



A SHADOW ACTION PLAN FOR BIODIVERSITY IN FISHERIES

Introduction

The EC Biodiversity Strategy defines a framework for actions necessary to fulfil the EC's legal obligations under Article 6 of the Convention on Biological Diversity (CBD). The stated aim of the Strategy is 'to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at source'. In particular, this is to be achieved by developing and implementing a number of sectoral biodiversity action plans, including an Action Plan for Biodiversity in Relation to Fisheries.

The Strategy and the subsequent action plans provide an important tool for furthering the integration of environmental considerations within the Common Fisheries Policy (CFP), in conformity with the new commitment to sustainable development introduced by the Amsterdam Treaty. However, there is currently a danger that the fisheries biodiversity action plan will not adequately address the numerous and complex issues associated with fisheries. To do so, the plan will need to adopt a sufficiently broad perspective, taking account of the full range of impacts on biodiversity resulting from the fisheries sector, and the many different EC policies and measures to manage the fisheries sector, including those concerned with high seas fishing and access to third country fisheries.

This IEEP paper aims to contribute to the further development of the Action Plan for Biodiversity in Relation to Fisheries by elaborating a framework of sectoral objectives, strategies and measurable targets in the form of identified tasks, performance indicators and timetables for delivery. The paper is in follow-up to a meeting held in London in April 2000 which was organised by IEEP to discuss the draft biodiversity action plan for fisheries. The contents of the paper reflect discussions at that meeting and subsequent contributions from the following organisations: BirdLife International/RSPB, Marine Conservation Society, Marine Stewardship Council, Seas-at-Risk, Whale and Dolphin Conservation Society, The Wildlife Trusts, Wildlife and Countryside Link, WWF EPO and WWF UK. Nevertheless, the views expressed in this document are the sole responsibility of IEEP.

Part I The EC Biodiversity Strategy

The EC Biodiversity Strategy (COM(98)42) was published in 1998 and was designed to help reverse present trends in biodiversity reduction or losses and to give species and ecosystems a satisfactory conservation status, both within and beyond the territory of the EU. The document defines a two step process for delivering this change:

- a) firstly, setting out the general policy orientation under four major themes, as defined in the strategy; and
- b) secondly, by the development and implementation of sectoral and cross-sectoral Action Plans and other measures by the Commission, to be completed by February 2000.

EC Biodiversity Strategy and fisheries – horizontal and sectoral objectives

The Biodiversity Strategy is built around four major themes, known as ‘horizontal objectives’, as follows.

- Conservation and sustainable use of biological diversity – including: environmental assessment of sectoral and cross-sectoral programmes, policies and projects; - developing methods and techniques to enable stakeholders to participate in assessment and remedial and preventative action; - internalising biodiversity in cost/benefit analysis; - introducing eco-labelling schemes; using incentives to encourage positive effects on biodiversity; - contributing to the social and economic viability of systems supporting biodiversity.
- Sharing the benefits of the use of genetic resources – including the promotion of appropriate multilateral frameworks for access to genetic resources, and technology transfer;
- Research, monitoring and exchange of information – including activities under the 5th Framework Programme and the EIONET network, and the identification of indicators; and
- Education, training and awareness – including public awareness, building technical expertise to implement the strategy, and monitoring, assessment and reporting on the impact of strategies.

In addition, four **sectoral objectives** are identified to bring fisheries in line with the CBD, as follows:

- **to promote the conservation and sustainable use of fish stocks and feeding grounds;**
- **to promote the establishment of technical conservation measures to support the conservation and sustainable use of fish stocks;**
- **to reduce the impact of fishing activities and other human activities on non-target species and marine and coastal ecosystems to achieve sustainable exploitation of marine and coastal biodiversity; and**
- **to avoid aquaculture practices that may affect habitat conservation through occupation of sensitive areas.**

The Action Plans should link the ‘major themes’ with the sectoral policies, so that the obligations under the Convention could be translated into ‘concrete action’. Once the plans are agreed, progress in implementing them is to be monitored and assessed using indicators and measurable targets.

Existing Policy Framework for Biodiversity and Sustainable Use

In developing the fisheries biodiversity action plan, account needs to be taken of the existing policy framework for biodiversity and sustainable use. In particular, there is a need to recognise international and EC policies in support of these objectives.

International policy framework

The Jakarta Mandate has been developed from the 1992 Convention on Biological Diversity (CBD) to address the specific needs of marine and coastal biodiversity. Together these call for the adoption of an ecosystem approach to conserving biodiversity, involving both site and non-site based conservation measures. A particular focus is given to the need to integrate biodiversity objectives within sectoral policies.

The CBD is linked to several other nature conservation conventions that aim to promote the sustainable development of natural resources, including the CITES Convention covering trade in endangered species, and the Convention on Migratory Species (also known as the Bonn Convention), under which Agreements have been concluded for the conservation of small cetaceans in the Baltic and North Seas (ASCOBANS) and of all cetaceans in the Black and Mediterranean Seas (ACCOBAMS).

There are also important conventions concerned with protecting the environment and ecosystems in three European regional seas, the Baltic Sea, the Mediterranean Sea and the North East Atlantic. For example, the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention) includes a new Annex V on the Protection and Conservation of the Eco-systems and Biological Diversity of the Maritime Area requiring parties to protect, conserve and restore the ecosystems and biological diversity of the maritime area.

These commitments are reflected, to some extent, in several key multi-lateral fisheries conventions and instruments that the Member States and/or the EC have committed themselves to, including the following:

- UN Law of the Sea Convention – requiring States to manage the exploitation of resources so as to ensure the conservation of living resources;
- 1995 UN Agreement on Straddling Stocks and Highly Migratory Fish Stocks - to ensure the long term conservation and sustainable use of straddling fish and highly migratory fish stocks, recognising the need to protect biodiversity in the marine environment, and to apply a precautionary and ecosystem approach to management; and
- 1995 FAO Code of Conduct for Responsible Fisheries – establishing non-binding principles and standards applicable to the conservation, management and development of all fisheries. It is supported by three international plans of action

(see box);

FAO International Plans of Action (IPOAs)

The 1995 FAO Code of Conduct for Responsible Fisheries provides for the adoption of subsequent technical guidelines and plans of action. Three plans of action were agreed in 1999, as follows.

- *Reducing incidental catch of seabirds in longline fisheries (IPOA – SEABIRDS)* – States are to report in 2001 on progress in assessing the need for a National Plan of Action (NPOA) .
- *Management of Fishing Capacity* – to achieve by 2003 and 2005 at the latest an ‘efficient, equitable and transparent management of fishing capacity’. States are to develop, adopt and make public national plans by the end of 2002.
- *Conservation and management of sharks (IPOA – SHARKS)* - to develop management and conservation strategies to keep total fishing mortality for each stock within sustainable levels by applying a precautionary approach. States are to adopt national shark plans by 2001.

EC policy framework – the Common Fisheries Policy

The main EC policy framework for delivering sustainable use of fisheries and biodiversity is outlined in the 1999 Commission Communication *Fisheries Management and Nature Conservation in the Marine Environment* (COM(1999)363). Regulation 3760/92 provides the legal basis for actions to conserve fish stocks, with the overall aim of protecting and conserving available and accessible living marine aquatic resources, and providing for rational and responsible exploitation on a sustainable basis, taking account of appropriate economic and social conditions and implications for the marine ecosystem (Article 2).

More detailed fisheries management measures have been elaborated in a series of ‘daughter’ regulations to Regulation 3760/92, setting up total allowable catch (TAC) limits and technical conservation measures (TCMs). Key TCMs adopted to date include measures such as minimum mesh and landing sizes, closed areas, gear specifications, etc, to reduce mortality of juvenile fish, to protect spawning stocks or nursery grounds and to reduce bycatch of marine mammals. In isolated cases, stock specific management plans have also been elaborated although such an integrated approach is not yet the norm. Importantly, a series of national multi-annual guidance programmes (MAGPs) have also been developed to realign fishing effort with available and accessible resources. MAGPs set out national fishing fleet capacity and effort reduction targets, broken down by major fleet segments. Implementation of these programmes is supported by funding under the Financial Instrument for Fisheries Guidance (FIFG).

Apart from aiming to manage fishing activities in EC waters, the Common Fisheries Policy also provides the framework for managing or developing high seas and third country fishing, in addition to aquaculture, marketing and processing activities.

Development in each of these areas is supported by EC funding programmes under FIFG. Thus, funding is allocated to the modernisation of fishing vessels, construction of aquaculture installations, development of markets, as well as 'conservation' projects such as adaptation to more selective fishing gear. Recent changes secured as part of the Agenda 2000 reforms should allow additional funding to be made available to a range of projects that support conservation and biodiversity objectives in each of these areas, although there is considerable concern that a significant proportion of funding continues to be used in ways that may conflict with biodiversity objectives.

These different instruments provide an important basis for managing Europe's fisheries sector, but they are currently insufficient to secure integration of biodiversity considerations within fisheries management. For example, at least half of the EU's fishing fleet is believed to be targeting commercial stocks that are below biologically acceptable levels. The weaknesses of the current round of MAGPs (1997-2001) were also recently highlighted by a Commission report (COM(2000)272) which states that 'it is likely that the real level of effective fishing effort has increased since the beginning of the MAGP IV'. While there is great scope for adopting ecosystem based management under the existing CFP, in reality, short term pressures to safeguard social and economic interests continue to outweigh the longer term needs of sustainable development.

EC biodiversity policy

EC biodiversity policy has developed largely in parallel to the CFP and aims to address some of the broader environmental problems resulting from fisheries and other economic activities. The Treaty of Rome provides the basis for Community action on the environment which is to be based on a series of principles, including the precautionary and prevention principles, and the principle that the polluter should pay. The Treaty now also requires all policies to contribute to sustainable development (Article 2), to be achieved primarily by integrating environmental considerations within other sectoral policies (Article 6).

Specific legal requirements for biodiversity conservation are set out in two key pieces of EC legislation: the habitats Directive (92/43) and the birds Directive (79/409). These Directives introduce requirements to protect the most sensitive and threatened habitats and species deemed to be of Community importance, including both site and non-site based protection of species and habitats from activities such as fisheries. The Directives were originally designed to protect terrestrial habitats and species, and their extension into the marine environment has met with considerable resistance. Nevertheless, in some Member States the Directives are now providing growing impetus for addressing nature conservation and fisheries issues, particularly in inshore territorial waters. A recent UK High Court ruling on the habitats Directive suggests that the Directive could in future also have significant implications for the management of Member States' exclusive economic zones, beyond territorial waters.

Improving the integration of EC fisheries and biodiversity policies

Attempts to reduce the impacts on biodiversity of the EC fisheries sector are likely to depend on progress being made in two key areas:

- firstly, better application and enforcement of existing EC obligations set out in legislation on nature conservation, water pollution, chemicals, etc, as well as the adoption of more stringent and suitable fisheries conservation and management measures, as part of the forthcoming 2002 reform of the CFP fisheries management regime; and
- secondly, by promoting the inclusion of ecosystem considerations at all levels of decision making under the CFP, including decisions concerning fleet restructuring, subsidisation, marketing and processing, and external relations.

The need to integrate environmental considerations, including biodiversity, within fisheries policy has been given renewed emphasis by the new Amsterdam Treaty which has placed sustainable development among the EC's main objectives (Article 2). The so-called 'Cardiff integration process' seeks to translate this into meaningful action by calling on the fisheries Council to develop an environmental integration strategy. The biodiversity action plan for fisheries provides an early opportunity to feed into that process and to develop a systematic approach to the integration of biodiversity within fisheries policy.

Part II Developing a Fisheries Biodiversity Action Plan

Introduction - what is biodiversity in relation to the fisheries sector?

A broad definition of biological diversity is provided in Article 2 of the UN Convention which states the following:

“Biological diversity’ means the variability among living organisms from all sources including *inter alia* terrestrial, marine and other aquatic organisms and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems;’

Biodiversity conservation is clearly an issue of direct relevance to the fisheries sector, including both capture fisheries and farmed fish. Fishing can have an impact on biodiversity in the following ways:

- genetic diversity – reducing the amount of variation within and between populations of species, eg by removing fish over a certain size leading to changes in the age and/or size at sexual maturity;
- variations in different species – reducing the number of species, an issue which is of particular relevance for elasmobranchs, deep water fish and non-fish species;
- community diversity – fishing can affect groupings or assemblages of organisms that inhabit the same area or have some other spatial relationship;
- habitat diversity – for example, particular gear types can affect biological and physical attributes of habitats, such as mudflats and seagrass;
- ecosystem diversity – on a large scale, affecting sets of inter-related communities and habitats, such as estuaries, bays and the continental shelf; and
- functional diversity – fishing can, by taking too many juvenile fish, reduce the level of recruitment into the adult population and thus threaten its survival.

There is now a growing acknowledgement that overfishing is one, if not the, major threat to marine biodiversity. The actual extent of impacts of fisheries on biodiversity remain poorly understood, particularly in relation to genetic diversity, functional and ecosystem diversity. Nevertheless, there is a growing body of research on these and other aspects of biodiversity which is helping to develop our understanding and help inform future fisheries and biodiversity policies.

In line with the precautionary principle enshrined in the EC Treaty, the absence of scientific information should not be used as a reason for postponing or failing to take conservation measures, particularly where practices are thought likely to result in serious or irreversible damage.

The challenge for the EC Action Plan for Biodiversity in Relation to Fisheries is to identify ways in which these different aspects of biodiversity can be taken into account in the process of developing and applying fisheries policies. It is particularly

important to recognise the interdependence of different species and ecosystems, so that policies move away from conventional single species fisheries management and towards multi-species and ecosystem-based management. The following sections identify priorities, objectives and policy options for steering the Common Fisheries Policy (CFP).

Identifying broad principles

In order to help guide the overall development of fisheries policy, it is useful to identify principles that should be reflected in the Action Plan. An initial list might include:

- the integration of biodiversity considerations within the development and implementation of fisheries policy, including proper application of the precautionary principle, the polluter pays principle and the principle of prevention;
- adopting an integrated and proactive approach covering the whole marine area, rather than isolated areas or activities. The development of strategies and the application of strategic environmental assessment of sectoral policies and plans is critical;
- applying a decentralised approach, in line with the principle of subsidiarity, allowing measures to be devolved to the most suitable levels and spatial scales, and tailored to suit local needs and circumstances;
- promoting stakeholder involvement, co-operation and support in the management of common resources, by opening up decision-making processes, as well as through education and awareness-raising, training and capacity-building of actors, including relevant environmental agencies;
- improving the level of coherence between CFP instruments and environmental instruments, notably by identifying a clear hierarchy of objectives for the CFP;
- ensuring that fisheries policies and instruments do not cause damage to the environment of third countries or areas beyond the limits of national jurisdiction and helping third countries to achieve conservation and sustainable use of biodiversity;
- developing a wider range of policy instruments, including economic instruments and protected areas, as called for under the Fifth Environmental Action Programme *Towards Sustainability*; and
- at all levels, promoting greater transparency, and supporting effective monitoring and evaluation of policies.

Objectives and policy options

The following objectives and policy options aim to support the integration of biodiversity considerations within the CFP, in light of the above principles, and the cross-sectoral objectives identified in the EC Biodiversity Strategy (see table on page 2).

The information is grouped under three main headings concerned with wild capture fisheries, aquaculture and 'cross-cutting' issues. A summary of recommendations, including goals, strategies, actions, indicators and timeframes, is provided in the table appended to this report.

Wild capture fisheries - conservation and sustainable use of fish stocks and feeding grounds

Regulation 3760/92 provides the legal framework for policies aimed at the rational and responsible exploitation of resources on a sustainable basis, taking account of the marine ecosystem. It provides considerable scope for the conservation of marine biodiversity. However, to date there has been insufficient political will to develop and/or properly apply the full range of measures that are needed to support biodiversity conservation objectives. TACs, TCMs and MAGPs are considered to be important elements in a fisheries management package, but they have clearly failed to address the critical issue of overcapitalisation of the fishing fleet or to reduce overexploitation of key commercial species. Existing policies have also failed adequately to monitor, assess and reduce fisheries impacts on non-target species, habitats and ecosystems.

Objective – to maintain the health and integrity of marine ecosystems, including the recovery of all commercially important stocks, as well as non-target species and habitats. Issues such as the depletion of local or genetically distinct stocks also need to be taken into consideration.

Policy options – a number of amendments to the existing legal framework should be sought, as follows.

- Amendments to the Treaty of Rome to introduce a clear set of objectives for EC fisheries policy, with the primary objective being ecologically sustainable exploitation of marine living resources.
- Amendment of Regulation 3760/92 to include as the *priority objective* 'ensuring sustainable exploitation of marine living resources, whilst maintaining the health and integrity of the ecosystem'.
- Regulation 3760/92 could include an explicit requirement for management objectives to be translated into ecosystem based strategies, setting out overall management objectives for all relevant stocks and dependent or related species

and habitats. These would include scientific reference and target/limit levels for commercial and non-commercial species in different bio-regions, based on the precautionary approach. Specific targets, including bycatch limits, would need at the very minimum to reflect commitments under the habitats and species Directives, and relevant regional agreements such as the ASCOBANS agreement, for example, which aims to reduce takes of small cetaceans to zero. They would also specify the institutional framework for implementing management strategies and specify the required strategic research and monitoring plans, including indicators. The strategies should be subject to environmental assessment and be amended in light of the results of such assessment.

- Stock specific management or recovery plans should be promoted more widely, as a means of meeting the objectives identified for each bio-region. These should include bycatch plans and inshore (within territorial waters) plans, with the objective of rebuilding and maintaining target and non-target stocks at sustainable levels and minimising takes of protected species over the long term. Plans would also identify the specific tools and measures to be applied in each case.

Stakeholder groups could be established to devise and implement plans, within clearly identified parameters. The implementation of specific management plans could rely on a mix of measures, where possible based on scientific advice, including the following:

- the use or strengthening of property rights, possibly including transferable quotas where these are accompanied by clear environmental conditions and social conditions to avoid undesired concentration of capital;
- restrictions on fishing capacity and effort, by setting capacity limits and restricted licensing;
- conditions on fishing, such as prohibitions on gear use, closed areas, as well as other technical conservation measures;
- minimum standards, eg requirements to apply Best Available Technology or to comply with good fisheries practices;
- economic instruments, including reform of subsidies, such as fuel tax exemptions, taxes or charges to ‘internalise’ the external environmental costs of fishing and to discourage less desirable practices;
- positive financial and other incentives to support sensitive fishing practices and to provide support for diversification within and out of the sector;
- marketing provisions, including minimum sizes, labelling and certification measures to support the adoption of new rules; and
- communication, education, consultation and/or co-management arrangements to improve fishing methods and increase the effectiveness of ecosystem management, involving policy-makers, NGOs, the fishing industry, the scientific community and the wider public.

Reducing fishing effort

The conservation and sustainable use of fish stocks is influenced by a number of factors, most notably controls on the level of fishing intensity and the nature of fishing that is pursued. Significantly reducing overall fishing capacity remains one of the key issues facing the European fisheries sector and should be achieved as a matter of priority.

Policy options – As guardian of the Treaties, the Commission should ensure full and proper implementation of existing MAGPs, including adherence to the targets for fleets fishing on the high seas and in third country waters. In the short-term, proposals should be developed and adopted by the Council to significantly strengthen MAGP IV, including a requirement for Member States to adhere to the full (ie non-weighted) reduction targets. Failure to implement the programmes should result in penalties, for example, financial penalties or reductions in quota allocations.

Proposals for future MAGPs should continue the process of reducing capacity, in line with scientific advice, and in favour of vessels and segments that are environmentally and socially most desirable. MAGPs should set a long term or even permanent cap on EC fishing capacity, calculated in the basis of multi-species and ecosystem assessments and taking proper account of likely improvements in technical capacity. The following specific criteria could be used to allocate reduction targets:

- the impact of different types of gear on the marine environment, both in terms of selectivity and damage to the seabed;
- the employment generated by the fleet segment;
- the energy consumption/efficiency of the segment; and
- the quality of fish landed and marketed.

The implementation of future programmes could be taken forward within the framework of broader bio-regional strategic plans for EC fisheries outlined above. They could also be incorporated within framework of third country agreements and high seas fisheries arrangements.

Establishing appropriate technical conservation measures

Technical conservation measures aim to regulate fishing activity by limiting the use of gear, placing restrictions on permitted gear and fishing areas, specifying bycatch limits, landing sizes, and other criteria. To date, most TCMs adopted within the CFP aim to reduce the level of mortality of juvenile fish and spawning stock. Few measures have been adopted to specifically mitigate the wider environmental impacts of fisheries. The main exceptions relate to the prohibitions on purse seining on marine mammals and on drift-netting, and the sandeel fishery closure off the east coast of Scotland to protect seabirds.

Within the strategic framework outlined above, there is a need for better implementation and enforcement of the existing range of TCMs. There is also a need for the progressive tightening of standards to ensure these are compatible with the conservation and sustainable use of fish stocks, based on an ecosystem and precautionary approach.

In relation to the habitats and birds Directives, the role of the CFP beyond territorial waters gives the Commission a particular responsibility to develop and facilitate technical measures offshore. In practice, this will require greater use of TCMs to protect non-target species and habitats.

Policy options - key areas for improving existing TCMs include the following:

- raising minimum landing sizes - recent amendments to EC rules have reduced minimum landing sizes for several species;
- substantially increasing minimum mesh sizes – to reflect the size of mature fish and thus to reduce catches of juvenile fish.
- in addition to single species quotas, setting bycatch limits and the use of multi-species or basket quotas;
- requirements concerning the use of more selective gear, to protect target and/or non-target species;
- restrictions on the overall size of gear or volume of nets, as well as the materials used in nets;
- restrictions on the use of certain gear types, particularly to protect sensitive species and habitats – potentially involving prohibitions on gear with unacceptable environmental impacts, such as beam trawls, as recently called for by the European Parliament (A5-0017/2000);
- more widespread use of area based restrictions on fishing, including closures to protect aggregations of juvenile fish, spawning stocks, nursery grounds (particularly close to shore), non-target species and habitats; and
- the development of a policy for developing TCMs within marine Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), and extension of the annexes of the habitats and birds Directives to properly reflect Europe's marine natural heritage.

TCMs should be developed at the most appropriate level, whether EC, bio-regional or local. TCMs are likely to be more effective if introduced as part of a package of measures which help to ameliorate their effects upon fishing communities, for example, the introduction of market based instruments such as financial or other incentives, labelling schemes, the use of funding to support the adoption of new gear, information and training, etc. The application and effectiveness of different TCMs also needs careful monitoring and enforcement.

TCMs should not be seen as a single solution to overfishing and impacts on biodiversity; they also need to be accompanied by measures to substantially reduce overall fishing effort.

Aquaculture

There are many environmental concerns surrounding aquaculture, particularly the intensive production of finfish. Fish farming practices can result in the discharge of polluted water containing chemicals and suspended matter, in the form of excess food and waste. Farms can also cause problems relating to the introduction of non-indigenous and genetically modified species, new pathogens and noise pollution into areas where they are located. The contamination of wild salmonid stocks by escaped farmed stock is of growing concern. In some areas, there is also concern over the high level of water used in finfish production with impacts on ground water levels. Production also relies upon large quantities of feed, notably fish meal produced from industrial fisheries, which has consequent implications for the potential over-exploitation of wild small pelagic stocks and related or dependent species.

Existing EC policy aimed at sustainable aquaculture production is relatively limited. The main tool for supporting aquaculture development is funding available under the FIFG. Recent changes to FIFG rules have been introduced to encourage projects aimed at mitigating the environmental impacts of aquaculture, for example, to reduce discharges into the aquatic environment. A number of additional EC measures are in place to regulate development or pollution, and are also relevant to the aquaculture sector, as follows:

- the EC habitats and birds Directives require Member States to limit impacts from economic development activities, most notably within designated areas;
- the environmental impact assessment (EIA) Directive requires development projects, including fish farms, to be subject to prior assessment if they are likely to have significant impacts on the environment;
- under the EC shellfish water Directive, coastal and brackish waters used to support commercial shellfisheries are to be designated, and made subject to binding water quality standards; and
- the dangerous substances Directives 76/464 and 76/769 introduce additional controls to reduce the use and emission of chemical pollutants into the environment, including chemical discharges into water from fish farms.

The EC's proposals to require strategic environmental assessment of plans and projects is also expected to cover aquaculture plans, in so far as these provide a framework for consent in relation to projects that would be covered under the existing EIA Directive. Similarly, the proposed water framework Directive is expected to affect future patterns of aquaculture development, notably by introducing more rigorous requirements for managing water quality and quantity.

Objective – to develop an EC aquaculture policy that takes full account of biodiversity considerations, including issues relating to genetic and ecosystem biodiversity.

Policy options – there are a number of specific areas or issues that need addressing. Foremost is the need for an overarching aquaculture strategy for the EC and Member States which can be subject to proper prior environmental appraisal and is open to public consultation. The prior appraisal should consider the environmental impacts of various development options and should include a life-cycle assessment of aquaculture production compared to production from capture fisheries.

The EC's regulatory framework for aquaculture needs to be developed and strengthened, in light of the rapid expansion of the sector and the transboundary nature of many environmental impacts resulting from aquaculture. Existing EC measures concerning water, chemicals and planning should be properly implemented. In addition, a number of new requirements could be introduced, as follows.

- *EIA procedures* should be applied to all finfish farm installations, including extensions to existing farms, and for other practices where these are likely to have significant environmental impacts. Future requirements for environmental assessments of plans and policies should be made mandatory for aquaculture.
- Aquaculture farms should be listed among the sectors covered by the *Integrated Pollution Prevention and Control Directive (IPPC)*, alongside pig and poultry farms which are already being subjected to the Directive's requirements.
- EC noise policy should be elaborated in response to the high noise levels generated by acoustic deterrent devices used around salmon farms which potentially have the effect of excluding species such as porpoises from important habitats.
- New regulatory measures should be developed to minimise adverse genetic, disease and other effects of farmed fish on wild fish populations. Animal health legislation should be strengthened by preventing the transfer of pests and parasites between regions, and by reducing to a minimum the movement of species that is permitted within the Community. In many cases, the environmental threat posed by such issues should warrant immediate action, potentially including the closure of farms, until alternative methods are developed, in line with the principles of precaution and prevention.

Alongside regulatory measures, there is a need for promotion, at the farm level, of responsible practices in aquaculture. Training schemes and the development of guidelines, codes of conduct or 'acceptable fish farming practices' should be central to this approach.

Where preferable, fish farmers should be involved in the development of alternative practices, including more extensive and small-scale farming methods with lower environmental impacts. Funding should also continue to be made available for adaptation to new technologies, as well as for pilot projects to support more sensitive farming practices. Eco-labelling or local marketing initiatives would also provide a

key means of encouraging and supporting such activities, and funding should be allocated to such initiatives.

A review of existing policies should be undertaken to ensure public funds are not supporting development that is unsustainable. Additional studies will be needed to analyse the impact of aquaculture funding on biodiversity. EC funding should not be made available to support the further development of this sector where this is likely to result in negative environmental impacts.

Aquaculture should be subject to regular monitoring of installations, including production levels, use of feeds, organisms, equipment and chemicals, and related environmental impacts. There is clearly also a need for significant additional research in this area, particularly to examine:

- the potential genetic impact of aquaculture on wild populations, including both accidental release as well as restocking activities;
- the promotion and transfer of diseases between farmed and wild populations; and
- potential improvements in husbandry practices, including technical improvements to reduce escapes, pollution, disturbance and resource use.

Cross-cutting actions

Enhancing stakeholder participation

There have been some developments over the past two years in support of greater stakeholder participation in CFP decision-making. Notably, the Advisory Committee on Fisheries and Aquaculture (ACFA) has been reformed and now includes three seats for representatives of consumer, environment and development non-governmental organisations, alongside the 17 seats reserved for industry representatives. There are currently no seats on ACFA for community groups or representatives of Europe's inshore sector. However, there remain concerns about the ability of stakeholders such as environmental groups to engage properly in this and other processes. For example, there are ongoing difficulties relating to the availability of funding to enable meaningful participation by such groups.

Objective – to develop appropriate methods to enable stakeholders to participate in fisheries planning, assessment and implementation.

Policy options – There is a need to review institutional structures and incorporate a greater participation of NGOs and the fishing industry, from the EC and accession States, into policy-making processes. For example:

- making provision to engage stakeholders early on in the process of strategic environmental assessment of policies;

- reviewing the structure of ACFA and the Scientific, Technical and Economic Committee for Fisheries (STECF), to reflect biodiversity priorities and to ensure meaningful participation by stakeholders; and
- the Community should press for stakeholder participation in intergovernmental fora, such as ICES and the relevant fisheries Commissions.

There is also growing interest in promoting a more devolved approach to implementing policies, as long as this is accompanied by suitable mechanisms for monitoring and review. The involvement of a broad range of all stakeholders in management, including bio-regional based management, should be a key feature of such a devolved approach.

Research, indicators of performance, monitoring and assessment

Research

A major priority of the EC's Fifth Framework Programme is the 'Quality of Life and Management of Living Resources' which includes funding for research on sustainable fisheries and integrated rural development. Additional funding is being provided by DG Fisheries' studies in support of the CFP, particularly in relation to gear selectivity, environmental assessment and reducing the environmental impacts of fisheries.

Despite the availability of funding and suitable research priorities, research continues to be undertaken on a relatively ad hoc basis. In particular, studies may not be suitably tailored to specific issues and policies, and may consequently be of limited benefit for policy-makers. There is also a lack of research on social and economic aspects of fisheries management making it much more difficult to adopt of policies that are effective, as well as being based on sound science.

Objective – to conduct coordinated and more targeted research on key biodiversity issues in the EC and the accession States, in particular concerning:

- single/multiple species population dynamics and trophic dynamics, to better understand the impacts of fishing activities;
- impacts of fishing on non-target species and the marine environment (habitats/ecosystems);
- impacts of aquaculture on biodiversity, including genetic impacts on wild populations, and disease; and
- the potential role of alternative policy instruments, including market based instruments, to reduce undesirable impacts.

Policy options – to develop strategic research plans which meet the needs of ecosystem fishery management plans, and in consultation with researchers, managers, industry and NGOs. Such research plans would cover:

- data collection needs (monitoring);
- assessment needs (modeling and analysis);
- specific projects to support assessment of biodiversity and impacts of fishing and farming on the marine environment;
- development of sustainability indicators, in line with EEA activity;
- broader ecosystem identification and assessment related projects;
- technological development needs/options (eg, bycatch reduction devices, technologies to prevent escapes);
- potential improvements in husbandry and fishing practices;
- economic performance and economic efficiency of different strategies; and
- socio-economic impacts of policies and practices.

There is also considerable scope to improve the use of existing information, for example, the development of an up to date database on research undertaken, building on previous work funded by the Commission.

Indicators of performance

According to FAO, indicators are ‘a tool to help make clear assessments of and comparisons between fisheries, through time’, describing ‘the extent to which the objectives set for sustainable development are being achieved.’ Indicators allow regular review of progress, as well as communication of results to stakeholders and the wider public.

Several different kinds of indicator are useful. The European Environment Agency (EEA) has been contributing to the process of developing indicators, and a new annual report includes 60-70 indicators aimed at decision-makers. However, despite the progress in other sectors, work on fisheries indicators is at a very elementary stage. A recent report drafted under the FAO Code of Conduct for Responsible Fisheries provides a relatively comprehensive assessment of ongoing international work on fisheries indicators, including social, environmental and economic indicators. The report emphasises the need for sustainability indicators going beyond traditional single stock data, and underlines the limited developments in this area so far.

There is a clear need to progress work on EC fisheries indicators, including state of the environment, pressure and response indicators. The 1998 Cardiff European Council called for the development of indicators to monitor progress in integrating environmental considerations within sectoral policies, including fisheries. The Commission, and particularly DG Fisheries, should take forward work in this area, in association with Eurostat and the EEA, with the aim of producing a basic set of sustainability indicators by the June 2001 Summit.

Monitoring and assessment

Monitoring and assessment of the state of the environment and the impacts of different policies is of increasing importance. However, comprehensive monitoring and data analysis can be costly and impractical. The identification of key species can reduce costs by encouraging 'selective' monitoring, based around key predator species, key prey species, and key fished and non-fished sites.

Some areas of monitoring, such as of bycatch and discards can only be conducted effectively by onboard observers. Provisions need to be made for the mandatory carriage of observers on vessels where this is practicable, with funding provided by EC/national governments, as well as some industry contributions.

It is also essential that data sets and survey material are standardised, so that data are compatible and comparable. The Commission has proposed a new framework for the collection and analysis of biological and economic data, primarily focusing on commercial fish stocks and fishing vessels. Information such as this is critical for evaluating the environmental impacts of fisheries policies and the effectiveness of efforts to promote environmental integration. However, monitoring will need to be extended to include ecosystem impacts of fisheries and aquaculture, as well as related socio-economic issues.

Education, training and awareness

The importance of education, training and awareness raising is often underestimated as a tool to support biodiversity conservation. In fisheries, there is a particular need to raise awareness of biodiversity interactions among resource users, the wider public and policy-makers, both in the EC and in accession States. The aim is threefold: to improve the design of policies so that they better reflect local biodiversity objectives; to increase public awareness of and support for biodiversity conservation; and to secure better compliance with measures by the sector.

There are various needs in this area, including public awareness exercises, and improving technical expertise around fisheries and biodiversity issues, within the scientific and administrative communities, as well as within industry and environmental organisations. There is also a need for increased capacity to monitor and assess the impacts of different policies.

DG Fisheries of the European Commission has already made improvements to the way in which policies are developed, notably by increasing information to the public and including environment and development NGOs in the official consultation process. particularly.

Policy options include the following:

- funding to support ‘independent’ information campaigns and other awareness raising exercises concerned with fisheries and the environment;
- encouraging professional training and education, to improve awareness/acceptance of ecosystem management; and
- improving capacity for monitoring and assessment, including resources, training and exchange of expertise between different technical groups.

Conclusions

It is evident that existing EC fisheries policies and instruments are failing to meet the needs of biodiversity conservation. The general review of Regulation 3760/92 in the run up to 2002 and the review of fleet reduction programmes in 2001 provide major opportunities to integrate biodiversity considerations within the CFP in the short to medium term. The reduction of fishing fleet overcapacity and effort remains a major challenge in Europe and, if achieved, promises to mitigate many of the environmental impacts associated with capture fisheries.

A range of options exist to improve the CFP’s performance. Sustainable development should be explicitly made the primary objective of the CFP. Fisheries policy should then be developed in light of this objective, and by reference to the polluter pays principle, the precautionary principle and the principle of prevention. Following from this, the CFP needs to adopt:

- a greater use of ecosystem based plans;
- a broader range of TCMs within these plans;
- new forms of support for sustainable fisheries; and
- a new research agenda in pursuit of biodiversity.

However, the integration of biodiversity considerations within the CFP is unlikely to succeed in the absence of greater political will to tackle the environmental problems associated with fisheries, including the implementation and enforcement of existing nature conservation legislation. There is also a need for a much more proactive and comprehensive approach to be taken to management. Progress in these areas will be slow unless there is a more widespread acceptance among the public and resource users of the need for biodiversity conservation. Fisheries communities need to be aware of the potential benefits of sustainable use, particularly in marginal areas where new models of rural development are particularly needed. Non-governmental organisations can play a central role in helping to improve information and awareness of the issues, and thus help generate ground-level support for measures designed to protect biodiversity.

Finally, much greater attention needs to be given to the issue of EU enlargement and its implications for fisheries. There is a danger that preparations for accession to the EU will encourage the modernisation and intensification of fisheries production in

ways that may not be in the long term interest of Europe's biodiversity. It is therefore critical that information and awareness campaigns, training and funding initiatives are targeted at the fisheries sectors of accession States, as early as possible.