirement. The EC Treaty of Rome, upon amendment by the 1997 Treaty of Amsterdam, will place sustainable development among the EC's founding principles. Sustainable development is to be achieved primarily by integrating environmental considerations within other policy sectors.

The Treaty's Environment Title (Title XVI) already calls on EC environmental policy to contribute to 'preserving, protecting and improving the quality of the environment, ... the prudent and rational utilisation of natural resources and the promotion of measures at international level to deal with regional or world-wide environmental problems'. It must aim at a high level of environmental protection, based on the principles of prevention, precaution, and 'polluter pays'. The principle of precaution, which is of particular relevance to the fisheries capture sector, is outlined below.

The Precautionary Principle and Precautionary Approach

The 'precautionary principle' has been a guiding principle within EC environmental policy since 1993, having developed out of the German concept of *Vorsorgeprinzip* which was enunciated as early as 1976. While the concept has since been subject to various interpretations, it is generally understood as requiring action which anticipates and prevents environmental degradation, even in the absence of scientific certainty about the damage, and without a thorough proof of a cause and effect relationship. In most cases, such action is justified only where the threat of damage is thought to be serious or irreversible. The Rio Declaration adopted in 1992 calls for the precautionary approach to be applied widely according to States' capabilities. '*Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation*' (Principle 15).

The application of the precautionary approach to fisheries management is a relatively recent one. Chapter 17 of Agenda 21 calls for new approaches to marine and coastal area management that are precautionary and anticipatory in nature. The precautionary approach has subsequently been included in the 1995 North Sea Conference Ministerial Declaration, the 1996 UN Agreement on Straddling Fish Stocks and Highly Migratory Fish Stocks and the FAO Code of Conduct for Responsible Fisheries. The bans on the use of large drift nets which have been adopted at international and EC level, although not explicitly referring to the precautionary approach, are manifestations of it.

A distinction between the precautionary 'principle' and a precautionary 'approach' was arguably not intended by Agenda 21. Nevertheless, the latter term is now commonplace in fisheries discussions, because it is regarded as a less prescriptive and a more flexible concept which considers the socio-economic effects of its application (Havforskningsinstituttet, 1996). How this approach translates into practice is the subject of ongoing debate. In relation to straddling and highly migratory stocks, the UN Agreement sets out quite practical tasks which States are to perform in furtherance of the precautionary approach:

- improve decision-making by obtaining and sharing best scientific information and implementing improved techniques for dealing with risk and uncertainty;
- determine stock-specific precautionary reference points and action to be taken if they are exceeded;

- take into account uncertainties relating to stocks and impacts on non-target and associated or dependent species, as well as predicted oceanic, environmental and socio-economic conditions;
- develop data collecting and research programmes to assess the impact of fishing on non-target and associated or dependent species and their environment and adopt plans to ensure conservation of such species and to protect habitats;
- where the status of stocks are of concern, stocks should be subject to enhanced monitoring;
- the impact of new or exploratory fisheries on the long-term sustainability of the stocks are to be assessed.

(Article 6)

Implementing these provisions should make an important step towards the application of the precautionary approach in the fisheries sector. However, the limitations of scientific assessments also need to be recognised more fully, with greater emphasis placed on developing more flexible and responsive instruments for managing the capture sector.

The Fifth Environmental Action Programme (5EAP) *Towards Sustainability* (CEC, 1992) sets out the EC's overarching approach to tackling environmental problems for the period 1992 to 2000. The Programme focuses heavily on agents and activities which cause environmental problems and selects five target sectors considered to have significant effects on the environment. It does not target fisheries specifically. Nevertheless, many of the broad principles set out in the programme are applicable to fisheries. In particular, the Programme emphasises the need for responsibility for environmental issues to be shared among the relevant stakeholders, that the precautionary approach should be applied and that a 'broader set of policy instruments' should be used, which go beyond traditional command and control types of legislation.

In addition, some items of EC environmental legislation aimed at the protection of nature and biodiversity have clear repercussions for fisheries practices (see Haigh, 1992 for an account of all EC environmental legislation). In particular:

- Fisheries practices are known to have an impact on several species and habitats protected under EC nature conservation legislation. The habitats Directive 92/43 aims at establishing 'favourable conservation status' for habitat types and species selected as being of Community interest. This is to be achieved primarily through the designation of 'Special Areas of Conservation', including marine and coastal areas. In addition, Member States are to establish a system of strict protection for species listed in Annex IV, which includes all cetacea. The system of protection should include monitoring the incidental capture or killing of these species and, if necessary, additional measures to ensure that this does not have significant effects on the species;
- The birds Directive 79/409 also places obligations on Member States to preserve, maintain or re-establish a sufficient diversity and area of habitats for birds. This is to be done primarily by creating Special Protection Areas (SPAs), including marine areas, managing habitats both inside and outside these SPAs, re-establishing destroyed biotopes and creating new ones. In practice this requires certain fishing activities to cease until it can be established that they do not pose a threat to bird populations. Although the Directive has been in place for twenty years, its implications for fisheries activities have not been fully tested. However, in a case currently before the European Court of Justice, the European Commission is arguing that the Dutch Government has failed adequately to protect the Dutch Waddensee SPA from the impacts of the mussel fishery;

- The CITES Regulation on endangered species (CITES Regulation 338/97) institutes a system of licensing for international trade in endangered species and prohibits trade in the most endangered species, including the common sturgeon (*Acipenser sturio*). Despite the protection provided to sturgeon, there is currently no explicit prohibition or limit on the capture of sturgeon within CFP legislation;
- The Environmental Impact Assessment Directive (Directive 85/337) requires that before consent is given for certain development projects an assessment is to be made of the effects they may have on the environment. Projects involving intensive fish farming are to be subject to an assessment if Member States consider that they may have a significant effect on the environment.

EC legislation on waste and water pollution also has implications for the fisheries sector, though of a more limited nature.

It is clear that EC environmental policy measures give rise to legal obligations which extend to parts of the fisheries sector. Yet these have been developed and are implemented separately from fisheries policy, with little coordination between the two. In the capture fisheries sector in particular, there is still an emphasis on single, commercial stocks; a more holistic 'ecosystem approach' is not being applied to fisheries management under the CFP. However, there is now increasing pressure to improve the level of integration and coordination between the two policies, particularly as the Member States face implementation of the habitats Directive, as well as international commitments such as the UN Biodiversity Convention. The following box outlines the Commission's intended response to the Biodiversity Convention as it applies to fisheries.

Integrating Biodiversity Considerations within Fisheries Policy

In 1998, the Commission produced a Communication called *EC Biodiversity Strategy*. The stated aim of the Strategy is 'to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at the source'. The Communication comes in response to Article 6 of the 1992 UN Convention on Biological Diversity which calls on parties to develop or adapt strategies, plans and programmes for the conservation and sustainable use of biological diversity.

The Strategy identifies the following objectives which are to be addressed by sectoral Action Plans. In relation to fisheries, the Action Plan is to:

- promote the sustainable use of fish stocks and feeding grounds;
- promote the establishment of technical conservation measures to support the conservation and sustainable use of fish stocks. Measures available include, *inter alia*, fishing exclusion areas (mainly for the protection of dense aggregations of juvenile fish), and mesh sizes. Each measure should be applied according to its merits and expected conservation effect;
- reduce the impact of fishing activities and other human activities on non-target species and on marine and coastal ecosystems to achieve sustainable exploitation of marine and coastal biodiversity;
- avoid aquaculture practices that may affect habitat conservation through occupation of sensitive areas, ie mangroves in third countries and inter-tidal areas within the Community, pollution by inputs and outputs from fish farms and genetic contamination by possible releases or escapes of farmed species.

CEC, 1998

In sum, translating the commitment to integrating environmental considerations into mainstream fisheries policy remains a considerable challenge for the European Community. It is hoped that integration will be given renewed impetus by the Commission's *Partnership for Integration: a strategy for integrating environment into EU policies*, and subsequent conclusions adopted at the Cardiff European Council in June 1998, in which fisheries is among a number of subjects to receive attention from the Council.

3 OUTLINE OF THE EC FISHING INDUSTRY

The aim of this section is to give a brief overview of the EC fisheries sector, and thus to place the environmental implications of fisheries in context. From this basis, Section 4 describes the key aspects of EC fisheries policy, the framework for managing the activities of the fisheries sector.

3.1 Key Factors Influencing the Sector's Development

The EC fisheries sector is one of the most important in the world, both as a producer and as a market for raw and processed fish. Europe's catches alone accounted for 7.7 million tonnes liveweight in 1995, or 6.5 per cent of world production. However, individual EC Member States' contribution to this figure varies considerably, often reflecting particular historical circumstances, as well as the effects of policies adopted within the framework of the CFP.

[map with tonnages and catches per Member State]

Changes to fisheries jurisdictions, and globalisation in the market place have both had quite profound impacts on the operation and organisation of the sector in recent decades. The extension of national fisheries jurisdictions in the 1970s, subsequently encoded in the Law of the Sea, meant that states gained control of access to fish stocks further offshore. This brought approximately 95 per cent of the then well exploited fish stocks under national control (OECD, 1997a). It benefited states with richly endowed coastal waters and the capacity to exploit them, such as Norway and Iceland. Other countries, such as Germany, Spain and Portugal, which had substantial fleets operating in waters off other countries, found themselves denied access to these resources. As a result, these countries were forced to secure 'third country agreements' to give them continued access to resources.

Globalisation in the market place has been the second great 'external' factor, creating pressure to increase the efficiency of fishing practices. In particular this has involved investment in more capital intensive technologies in order to cut labour costs. Vast amounts of subsidy have been used to expand fishing effort in this way since the 1960s. However, this has led to overcapitalisation in the sector, such that the cost of catching fish was estimated in 1992 to exceed the gross landed value by some 44 per cent (Friis, 1996).

Although new market opportunities have been opened up for European producers, increased competition in processing and retailing has also resulted in lower prices of retail goods. This is despite a growing gap between the supply of and demand for fish in Europe which is giving rise to a ECU 6.7 billion annual trade deficit (Eurostat, 1997). The main victims of this process of change have been smaller, more marginal businesses which have been unable to compete.

Market liberalisation, due to EC and international pressure, is continuing to have a major impact on the fisheries sector. This is visible not only in the equipment which is used to catch and process fish, but also in the way in which the industry itself is organised. In aquaculture, for example, there is a trend towards multiple farms being owned by single companies.

3.2 Profile of a Diverse Sector

Despite these developments, the sector continues to be typified by its heterogeneous character, with regional, national and local differences still very much in evidence. However, there is a fundamental distinction within the industry, based on whether fish are farmed or caught. Although both activities fall within the remit of the Common Fisheries Policy, their characteristics are almost entirely different, and similarities are restricted to the marketing and processing of the fish or shellfish produced.

The capture sector

Over the past 50 to 100 years there has been a dramatic change in the types of fishing ‘gear’ used to catch fish. At the turn of the century, fishing usually involved small craft and low-energy methods to trap fish, for example using set nets, lines and pots. Some ocean going vessels were used, but were much less adept at catching fish than today’s state of the art vessels. In all types of fleet, fishing activities were labour intensive, in many cases engaging whole families and communities in the process.

While such ‘traditional’ methods are still employed today, they contribute relatively little to the overall tonnage of fish landed by EC vessels. Most fishing fleets have adapted to technological progress, using larger and more powerful boats, particularly in the offshore sector which is adopting sophisticated electronic and hydraulic equipment. The technology of these larger vessels continues to increase rapidly, now including refrigeration, fuel efficiency and remote sensing equipment (Fitzpatrick & Newton, 1998). This advance has changed the dynamics of the sector fundamentally, opening the ‘gap’ between artisanal inshore fleets and their industrial ocean-going counterparts.

Most fishing activity falls between these two extremes, however, relying on a wide variety of nets and other equipment to catch fish, known as ‘gear’. Fishing gear essentially falls into two categories: ‘passive’ nets or pots which act as traps when submersed in the water; and ‘active’ gear, such as a trawl, which is manipulated to catch fish, often by being towed through the water. Of these two categories of gear, a small number of devices, such as passive bottom gill nets, bottom otter trawls and pots are in widespread and increasing use throughout European waters. Others are less widespread but account for a large volume of production, such as the purse seines, small meshed ‘otter’ trawls and pelagic trawls, which are used in the industrial fisheries in the North Sea. Examples of some common types of gears and their uses are provided in the following box.

There is also a variety of gears of more local importance, or used by a small number of fishers. These include other kinds of net, lines and harpoons. Many of these are used by the small scale sector, which is thought to make up more than 90 per cent of all vessels in the EC. It is particularly characteristic of the sector in Greece and Italy (Caddy *et al*, 1996). It has been estimated that as many as 45 different gear types are used by such ‘artisanal’ vessels, targeting at least 100 species. Many are passive gears which are relatively energy efficient and selective in targeting fish.

Common European Gear Types and Uses

Surrounding nets, including purse seines or lamparas – mainly targeting small fish (mackerel, sardine, anchovy and herring) and large pelagic (tuna). The nets encircle fish from the sides and below, often used with sophisticated detection equipment to locate shoals, sometimes even with planes or helicopters.

Seines, including Danish and Scottish seines - nets towed and operated by means of two long ropes to herd fish towards the net opening. The nets are used to target demersal flatfish (plaice) and roundfish (haddock and whiting);

Trawls, including bottom and midwater trawls – towed nets with a conical body ending in a closed pocket known as the ‘codend’ where the captured fish accumulate. Bottom trawls include beam, otter and pair trawls. Targeted species range from flatfish and roundfish, to shrimp and deep-sea species (eg grenadier). Midwater otter or pair trawls are generally much larger than bottom trawls and commonly target small pelagics, eg herring and mackerel, but also tuna. Of all gears, bottom trawls are associated with most damage to sea bed habitats.

[add picture]

Gillnets, tangle nets, including bottom set gillnets – rectangular in shape and made of fine, barely visible yarn. The nets are moored vertically in the water and fish as well as other species become entangled in them. Drifting gillnets differ in that they are held in position at or just below the water surface but drift freely, usually with the boat to which they are moored.

Traps, lines etc – these include madrague nets which are set at right angle to the coast and target mainly migratory pelagic species such as tuna. Surface and bottom longlines are used to target a variety of species, including porbeagle, cod and dogfish, for example.

CEC, 1996c

Managing the sector

The activities of the capture sector are managed using complex sets of rules and regulations, adopted at the local, national and supra-national levels. As set out in Section 4, most management decisions fall within the framework of the CFP. However, some responsibilities and opportunities for action remain at the national and sub-national levels. In particular, Member States maintain responsibility for most legislation applicable in their inshore waters. They also retain responsibility for allocating national fishing quotas, and monitoring and control activities.

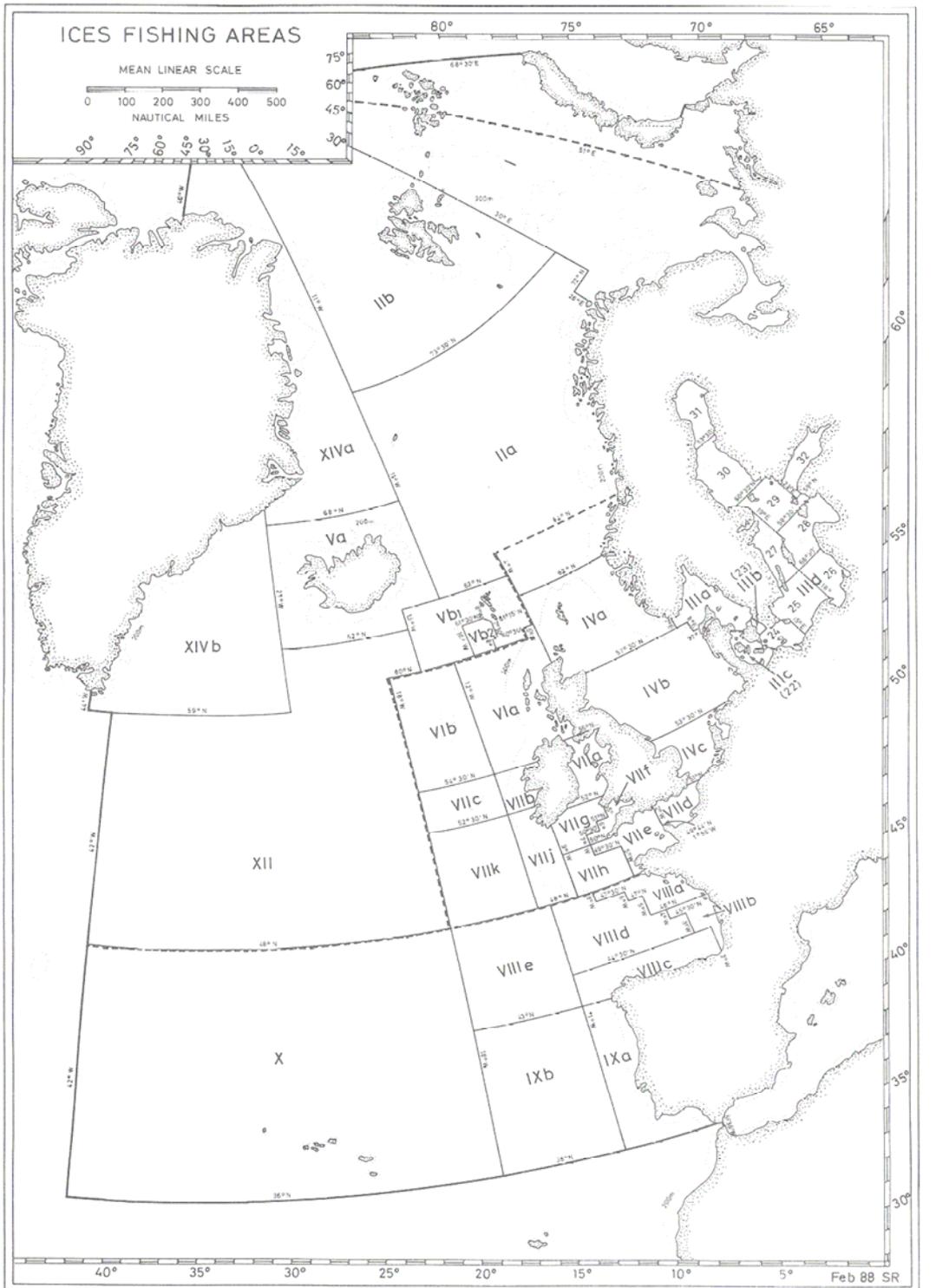
In support of their management functions, most Member States have created some sort of consultative forum to exchange information and guidance between the government and the fisheries sector. For example, Denmark’s two advisory boards place fishers in an advisory role, alongside the processing sector and environmental interests; Sweden’s central government fishery management authority, the *Fiskeriverketen*, has a similar function.

A range of management institutions also exist at the local level to oversee activities in the inshore fisheries. These include producers organisations which can also be involved in fishery management decisions. For example, producer organisations can be allocated responsibility for administering fishing quotas to be distributed among their members. In other countries such involvement goes further than this. In Spain, the *Cofradia de Pescadores* are local organisations of producers which exercise fishery management functions. In France, the *Prud’homies* play an important role in fishery management, having traditionally had rule-making and enforcement functions.

The main fishing regions

The European fishing fleets are active over an enormous area, with vessels fishing in waters as distant as Argentina. The main European fishing regions cover the grounds along the continental shelf of the north east Atlantic, including the Baltic Sea and the North Sea, and the Mediterranean basin. Both areas are fished by EC and non-EC States. The north east Atlantic is one of the richest areas in the world, accounting for some 10 per cent of the global fish catch (EEA, 1995). In addition, vessels from Spain and France also fish in waters further afield, including waters around the French *départements d'outre mer*, although the proportion of the total EC catch from these sources is declining.

The following Box gives a brief overview of the activities of the EC fleets in each of the main European fishing regions. The roman numerals in brackets indicate the ICES statistical sub-area or division, corresponding to the map opposite.



Fishing in the North East Atlantic

The fisheries of the north east Atlantic expanded rapidly in the late 19th and 20th centuries as fishing became mechanised, with a short period of relative inactivity during both World Wars. This expansion continued throughout the 1950s and 1960s, peaking in the mid 1970s at over 13 million tonnes. Landings have since declined to an average of 10 million tonnes during the late 1980s and early 1990s. The make-up of landings has changed considerably during the period from 1950 to 1994, with catches increasingly dominated by lower value species such as sandeels and blue whiting. Landings of historically more valuable species such as cod, haddock and herring have declined. (FAO, 1997a)

1) North Sea (IV) and Eastern Channel (VIIId)

Situated on the continental shelf of the north east Atlantic, the North Sea is one of the world's most important fishing grounds; it is also one of the most complex and heavily exploited. The North Sea supports over two hundred species of fish, including twenty which are commercially important. The current structure and size of fish communities reflect the impact of more than a century of intensive fishing. In general smaller, short-lived, plankton-feeding species dominate.

The North Sea is bordered by seven EC Member States, Belgium, Denmark, France, Germany, Netherlands, Sweden and the UK, plus Norway. The fisheries can be divided into two main groups: so-called 'industrial' fisheries where catches are landed and reduced to fishmeal and oil; and those for human consumption. A variety of fishing gear is employed, with three vessel categories particularly prominent since the 1940s: bottom industrial trawlers to target small *demersal* and *pelagic* species (sandeel, Norway pout and sprat); purse seines for North sea herring and mackerel; and beam trawlers targeting flatfish (plaice and sole) and roundfish (cod, haddock and whiting) primarily in the southern and central North Sea. These three categories account for a large proportion of the total fleet and have thus influenced the make-up of fish landings from the region (Svelle *et al*, 1997).

A large proportion of the Eastern Channel falls within the 12 nautical mile zone which is exploited by small scale fisheries using a variety of gear, including fixed gear, trammels and gill nets. Apart from French and English inshore fleets, English, Belgium and French offshore trawlers also operate in this area using beam and otter trawlers. The main stocks targeted are sole, plaice and cod. A pelagic trawl fishery also takes place in winter during the herring spawning season.

2) Baltic Sea (IIIB-d) and Skagerrak and Kattegat (IIIA)

The Baltic is the largest brackish sea area in the world, surrounded by nine countries, including Germany, Sweden, Finland and Denmark. Much of the sea's drainage basin within the EC is densely populated and industrialised and includes large areas of intensive agricultural land.

The brackish water makes the Baltic Sea very poor in marine species; most of those which occur are from neighbouring regions. The Baltic fisheries are nevertheless an important resource, particularly of sprat, herring and cod, which represent some 90 per cent of the catch in the region. Catches have shown a steady increase over the last 50 years, due to increased fishing effort and improved technology. However, stocks are heavily influenced by pollution in the Sea. For example, cod stocks have been negatively affected by oxygen depletion, increased concentrations of hydrogen sulphide and changes in the level of salinity. Small pelagics, such as herring and sprat, on the other hand, have benefited from moderate eutrophication.

Fleets operating in the Skagerrak and Kattegat include vessels targeting species for human consumption as well as vessels engaged in fisheries for reduction purposes. The human consumption fleets include gill netters and Danish seiners targeting flatfish and cod, and trawlers fishing for

roundfish, flatfish, *Pandalus* and *Nephrops* (shrimp). Demersal trawls are also used in Norway pout and sandeel fisheries which are landed for reduction purposes. Pelagic trawlers and purse seiners exploit herring, mackerel, horse mackerel and sprat.

3) West of Scotland and Rockall (VI)

Off the west coast of Scotland, fisheries targeting bottom dwelling (demersal) fish are dominated by otter-trawlers fishing for cod, haddock and whiting. Many vessels are local, Scottish-based vessels, although trawlers from Northern Ireland, England, France and Germany also take part. The importance of Scottish seiners essentially targeting haddock has been declining in recent years as many vessels have been converted to trawlers.

Some 200 trawlers also participate in *Nephrops* fisheries in inshore waters. These boats also land small quantities of haddock, cod, whiting and small saithe, but discard larger numbers of whiting and haddock. The pelagic fishery for herring is targeted by UK vessels in the north and by Irish vessels in a 'roe' fishery in the south. There is also a directed trawl fishery for mackerel and horse mackerel, as well as a small 'industrial' Scottish sandeel fishery. A Norway pout fishery is mainly conducted by Danish vessels. Deep sea species are also targeted.

4) Irish Sea (VIIa), Celtic sea (VII f-k), Western Channel (VIIe) Northern parts of the Bay of Biscay (Divisions VIIa,b-d, and e) and West of Ireland (VII b,c,h-k)

The Irish and Celtic Seas are fished primarily by the UK and the Republic of Ireland, with most vessels consisting of otter trawlers fishing for cod, whiting and plaice. The number of Irish vessels operating in this region has declined in recent years. Fishing effort in the England and Wales fleet by vessels over 12.2 metres has also declined rapidly since 1989. But there has been a development of semi-pelagic trawling for cod and whiting, dominated by vessels from Northern Ireland. Some otter trawlers take part in the sole fishery but the stock is increasingly targeted using beam trawlers from southern England and Belgium. Important by-catches from this fleet are plaice, rays, brill, turbot and anglerfish.

Both Irish and Northern Irish vessels take part in a *Nephrops* fishery using square mesh panels. The larger vessels use trawls with twin rigs. Decommissioning has reduced the size of the Northern Irish fleet by a third over the last four years. All boats take a considerable by-catch of whiting, much of which is discarded. The by-catch of haddock has also increased substantially in recent years. The other gear employed for demersal species is the gill-net, notably by inshore boats to catch cod, bass, plaice, grey mullet and sole. Spanish vessels employ longlines for hake. There is also a mid-water or 'pelagic' fishery for herring, dominated by vessels from Northern Ireland.

In the Celtic Sea and Western Channel, fisheries for demersal species, mainly cod, whiting, sole and plaice, are conducted by Belgium, France, Ireland and the UK. The main gears used are otter and beam trawls. In the Bay of Biscay there has been a substantial increase in the coastal gill-net fishery targeting sole. In the Celtic Sea and Bay of Biscay Spanish and French vessels operate a trawl fishery for anglerfish. *Nephrops* are also an important component of fisheries in this areas. There are also separate trawl fisheries targeting herring and mackerel and horse mackerel. The herring fishery is principally a 'roe' fishery, with at times very high discard rates. There is also a small sprat fishery in the Channel.

West of Ireland there are mixed fisheries for cod, whiting, hake, sole and plaice. The area is mainly a trawl fishery, though gill netting has been of increasing importance.

5) Iberian Region (VIIIc and Sub-areas IX and X)

The Iberian region along the western Atlantic shelf is considered an upwelling area with high productivity and consequently is characterised by a large number of commercial and non-commercial

fish species. Different types of Spanish and Portuguese fleets operate in the region, including the mixed trawl, consisting of single, pair and crustacean trawlers. The fleet targets hake, blue whiting, horse mackerel, megrim, anglerfish, mackerel *Nephrops*, bib and cephalopods as the main species. Other types of fleets such as longliners fish for hake and mackerel; fixed nets are used for hake, anglerfish and mackerel, and purse seiners are used to target sardine and anchovy, as well as mackerel and horse mackerel.

The number of trawlers has decreased since the early 1980s, resulting in a decreasing trend in the overall fishing effort in the Portuguese and Spanish fleets. Fleets operating gill nets and longlines have contained a declining number of boats in recent years. Spanish boats using trawl, longline and fixed nets are currently subject to restricted access to these fisheries.

6) The Mediterranean Sea

The Mediterranean Sea is the largest semi-enclosed sea in Europe and is surrounded by 18 countries on three continents, including four EC Member States. The Sea consists of two major basins and is linked to the Atlantic by the Straits of Gibraltar. Overall, the Sea has a narrow continental shelf where most small pelagic and demersal fisheries are found.

The state of fish stocks in the Mediterranean is less well understood than elsewhere in Europe due to lack of data, the large number of landing sites used by small vessels and a wide diversity of commercial species. In terms of quantity, the most important fisheries are the demersal and small pelagic fisheries, including mullet, hake, sardines, anchovy and mackerel. Swordfish, tuna and shark are caught in smaller numbers but are important financially. However, most commercial stocks are considered by the FAO to be fully or over-exploited.

Aquaculture

As in other regions around the world, fish farming is an expanding sector, accounting for nearly 1 million tonnes in 1994 and playing a significant role in EC fish production. In terms of value, aquaculture now represents 24 per cent of overall production in the EC and is therefore a substantial part of the sector. (CEC, 1997)

The term 'aquaculture' applies to a wide range of methods used to farm fish, shellfish and plants. Most aquaculture in the EC involves one of the following seven species: trout, salmon, sea bass and sea bream, eel, mussels, oysters and clams. Other species, including sole, cuttlefish and sturgeon, are also reared, but on a limited scale.

Aquaculture is predominantly a coastal or rural activity, typically located in poorer areas where little or no support infrastructure exists. Species are farmed using various levels of inputs. These can be summarised as:

- *Extensive systems*, involving systems which require no feed or energy input to support the growth of species - mussel and oyster farming involves harvesting the young which are then cultured. Mussels can be transplanted onto wooden poles (*Bouchot* culture), or suspended ropes. Oysters are often grown in bags on trestles. The most extensive method of farming both species involves cultivation along the sea bottom. Finfish can also be cultivated extensively, using man-made coastal lagoons to exploit the migratory patterns of some species. Mature fish such as eel and mullet are harvested as they leave the lagoons. In freshwater systems, carp and catfish are extensively farmed, using ponds;

- *Semi-extensive systems*, involving a more interventionist approach to lagoon farming, using some additional feed to encourage growth. Semi-intensive integrated systems are typical of the Italian ‘valli’, where eel and mullet production exploits nutrients released by intensive farming of sea bass, for example. Alternatively, semi-intensive methods can involve artificial egg incubation, hatching and larval rearing;
- *Intensive systems*, depending exclusively on manufactured inputs and energy to raise organisms - such systems can involve land-based intensive flow-through farming aimed at producing high value fish (eg salmon, trout and turbot) at high stocking densities. Specialised commercial hatcheries exist to produce fry. Marine floating cages are also used increasingly to farm salmon, trout, sea bass and sea bream.

Aquaculture production in Europe is mainly based in coastal or brackish and marine waters, where most of the growth in output has also been witnessed. In the EC production is concentrated in France, Spain, Italy, the Netherlands and the UK, where molluscs, salmon and rainbow trout predominate. Trout is also the main species farmed in Finland, Denmark and Sweden. Aquatic plants and crustaceans are produced on a more limited scale.

The rapid growth in aquaculture is largely due to increases in finfish production. In particular, the production of Atlantic salmon in the EC and Norway has increased by a staggering 1,236 per cent since 1984 (FAO, 1997b). Consequently Europe accounts for a large proportion of the world’s farmed salmonids. The other main finfish species cultivated in the EC are marine finfish farmed in intensive cage, tank or pond based systems in Greece and Italy.

By contrast, mollusc production has decreased since 1994, though the value of production has increased by 7 per cent. The main mollusc producing countries are France, Italy, Spain and the Netherlands. (CEC, 1997) Production in Spain and Portugal has been restricted by red tides and disease outbreaks, however.

Whether finfish or molluscs production is involved, most farming systems in the EC tend towards intensive production of high value species. This compares to less intensive finfish production of cyprinids typical of central and eastern European countries. Some of the key issues facing aquaculture in Europe include:

- Saturation of markets and declining prices for most farmed finfish and, to a lesser degree, oysters;
- Heavy dependence of the intensive systems for salmonids, eels and marine finfish upon capture fisheries as a source of protein;
- Pollution incidents, particularly in southern Member States, which threaten to further reduce mollusc production;
- Increased pressure for more environmentally sensitive aquacultural production.

Given the continued growth in demand for fish products, and the poor state of many EC fish stocks, there will be considerable pressure to expand the aquaculture sector further, for example by increasing offshore production and the development of genetically modified organisms such as transgenic Atlantic salmon. It is also anticipated that freshwater aquaculture production in central and eastern European countries will increase with increasing economic stability, privatisation of the sector and increased access to markets. These increases are likely to result from intensification of existing traditional extensive and

semi-intensive farming practices to more intensive methods, and through the culture of higher-value species (FAO, 1997b).

The Processing Sector

While the capture and farming of fish and shellfish is a central aspect of the fisheries industry, the processing sector is taking on increasing importance for several reasons: firstly, the EC is increasingly reliant on imports of fish to meet market demands; and secondly, changing consumer preferences mean that a greater proportion of fish is processed before final sale.

The Community has a large and regionally important fish processing sector, although precise figures on its size and nature are absent. A 1993 study suggests that there are 3,500 to 4,500 processing plants employing over 110,000 individuals, with an annual output of 4.5 million tonnes (CEC, 1993). All Member States, with the exception of Belgium and Greece, have sizeable processing sectors. In terms of volume, Denmark's is the largest, dominated by the fishmeal industry. In terms of fish processed for human consumption, Denmark, Spain, UK, Netherlands and France process around 500,000 tonnes each, accounting for around 80 per cent of processed volume for human consumption in the EC. In terms of gross value and value added, Italy and Germany are also important.

The main types of processing include the preparation of fresh fish, freezing and canning. Smoking, salting, drying and other processing forms are much less significant, though they may be locally important and provide particular opportunities for added value. The northern European countries typically freeze species such as cod, haddock and plaice, and use herring for a variety of purposes. Southern Member States mainly freeze involves hake, squid and shellfish. The canning industry is also important in these countries, particularly involving tuna and sardines. It is based primarily in Spain, Portugal, France and Italy. Total production of canned fisheries and aquaculture products is estimated at 600,000 tonnes (EP, 1998).

Although processing has traditionally reflected local landings, processors increasingly import raw or semi-processed material. This is particularly the case for whitefish processed in the UK, Germany, Denmark and France, and much of the tuna which is canned. Processing of flatfish and sardines, in contrast, still relies heavily on local landings. (CEC, 1993)

3.3 Socio-Economic Importance of the Sector

Despite the fact that there are active fisheries in many coastal regions of the EC, there is some debate over the socio-economic importance of the sector. A 1993 study suggests that the number of full and part-time fishers employed in the EU 15 in 1993 was around 277,000, less than 4 per cent of total employment in the primary sector as a whole. The contribution of fisheries to the EC's Gross Domestic Product was also comparatively low at 0.1 per cent. (CEC, 1993) However, the report recognises that these figures belittle the sector's importance. In particular there are two main criticisms, as follows:

- These figures exclude employment in aquaculture, processing and ancillary industries - the 3,500 to 4,000 fish processing enterprises employ approximately 110,000; aquaculture contributes a further 50,000 jobs, and ancillary industries (such as gear manufacturers) employ a further 140,000. Together these raise total employment in the sector by some 300,000;

- The sector is highly fragmented, with activities and employment based in what are often remote coastal areas. Most employment is widely dispersed along the European littoral strip, so that it may appear regionally insignificant, despite its local importance.

It is recognised that the sector has traditionally been of significant economic importance to certain coastal regions of the EC, particularly in less-developed and often rural regions. In such areas the industry plays a major role in the survival of certain communities, not least due to the lack of potential for alternative employment.

However, the impact of national, EC and international developments has been to support a trend towards more 'intensive' means of production, involving larger, labour saving vessels and bigger aquaculture units. These methods offer fewer employment opportunities. So, for example, in the 1940s the Swedish sea fishing industry employed some 15,000 fishermen full-time and several thousands more on a part-time basis. Numbers have now dwindled to some 3,000 full-time and a few hundred part-time. Catches are nevertheless higher than they were in the 1940s (Bernes C, 1994).

Although the Swedish example provides a useful indication of trends in employment over the last 50 years, there is little data available for the EC as a whole. More recent national employment figures for full and part-time fishers suggest a gradual decline in direct employment in the primary capture sector. That part of the sector most susceptible to the process of rationalisation, the small-scale, 'artisanal' sector is most poorly represented among the statistical data. Nevertheless, some studies confirm that artisanal fishing communities have been most heavily hit by these trends. Typically the activities of this sector have been eroded, or replaced by less environmentally sensitive fishing patterns and practices, with associated cultural impacts. In this respect, there are parallels with experiences in the European agriculture sector over a similar period.

4 MANAGING THE FISHERIES SECTOR: THE ROLE OF THE COMMON FISHERIES POLICY (CFP)

Recent developments in the EC fisheries sector have been driven by a combination of factors. Among these has been the Common Fisheries Policy (CFP) which has evolved over a twenty year period into what today is one of the EC's most comprehensive sectoral policies. It provides the overarching framework for the management of capture fisheries, marketing and processing, as well as supporting 'structural' development. This framework is accompanied by detailed technical regulations and standards, for example, regulating catches of certain fish stocks. In other areas, such as management of inshore fisheries, the details are largely the responsibility of the Member States to determine.

If efforts to reduce the environmental impacts of fisheries in Europe are to succeed it is essential to understand the composition, strengths and shortcomings of the CFP. It is also important to consider the institutional arrangements within which European fisheries policy is developed.

The aim of this section is to provide a brief overview of the legal basis and broad remit of the CFP, before exploring the four main areas which it covers. This is followed in Section 4.3 by a short profile of the main institutions involved in developing the CFP.

4.1 Basic Framework of the Common Fisheries Policy

The 1957 Treaty of Rome, which formed the then European Economic Community (EEC), contained a passing reference to 'the products of fisheries' within its definition of agricultural products (Title II, Article 38). At the outset, the primary aim of the six Member States, Luxembourg, Belgium, Netherlands, Italy, Germany and France, was the establishment of a common agricultural policy. The Member States had little reason to push for a Community fisheries policy. Their most important fisheries were largely in international waters, outside their national jurisdictions. Where these stocks were jointly managed by two or more Member States this was done under the auspices of multilateral agreements.

A number of founding objectives for a common agricultural policy were established by the Treaty of Rome. These still apply today (Article 39) and aim to:

- increase agricultural productivity by promoting technical progress and by ensuring the rational development of agricultural production and the optimum utilisation of the factors of production, in particular labour;
- ensure a fair standard of living for the agricultural community, in particular by increasing the individual earnings of persons engaged in agriculture;
- assure availability of supplies;
- ensure that supplies reach consumers at reasonable prices.

Many of the Article 39 objectives were as relevant to the production and marketing of fisheries products as they were to agricultural products. It is unlikely however that the authors of the 1957 Treaty anticipated the development of a separate and substantial common policy on fisheries as exists today.

Broad remit of the CFP

Despite the CFP's rather humble beginnings, it has developed into a significant area of Community activity. It spans not only fishing activities directly, but also fish farming, secondary and tertiary production processes. In practice, this is translated into four relatively distinct strands of policy which are presented in more detail in Section 4.2. The four strands cover:

- *structural policy* - governing the modernisation of the sector, including vessel building and decommissioning, and expansion of aquaculture, marketing and processing;
- *market policy* - aimed at stabilising markets, guaranteeing supplies of fish products and ensuring reasonable prices for consumers and reasonable incomes for workers;
- *external policy* - governing activities of vessels active on the high seas or in waters of third countries, and international trade in fish products;
- the direct exploitation of Community fish resources - known as *conservation and management* - with the aim of protecting and conserving living marine aquatic resources, and providing for their exploitation on a sustainable basis.

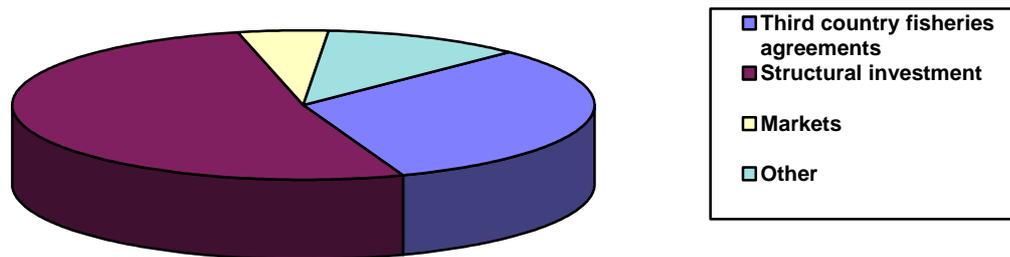
It is clear that the last strand of policy fits rather uncomfortably with the limited and somewhat outdated objectives of the Treaty, and particularly those aiming to 'increase agricultural productivity by promoting technical progress'.

Apart from the range of measures encompassed by the CFP, the policy has implications for fisheries sectors operating far beyond the Community's *European* waters - the so-called 'blue Europe'. It is therefore of importance not only to Europe's environment, but also for sustainable development in other parts of the globe. In particular, 'Community' fishing waters include significant areas around the more remote parts of the EC including the French *départements d'outre mer* located in the central Atlantic. A substantial element of the CFP also extends to 'external' activities, such as EC vessels operating on the high seas and the Community's trade policy has implications for the way in which fish products are produced and supplied in other countries.

4.2 The main strands of the CFP

As already noted, the CFP is made up of four main areas or strands: structural, markets, external, and conservation and management policies. Of the total annual CFP budget of ECU 875 million, just over three-quarters goes towards the structural policy and the conclusion of third country agreements under the external policy (see Chart 4.2.1). Significantly less funding is allocated to market measures and 'other' areas, including conservation, monitoring and enforcement.

Chart 4.2.1 EC fisheries budget allocation 1996



CEC, 1997

This chapter provides a basic overview of each of these policy areas, raising some of the key areas of concern. It is to be noted, however, that improved coordination and consistency within the CFP has meant that the four strands are not always entirely distinguishable in practice.

4.2.1 Structural policy

The origins of the CFP 'structural policy' lie in demands from the Member States, Italy and France, for assistance to modernise their fleets and infrastructure, and so to improve their relative competitive positions both within the EC and outside it. From 1970 onwards, financial assistance was provided under one of the EC's 'Structural Funds', the European Agriculture Guidance and Guarantee Fund. The aim of the funding was to support and encourage increased fish production, primarily by supporting investment in larger and more 'efficient' fleets, and adapting production and marketing conditions. The Community was essentially committed to improving its level of self-sufficiency in fish products - in 1975 the balance of trade was minus ECU 604 million, compared to minus ECU 6,731 million in 1995 - and the funds were applied in support of this. A secondary aim was to co-ordinate the structural policies of the Member States and so reduce internal barriers to trade which were arising from national aid programmes.

Although the provisions of the policy were amended on several occasions, their overall effect was to support a rapid expansion of the sector. The engine power of the fishing fleets increased threefold between 1970 and 1987. In principle, the late 1980s saw a greater emphasis on balancing fishing capacity and available stocks, but in practice projects continued to support fleet modernisation and thus contribute to a more capital intensive, and technologically productive industry.

Boat building was not the only area to benefit from the structural policies. They also supported large processing factories and intensive aquaculture installations. Community aid was made available to aquaculture development from the early 1970s onwards, although initially it was restricted to inland fish farming. In 1978 aid was extended to include farms in salt and brackish water, giving rise to a rapid expansion of the sector (CEC, 1995).

Financial Instrument for Fisheries Guidance

The Financial Instrument for Fisheries Guidance (FIFG) was introduced in 1993. Since then it has been the main EC financial instrument to promote 'structural adjustment' of the fisheries sector. It is one of four Structural Funds to which some ECU 160 billion has been allocated over the period 1994 to 1999. Funds are typically 'programmed', ie subject to strategic programming documents which set out the aims and purposes of aid for each region indicating how the funds will be spent over a period of years. The EC funds are supported by part-funding from national sources. Approximately ECU 2.7 billion has been allocated to the FIFG. It is aimed at the following key objectives:

- achieving a sustainable balance between resources and their exploitation;
- strengthening the competitiveness of the industry and the development of economically viable enterprises in the sector; and
- improving market supply and the value added to fisheries and aquaculture products.

FIFG was established in order to simplify and consolidate the various financial mechanisms available to the sector, and thus enable a more strategic approach to be applied to EC funding for fisheries. Placing fisheries funding within the programming framework also provides greater potential for integrated social and economic development in remote coastal regions of the Member States. This is particularly the case in less developed regions, defined as 'Objective 1', where FIFG is made available alongside other EC development funds. In all other areas of the Community, funding is made available under 'Objective 5a'.

A range of measures can be funded using FIFG, including the adjustment of fishing effort (ECU 700 million), renewal and modernisation of the fishing fleet (ECU 625 million), expansion of the aquaculture sector (ECU 268 million), port development, and processing and marketing. In order to cushion the socio-economic impact of fleet reduction measures, FIFG also part-funds two social measures. These are the early retirement schemes and individual compensatory payments for fishers made redundant as a result of vessel decommissioning.

In environmental terms, the most important positive contribution of the FIFG is its support for reducing the excess capacity of the fishing fleet. Funding is explicitly linked to a set of fleet reduction programmes, as outlined below. Member States are required to 'take measures to adjust fishing effort to achieve the [fleet reduction] objectives' (Art 8, Regulation 2468/98). Funds for building new vessels or modernising existing vessels are only available to those Member States which have achieved their fleet reduction targets. Despite this safeguard, there is nevertheless the danger that efforts to reduce pressure exerted by fishing fleets will be undermined by vessel modernisation projects. This is particularly so in the absence of adequate baseline data on fish stocks and the wider marine ecosystem, as well as statistics on fleet capacity and fishing effort (Coffey and Baldock, 1998).

Another positive measure is the small percentage of FIFG which is directed at 'marine protected areas', aimed at improving commercial fish stocks. However, an underlying feature in almost all areas of the funding programmes has been the emphasis on rationalisation, growth and expansion, often at the cost of smaller, more extensive parts of the sector. This almost certainly works against environmental objectives, as well as having significant social effects.

The existing framework for FIFG and other Structural Funds is currently the subject of a major review, as part of what is known as the *Agenda 2000* process. New arrangements

governing the Funds, including financial measures to support structural adjustment of the fisheries sector are due to be agreed and put into place by the year 2000. These developments provide important opportunities to address some of the problems associated with the structural policy.

PESCA

As an additional measure to help cushion the impact of structural adjustment, a 'Community Initiative', PESCA, was established in 1994. The Initiative is marginal in funding terms, with ECU 255 million over the period 1994 to 1999 by comparison with the ECU 2.7 billion for FIFG. However, it provides funding for more innovative measures to support diversification within and outside the sector to help those areas dependent upon fisheries. The emphasis of the Initiative is very much on 'bottom-up' projects, conceived at local level and involving a combination of structural funds: European Regional Development Funds; European Social Fund; and FIFG. The aims of PESCA are as follows:

- to enable the fishing industry to successfully accomplish restructuring by providing additional support;
- to help the sector cope with the social and economic repercussions of restructuring by providing aid for retraining and diversification of businesses;
- to contribute to the diversification of the coastal regions concerned, through job expansion schemes.

Despite criticism of the instrument, not least by Commission officials, some useful experiences have been gained as a result of PESCA, in particular through innovative resource management projects. It has also provided an opportunity to engage local 'stakeholders' in the process of developing and implementing projects. On the down side, the small size of the fund and relatively cumbersome administrative procedures have limited its effectiveness on the ground (Coffey and Baldock, 1998). PESCA is not to be renewed after 1999 but it is hoped that some of the positive results of the Initiatives will be used to inform future fisheries funding mechanisms.

Reducing overcapacity - Multi-annual Guidance Programmes

A key preoccupation of FIFG is overcapacity, now widely regarded as the single most urgent issue facing the fisheries sector. Recent estimates suggest that substantial cuts in the EC fishing fleet, in some cases up to 40 per cent, would be required to achieve a balance between available resources and fishing capacity (CEC, 1996a). Balancing resources and capacity has important spin-offs for conservation and management of fish stocks. If the capacity and methods used by fishing fleets are brought into balance with the ability of the marine environment to replenish itself, this should reduce the capture of immature and non-target fish and should improve the economic efficiency of remaining boats. If reductions are well managed and targeted, they can also reduce other environmental impacts, and protect the smaller, more socio-economically significant parts of the sector.

Reducing structural overcapacity is a critical part of fisheries management in Europe, alongside restrictions on the type of fishing activity and the total catches allowed to be taken (see below). Since 1986, there have been various attempts to deal with overcapacity through the adoption of a series of Multi-annual Guidance Programmes, or MAGPs. MAGPs represent an unusually 'hands-on' approach to the management of a sector, through which the

EC seeks to limit the growth of the capture sector. First at the EC and then the national level, fleet capacity and fishing effort¹ targets are set for different segments of the fleet. Financial incentives are then made available under the FIGF to encourage these targets to be met.

The earlier success of MAGPs was limited due to their low, almost non-existent reduction targets, failure in their implementation and poor systems for monitoring progress. Since 1991, their impact has been more noticeable, however. Between 1991 and 1996 the Programmes are thought to have resulted in a 15 per cent reduction in the tonnage of the EC fleet. From an environmental perspective, these reductions have not occurred in the most desirable areas, however, often encouraging the decommissioning of smaller, less productive vessels. Furthermore, any reductions which are achieved continue to be offset by 'technical creep', in other words gains made through the introduction of new vessels featuring much more sophisticated technologies.

MAGP IV – 1997 to 2001

The current programmes, under MAGP IV, set new objectives for restructuring the EC fleet between 1997 and 2002 (Council Decision 97/413), with different targets specified for different segments of the fleet. So, for example, the fishing 'effort' of beam trawls targeting cod in the North Sea is to be reduced overall by 30 per cent; the fishing effort of vessels prosecuting other stocks defined as 'overfished', such as swordfish in the Mediterranean, are to be cut by 20 per cent, and so on. Vessels below 12 m in length (with the exception of trawlers) may be excluded from these provisions, as long as the overall capacity of this segment stays within the targets set in previous programmes.

National plans to implement the global targets for the MAGPs have been negotiated between the European Commission and the individual Member States. Some flexibility is provided for meeting reductions in effort, either through capacity reductions or alternative methods of controlling effort, ie restricting the number of days that vessels can put to sea. In some countries, it is expected that considerable use will be made of days at sea restrictions, although EC funding is not available to support these.

Although overall MAGPs have not been an outright success, they certainly represent an important development in terms of fisheries management. The current MAGPs are to be subject to a mid-term review in 1999, with a view to agreeing possible adjustments to the fleet reduction targets. The review coincides with the reform of the EC Structural Funds, including funding to support MAGPs. The review thus provides another opportunity to tighten and otherwise improve national fishing effort reduction targets to bring them more closely in line with local environmental limits.

4.2.2 Marketing and processing policy

The aims of the fisheries market policy mirror those adopted for the CAP, namely to stabilise markets, guarantee security of supplies, ensure reasonable prices for consumers and support incomes of those working in the sector. It was in fact inspired by arrangements adopted in the agricultural sector in the 1960s, especially for fruit and vegetables.

¹ Fishing effort is calculated as the capacity of a vessel, measured in gross tonnage or power, and multiplied by the number of days spent at sea during the year.

The initial CFP market measure was adopted in 1970 (Regulation 2142/70). The system which was subject to a major review in the early 1990s, provides guide and intervention prices, common rules on competition and tariffs on external trade. Intervention prices set the 'floor' below which market prices should not fall, whereas guide prices are the desired level of prices. Tariffs on imports help maintain EC prices at the guide level. A Management Committee for Fishery Products is involved in determining the actual levels at which these prices are fixed.

One important distinguishing factor between the market policies of the CAP and the CFP is that the customs tariffs applicable to imports of fish products were bound under the General Agreement on Tariffs and Trade as early as 1962. In effect, this has restricted flexibility when adopting market management mechanisms, both internally and in relation to third countries. This has been used to explain the comparatively low financial allocation of the overall fisheries budget to the markets policy, in contrast to the dominance of market measures in the agricultural budget (OECD, 1997b).

The organisation of the market is now embodied in Regulation 3759/92 which aims to simplify rules and strengthen the links with the conservation aspects of the CFP. It is designed *inter alia* to increase transparency and uniformity of trade, and to guarantee free circulation of products. The system is based on four main elements:

- common marketing standards - Regulation 2406/96 lays down standards for the freshness, size and weight of products intended for human consumption. Packaging requirements for imports into the Community are also specified;
- producer organisations (POs) - these are given legal responsibility to ensure that fishing is carried out 'along rational lines' and conditions for sale are improved. They may also be charged with ensuring the proper management of catch quotas. To be recognised, POs are to be 'sufficiently active economically' and the economic area covered is to be of 'sufficient importance'. EC start up grants (under FIFG) encourage the formation of POs although uptake has varied considerably between the Member States. In the UK there are 20 POs, compared to 31 in Germany and only three in Greece (Official Journal, 1996);
- a common price system - this involves two main support mechanisms, withdrawal and compensation. Withdrawal prices are set below which fish is withdrawn from the market, ie bought by the EC and destroyed or reduced into oil and fish meal. 'Carry-over' aid is available for fresh and refrigerated products which are subsequently processed and stored for a maximum of 6 months. Private storage aid is also available for frozen products which are withdrawn from the market and stored for a maximum of 3 months, or until guide prices can be met. In the case of tuna only, direct aid is given to producers for losses in earnings due to low prices;
- a system of trade with third countries - a common customs tariff aims to give preference to Community produce. There some major exceptions, however, including imports under the Lomé Convention and the European Economic Area. This and other aspects of international trade are outlined below under *External Policy*.

The market policy clearly has several aims: on the one hand to supply adequate and reasonably priced fish for both processors and consumers, and on the other, to preserve the interests of EC producers by maintaining good market conditions, including high prices.

Balancing the different aims of the market policy presents a challenge, and is likely to become more critical as the EC's balance of trade in fishery products worsens. In an attempt to address these matters, the Commission issued a Communication in 1997 called *the Future for the Market in Fisheries Products in the European Union: responsibility, partnership and competitiveness*. This proposes some new objectives and directions for the policy, including ways of encouraging responsible fishing and trading by for example increasing information on the origin of catches and the use of certification.

4.2.3 External policy

The EC's fisheries sector has interests which are not confined to the EC alone, but which extend to international waters and waters of third countries. The CFP therefore has an 'external' policy element covering a number of multilateral agreements to conserve and allocate high seas fish stocks or bilateral fisheries agreements to gain access to fish stocks in third countries. There is also a trade regime governing the supply of fish products to the internal market.

Multilateral agreements

For a significant number of stocks which are fished on the high seas, management measures are agreed through commissions or organisations created by international fisheries agreements. Many agreements focus on specific fishing regions, including the Convention on Fishing and Conservation of the Living Resources in the Baltic and the Belts, and the Convention on Future Multilateral Co-operation on the Northeast Atlantic Fisheries. Others aim to conserve specific species of fish, notably the International Convention for the Conservation of Atlantic Tunas (ICCAT) or the Convention for the Conservation of Salmon in the North Atlantic Ocean. The EC plays a major role in many of these conventions on the basis of its 'exclusive external competence' to negotiate on fisheries matters. Although this essentially means that the EC has overall power to negotiate agreements, there are areas such as monitoring and enforcement where Member States maintain some powers for themselves.

As well as specific conservation agreements, there are also broader binding and non-binding arrangements aimed at global fisheries management. The two principal agreements are:

- the 1995 UN Agreement relating to the conservation and management of straddling fish stocks and highly migratory fish stocks. The Agreement is binding, but it has still to be ratified by sufficient numbers of contracting parties (including the EC and the Member States individually) before it can enter into force;
- the FAO Code of Conduct for Responsible Fisheries, a voluntary code whose implementation is supported by sets of technical guidelines, for example guidelines on fisheries management. However, an integral part of the Code is the Agreement to promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas which is legally binding on FAO members. Further voluntary guidelines and Plans of Actions are under development concerning fishing vessel overcapacity, shark conservation and seabird by-catch.

In both these instruments, the need for environmental considerations to be integrated within fisheries management is a feature, with clear references to the Agenda 21 adopted at the UN

Conference on Environment and Development in 1992. Chapter 17, the so-called 'Oceans Chapter', acknowledges that the right to fish is accompanied by a duty to manage and conserve resources for present and future generations (Hyvarinen *et al*, 1998).

Within Europe, sustainable fisheries management is also being addressed by regional seas fora, most notably the North Sea Conference process. The North Sea 1997 Intermediate Ministerial Meeting of Fisheries and Environment Ministers and Commissioners focused specifically on integrating fisheries and environmental issues.

Importantly, each of these instruments and processes has added weight to certain emerging principles as they relate to fisheries. In particular these include the 'precautionary approach' (see Section 2.2) and the 'ecosystem approach'. Ensuring the full application of each of the instruments and associated principles will present an important challenge for environmental and fisheries administrations in the EC over the coming years.

Bilateral agreements

Alongside the multilateral agreements are a host of bilateral agreements, negotiated between the EC and third countries. This aspect of external policy absorbs a significant share of the EC fisheries budget, amounting to Euro 271 million in 1998.

The basis for the Community's role in such agreements was provided by a Council Resolution of 3 November 1976 stating the following:

'[The Council] agrees that, as from [1 January 1977], the exploitation of fishery resources in the [200 mile fishing] zones by fishing vessels of third countries shall be governed by agreements between the Community and the third countries concerned.

It agrees, furthermore, on the need to ensure, by means of appropriate Community agreements, that Community fishermen obtain fishing rights in the waters of third countries and that the existing ones are retained'.

The Resolution came in response to developments outlined in Section 3 whereby states were extending their fishing zones to 200 miles and thus creating exclusive fishing areas. The effect was twofold: on the one hand, this led to the creation of a substantial 'European fishing zone', and on the other, it threatened the 'legitimate interests' of EC regions whose fishing vessels had been active within the 200 mile zones of third countries.

The first bilateral fisheries agreement was concluded in 1977, between the then EEC and the USA. Since then several types of bilateral agreement have evolved. These essentially concern the trade or exchange of fishing rights between the EC and the third country. In what are known as 'first generation agreements' fishing rights are either exchanged for access to markets or financial compensation, and in some cases involve a combination of the two. Such agreements have been concluded with fourteen African, Caribbean and Pacific countries, within the framework of the Lomé Convention, as well as Morocco and Greenland.

A 'second generation' of agreements aims to promote a more coordinated approach to fishing in third country waters, involving the exchange of technological expertise and the establishment of joint ventures or enterprises between EC vessel owners and vessel owners in

third countries. Additional funding for the establishment of joint ventures is provided under the FIG. Experience of this new type of agreement is limited to one with Argentina, although there is some interest in extending their use.

A third group of 'reciprocal' agreements involves the exchange of fishing rights, primarily with Norway and Iceland.

Each agreement is negotiated by the Commission, on the basis of a negotiating mandate from the Council. Normally this results in the adoption of legally binding 'framework' agreements with protocols and annexes containing detailed provisions, for example, including the size of financial contributions to be made and any fishing rights which are bestowed.

Fishing quotas for EC vessels under bilateral agreements are then apportioned among the Member States on the basis of traditional fishing rights. They are of particular importance to parts of the fisheries sector in Spain, and to a lesser degree in Portugal, France and Germany - countries which had access to external fisheries prior to their accession to the EC. Other Member States have an interest in the continuation of these agreements, not least because they are seen as keeping vessels away from precious European fish stocks.

The EC attaches great importance to third country agreements as is illustrated by the large sums allocated under the EC fisheries budget. The Commission estimates that around 1,000 EC vessels benefit from these arrangements, employing 20,000 directly and a further 20,000 in the industry and ancillary services. The economic rationale behind the agreements is that they provide 20 per cent of the EC's total production of raw fish, thereby considerably improving its trade deficit in fisheries products. However, both the financial and social returns of these agreements, particularly first and second generation agreements, are contested. Many critics say the agreements are too costly, while others have raised concerns about their incompatibility with EC environment and development policies.

In response to concerns such as these, the Commission published a Communication in 1996 (CEC, 1996e), followed in 1997 by a set of Council Conclusions. These reaffirm in principle the Council's commitment to third country agreements, but recognise a need to adapt the policy approach in line with both international conservation and management commitments and internal budgetary constraints. The Commission is now undertaking a cost-benefit analysis of the agreements and assessing their contribution to the sustainable development of fisheries. The analysis is due to be completed in mid-1999 and may in due course be reflected in future Community policy. The fact that six agreements are due to expire in 1999 (including the Argentinean Agreement which is due to expire in May 1999) and the EU's stated desire to expand its 'second generation' agreements, makes the analysis and subsequent guidelines all the more urgent.

International trade in fisheries products

Apart from international agreements to manage fisheries and gain access to fish stocks in third countries, external policy also covers the trade in fish products. Fish products constitute one of the major components of world trade, with a value of US\$ 50 billion in 1993, amounting to over 11 per cent of world trade in agriculture. The aim of the EC trade policy in fisheries is to increase the supply of raw fish and fish products to the EC market, without undermining prices of fish products originating from the EC.

The trade system reflects a long-standing Community tariff policy, in line with provisions of the General Agreement on Tariffs and Trade (GATT). The effect is to rule out any possibility of increasing tariff or non-tariff protection such as the use of import quotas, thereby limiting the Community's room for manoeuvre when adopting market management mechanisms.

Trade arrangements consist of three instruments:

- the common customs tariff - aimed at encouraging desirable levels and types of imports. Tariffs are set at three different levels. The highest tariff range, around 25 per cent, is placed on processed goods. A lower rate of between 10 and 18 per cent applies to fresh, refrigerated or frozen fish. The lowest tariff level applies to species such as salmon and cephalopods. In cases such as salted cod no tariffs apply.

There are important exemptions from the common tariff, however. These arise primarily under the Lomé Convention involving the group of African, Caribbean and Pacific countries, the European Economic Area and under the generalised system of preferences which gives specific concessions for certain countries. Certain concessions are also given within the framework of bilateral agreements;

- the reference price scheme - this provides a system for *ex post* monitoring of the import market;
- the safeguard clause - in limited circumstances, this allows the Community to apply measures to prevent serious disturbances in the market.

Existing arrangements governing trade in fish products are likely to be subject to further liberalisation in future, in line with the GATT. The 1994 Uruguay Round is expected to result in import duties being reduced by as much as 50 per cent between 1995 and the year 2000 (Friis, 1996). Already competition from third countries has supported rationalisation in the sector and, with the help of government subsidisation, encouraged the use of more advanced and 'efficient' technologies for catching and farming fish. It is important that future market liberalisation is not at the cost of small-scale producers.

There are clear prospects for improvement in both multilateral, bilateral and trade aspects of the CFP's external policy. Renewed impetus for taking these forward could come from the forthcoming 1999 session of the UN Commission for Sustainable Development which will be examining fisheries in more detail. This may have the desired effect of progressing conservation and management within all those areas where the EC plays a role, and particularly outside the Community's own fishing zones.

4.2.4 *Conservation and management policy*

The framework for fisheries conservation and management was agreed in 1992. In many respects it is the most contentious aspect of the CFP because it sets the regulatory framework for fishing in EC waters. Because of this, it was also the last part of the CFP to be formally agreed, although certain elements were introduced as early as 1970. Its aim, as set out in Regulation 3760/92, is to:

‘Protect and conserve available and accessible living marine aquatic resources, and to provide for rational and responsible exploitation on a sustainable basis, ... taking account of its implications for the marine ecosystem....’ (Article 2)

A major emphasis of the regime is on fishing activities taking place within the Community’s fishing zones, though the activities of EC vessels fishing on the high seas are also regulated, though to a lesser extent. In relation to the EC’s fishing zones, a key underlying principle has been that all EC vessels have ‘equal access’ to all fishing areas. However, in practice the principle has been unworkable and it has therefore required substantial modification (see Box below).

The Principle of Equal Access

The Treaty of Rome, and in particular Article 7, prohibits all forms of discrimination among nationals of the Community on the grounds of their nationality alone. In fisheries policy, this translates into what is known as the ‘principle of equal access’, first introduced by Regulation 2141/70:

‘Member States shall ensure in particular equal conditions of access to and use of the fishing grounds situated in the waters [coming under their sovereignty or within their jurisdiction] for all fishing vessels flying the flag of a Member State and registered in Community territory.’ (Article 2)

The principle would have created a common pool for all EC vessels. However, a series of derogations were adopted soon after to curtail the impact of such a principle on local fishing communities. Specifically, access to a 12 mile coastal strip was restricted in regions particularly dependent upon fishing; the 6 mile limit was restricted further, to ‘vessels which fish traditionally in these waters and which operate from ports in that geographical coastal zone’ (1972 Treaty of Accession). The restrictions, or access derogations, were subsequently extended to all 6 and 12 mile inshore areas.

Under Regulation 3760/92, the 6 and 12 mile limit restrictions still apply, in order to offer protection to traditional activities occurring there. However, they are due to expire at the end of 2002 and a new measure will need to be agreed by qualified majority vote of the Council if any restrictions are to be retained.

Other access restrictions apply in the Shetland and Orkney regions known as the ‘Shetland box’ for species which are ‘biologically sensitive because of their exploitation characteristics’. Access to the ‘Irish box’ and the North Sea are also restricted to vessels of the newer Member States. In addition, increasing numbers of stocks are subject to catch limits or quotas so that, while vessels may have ‘equal access’ to fishing grounds, they do not necessarily have access to all fish stocks.

The instruments to conserve and manage fish stocks are set out in a set of ‘daughter’ Regulations which regulate access to fishing grounds and resources, backed up by a system of monitoring and control. These instruments fall into one of three categories, as follows:

- a) quantitative limits on catches, ie *Total Allowable Catches* (TACs) which are set for an increasing number of stocks, though predominantly those in the north east Atlantic. TACs are allocated to Member States in the form of national quotas;
- b) *Technical Conservation Measures* (TCMs) which aim primarily to protect juvenile stock. They include minimum mesh sizes, zones for restricted or prohibited fishing and other

restrictions on fishing gear and its use, for example prohibitions on the use of drift nets and purse seines to reduce bycatch of cetacea;

- c) *limits on the number and type of vessels* which are allowed to fish, including licensing systems and special permits for vessels fishing in particularly sensitive areas. In some cases, there are limits on 'fishing effort', ie the time vessels can spend at sea, as well as their maximum tonnage and power.

a) Total Allowable Catches

The cornerstone of fisheries management under the CFP has traditionally been the Total Allowable Catches (TACs) and national quotas. Most EC TACs are directed at fish stocks in the north east Atlantic; a few Mediterranean stocks are now also covered but in most cases, largely for geo-political reasons, TACs do not apply there. A separate system of TACs operates in the Baltic, administered by the Baltic Sea Fisheries Commission.

The Commission proposes TACs for around 25 species on a yearly basis. Their proposals generally reflect scientific recommendations presented by the International Council for the Exploration of the Sea as well as those of the EC's own Scientific, Technical and Economic Committee on Fisheries (see Section 4.3). However, many more TACs are in fact based on rather limited scientific data, and are thus given the name 'precautionary', as opposed to 'analytical' TACs. They can nevertheless serve an important function in mixed fisheries by setting a limit on catches and therefore reducing by-catch of other commercial stocks.

Final TACs are agreed by the Council, with quotas allocated among the Member States on the basis of the principle of 'relative stability'. The principle is intended to ensure a balanced approach to the allocation of fishing quotas between Member States in order to preserve traditional shares of the total catch (see Box below).

The Principle of Relative Stability

The fish resource itself can be subject to enormous fluctuations from one year to the next. Where fishing policies aim at achieving maximum yields, this means that overall catches will also fluctuate making it all the more impossible to guarantee exact tonnages caught by each Member State over the long term. The principle of relative stability guarantees a specific percentage of the TAC for each stock and is therefore able to provide some level of stability relative to other Member States. Importantly, the principle also avoids protracted yearly negotiations on how TACs should be allocated.

The principle is now accepted as a guiding principle for the long term, although the method agreed upon for its application may be modified. A set of so-called 'quantitative reference data' was agreed in 1983 and considered three factors: historic catches during the period 1973-1978; the 'vital needs' of dependent areas, later known as the Hague preferences and including Ireland and 'northern parts' of the UK; and compensation for jurisdictional losses. The method for calculating relative stability may be subject to amendments as a result of changes in biological, economic or political factors, eg future enlargement of the European Community.

The TAC system has several advantages - it is relatively simple and it has built-in subsidiarity, allowing Member States to decide how quotas are distributed among their fleets. Nevertheless, it is rather a crude management tool, for the following reasons:

- the scientific advice on which TACs are based is incomplete, and is also susceptible to misinterpretation;
- the models used to assess or forecast stocks are based on single species, rather than multi-species considerations, although some progress is being made in this regard;
- TACs cannot be equated with fishing mortality, which also includes discards at sea, unreported or misreported landings, damage caused in the trawl path and losses due to burst nets, etc, yet this point is often ignored in discussion of the appropriate TACs to set;
- the institutional conditions required to properly set TACs and ensure their full implementation have not been in place. Instead, scientific recommendations have tended to be used as minimum rather than maximum catch levels;
- research suggests that TACs tend to encourage surplus vessel capacity, in turn leading to increased fishing and fish mortality rates.

It is essential that a sustainable fisheries policy respects the biological dynamics of fish stocks, and the wider ecosystem within which they exist. The scientific data upon which TACs are based therefore needs to be strengthened to take fuller account of wider environmental interactions, as well as incorporating local knowledge of stocks. However, it is unlikely that scientific assessments will be able to provide a true reflection of the marine environment and the state of specific stocks for some time to come. This emphasises the importance of adopting the precautionary approach when setting TACs. For this reason, both the European Commission and ICES are placing increasing emphasis on the precautionary approach in proposing TAC levels.

Importantly, TACs can only provide a limit on the amount of fish which is removed from the environment. They do not address other environmental concerns about fishing practices. TACs can therefore form only one part of a sustainable management system, alongside other measures.

b) Technical conservation measures

Technical conservation measures, or ‘TCMs’, are designed to modify the make-up of catches, in particular by protecting juveniles of targeted stocks. In exceptional cases, protection is aimed at non-target species as well, including both other commercial fish and other species, for example cetacea.

The CFP employs a detailed body of TCMs which apply to EC vessels operating within EC waters. These are broken down by region, with different Regulations for the Mediterranean Sea (Regulation 1626/94), the Baltic Sea (Regulation 88/98), and the north east Atlantic and waters off the French overseas departments (Regulation 894/97). All three use combinations of gear restrictions, time and area closures, and minimum mesh and fish sizes. For example:

- *Baltic salmon and sea trout* - it is prohibited to use more than 2,000 hooks at any one time when using lines to fish, and in some areas, fishing with drifting or anchored lines is completely forbidden between 1 April and 15 November;
- *UK and the Republic of Ireland* - most beam trawling is prohibited within 12 miles of these coasts.

- *Mediterranean* - it is forbidden to fish with bottom trawls, seines or similar nets above beds of *Posidonia oceanica* or some other marine flora in the Mediterranean.
- *All regions except the Baltic* - from the year 2002 it will be prohibited to keep drift nets on board fishing boats, or to land certain species caught with these nets.

In addition to these restrictions, Member States are allowed to introduce tougher measures to conserve strictly local stocks of value only to fishermen in the Member State concerned, or measures which apply solely to the fishermen of the Member State. In the Mediterranean, Member States adopting stricter measures are to pay particular attention to ‘the conservation of fragile or endangered species or environments’.

A provision unique to the north east Atlantic TCMs (Regulation 894/97) is that the Commission and the Member States are able to adopt ‘emergency measures’, which may subsequently be confirmed, amended or cancelled by the Council. This facility was invoked for the first time in 1996, to protect declining stocks of herring.

TCMs can be useful in reducing the by-catch of species and the overall environmental impact of fishing activities. A particular opportunity for conservation purposes is also provided by the system of closed areas which is used to protect fish stocks and other species, as well as conserving valuable habitats. As noted in Section 5, there is some interest in developing further the use of closed areas in order to serve the aims of nature conservation and resource management.

However, they also have drawbacks. Technical measures can only perform a limited function, particularly given the vessel overcapacity which currently exists in the EC. Some advances in gear technology have been made but reducing bycatch in mixed fisheries such as those of the North Sea remains a major challenge, particularly in relation to cod. Despite the regional variations in existing technical measures, there are also repeated calls for them to be tailored more closely to the characteristics of specific fisheries. In many cases, the minimum landing sizes and mesh sizes are seen as being too low to offer real protection to juvenile stocks. In the absence of Europe-wide agreement on stricter measures to protect shared stocks, there is an argument for encouraging or rewarding the use of more selective and environmentally sensitive gears.

In conclusion, therefore, technical measures, like TACs, cannot protect stocks on their own but need to be placed within a wider framework which controls overall fishing activity and tailors fishing to local circumstances. For example, technical measures could take on a key role in zonal management plans which also involve access and capacity restrictions.

c) Limits on the number and type of vessels

The acknowledged limitations of TACs and TCMs has led to the more recent introduction of controls on the number and activity of fishing vessels. The Multi-annual Guidance Programmes referred to under the *Structural Policy* heading (section 4.2.1) are a central component of this approach, as they seek to restrict the capacity and activity of fishing fleets.

Another central tool concerns a system for fishing licences and permits used to monitor the fleet and eventually to limit access to fisheries. Since 1995 all Community vessels have been

required to hold a fishing licence. Vessels must also be entered onto the fishing vessel register.

In addition, two effort control systems have been established since 1995, the first applicable to the Community's 'western waters'. For a certain group of fisheries, annual effort ceilings are established for each Member State, and depending on the fishing gear used. The list of fisheries for which special fishing permits would be compulsory is limited. Special fishing permits are required (Regulation 1627/94) to limit the effort of an individual vessel. Permits are issued prior to fishing, and detail the period and area to be fished. The list of fisheries in the Atlantic and neighbouring waters for which special permits would be compulsory is currently limited to demersal species, deep-water fisheries, edible crabs, spider crabs and scallops.

More recently, effort restrictions have been adopted for the Baltic Sea (see box).

Managing Fishing Effort in the Baltic Sea

Regulation 779/97 introduces, from 1 January 1998, arrangements for managing the fishing effort of EC vessels active in the Baltic Sea.

Member States are required to draw up and maintain a list of all fishing vessels authorised to fish for demersal species using towed or static gear and targeting demersal species, pelagic species (herring and sprat), and salmon, sea trout and freshwater fish. They must also issue special fishing permits for all vessels operating in the fisheries, and maintain a list of all vessels authorised to fish there.

Member States are required to assess fishing effort retrospectively, rather than setting targets to be observed. For all vessels larger than 18 metres overall length assessments are to be based on data on effort which is recorded in logbooks, and subsequently collected by the Member States. Effort of the under 18 metres segment is to be assessed globally for each fishery. Where necessary, the Council can set fishing effort ceilings to reduce pressure on particular stocks.

Implementation of these 'effort' regimes is at an early stage and their effectiveness is therefore difficult to evaluate. They certainly offer a more holistic and tailored approach to managing specific fisheries although do not preclude the concentration of effort in a small number of technologically advanced vessels. Similar initiatives can be expected in other parts of the European fisheries zone, particularly the North Sea where a considerable number of stocks are under pressure. They could also play an important role in the run up to further enlargement of the Community to the east.

Monitoring and enforcement

A universal problem with conservation and management tools is that the measures may not be properly applied, or that other aspects of the CFP undermine these measures. In order to improve compliance and coordination, Regulation 3760/92 called for a 'monitoring and control' system, which was introduced two years later in 1994 (Regulation 2847/93).

The monitoring and control system is designed to ensure the legality of activities on board fishing vessels (see Box), as well as during landing, selling, storing, transporting and importing fish. It also aims to ensure that effective sanctions are applied wherever legislation is breached. Unlike many of the CFP's provisions, it applies to the activities of all EC fishing vessels, and

all activities in the territory or under the sovereignty of Member States. Member States retain responsibility for enforcement, but there is also an EC inspectorate to oversee their activities and ensure some parity between national enforcement approaches.

Vessel Monitoring System

The EC monitoring and control Regulation now requires the use of satellite monitoring systems to support surveillance activities in relation to certain vessels. The aim is to track vessel movements, thereby enabling authorities to assess whether vessels are operating in areas where fishing is not allowed, whether they are equipped with the necessary licences and quotas and whether the landings have been declared.

The surveillance systems work by installing transceivers on board vessels. Since July 1998, vessels over 24 metres overall length operating on the high seas (other than the Mediterranean) or engaged in industrial fisheries have been equipped with blue boxes. From 1 January 2000, the measure will be extended to all vessels above 10 metres in length.

Despite these advances, the Commission continues to highlight the generally poor state of monitoring and enforcement within Member States. Misreporting, illegal landings, and lack of appropriate enforcement remain widespread, which seriously undermine conservation efforts. This is despite the fact that, in contrast to some other regions, the EC has comparatively good technologies and resources at its disposal.

Monitoring could be strengthened, for example by improving reporting, inspection and enforcement mechanisms. For larger offshore vessels, onboard observers may provide a means of contributing to monitoring, although this would increase the cost of operating fisheries. Other alternatives include harsher sanctions for non-compliance, or concentrating powers within the Community inspectorate to raise efficiency and reduce overlap. However, the more likely effect of both options would be to raise fishers' and Member States' hostility towards the Commission.

Some changes were introduced in 1998 to improve cooperation between Member States and the Commission, and to improve the coverage of monitoring systems so that the origins of fish can be traced more effectively. Despite this progress, there remain practical limitations in trying to control thousands of individual operators active over vast expanses of the open sea, particularly when these rules and regulations are widely perceived as illegitimate and undemocratic. Alternative approaches, including education and advice and the introduction of more participatory forms of management could go some way to improving conservation and management, although some form of regulatory back up will remain essential.

Missed opportunities

A clear advantage of the new approach to conservation and management adopted under Regulation 3760/92 is its greater emphasis on conserving fish stocks as well as managing the activities of the fishing fleet. In the absence of such complementary approaches, TACs and TCMs would only serve a limited purpose.

Not all the provisions of Regulation 3760/92 have been implemented however. As well as TACs, TCMs and effort controls, some other provisions were offered. The most obvious of

these lost opportunities relate to the establishment of multiannual management objectives for fisheries, and strategies to achieve these. The setting of long-term plans can be seen as an essential first stage in applying the precautionary approach. Ideally these include pre-agreed measures to be taken as and when certain pre-defined reference points are reached. It has therefore been particularly disappointing that the Council has not been able to agree on such a facility within the CFP.

Another as yet untapped opportunity given by Regulation 3760/92 concerns 'incentives, including those of an economic nature, to promote more selective fishing'. Some economic incentives to encourage investment in more selective gear are provided under FIFG, but the potential contribution of economic incentives in ongoing fisheries management has received relatively little attention. This is discussed further in Section 5.5.

In practice, fisheries management under the CFP still relies first and foremost on the use of TACs which, as discussed earlier, are highly imperfect and only partial measures. As a result, the current system is seen as encouraging overfishing, misreporting of catches, and flouting of technical regulations. This has implications for commercial fish resources, as well as other species and the wider marine environment. It is argued that both would benefit more from an ecosystem approach to management which gave due consideration to measures which were both effective and enforceable.

4.3 Institutional Arrangements

The CFP clearly plays a significant role in the development of fisheries policy in the EC, particularly in the areas of fisheries conservation and management and external policy. Many of its activities revolve around legislative measures adopted by the Council of Ministers, on the basis of Commission proposals and in discussion with some sectoral representatives and experts. The role of the European Parliament and of the wider public is less evident, with the consequence that the CFP is seen to be administered in a top-down fashion, by Brussels based civil servants and with little direct involvement of fishermen or environmental interests.

The broad coverage of the CFP and its detailed involvement in capture fisheries has made it a major pre-occupation of EC institutions, quite out of proportion to the size of the sector and its contribution to overall GDP, which are both quite small. Since 1976, a dedicated Directorate General (DG XIV) within the European Commission has been responsible for the CFP, although other DGs maintain some involvement in relation to specific aspects. For example, financial control over market measures is shared with DG VI (*Agriculture*); and DG I (*External Relations*) is involved in policies on third country agreements. DG XIV has a core staff of some 200.

The Commission powers are largely limited to forwarding legislative proposals and overseeing implementation of existing measures. It nevertheless plays a key role in the development of the CFP. Many of its tasks are performed in association with various formal and ad hoc committees each with differing roles. The Advisory Committee on Fisheries (ACF) and the Scientific, Technical and Economic Committee on Fisheries (STECF) are the main formal committees. The ACF provides a forum for sectors of the producer and consumers organisations to discuss developments in the CFP. Representatives on the ACF include *Europêche* and the European Association for Fisheries Associations. The STECF gives advice, opinions and general assistance to the Commission and may form internal working groups to discuss various matters. It has a particular function relating to annual proposals on setting TACs, which it performs on

the basis of advice requested from the International Council for the Exploration of the Sea (ICES) (see below).

The International Council for the Exploration of the Sea (ICES)

ICES was established in 1902 as a forum for exchanging information and ideas relating to the sea and marine living resources in the north Atlantic and the Baltic Sea. It is an intergovernmental organisation whose key aims are to promote, encourage, develop and co-ordinate marine research; promote the results of research; and provide scientific advice in response to requests from Member Governments and Commissions. The work is also funded by these organisations.

A key area of ICES work is concerned with research and evaluation of more than 120 commercial fish stocks, under the auspices of the Advisory Committee on Fisheries Management. Fish stock assessments are carried out using catch statistics provided by national fisheries offices. The main data sources are landing statistics, sampling programmes, field observations, interviews, etc. Advice is presented on a stock by stock basis, including catch data, the historical development of the fishery and the state of stocks, management advice and any special comments about each stock. Information on the state of stocks is given in terms of spawning stock biomass (SSB), the level of fishing mortality (F) and the recruitment of new year classes. However, a recent development has been to propose the use of 'precautionary approach' reference points in formulating advice.

ICES uses these assessments to produce recommendations on the estimated biological state of targeted fish stocks.

Despite the existence of these formal committees, the Commission recognises that 'relations between the Commission and the fishing industry, especially in the framework of the ACF, are no longer satisfactory to either party' (DG XIV, 1999). The ACF is consequently the subject of major review, with new arrangements expected to be put in place in 1999 to help ensure a closer dialogue with a wider range of interested parties, including environmental organisations. Since 1997, the Commission has also used a series of informal regional meetings in an attempt to engage more effectively with the capture sector, national administrations and scientists. At a more general level, efforts are also being made to improve information and awareness on the CFP. The establishment of a dedicated Unit in DG XIV represents an important step in this direction.

By comparison to the Commission, the role of the European Parliament (EP) in developing EC fisheries policy is more limited; by virtue of Article 43 of the Treaty of Rome the Parliament need only be consulted as part of the legislative process. All external trade related matters falling within the 'common commercial policy' (including both the CAP and the CFP) have Article 113 as their legal base, which requires no consultation with the Parliament at all. Its powers to influence the CFP are therefore very restricted. Despite this, the Parliament has shown a strong interest in aspects of fisheries policy, particularly those relating to socio-economic and environmental matters. Since 1994 there has been a dedicated EP Committee on Fisheries which comments on legislative proposals and which, in some areas at least, has made an important contribution to the fisheries policy making-process (Steel, 1998).

Given the Parliament's limited official role in the adoption of EC fisheries legislation and policy, the final shape and content of the CFP has been highly dependent on the Council of Ministers and the 15 national ministers presiding there. This is an important fact to note, as it is the Commission which receives much of the blame for the problems experienced by the sector. Council negotiations often take place within the fora of working groups or special committees;

considerable assistance is also provided by the Committee of Permanent Representatives (COREPER).

The Council has been held responsible for many of the CFP's shortcomings. A particular problem has been the tendency for decisions to be based on short-term political priorities, with rather less consideration given to the longer term needs of sustainable development. However, the greener credentials of the EC's newer Member States, Finland, Sweden and Austria, coupled with greater public concern over the unsustainability of fisheries practices, may help redress this balance.

Most fisheries legislation which is finally adopted, usually by the Council, takes the form of regulations which are directly applicable in the Member States. Some of these act as framework regulations (for example Regulation 3760/92 as previously discussed) which have 'daughter' regulations to spell out the detailed rules required to take implementation forward. In some cases, EC regulations are accompanied by additional legislation adopted within the Member States. Ultimate responsibility for ensuring implementation of legislation, as well as its monitoring and enforcement, rests with the individual Member States, where arrangements vary considerably.

4.4 Conclusion

The CFP is a continuously evolving policy, which has developed considerably over the last 30 years. Many areas of policy are under further development. Most notably the conservation and management policy is due for review by the Commission before the year 2002, following which new directions may be proposed. In the meantime, the markets policy is being reassessed, the structural policy is subject to a major reform and aspects of the external policy are being reviewed. Many of these developments present important opportunities to adopt new policy approaches to manage the fisheries sector. It is essential to ensure that all revisions, not just those relating directly to fishing activities, take sustainable development into full consideration. It will also be important that the appropriate institutional structures are put in place to ensure that new policies are effective.

5 LOOKING AHEAD: NEW APPROACHES TO FISHERIES MANAGEMENT

The discussion in the previous sections has highlighted the many obstacles in the way of the sustainable development of the fisheries sector. These problems are particularly complex, encompassing not only issues of resource exploitation, but also broader themes such as protecting biodiversity, pollution control, and erosion of a resource base, thus threatening the survival of a traditional industry. The inherent difficulties of understanding and managing the dynamic marine and coastal environment add yet another layer of complexity. Finally, the complexity of the policy itself, which has resulted from incremental additional and adjustments, may also act as a further obstacle to far-sighted reform in the direction of sustainability.

Attempts at fisheries management within the EC have apparently failed to address these different dimensions adequately. Policy instruments have been put in place, seeking to control the number and type of commercial fish which are caught and landed, using TACs and TCMs, in order to arrive at sustainable yield. Both instruments are important ingredients in sustainable fisheries management, and their refinement should be encouraged. In particular, the scientific basis and credibility of TACs needs to be strengthened considerably, not least by moving away from assessments of single commercial stocks, and towards assessment which takes account of the impact of fishing on ecosystems as a whole. Even in a perfect world, however, TACs and TCMs can only ever set upper limits on what is biologically sustainable. On their own, they cannot be expected to deliver sustainability.

As recognised in CFP Regulation 3760/92, for TACs and TCMs to work, they must be placed alongside other management tools, including those that limit fishing effort. Excess fishing effort is still the fundamental problem facing the EC fishing industry. Further drastic reductions in some fleet segments will be needed to secure sustainable levels of effort. This in turn should help to reduce some of the side-effects of over-fishing - discarding, by-catch, adverse impacts on habitats, mortality of juveniles, etc.

TACs, TCMs and effort controls provide the basic parameters within which the capture sector should operate by stipulating *inter alia* maximum catches, minimum gear standards and maximum effort. However, these three measures will not tackle the imbalance in the underlying structure of the industry nor halt the trend towards larger and more powerful vessels employing fewer people. These tend to work against environmental and social objectives. Addressing these issues may require the use of other policy instruments, including 'softer' measures to encourage changes in behaviour. These could include voluntary agreements, economic instruments or codes of practice. It is important that fisheries development funds should be used to encourage certain patterns of development which provide maximum social and economic returns within the ecological limits of the fishery. Significant differences in emphasis between regions may be necessary. The most effective means of bringing these various strands together may be through plans drawn up for individual regions or fisheries or another geographical zone. Plans should be developed at the most appropriate level and with participation from the range of stakeholders, scientists and administrators.

New approaches for the CFP review

The review of Regulation 3760/92 in the run up to 2002 presents an opportunity to develop and introduce alternative approaches to fisheries management. The need for the CFP to take greater account of environmental issues was one of the conclusions drawn from a DG XIV consultation on the review launched by the Fisheries Commissioner, Emma Bonino, in March 1998. The consultation exercise as a whole has already generated widespread interest from a range of stakeholders, many calling for stronger and more effective management policies. At this early stage, therefore, there are positive signs that the review of the CFP may reflect more closely the new sustainable development agenda.

While there is widespread agreement that changes are needed, the suggested solutions vary. The ambitions of the large-scale offshore sector are often in conflict with those of the small-scale inshore sector. The latter are most likely to press for measures that conserve local fish stocks and support traditional practices, often to the exclusion of larger and more modern technologies. The high seas sector, in contrast, finds itself in a highly competitive environment, where the constant search for increased efficiency is pushing forward the boundaries of technological development and the exploitation of as yet undeveloped fishing grounds. This sector therefore tends to favour policies that promote modernisation and growth. It is important to distinguish between these different ambitions; and also to note that features of both systems appear in the 'medium' scale fleet. If any real progress is to result from the 2002 review consultation, these sectoral differences will need careful management. Ultimately, however, making progress towards sustainable development will require increased weight to be given to the interests of both the small-scale inshore sector and environmental organisations.

5.1 Key Policy Options for Sustainable Development

If the sustainable development agenda is to be embraced as part of the 2002 review, new policy options or approaches will need to be developed and refined as early as possible. A number of 'major options' are already discernible which might provide the basis for this new EU fisheries agenda. Although others may emerge as we approach 2002, principal new options currently include the following:

- more widespread and innovative use of *economic instruments*, acting both as 'carrot' and 'stick' to encourage behavioural change, as well as internalising some of the external costs of fishing activities, eg by charging for resource use;
- *closed areas* - alongside other technical measures, the appropriate closure of areas should be pursued so that limited fishing can support a combination of nature conservation, social and resource management goals;
- *structural adjustment* will need to be targeted to ensure development is not focused on growth and rationalisation alone, but promotes environmentally and socially beneficial modernisation of capital stock;
- further *diversification measures* could be used, for example in the development of new marketing niches, to reduce pressure on resources while sustaining local economies and communities;
- the adaptation of *institutional structures*, to reflect a more appropriate distribution of rights and responsibilities between different sectors of the industry and other stakeholders, while improving the transparency and legitimacy of the policy making process.

Each of these options is outlined in more detail below.

In developing any of these options, care will need to be taken to ensure that proposed measures are both efficient and effective. Transparency and equity will also be key here. Instruments will need to be flexible enough to cope with the very dynamic nature of fisheries. They must be enforceable and preferably encourage desirable patterns of behaviour, rather than being purely prescriptive and rigid. Above of all, they must be workable within the EU context.

5.1.1 Economic instruments – encouraging behavioural change

Economic instruments include taxes, charges on certain products or activities and the payment of incentives to encourage particular practices. Although there are some examples of economic instruments being applied to fisheries through national and international initiatives, the CFP is still predominantly dependent upon legislative ‘command and control’ approaches to policy. Legislation undoubtedly provides an important framework for fisheries policy. Nonetheless, analysis of the CFP in the earlier sections of this report points to several limitations of this approach. In particular, legislation can be unresponsive to new problems, notably in the absence of scientific certainty. It tends to be fairly rigid and often does not encourage longer-term innovation. Furthermore, where actors are numerous and dispersed, enforcement of legislation tends not to be cost-effective.

The use of economic instruments such as charges, taxes and payments as a means of managing fishing activities is in principle attractive but requires more research and debate. Charges and taxes can be levied on different activities such as fish landings or on fishing licenses. They are already used in the domestic management of a number of fisheries, such as levies to support industry marketing or research. Tradable fishing permits are also used in some limited cases, such as the Netherlands’ sole and plaice fisheries. At the EU level, charges are placed on vessel operators benefiting from quota allocations under some third country fisheries agreements (see Section 4.2.3). Overall, however, experience of economic instruments in the fisheries sector is still relatively limited and, in the case of payments, virtually non-existent.

The greater use of economic instruments has been justified on a number of grounds, for example:

- ‘external’ costs associated with fishing can be internalised by placing *fiscal environmental taxes* on the use of the public fish resource;
- *Cost-covering charges* raise revenue which can be utilised or ‘hypothecated’ to support research, monitoring or other related functions;
- *Incentive taxes* can discourage more damaging activities if they are introduced at differentiated rates favouring lower impact fishing. They can also encourage more innovative practices;
- *Social or environmental payments* can encourage early compliance with legislation and the adoption of more progressive, innovative practices. They could also support the ongoing activities of a sustainable small-scale sector, for example. Importantly, they provide a mechanism for engaging individuals and raising awareness of environmental issues.

In practice, different elements from this menu may be combined at any one time, such as by taxing resource use as well as encouraging behavioural change through incentives. For example, in the agriculture sector, national charges on pesticide use have been accompanied by more explicit financial payments to reward ‘desirable’ behaviour.

There are obvious difficulties associated with the use of some economic instruments which could induce perverse responses. For example, if charges were placed on declared landings of fish, for example, this would provide a perverse incentive not to declare landings unless the fishery is strictly monitored. A more successful alternative may therefore be to charge for licences or permissible ‘effort’.

There are also political barriers to the introduction of taxes or charges. These include the perceived socio-economic implications, particularly the impact on small-scale, extensive systems that would be least able to afford charges. Ring-fencing the small-scale sector and ensuring favourable treatment might help. However, a tendency to capitalisation in larger vessels and gear would remain unless sufficient emphasis was given to payments or taxes that favoured low impact activities.

At the macro-level, economic instruments also have broader implications for the competitiveness of the EU or national fisheries sectors in that charges or taxes will increase costs. In practice, however, these and other barriers can often be overcome by introducing instruments as part of a broader policy package which is designed to balance costs and benefits to different parts of the sector.

On the basis of experience already gained in fisheries as well as other policy domains, concerted efforts should be made to design and introduce suitable packages of economic instruments, including taxes, charges and payments to promote more sustainable fishing methods in the EU fisheries sector. If implemented initially on an experimental basis, accompanied by effective monitoring and evaluation, these mechanisms could be developed and tested prior to any more widespread adoption, alongside other fisheries policy measures.

5.1.2 Closing areas to protect stocks

The role of technical conservation measures (TCMs) was discussed in Section 4.2. They most commonly take the form of gear restrictions. However, the introduction of closed areas, notably controls within geographically delimited 'boxes', can also be an important policy tool for reducing overfishing and protecting juveniles or spawning stocks. So, for example, in the Norway Pout Box a year round ban on the use of nets with mesh sizes less than 16 millimetres is in force for the protection of juvenile stocks of pout. Seasonal closures are also operated, and are most common in inshore waters. However, the use of closures is not yet widespread across EU fisheries and there is scope to consider some expansion.

Fisheries ‘boxes’ are just one form of site based protection afforded to parts of the marine environment. Other designations aim to close areas permanently to consumptive uses, known as ‘no-take zones’, or to protect important habitats or features. The potential benefits of well designed closed areas include the following:

- *resource management* – in particular by allowing stock recovery and enhancement by increasing species abundance, reproductive output and recruitment within the closed area. Fishery yields in adjacent areas can also be enhanced;

- *environmental* – protected areas can increase species diversity, improve habitat complexity and quality, and increase community stability both in the closed area and adjacent waters;
- *social and cultural* - certain types of fishing activities and gears can be given preferential access to areas thus giving some benefit to traditional small-scale and low impact fishing sectors. Closed areas can also be used to preserve and manage historical and cultural features, and to enhance the natural aesthetic value of areas;
- *research* - closed areas can provide an important focus for research activities into population dynamics and behaviour, to support wider resource management, environmental and social policies. For example, the IMPACT II study (see Section 2) includes a recommendation for large areas to be closed to fisheries for many years in order to collect more conclusive evidence of the long-term effects of beam trawling on the benthic ecosystem.

Closed areas therefore offer an important opportunity to integrate environmental and social considerations within fisheries policy.

Actual benefits arising from individual closed areas will vary from site to site, depending on the size and type of closure, and its intended function. Before designating sites for the protection of species, it is important that biological factors such as the range, migration patterns, habitat preferences and modes of production of any target species are taken into consideration. The appropriate geographical size of a closure will vary depending on the objective of the designation and the target species involved. For example, protection of even small areas can have far-reaching effects if ‘critical’ areas, such as spawning grounds or nursery areas, are included (Gubbay, 1996). Allowing certain forms of fishing to continue, or closing areas on a temporary basis only, may reduce the overall effectiveness of the closure, particularly its contribution to habitat conservation. It also increases administration costs and makes enforcement more problematic. However, where it is designed only to allow low-impact fishing, there may be significant community benefits and negligible environmental impact.

Despite the potential of closed areas for supporting multiple objectives, there are considerable political and practical obstacles to their more widespread introduction within the CFP. Whereas application of the EC habitats Directive to Member States’ territorial waters has given impetus in recent years to marine sites for nature conservation purposes, progress on larger offshore closed or protected areas for resource management is less evident, particularly where these areas are fished by several Member States. The recent IMPACT II study (Lindeboom HJ *et al*, 1998) adds weight to calls for such large-scale designations but there is resistance from those parts of the fisheries sector which fear that they will suffer economic disadvantages as a result.

Assessing the effectiveness of designated areas and convincing stakeholders of the benefits of such areas is still a major challenge. In order to win the necessary industry and political support for closed areas as a key tool in fisheries management within the CFP, more widespread research will be needed to demonstrate their value clearly. Where areas are designated, voluntarily or within a legislative framework, funding will be critical both to support long-term research, monitoring, surveillance and enforcement programmes, and to develop and implement management plans. Without such financial commitment, closed areas are unlikely to become a permanent feature of EC fisheries policy.

5.1.3 Promoting sustainability through structural adjustment

‘Structural adjustment’ in the fisheries sector is the general term used to describe changes made to the size, scale and composition of fishing fleets, aquaculture and marketing and processing facilities, in order to adjust to economic and other challenges facing them.

In the late twentieth century European fisheries structural policies have been driven by a desire to protect the industry in the face of competition from an increasingly global market. Significant EC and Member State public investment has consequently been injected into the industry to support the introduction of more modern and ‘efficient’ methods of catching, farming and processing fish and shellfish (see Section 4.2.1).

The overall impact of these policies has been substantially to increase fishing effort far beyond sustainable levels, despite more recent efforts to reduce vessel overcapacity. Productivity has also become increasingly concentrated in the most ‘efficient’ parts of the sector which often impose large ‘external’ costs on society, such as fish stock depletion, intensive energy use or air pollution from the long-distance transportation of produce. To illustrate, some crab caught ‘efficiently’ in the North Sea is known to be transported to Morocco for processing, and then returned to Germany for final sale. This type of production also tends to offer few ‘external’ benefits to society, in terms of its contribution to local economies and communities. Vessels employ few people and are increasingly owned and operated by a small number of large fisheries companies.

Promoting rationalisation and ‘efficiency’ is often at the cost of smaller, more labour intensive vessels and industries, which are vulnerable to competition in the conditions imposed by the global market place. The net effect is that many of the social and environmental benefits of smaller scale fishing, farming, marketing and processing particularly in marginal areas of the EU are being lost, as they are replaced by enterprises which are more ‘industrial’ in nature and which are generally less sensitive to the environment.

In order to challenge this process there must first be official acceptance of the social, economic and environmental value of small scale, multifunctional fisheries. This needs to be backed up by a substantial shift in resources away from investment in increased capacity, and in favour of locally appropriate management, possibly using local plans to guide sustainable development. Funding could be used to support integrated fisheries development within specific regions. This may require zonal plans to target funds at development which is locally appropriate and which covers the whole supply chain, from fishing or farming, through to landing facilities, processing and marketing.

Ongoing reform of the fisheries structural measures, as part of the Agenda 2000 process, provides an early opportunity to increase support for sustainable development in the inshore sector. Small-scale fleets and inshore fisheries management could become eligible for a greater share of structural funding as a result. While this is likely to make a helpful contribution, a more substantial change in EC fisheries structural policy is still required if the further erosion of the small scale sector is to be halted.

5.1.4 Diversification and added value in the fisheries sector

Diversification is often lauded as a positive accompaniment to ‘modernisation’ of the fisheries sector, encouraging alternative forms of employment both within the sector, and outside it. From an environmental perspective, it also offers an opportunity to reduce fishing effort.

Diversifying out of the fisheries sector involves the creation of new employment opportunities, thereby reducing local dependency on the sector. In some countries, such as Greece and Portugal, tourism is presented as a key opportunity for diversification to replace or supplement fisheries incomes. In other areas, however, alternative sources of employment may be extremely limited. Furthermore, some diversification activities, such as unsustainable tourism development, may in fact compound environmental problems.

Even where there are limited opportunities to leave the sector, diversification can nevertheless play an important role by altering the method of fish ‘production’, for example by redirecting fishing towards ‘new’ fish stocks, or by developing aquaculture. Aquaculture in particular has served as an alternative to capture fisheries in some coastal areas and it may offer a more regular and less hazardous source of employment. The more extensive shellfish farms have fulfilled this role in some regions. As noted in Section 2, however, there is concern over the expansion of some forms of aquaculture, and its real contribution to local economic development.

Downstream diversification into local branding and marketing of produce also presents significant opportunities for the fisheries sector. The subject has received considerably more attention in relation to farming and rural development, however. In particular, ‘countryside products’ have been the focus of much public-sector supported activity over the past decade or so. These can be produced where relatively natural or environmentally friendly production systems can be applied. Products have a regional or local image and are processed or marketed in the area of production, employing local people and generating local economic activity. They offer the following opportunities:

- a potentially valuable way to promote sustainable land management;
- a means to promote local and regional identity and preserve local distinctiveness;
- a tool for local economic development (Dwyer, 1998).

Although products could be marketed either for their social, environmental or economic benefits, combining all three qualities offers particular opportunities for supporting and encouraging sustainable development of the fisheries sector.

The PESCA Community Initiative, which offers EC funding, has supported some innovative diversification projects, including those aimed at developing new fisheries and aquaculture farms. However, there is clearly scope for exploring the use of diversification measures further, particularly in the area of value added produce. Experience gained under various other initiatives, such as the Marine Stewardship Council and initiatives in the agriculture sector provide an important point of departure for such work. However, more considered attention will be needed to encourage widespread adoption of local initiatives, such as ‘coastal product’ schemes. Securing the necessary financial support will be critical, with funding potentially deriving from the EC Structural Funds which might include the proposed LEADER III Initiative.

5.1.5 Institutional structures in support of sustainability

The principal resource management tools now being applied within the CFP, notably quotas and technical measures, have received a great deal of criticism. A commonly noted weakness is the failure to agree sufficiently rigorous or well enforced to achieve their stated environmental or economic aims. There is undoubtedly room for improving these instruments and developing new ones, along the lines already discussed. At the same time, however, attention must be given to the rather more daunting task of assessing and redefining institutional structures so that these improve rather than inhibit the effectiveness of fisheries policies.

The approach to management adopted under the CFP is characterised by a sectoral approach, with the policy widely seen as bureaucratic and top-down (see Section 4.3). As such, the CFP is considered to give inadequate weight to the sector's enormous diversity, often to the detriment of the small-scale sector and environmental organisations. It is consequently not surprising that alternative approaches and structures have been proposed, including the following two:

- *Regionalisation* – ie increasing the regional dimension of the CFP, in some cases accompanied by decentralised management structures. The purpose is to make decisions more regionally appropriate, bringing them closer to the stakeholder. At the same time, decisions can be vested in countries or regions with a direct interest in the fishery. The net effect, it is argued, is to make decisions more relevant and so increase the support and commitment of resource users and fisheries administrators. Some regional elements already exist in the CFP, not least the arrangements for inshore fisheries management. In contrast, technical conservation measures are agreed upon centrally, even though they include regional variations.

One model for increasing the regional dimension in the CFP involves management being decentralised to a series of bodies covering the EU's regional seas. (Symes, 1998; EP, 1999). This raises key questions about changing the relationship and responsibilities of regional bodies *vis à vis* existing EC institutions. In the absence of radical reform of the EC institutions, a more plausible option would be to develop a new regionalised committee structure, with appropriate responsibilities and powers vested in each committee, and ultimate responsibility remaining with the Commission and the Council. The benefit of such an approach is 'that all regional management regimes are sufficiently robust to ensure the long-term sustainability of stocks' (EP, 1999).

Regionalisation already has some support in the UK and Ireland. Support from other Member States might be more forthcoming if it can be shown that decisions taken in one region would have no adverse impacts on other regions. Nevertheless, the idea of regionalising this and other aspects of EC policy may gain broader acceptance as the Community adjusts its institutions to a membership of 20 or more States;

- *Co-management* – ie delegating management responsibilities to resource users and other stakeholders so that they take an active part in designing, implementing and enforcing fisheries regulations (Jentoft, 1989). The benefits are that policy-makers gain access to valuable local knowledge of fisheries and ecosystems, which potentially can be used to help define local problems more clearly and to design locally appropriate solutions. Increased participation by stakeholders in the design and implementation of policies

should also enhance the legitimacy of the fisheries management system among the wider public. It is also thought to improve the likelihood of compliance by fishers, which is a key issue in fisheries management.

A common feature of many traditionally devolved management systems is that they apply to inshore waters, artisanal fisheries and non-industrialised economic structures. The small-scale inshore sector tends to be active within defined, often local regions, with links to local communities. There is consequently a question over whether such systems could be adapted to more diverse conditions of the offshore sector (Symes, 1996). Even if co-management is found to be unworkable in offshore fisheries, its broader application to inshore management could potentially serve as a mechanism for delivering sustainable development at the local level.

Even if certain CFP management functions were devolved and decision-making processes decentralised, a significant level of decision-making would remain vested in the Community institutions. Ensuring that sustainable development considerations are fully integrated within future fisheries policies will therefore continue to depend on the creation of appropriate structures and mechanisms at EC level. In practice this means promoting openness and transparency in the decision-making process, and engaging other stakeholders, the industry and the general public in the development and implementation of EC policy.

Developments currently in train in DG XIV of the Commission (see Section 4.3) represent important steps in the right direction and will need to be followed by additional measures to improve dialogue between the Commission and a broader group of stakeholders. Beyond the Commission, the very limited role of the European Parliament in adopting fisheries legislation looks increasingly outmoded. Addressing this ‘democratic deficit’ might complicate further the procedure for adopting CFP legislation; it would certainly add to the CFP’s legitimacy.

5.2 Conclusion

Despite the limited success of the CFP to date, there are now several emerging options that could support the transition towards a more sustainable EC fisheries policy. The five options raised here are intended to highlight some of the key areas which are worthy of detailed exploration and discussion. In relation to most, a debate is already in progress, with ideas being discussed and developed within the Member States and elsewhere. For these options to form part of future fisheries policy agenda, however, will require further work and an intensified level of discussion between those with a legitimate stake in sustainable fisheries.

6 CONCLUSIONS

Some of the key issues surrounding sustainable management and development of the European Community (EC) fisheries sector have been explored in this report. It has considered the environmental impacts of capture fishing and aquaculture, and examined the complex web of fisheries policies that has evolved over the past few decades within the EC. A range of ways of altering the policy mix in order to promote more environmentally and socially beneficial development have been discussed. Potential improvements would involve both the modification of existing policies and institutional arrangements and the development and application of new mechanisms.

Several common threads emerge from these discussions and considerations:

- Firstly, it is clear that, under current conditions, the EU fisheries sector is not sustainable in environmental, social and economic terms. Fisheries practices continue to cause significant environmental problems including pollution, eutrophication and physical damage to habitats, overexploitation of fish stocks and knock-on detrimental effects upon related marine and coastal species. In social terms, too, current fisheries policies are failing to prevent falling employment in the sector and to prevent decline in many fisheries dependent communities. These trends are linked to the continuing enlargement and industrialisation of offshore commercial fleets in the EU and the contraction of small-scale and artisanal fisheries in inshore and coastal areas.
- Secondly, Community policies for fisheries are not sufficient to promote sustainable development of the sector. This is despite a continuing, piecemeal process of policy development which has sought to integrate certain environmental and social concerns into the CFP in recent years. Not surprisingly, given the conflicts of interest and the complex nature of fisheries management decisions, the policy attracts considerable criticism from all sides. Fisheries organisations dispute the validity of the regulatory controls and the science on which these are based; many resent this bureaucratic interference in their day-to-day activities, while environmental organisations remain concerned that the measures are insufficiently precautionary and the marine environment continues to suffer.
- Thirdly, and in a more optimistic vein, it is clear that the social and environmental challenge is now understood more fully by policy makers and experts in Brussels and elsewhere. We appear to have reached a stage in the policy development process where attention is being focused increasingly on improving the overall strategic approach of the CFP, rather than simply making incremental changes to individual policy tools.

As the European Commission has embarked on a discussion of options for the CFP beyond 2002, it is time to draw out a range of options for enhancing the structure and functioning of European Community fisheries policy. New ideas should inform the broad challenge of establishing sustainable fishers as well as the various policy reviews that are taking place over the coming two years. These include the 1999 review of third country fishing agreements and the 2002 review of the conservation and management system covering EC fish stocks. In overview, the suggestions arising from our report divide into four main themes:

- increasing the ability of the current policy measures selectively to target the most environmentally and socially beneficial sectors of the industry – including fleet renewal and restructuring aids and measures for processing, marketing and other forms of diversification;
- being more resolute in incorporating the latest scientific understanding and the precautionary principle into fisheries management and planning;
- placing renewed emphasis upon the institutional structures and implementation mechanisms for fisheries management, by adopting a greater degree of subsidiarity, regional programming and community involvement in policy administration and enforcement;
- experimenting with new mechanisms, or with new applications for existing mechanisms, in order to promote more sustainable management practices, particularly in inshore and coastal areas and in the context of closed areas and stock recovery programmes.

These suggestions are only a starting point for discussion. Each needs to be worked through in more detail, as part of the review process, so that it can be incorporated into future policy in an appropriate way. Some of these ideas may be readily applied to the current round of reforms while others may warrant a more cautious approach, involving pilots and experiments first, to test out their efficiency and effectiveness in practice.

Nevertheless, it is hoped that this report has provided food for thought for all those who are involved in fisheries policy work and the pursuit of sustainable development in a fisheries context.

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GLOSSARY OF TERMS

CAP - Common Agricultural Policy

CEC - Commission of the European Communities

CFP - Common Fisheries policy

DG XI - Directorate General for the Environment, Nuclear Safety and Civil Protection

DG XIV - Directorate General for Fisheries

DG XVI - Directorate General for Regional Policies and Cohesion

EAGGF - European Agriculture Guidance and Guarantee Fund

EC - European Community

ECU - European Currency Unit

EEC - European Economic Community

EEZ - Exclusive Economic Zone

EP - European Parliament

EU - European Union

EU 15 - Current Fifteen Member States of the EU

FAO - United Nations Food and Agricultural Organisation

FIFG - Financial Instrument for Fisheries Guidance

GATT - General Agreement on Tariffs and Trade

GDP - Gross Domestic Product

GRT - Gross Registered Tonnage

ITQs - Individual Transferable Quotas

kW - kilowatt

MAGP - Multi-Annual Guidance Programme

OECD - Organisation for Economic Cooperation and Development

POs - Producers' Organisations

TACs - Total Allowable Catches

TCMs - Technical Conservation Measures

5EAP- Fifth Environmental Action Programme