Communication from the Commission to the Council and the European Parliament
Towards a strategy to protect and conserve the marine environment
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1. Introduction and Setting the Scene

The 6th Environment Action Programme (6th EAP) stipulates the development of a thematic strategy for the protection and conservation of the marine environment with the overall aim "to promote sustainable use of the seas and conserve marine ecosystems", because the marine environment is subject to a variety of threats. These threats include loss or degradation of biodiversity and changes in its structure, loss of habitats, contamination by dangerous substances and nutrients and possible future effects of climate change. The related pressures include: commercial fishing, oil and gas exploration, shipping, water borne and atmospheric deposition of dangerous substances and nutrients, waste dumping, physical degradation of the habitat due to dredging and extraction of sand and gravel.

While measures to control and reduce these pressures and impacts do exist, they have been developed in a sector by sector approach resulting in a patchwork of policies, legislation, programmes and action plans at national, regional, EU and international level, which contribute to the protection of the marine environment. At the EU level, there exists no overall, integrated policy for marine protection.

At a global level the seas and oceans play key roles in climate and weather patterns. The oceans and seas also generate wealth, they provide important food resources and provide employment for a significant number of people. However, our oceans and seas are under threat: in some cases to the extent that their structure and function is being jeopardised. If our oceans and seas are not preserved their ecological capital will erode and the wealth generation and employment opportunities of future generations will be put at risk.

The 6thEAP establishes a programme of Community action on the environment. It addresses the key environmental objectives and priorities based on an assessment of the state of the environment and of prevailing trends including emerging issues that require a lead from the Community. The Programme promotes the integration of environmental concerns in all Community policies and contributes to the achievement of sustainable development throughout the current and future enlarged Community.

This programme represents the environmental dimension of the Community's Strategy for Sustainable Development (SDS). The Strategy for Sustainable Development (SDS) builds upon the political commitment of the European Union: "to become the most competitive and dynamic knowledge-based economy in the world capable of sustainable economic growth with more and better jobs and greater social cohesion".

This recognises that in the long term, economic growth, social cohesion and environmental protection must go hand in hand. Promoting the health and proper functioning of marine ecosystems will increase their intrinsic values and contribute significantly to sustainable development.

This has been further strengthened by the outcome of the World Summit on Sustainable Development in Johannesburg. In its implementation plan the Summit agreed, inter alia,

- ♣ to encourage the application by 2010 of the ecosystem approach to oceans;
- ♣ to maintain or restore fish stocks to maximum sustainable yields with the aim of achieving these goals for depleted stocks on an urgent basis and where possible before 2015;
- ♣ to implement the FAO plan for managing fishing capacity by 2005;
- ♣ to implement the FAO plan to prevent illegal fishing by 2004;
- ♣ to establish a regular UN process for assessing the state of the marine environment by 2004.

The political commitment to sustainable development should lead to a more integrated approach to policy making and management because each policy sector should consider also the side effects, positive or negative, on other sectors and the marine ecosystem. Evaluating and managing the long- term consequences of current and future practices on other sectors and on the marine environment, even without full knowledge, will be equivalent to adopting an ecosystem-based approach based on the precautionary principle. The fundamental of the ecosystem-based approach lies in the integration of sometimes conflicting demands in protecting and exploiting the marine environment in such a way that it can continue to support these demands in the long-term.

One of the particular features of the marine environment is the number of organisations, regional conventions and international bodies, which are concerned with its protection. In addition the EU itself has an extensive body of legislation, policies and programmes which directly or indirectly impact upon the quality of our oceans and seas. The institutional and legal complexity of marine protection is indeed one of the main challenges to be confronted in developing an EU strategy and will be addressed in the document.

In addressing the protection of the marine environment, we must also define the geographical scope of our actions. The strategy we are setting out to establish is intended to contribute to the protection of oceans and seas and their biodiversity throughout the world. Clearly the opportunity for concrete measures and actions will be much greater in those parts of the oceans and seas which are part of the territorial waters and Exclusive Economic Zones (EEZs) of the Member States and Candidate Countries (North East Atlantic, Baltic Sea, Mediterranean Sea and Black Sea). However, the EU can have a significant influence on the health of marine ecosystems of other seas such as the Barents and Arctic seas and at international level. This would be through its bilateral agreements, its political co-operation, its legal approximation, its fishing agreements with third countries, its development programme and also its participation in international treaties and conventions.

The title of the present document is "Towards a strategy to protect and conserve the marine environment". As this is the first communication addressing a marine strategy it is premature to provide the integrated approach that will be needed in the future. At present not all the information needed for developing such an integrated policy is available. It is therefore action and sector oriented in order to describe the complexity and it is intended to establish the foundation upon which a thematic strategy can be built. In particular the present document will:

(1) review the current information concerning the environmental status of the seas and oceans and identify the main threats (Chapter 2 and Annex 1);

(2) review the present situation with regard to the development and implementation of policies to control these threats, both within the EU and at regional and international level (Chapter 3 and Annex 2);

(3) identify gaps in knowledge and review the present situation with regard to monitoring assessment and research (Chapter 4 and Annex 3);

(4) draw operational conclusions as to what needs to be done to improve the current situation (Chapters 3, 4 and 5);

(5) identify the appropriate operational and institutional objectives for the EU (Chapter 6 and 7);

(6) set out an action plan and a work-programme for the Commission, the Member States, Candidate Countries and all relevant stakeholders to work together between now and 2004 in order to define and develop a thematic strategy for the protection and sustainable use of the marine environment (Chapter 8 and Annex 5).

2. The Environmental Quality Status of Our Seas and Oceans

The following is a brief summary of the environmental quality status of the marine environment. The presentation is focussed primarily on Europe's regional seas. This summary and the more extensive description to be found in Annex 1, is based extensively on the reports of the regional marine conventions[1], reports from the European Environment Agency as well as the information collected and reported in the context of the EU's own policy actions such as the common fisheries policy.

Although there is information on the different pressures on the marine environment as described, it is not always clear to what extent these pressures have actually resulted in environmental impacts. Lack of knowledge and the fact that environmental changes take place over long time-scales means that impacts can be unnoticed for long periods of time.

[1] These reports include; the Fourth Periodic Assessment of the Helsinki Commission (to be published in 2002), the "QSR2000" of the OSPAR Commission (published in 2000), which includes a contribution made by AMAP, the "State and Pressures of the Marine and Coastal Mediterranean Environment" of the EEA and UNEP/MAP (published in 1999), the "Black Sea Pollution Assessment" of the Black Sea Environmental Programme (published by the Black Sea Environmental Programme in 1998) and information taken from the website of the Black Sea Environmental Programme and "Europe' s Environment: The Second Assessment", published by the EEA in 1998. Information regarding the impact of fisheries on the main commercial fish stocks was updated taking into account the Commission' s Green Paper on the Review of the Common Fisheries Policy.

Marine biodiversity[2] is under significant pressure. Overfishing is a common problem worldwide in all European seas and in many sea areas of developing and of developed countries, although management systems for the exploitation of these resources have been implemented (such as the Common Fisheries Policy, CFP). The main environmental concerns are:

- several important commercial fish stocks such as cod and hake have reached critical low levels and the majority of fish stocks is fished well above what is sustainable;
- significant damage to non-target fish species and to other, non-fish species such as cetaceans, seals, birds and turtles mainly as a result of high fishing intensity;
- in addition to these direct impact on species, commercial fishing activities are also responsible for damage to sensitive habitat types such as maerl beds, posedonia meadows and deep-sea reefs;
- alterations of the structure and function of marine ecosystem by fishing down the marine food chains.

Another threat to marine biodiversity is associated with the (unintentional) introduction of non-indigenous species, genetically modified or disease bearing organisms. The main vector for these introductions is the discharge of ballast waters from ships and organisms carried on ships' hulls. Aquaculture is also a significant source. When introduced into an ecosystem, non-indigenous species can have a catastrophic effect on indigenous plant and animal communities.

Further, the increasing intensity of human activities along the coasts (such as the development of ports and harbours, coastal protection, land reclamation, tourism and sand and gravel extraction) has a severe impact on coastal habitats and associated ecological processes. These impacts may extend for a significant distance offshore. In addition to increasing levels of urbanisation and tourism, developments such as barrages and wind-parks may also have an impact on habitats and sensitive species. The development of wind and wave power installations should respect sustainability principles.

Various hazardous substances reach the marine environment following their discharge, emission and loss from a number of industrial processes and commercial and domestic uses. Given their intrinsic properties of toxicity, persistence, and liability to bioaccumulate, there is evidence that a diverse range of natural and man-made substances have the potential to impair biological processes in aquatic organisms.

Although some of the more dangerous substances such as PCB' s and DDT and other older pesticides have not been produced or used in the EU for some time, they continue to be detected in the marine environment.Emissions may have stopped, marine water and its associated sediments have a long "memory". As sediments act as sinks for many pollutants, these chemicals continue to a public health concern and impede the use of marine resources for human use. For example, dioxins are appearing in fish taken from the Baltic Sea. In addition endocrine disrupters associated with decreased human fertility and of fish and other marine species are of increasing concern. On the positive side, there are trends of reduced pollution of some hazardous substances in particular the heavy metals.

Eutrophication is caused by excessive inputs of nutrients (nitrogen and phosphorous). Where this is predominantly from agricultural and urban sources, atmospheric deposition of NOx from seagoing ships, may also be a relevant input. In combination with other conditions these inputs can give rise to (increased) algal blooms. These algal blooms can result in the release of substances which are toxic both to man and to other marine life affecting i.a. fisheries, aquaculture and tourism. Decomposing algae can also deplete the oxygen in benthic waters which, in turn, can also have a severely detrimental effect on marine ecosystems in sensitive areas. Finally eutrophication can also result in spectacular growth of macroscopic algae which is then washed onto the shore where it rots causing nuisance and public health risks. Examples of this type of impact can be observed in the coastal regions of Brittany where the tourist industry in some towns and villages has been blighted as a result.

Eutrophication is considered as the most significant cause of the Black Sea' s environmental decline since the 1960s and has contributed to the proliferation of Mnemiopsis. It also has caused marked changes in the Baltic Sea. In the Northeast Atlantic impacts are mainly confined to coastal areas of the eastern part of the North Sea, the Wadden Sea, the German Bight, the Kattegat, and the eastern Skagerrak. In the Mediterranean, the most endangered area is the northern and west coast of the Adriatic Sea.

Progress has been made in reducing inputs of nutrients. However, in most cases this has not yet resulted in clear reductions in nutrient concentrations in the areas of concern due to a long time lag. There are

[2] For the purpose of this Communication marine biodiversity is used in accordance with relevant parts of the UN Convention of Biodiversity Article 2 that states: "Biodiversity 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."

also no reductions in concentrations of chlorophyll-a, which is an indicator of eutrophication. Inputs in particular of nitrogen from diffuse agricultural sources and untreated urban wastewater remains a problem to be solved.

Violations of existing regulations aimed at preventing discharges of oil at sea are frequent in all European seas, resulting in the oiling of seabirds, shellfish, other organisms and the coastline. In general this type of pollution results from the deliberate washing of tanks or the flushing of bilge or ballast water. So far, there is no clear downward trend. Operational discharges from refineries are decreasing. With regard to the offshore industry in the North Sea, total inputs of oil have been reduced substantially since 1985. However, there is a need for continual vigilance as drilling platforms extend into new sectors in deeper waters and into waters seasonally affected by ice.

Further accidents involving ships are unfortunately and despite all the preventive measures which have been put in place, to be expected. Associated with these accidents are the attendant risks of pollution by oil and chemicals. Where major shipping lanes and port facilities are located near to sensitive or special habitats the potential for environmental damage is significantly increased.

There is continued public concern with regard to discharges of radionuclides, particularly those arising from nuclear-fuel reprocessing plants. Compared to many other areas of the world, some of Europe' s regional seas have received significant discharges of nuclear material. There are few data concerning the impact on marine ecosystems.

Contamination with litter is believed to be a general problem in all European Seas. The main sources are shipping (fishing and commercial) and tourist and recreational activities. Impacts on marine life include the drowning of birds entangled in plastic sheeting, and the death of birds, turtles and cetaceans caused by ingested plastic objects. Litter has also been found to carry a variety of epiphytic organisms to sea areas that these organisms would not normally reach. As tourism, urban development and industrial pressure for development in the coastal zone increase, the problem of litter may also increase.

There are still a number of Community beaches where problems with microbiological pollution exist. These result from deficiencies in implementing the Urban Waste Water Treatment Directive and as a result the standards of even the present EC Bathing Water Directive, let alone the likely provisions of the new directive, are not met. Problems also exist in non-Community regions in the Mediterranean and are severe in the Black Sea.

There are clear linkages between the health and proper functioning of the marine environment and human health. Contamination by marine phytoplankton biotoxins or by pathogens associated with inadequately treated sewage, may have a direct and very obvious impact on human wellbeing.

For instance, some countries bordering the Baltic Sea have issued guidelines for consumption by sensitive groups (pregnant women, nursing mothers, children) of certain species of fish due to contamination by dioxins but nevertheless allow for high levels of contaminants in fish products. In certain areas of the European coast the concentrations of heavy metals in carnivorous fish sometimes exceed maximum acceptable levels. Human beings are at the top of the food chain and as such are the ultimate sinks for contaminants which bio-accumulate and bio-magnify.

The potential consequences of climate change are far reaching and may include changes in ocean current strength and transport, water mass formation rates, sea level height, the strength and frequency of weather systems, and rainfall and run-off with downstream effects on ecosystems and fisheries.

3. Review of the Present Situation - Existing Policies and Legislation on Protection and Conservation of the Marine Environment

From the review of current EU policies and legislation in Annex 2, it is apparent is that there exists a wide variety of EU measures which contribute to the protection of the marine environment. However, as most of this is sectoral and as the geographic scope varies, there is no integrated policy focussed on the protection of our seas and oceans.

Threat/Pressure // Legislation, policy or programme

Biodiversity Decline/ Habitat Destruction // A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development (SDS), Directive on the conservation of natural habitats and of wild fauna and flora (92/43, Habitats Directive), Directive on the conservation of wild birds (79/409, Birds Directive), Council Regulation establishing a Community system for fisheries and aquaculture (No 3760/92 of 20 December 1992, CFP), Agricultural Policy (CAP), Directive establishing a framework for Community action in the field of water policy (2000/60, WFD), draft Recommendation concerning the

implementation of Integrated Coastal Zone Management in Europe (ICZM); proposed Directive amending the Recreational Craft Directive 94/25 to include noise and exhaust emission limits for engines used in recreational craft

Hazardous Substances // Directive on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances (67/548) and related legislation, Directive 76/769 relating to restrictions on the marketing and use of certain dangerous substances and preparations, Directive concerning the placing of plant protection products on the market (91/414), Directive concerning the placing of biocidal products on the market (98/8), Directive on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (76/464, plus daughter directives), Directive concerning integrated pollution prevention and control (96/61, IPPC), WFD, Chemicals Policy, emissions legislation especially national emission ceilings

Eutrophication // Council Directive concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676, Nitrates Directive), Council Directive concerning urban waste-water treatment (91/271, UWWT), WFD, CAP, emissions legislation/national emission ceilings

Chronic Oil Pollution // Directive on port reception facilities for ship-generated waste and cargo residues (2000/59), Community Framework for cooperation in the field of accidental or deliberate marine pollution

Radionuclides // Basic safety standards established under the Euratom Treaty establishing the European Atomic Energy Community

Health and Environment // Directive concerning the quality of bathing water (76/160), UWWT, Directive 91/492 on shellfish, Directive 91/493 on fish and fishery products and Directive 96/23 on monitoring of residues in food (Food Safety Framework), Directive laying down the health conditions for the production and the placing on the market of live bivalve molluscs (91/492), Commission Strategy with regard to Dioxins, Furans and PCB; proposed Directive amending the Recreational Craft Directive 94/25 to include noise and exhaust emission limits for engines used in recreational craft (COM (2000) 639); Proposal for a directive on the Protection of the Environment through Criminal Law (COM (2001) 139)

Maritime Transport (limited to measures most directly linked to the protection of the marine environment) // Directive 93/75 concerning minimum requirements for vessels carrying dangerous or polluting goods; Directive 94/57 on common rules and standards for ship inspection and survey organisations, Directive 95/21 concerning Port State Control; Directive 2000/59 on port reception facilities for ship-generated waste and cargo residues; Directive 2001/25 on the minimum level of training of seafarers; Regulation 417/2002 on the accelerated phasing-in of double hull or equivalent design requirements for single hull oil tankers;

The mandates, objectives and activities of the major regional and international conventions, commissions, organisations and agreements are described in Annex 2 with further detailed background information in Annex 4.

Threat/Pressure // International Conventions / Commissions / Organisations

General // Convention for the Protection of Marine Environment of the North East Atlantic (OSPAR), Convention for the Protection of the Marine Environment of the Baltic Sea (HELCOM), Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (BARCELONA), Convention for the Protection of the Black Sea against Pollution (Bucharest), North Sea Conference

Biodiversity Decline / Habitat Destruction // OSPAR, HELCOM, BARCELONA, Agreement on the conservation of small cetaceans of the Baltic and the North Seas (ASCOBANS), Agreement on the conservation of cetaceans in the Black and Mediterranean Seas and contiguous areas of the North East Atlantic (ACCOBAMS), International Baltic Sea Fisheries Convention (IBSFC), North East Atlantic Fisheries Commission (NEAFC), North Atlantic Salmon Conservation Organisation (NASCO), International Commission for the Protection of Atlantic Tunas (ICCAT), Convention on Biological Diversity (CBD), Food and Agriculture Organisation (FAO), Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention), Convention on the Conservation of Wildlife and Natural Habitats in Europe (Bern Convention), UN Convention of the Law of the Sea (UNCLOS)

Hazardous Substances // OSPAR, HELCOM, BARCELONA, Bucharest, Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matters (London Convention), Stockholm Convention on Persistent Organic Pollutants (POPs), International Convention for the Prevention of Pollution from Ships (MARPOL 73/78), UN-ECE Convention on Long-range Transboundary Air Pollution (LRTAP); Rotterdam Convention on Prior Informed Consent for certain Hazardous Chemicals in International Trade

Eutrophication // OSPAR, HELCOM, BARCOM, Bucharest

Chronic Oil Pollution // OSPAR, Agreement for Cooperation in Dealing with Pollution of the North Sea by Oil and Other Harmful Substances (Bonn Agreement), Agreement concerning Cooperation in taking Measures against Pollution of the Sea by Oil (Copenhagen Agreement), Agreement for Cooperation in Dealing with Pollution due to Hydrocarbons or Other Harmful Substances (Lisbon Agreement, not yet in force), HELCOM, BARCELONA, Bucharest, MARPOL 73/78

Radionuclides // OSPAR, HELCOM, BARCELONA, Bucharest, International Atomic Energy Agency, London Convention

Health and Environment // HELCOM, BARCELONA, Bucharest, European Environment and Health Committee, World Health Organisation; Convention for the protection of environment through criminal law of the Council of Europe

Maritime Transport // International Maritime Organisation (IMO) administering several global conventions related to maritime transport, Paris Memorandum on Port State Control (Paris MOU), HELCOM, BARCELONA

The large number of different organisations contributing to the protection of the marine environment is apparent. The geographical area covered by these organisations overlap to a large extent with Community waters. Also in terms of membership there is overlap, albeit to a different extent in the different organisations.

In relation to the specific threats and pressures impinging upon the marine environment the following conclusions can be drawn with regard to EU and regional/international activities

Biodiversity Decline and Habitat Protection

The most significant policies and actions addressing the protection of species and habitats within the EU are the Habitat and Birds Directives, the Common Fisheries Policy, the Common Agricultural Policy and the Biodiversity Action Plans. The OSPAR, Helsinki and Barcelona Conventions activities are being carried out regarding the protection of species and habitats. In the Baltic region actions and targets have been established in the Baltic 21 agenda. Activities regarding the biodiversity and habitat protection in the Black Sea are not very well developed yet.

International conventions on fisheries (e.g. Atlantic salmon under NASCO) and on biodiversity protection (e.g. the Biodiversity Convention (BDC) and ASCOBANS) are either of a general nature or directed at specific stocks and are the principal driver. There are inconsistencies between decisions taken under ASCOBANS and the provisions of the Habitats directive. Where there is further potential for parallel activities, an integrated and consistent approach should be developed to avoid further inconsistencies.

Hazardous Substances

EU measures for controlling pollution with hazardous substances include as the most significant the directives on new and existing substances, IPPC, the Water Framework directive and the New Chemicals Policy. All regional marine conventions address measures to control hazardous substances, sometimes to a high level of detail. A fruitful co-operation between the EU and OSPAR has recently been developed in the field of the selection and prioritisation of hazardous substances and in assessments of these substances with OSPAR addressing its concerns to the Commission where the Community is in a better position to regulate. Relative risk rankings of priority substances in EU and in the regional marine conventions may vary as a result of different relevance of substances in the marine and in freshwater environments or to different usage patterns of substances in countries across Europe.

Where a large part of the regulatory effort of marine Conventions attempts to control chemical products and industrial installations which are also covered by Community legislation, there is a large duplication of effort as well as confusion given the divergent positions taken by the same countries in different fora. Usefully, there have recently been some efforts to co-ordinate the respective work programmes and work according to common methodology. Further afield international action in the context of the recently agreed POP' s Convention and the LRTAP Protocols will be of relevance.

Eutrophication

The main EU instruments to combat eutrophication are the Nitrates Directive, the Urban Wastewater Directive, the Water Framework Directive and the CAP. Both OSPAR (under its Strategy to Combat Eutrophication) and HELCOM stress the need to implement these measures and undertake to identify what additional measures would be required. Regulation by both the EU and the regional marine conventions leads to a degree of confusion as well as duplication of effort. In the field of assessing the

status of eutrophication in the marine environment, activities of the regional marine conventions would be beneficial for the Community.

Chronic Oil Pollution

Although the IPPC and the EIA Directives are applicable, there is no specific EU policy or legislation addressing the offshore oil and gas industry. Measures to control emission and discharges from this sector are mainly developed by OSPAR. Furthermore, Annex 1 (oil) of MARPOL73/78 is applicable on a worldwide scale as far as prevention of ship-source pollution is concerned. These rules are complemented by EC rules for ships bound for EU ports (mainly the Port State Control and reception facilities Directives). There is at present no real competition or wasteful policy overlap in this area.

The main activity in the EU on combating pollution at sea is the action programme on controlling and reducing marine pollution by discharges of hydrocarbons and hazardous and noxious substances. Also HELCOM, the Bonn and Lisbon Agreements, and the Barcelona Convention are active in this field. In general it can be concluded that these activities are well coordinated and beneficial to all.

Contamination with Radionuclides

There exists a global moratorium on sea dumping of radioactive wastes. In European seas dumping of such wastes is banned completely. Euratom provides for the possibility to adopt recommendations on the levels of radioactivity in water, air and soil. However, this provision has so far not been utilised for the marine environment. Under its Strategy with regard to Radioactive Substances, OSPAR is carrying out activities to identify, prioritise, monitor and control the emissions, discharges and losses of radioactive substances. HELCOM has started the monitoring of radioactive substances in 1985 as a continuation of the previous work coordinated by IAEA. The programme includes monitoring of inputs of artificial radioactive substances and their concentrations in water, biota and sediments. The European Commission is carrying out an update of the MARINA Project on the Radiological Exposure of the European Community from Radioactivity in North European Marine Waters. Results of this project are and will be used by the regional conventions. Overlap or duplication of efforts is not an issue in this area. Community and work of the regional marine conventions on radioactive substances appears to be complementary.

Health and Environment

The main pieces of EU legislation controlling microbiological pollution are the Bathing Water Directive and Urban Wastewater Directive. However, the main problems occur in the non-EU parts of the Mediterranean and in the Black Sea due to lack of adequate treatment facilities in these regions. Enhanced cooperation could benefit these regions. Overlap of activities is not an issue.

There is no overlap between the activities of the food safety framework of the Community and those of the regional marine conventions as these organisations are not involved in issues related to health and environment.

Two legal instruments, one at EU level, the other one at European level, could improve the protection of the marine environment at European level by obliging Member or Contracting States to provide for criminal sanctions to deter and prevent conduct which is harmful to it. However, neither of these instruments has entered into force; the first instrument has not yet been adopted by Council and the second one has not yet been ratified.

Maritime Transport

Shipping is a highly regulated field at international level. Community legislation regulating maritime transport and the safety and environmental aspects thereof is inevitably often related to legislation adopted at the global level. The Community' s main role has been to identify weaknesses and gaps in the international regulations and their implementation and to adopt specific Community measures, where considered necessary. Therefore overlap of activities is not an issue. Where ships are considered products, the overall impact on the environment in terms of material consumption, emissions and waste generation in their construction, operation and disposal could be addressed in a more integrated way.

4. Review of the Present situation - The Knowledge Base

4.1. Do we have the Information Necessary to Protect and Conserve the Marine Environment-Gaps in Knowledge

An outline of our understanding of the quality status of the marine environment is given in Chapter 2. This section outlines a short summary of the main gaps in our knowledge. It has already been mentioned in Chapter 2 that even where there is information on the pressures on the marine environment, there is

often no information on any actual impact resulting from these pressures. This summary takes account of current monitoring programmes and information presented in the assessment reports of the regional marine conventions.

Considering that the conservation and sustainable use of biodiversity should be based on an ecosystem-based approach the following four main gaps in knowledge can be identified:

(1) how is biodiversity affected by human induced changes and natural processes and what is the recovery potential and speed once the drivers of the impact have been reduced or eliminated;

(2) how does the change in species diversity and structure influence the functioning of marine and coastal ecosystem;

(3) what is the impact on the elements of marine biodiversity e.g. in terms of decline, losses and timescales;

(4) how should sustainability be defined in relation to biodiversity and how to monitor changes.

In relation to fisheries management there is a need for more reliable and accurate data to manage fish stocks better in marine waters. In addition information on the effects of fishing on non-target species such as benthic organisms, sharks, rays, turtles, seabirds and marine mammals and on benthic habitats, including deep-sea environments is incomplete. Furthermore information is lacking on the effect of changes in size and species structure as well disturbance in trophic levels.

Inventories of species and habitats in need of protection are available for some areas but lacking for other areas. There is also an urgent need to integrate mapping of elements of marine biodiversity.

Data concerning marine mammal populations are incomplete, in particular with regard to population abundance and trends and the impact of human activities.

Information is lacking to identify, monitor and assess the impact of the introduction of non-indigenous species.

For a large number of chemicals reliable data on the intrinsic properties as well as on concentrations in the marine environment is either lacking or not easily accessible. There are no routine monitoring programmes for a large number of the chemicals considered to be of possible concern to the marine environment. The spatial distribution of the available information for those that are covered in monitoring programmes is such that it does not appear to provide an overall picture of the chemical status of the marine environment. On the basis of available data, it has been difficult to establish reliable trends regarding chemical contamination. This is mainly due to the fact that time series are too short and/or that data were not comparable or not reliable.

Little information on the range and concentrations of anthropogenic chemicals released into the marine environment that may cause endocrine disruption in marine organisms is available. The way in which potential endocrine-disrupting chemicals affect organisms is not fully understood and more information is needed on endocrine-disrupting effects other than oestrogenic effects. Furthermore, an assessment of the long-term risks posed to marine ecosystems by hazardous substances is lacking.

HELCOM and the BONN Agreement collect since long information regarding illegal oil discharges from ships into the sea. Information for other areas is incomplete and not fully representative.

The understanding of the response of the marine ecosystem (for example, through the formation of harmful algal blooms, changing algal community structure and succession) to inputs of nutrients, especially the impact of changing nutrient ratios and the contribution of dissolved and particulate nitrogen and phosphorus is rather limited.

Information is lacking on natural variability in nutrients and ecosystem response, including the measurement and assessment of long-term trends. More research is also needed on the extent to which atmospheric deposition of NOx, including from seagoing ships, are contributing to marine eutrophication.

Information on the extent of pollution by radioactive substances as well as the effects of these substances in the marine environment, the extent of marine litter and its effects on marine species, the extent of contamination of fish and shellfish products is also incomplete

4.2. Programmes on Monitoring, Assessment, Reporting and Research

A review of current activities regarding monitoring, assessment, reporting / data management and research, is presented in Annex 3

From this review, it is apparent that most of the organisations involved in the development of measures to protect the marine environment are also involved in monitoring and assessment activities. In addition, at the European level, the EEA and ICES are involved in assessment activities. Further afield on the global

level, organisations such as IOC, GESAMP and UNEP produce or intend to produce regular assessments of the state of the marine environment. Focussing on the European level the following conclusions can be drawn.

- Monitoring

  When seen in a European context, the existing monitoring programmes of the regional marine conventions are not very coherent in terms of scope, content (issues covered) and detail (geographic and temporal density). However, some of the divergence can be attributed to differences in environmental conditions and differences in socio-economic and political situations in the countries bordering these seas. Activities carried out in the context of the implementation of the Water Framework Directive can give an impetus for a more coherent approach.

  Assessment

  A certain level of duplication of effort can be observed in reading the most recent assessment products of the EEA and of the regional marine conventions. This duplication might be reduced by synchronising the frequency and timing and streamlining the content of assessment products and by harmonising the way assessments are made. Where several assessments are based on the same raw data, procedures to make contributions to assessment products of other organisations are lacking and there are barriers to access to publicly funded monitoring data.

- Reporting and Handling of Data and Information

  There is a need to improve the situation with regard to reporting, handling and management of data and information. This could be usefully realised on a European level and be based upon a common policy on generation of, access to and use of the different types of data and information.

- Research

  Research has generated valuable insights into the state of the marine environment and its ecosystems but much more will be needed. As the results of publicly funded research are often not available nor fully exploited in operational work, there is scope for improving the communication between the research community and those engaged in operational activity both in establishing the research priorities and in applying results to operational monitoring and assessment in the regions.

5. Overall Conclusions regarding the Present Situation

As indicated in the previous sections, a large number of problems have yet to be fully addressed and major threats still persist notwithstanding the work of different bodies over the last three decades. Some significant improvements in the quality status of European seas have been realised and some of the trends towards worsening pollution have been halted and in some cases reversed.

The overview of existing monitoring and assessment programmes and the knowledge they have generated reveals a significant number of information gaps on the state of the marine environment and on the effectiveness of the existing measures. Consequently it is, in many cases, unclear whether and which additional protection measures should be considered as well as the administrative level at which they should be considered.

Most of the Community legislation that contributes to addressing the protection of the marine environment was not designed specifically for protection of the marine environment. The control measures of the regional marine conventions aimed at protecting the marine environment are, while in some cases legally binding, difficult to enforce. Consequently it is unclear whether the aggregate of these measures is sufficient to afford the desired level of protection and conservation.

Furthermore, the existing situation described in chapters 3 and 4 does or may lead to: differences in assessments about the need to control environmental threats, lack of coherence and uncertain adequacy in overall policies of the different organisations and in specific measures adopted under such policies, breaks in the chain of the policy cycle when one organisation transfers certain issues to another for follow-up action, disputes about matters of competence, lack of coherence in Member States positions in different fora and duplication of efforts and waste of resources.

Although the analysis outlined in chapters 2-4 focused more on the regional than on the global dimension, many of the overall conclusions would also apply at the global level. While there are various sectoral instruments at UN level in the framework of UNCLOS and UNEP, there is a need to improve the ratification and implementation of these and for a better co-ordination of the global programmes. There is similarly a need for a comprehensive assessment of the state of the marine environment which should be based on regional and sectoral inputs. In addition there is a need for reinforced capacity building,

particularly in developing countries, both to develop the knowledge base and to implement management measures.

The global dimension also includes the external role of the Community. In substantive terms, the strategy will have implications for the Community' s trade, development and external fisheries agreements. The Community should project its policy at a global level both in its participation in multilateral meetings of UN agencies and in its bilateral and multilateral agreements.

6. The Way Forward

Taken together, these conclusions would suggest that the Marine Strategy should set an ambitious, clear and coherent set of objectives with a view to promoting sustainable use of the seas and conserving marine ecosystems (cf. chapter 7). The activities to achieve these objectives (cf. chapter 8) should include the following elements:

- development of a coherent marine policy by moving towards an ecosystem-based approach building on the existing policies;
- improving implementation and enforcement of both existing and new legislation in an integrated way;
- mechanisms and actions aimed at facilitating the co-ordination of these measures and the co-ordination of the different organisations and other stakeholders;
- initiatives to improve knowledge, on past trends in and likely future scenarios for the quality status of European seas and the procedures and methodologies to assess this information;
- promotion of the use and improvement of the co-ordination between the different funding instruments towards the protection of the marine environment;
- application of these strategic elements both regionally and globally.

7. Objectives

Overall objective

The Marine Strategy should constitute a contribution to the Community Strategy for Sustainable Development. Therefore, and as indicated in the 6th EAP, it should promote the sustainable use of the seas and conservation of marine ecosystems, including sea beds, estuarine and coastal areas, paying special attention to sites holding a high biodiversity value.

This overarching objective should be made operational by setting specific (intermediate) sectoral or issue objectives which should include time-lines for their achievement. Achieving this will require an integrated approach to address all threats and a careful assessment of their negative impact on marine environment and an identification of emerging threats.

In endeavouring to achieve this, the regional diversity in the ecological characteristics of the different seas and their sub-regions, the actual quality status thereof, the pressures and threats acting on these seas, the political, social and economic situations in the different regions and existing international institutional arrangements should be recognised and taken into account.

Several specific objectives have already been agreed in EC policy from the Treaty and specific legislation as well as by regional marine conventions. These objectives which are in many cases of a political value or aspirational nature have been used as a basis in the following overall set of objectives. Implementation of these objectives should reflect the overall high level of ambition but recognise regional variation on the actual need and opportunities for remedial action.

Loss of Biodiversity and Destruction of Habitats

- Objective 1

  The European summit in Gothenburg in June 2001 concluded in the context of the debate on sustainable development that a political objective of the EU was to halt biodiversity decline by 2010. This is an extremely ambitious and challenging objective which will drive environmental policy over the next 8 years.

- Objective 2

  In the longer term, the objective is to ensure a sustainable use of biodiversity through the protection and conservation of natural habitats and of wild fauna and flora in the first instance in the European seas, inter alia, by restoring marine ecosystems and re-establishing certain trophic levels which have

been affected by human activities and by preventing the human induced introduction of new non-indigenous species, genetically modified organisms and disease organisms.

- ♣ Objective 3

  In relation to the reform of the Common Fisheries Policy which is currently underway the environmentally relevant objectives have already been identified and included in the Commission' s proposal on this reform, namely a change in fisheries management to reverse the decline in stocks and ensure sustainable fisheries and healthy ecosystem, both in EU and globally.

Hazardous Substances

- ♣ Objective 4

  The objective is to progressively reduce discharges, emissions and losses of substances hazardous to the marine environment with the ultimate aim to reach concentrations of such substances in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.

Eutrophication

- ♣ Objective 5

  The objective with regard to eutrophication is to eliminate human induced eutrophication problems by 2010 by a progressive reduction of anthropogenic inputs of nutrient to areas in the marine environment where these inputs are likely, directly or indirectly, to cause such problems. Where no regional objectives on eutrophication have been set, regional specific action and timeframes for achieving this objective will be developed in collaboration with the regional marine conventions.

Radionuclides

- ♣ Objective 6

  The objective with regard to radionuclides is to prevent pollution from ionising radiation through progressive and substantial reductions of discharges, emissions and losses of radioactive substances, with the ultimate aim to reach concentrations in the marine environment near background values for naturally occurring radioactive substances and close to zero for artificial radioactive substances. This objective should be achieved by 2020.

Chronic Oil Pollution

- ♣ Objective 7

  The objective in this case is to ensure compliance with existing discharges limits of oil from ships and offshore installations by 2010 at the latest and to eliminate all discharges from these sources by 2020.

Litter

- ♣ Objective 8

  The objective is to eliminate marine litter arising from illegal disposal at sea by 2010.

Maritime Transport

- ♣ Objective 9

  The objective is to reduce the environmental impact of shipping by developing the concept of the "Clean Ship".

Health and Environment

- ♣ Objective 10

  The objective is to achieve a quality of the environment where levels of contaminants do not give rise to significant impacts on or risks to human health and wellbeing.

Climate Change

- ♣ Objective 11

  The objective is to implement Community commitments made in the Kyoto Protocol.

Enhancing Co-ordination and Co-operation

In addition to objectives concerning environmental threats and pressures set out above, the EU should actively pursue objectives to improve the tools, processes and institutional arrangements which are employed to protect the marine environment.

- ♣ Objective 12

  The objective is to realise more effective co-ordination and cooperation between the different institutions and regional and global conventions, commissions and agreements governing marine protection.

- ♣ Objective 13

  The objective is to pursue this strategy at global level, by building capacity, in particular in developing countries, to facilitate a better understanding of the state of the marine environment and to implement international Conventions and codes of practice.

Improving the Knowledge Base

- ♣ Objective 14

  The objective is to improve the knowledge base on which marine protection policy is based.

8. Action to Achieve the Objectives

As the above objectives are often of a political and aspirational nature rather than specific, measurable or time related, their realisation could involve a range of different measures. At this stage with the gaps in knowledge as indicated above, it is not feasible to indicate a complete or precise set of actions to reach the objectives. In addition, as some non Community bodies and various stakeholders have a role to play and dialogue is at an early stage, it would be premature to itemise all the actions even if the knowledge base were more complete. The actions to achieve these ambitions detailed hereunder should be seen as a proposition for further discussion. An overview of the time schedule of these actions is presented in Annex 5.

8.1. Policy Action

With greater focus on prevention and by applying the precautionary principle, Commission proposals for control measures will be based on improved knowledge on the state of the marine environment and the actual threats of particular human activities to it and an overview of the effectiveness of the implementation of existing measures. Scenarios reflecting planned or foreseen developments and their likely impacts should also be taken into account.

Where Treaty provisions on environmental protection allow Member States to introduce national control measures that go beyond the common Community level of protection, this implicitly provides opportunities for groups of Member States to do so in concert. The regional diversity of socio-economic and environmental conditions may warrant specific measures and different timeframes may be required to address certain environmental problems. However, such measures should be based on the principles of sustainable development and not jeopardise the effective functioning of the internal market.

The remit of the Community has certain geographic limits and some problems have their source beyond these. Therefore, the Commission will, in co-operation with the relevant non-Community bodies, ensure the most opportune locus of regulation. Where appropriate, this will take the form of agreements in the framework of other bodies.

While such agreements are generally difficult to enforce, they provide an opportunity to address regional specificity and aspirations and they have a role in influencing EC and national legislation. Where the Community is best placed to regulate, the Commission will ensure that concerns identified by these conventions, based on regional assessments are fully taken into account in developing Community policies.

The Commission will also put more emphasis on implementation and enforcement. In doing so, and in addition to essentially retrospective implementation reporting required under many pieces of legislation, the Commission will actively promote the Common Implementation Strategy for the Water Framework

Directive as a model for a forward looking and co-ordinated implementation effort involving the relevant organisations and other stakeholders.

Conserving Biodiversity and Ensuring Habitat Protection

- Action 1

  The Commission will make proposals for developing an ecosystem-based approach, including ecosystem benchmarks and targets to ensure conservation and sustainable use of biodiversity. It will build on the concepts of favourable status of conservation and good ecological status as required by the Habitat and Water Framework Directives and various initiatives regarding the definition of ecological quality objectives.

- Action 2

  The Commission will pursue its efforts to fully implement the EU Habitat and Bird Directives in the marine environment including Exclusive Economic Zones. The Commission will develop by 2005, together with the regional marine conventions, a programme aimed at enhancing the protection of species and habitats in European waters. Consequently, the Commission will develop proposals to adapt the annexes to the Habitat Directive containing marine habitats and species to be protected under the Natura 2000 Network to scientific and technical progress.

  Where this is likely to lead to designation of Special Areas of Conservation which would have implication for ongoing sectoral activities, the Commission will address the integration of nature protection measures and the various sectoral activities impacting on the marine environment including spatial planning and the application of strategic environment assessments.

- Action 3

  The Commission will, following its proposals in 2002, pursue its effort to adjust the fishing effort and capacity in line with long-term management plans to secure sustainable harvest of fish resources and propose measures to reduce discards, incidental by-catches and impact on habitats.

- Action 4

  The Commission will, in relation to the introduction on non-indigenous species:

  - support the initiative to prepare in the IMO framework an international convention for the control and management of ships' ballast water and sediments;
  - develop, in close collaboration with the regional marine conventions, in 2005-2006 regional ballast water management plans as far as such plans are foreseen under this agreement with a view to their early implementation once the agreement has entered into force;
  - review in 2004-2005 if and to which extent a complementary initiative for controlling the introduction of new non-indigenous species by ships ballast water will be necessary;
  - propose measures to limit escapes of farmed fish from aquaculture.

Hazardous Substances

- Action 5

  The Commission will actively pursue the implementation of the objectives set in the Water Framework Directive.

- Action 6

  It will also aim to integrate these objectives into Community policies regarding chemicals and pesticides and other relevant policies so as to achieve a progressive reduction of discharges, emissions and losses of these substances from all land and sea-based sources and sectors with the ultimate aim of halting these.

- Action 7

  In the context of its implementation of its strategy with regard to Dioxins, Furans and PCBs, the Commission will consider the development of an integrated pilot programme for monitoring of dioxins in the environment and in food in relation to human health in the Baltic area.

- Action 8

  The Commission will, in 2002, make proposals for the implementation of the IMO Convention on Harmful Antifoulants and will, in 2005, consider the need for possible further action.

Eutrophication

- Action 9

  To facilitate a more systematic approach towards combating marine eutrophication, the Commission will:

  - pursue a more vigorous enforcement and implementation of the nitrates and urban wastewater directives;
  - review latest information concerning the processes of eutrophication in the context of current legislation;
  - in collaboration with the regional marine conventions establish a more comprehensive assessment in 2006 of the extent of marine eutrophication including a harmonised identification of areas where anthropogenic inputs of nutrients may or do lead to eutrophication problems;
  - in the context of the strategy to reduce air pollution from seagoing ships, propose new, complementary instruments, including reduction of ship NOx emissions. It will initiate in 2002 activities to model depositions of NOx in the marine environment and if necessary, will make proposals for further reducing NOx emissions into the atmosphere.

Radionuclides

- Action 10

  By 2004, the Commission will review the relationship between the OSPAR Strategy with regard to Radioactive Substances and existing EC measures in particular with respect to the reduction of discharges arising from nuclear-fuel reprocessing plants. Based on the results of the updated MARINA project it will determine whether any Community action should be considered.

Chronic Oil Pollution

- Action 11

  By 2004, the Commission will explore ways to improve surveillance of illegal discharges of oil at sea and means to facilitate prosecution of offenders. In doing so, it will seek enhanced co-operation with the regional Bonn and Lisbon agreements, HELCOM and Barcelona.

- Action 12

  In addition, by 2004 the Commission will elaborate, in collaboration with all relevant organisations and other stakeholders, a strategy aimed at eliminating all discharges of oil from all sources. In this context, the Commission will review the different approaches regarding the use and financing of port reception facilities.

Litter

- Action 13

  Where the implementation of the previously mentioned directive is also relevant in reducing litter, the Commission will, in addition by 2004 and in collaboration will all relevant organisations prepare a report on the extent and sources of marine litter and consider possible remedial measures.

Maritime Transport

- Action 14

  The Commission will:

  - in the future assisted by the European Maritime Safety Agency, continue to review the effectiveness of EU legislation in the maritime safety field with special emphasis being given on the recently adopted measures to prevent maritime pollution accidents;
  - continue to actively promote initiatives aimed at minimising environmental harm caused by maritime transport and will support efforts to develop the concept of a Clean Ship.

Health and Environment

- Action 15

The Commission will, in co-operation with Member States, assess by 2004 the results of the monitoring of the levels of contaminants in wild and farmed fish and shellfish and will make in 2006 proposals for maximum contaminant levels in the framework of food safety legislation.

♣ Action 16

In 2002 the Commission will come forward with a proposal for a revision of the Directive on bathing water. This proposal will strengthen current levels of health protection.

♣ Action 17

The Commission will also undertake to achieve a rapid entry into force of Annex IV of MARPOL 73/78 related to discharges of sewage from ships.

Climate Change

♣ Action 18

The Commission will continue to pursue its implementation of the Kyoto protocol, in particular, the policy on emissions trading and the promotion and development of renewable energy sources including the environmentally sensitive sea-based sources.

8.2. Enhancing Co-ordination and Co-operation

♣ Action 19

The Commission will:

- establish an interservice group to consider all issues related to marine protection and ensure effective co-ordination of the sectoral regulations;
- establish a workprogramme involving a sharing of work with Member States, regional organisations and other stakeholders to realise the objectives of the Marine Strategy;
- publish a report by June 2004 on the results of these initiatives together with recommendations for further action.

• Action 20

Where the Commission, within the reform of the CFP, has proposed to establish Regional Advisory Councils with a broad membership including representatives from fisheries and aquaculture sectors, environmental and consumer interests, national and/or regional administrations, and scientists, it will seek to apply this model in other sectors.

• Action 21

The Commission will promote the use of and improve the co-ordination between the different funding instruments towards the protection of the marine environment. At regional level, where there is already co-ordination of the selection, funding and implementation of projects, there may be a utility in further reinforcing this.

Co-ordination could be facilitated by a forum of discussion involving the Community and representatives of organisations and other stakeholders. It could possibly use the model of the Inter Regional Forum (IRF)[3]. Co-operation with other bodies could be based on various forms of co-operation agreements or contracts between different actors. It could also involve Community instruments such as resolutions, recommendations and framework legislation.

Further detailed proposals for this collaboration will be prepared for discussion at a Conference with all organisations and other stakeholders which the Commission intends to organise in December 2002 in collaboration with the Danish Presidency.

• Action 22

At global level, the Commission will:

- promote improved co-ordination between all bodies dealing with marine protection in the framework of UNCLOS and Agenda 21 chapter 17;
- ensure co-ordinated Community position in intergovernmental organisations to facilitate a broad pan European consensus and European influence;

[3] The IRF is an informal framework for co-operation between regional marine conventions, the EEA and JRC.

- pursue on-going dialogue and international scientific and technological research cooperation with partner countries and regions interested in promoting the ecosystem-based approach to the marine environment;
- utilise the framework of various programmes of political co-operation and legal approximation with third countries and the various bilateral and multilateral trade, fisheries and development agreements to pursue the objectives of this strategy;
- strengthen at global, regional and sub-regional level, developing countries' capacities for better understanding and management of their marine resources and protection and conservation of their marine environment;
- seek Community membership in some vital organisations, such as the International Maritime Organisation.

8.3. Improving the Knowledge Base

At present, there are three main types of marine monitoring and assessment work: (i) the regional monitoring and assessment strategies and programmes; (ii) the Community' s implementation strategy on the monitoring and assessment requirements under the EC Water Framework Directive, the food safety framework and other relevant directives; and (iii) the EEA work to develop on a pan-European level indicator based assessments.

- Action 23

  The Commission will, based on its Communication on the Precautionary Principle and the more recent Communication on (Sustainability) Impact Assessment and the knowledge based approach stipulated in the Sixth Environment Action Programme:
  - initiate in 2002 the development of an ecosystem-based approach based on ecosystem indicators and benchmarks and promote the development of integrated advice to facilitate ecosystem based management;
  - promote research in order to enhance the understanding of the link between the pressures on the marine environment and impacts of these;
  - with a view to further enhancing the understanding of the relationships between pressures on and the resulting impact in the marine environment, take initiatives to improve the linkages between Community funded research activities and operational application of the fruits of this research;
  - develop in 2002 proposals for a common approach on the type of the data and information to be collected, how this should be handled and the basis on which it would be assessed to monitor the performance against the benchmarks;
  - initiate the development by 2004 of a common monitoring and assessment strategy to set a framework for regional and sectoral monitoring and assessment programmes;
  - evaluate the provision of training and identify good practice, with a view to enhance governance;
  - play an active role in a process recently started by UNEP aimed at establishing a regular process for assessing the state of the marine environment at a global scale.

The Commission envisages this action could result in the following products:

- comprehensive and integrated reports on the quality status of European Seas which should be prepared in a joint programme involving the Community and the other key stakeholders;
- topic assessments to, inter alia, inform fisheries management discussions on the effects of fisheries on the marine environment and facilitate better efforts to combat eutrophication;
- indicator based reports on the main trends and developments.

The Commission proposes to use as a starting point for the development of the first comprehensive assessment the relevant guidance documents, prepared in the context of the common implementation strategy for the Water Framework Directive, monitoring and assessment programmes of the regional conventions, the EEA and build upon the Inter-Regional Forum.

The development of the monitoring and assessment strategy should address, inter alia:

- a functional integration of monitoring and assessment activities and requirements of the Community, including the food safety and environment monitoring programmes, and those of the regional marine conventions and the roles of EEA and ICES. While monitoring and assessment should basically be

performed regionally, there are questions on the methodology and process on how assessments are being prepared and reviewed;

- a streamlining of the content of assessments, synchronisation of assessment schedules and the harmonisation of assessment tools, of quality assurance, of data collection and handling, of reporting and data-management policies and procedures. A common information infrastructure comprising a common data policy, common standards and structures should be established with a view to removing the obstacles for accessing and using publicly funded data and for the assessments that are based on this data;
- mechanisms to link research priorities and results to operational monitoring and assessment in the regions, inter alia, by preparing syntheses of results of relevant funded research, making this available to those performing assessments on the state of the marine environments and by considering knowledge gaps in assessments in establishing new research priorities.

9. Conclusions

In developing the Marine Strategy, the Commission has taken an ambitious and pragmatic approach. Ambitious objectives have been set or proposed which should ensure sustainable and healthy seas and oceans and their ecosystems as well as a sustainable exploitation of their resources. Meeting these objectives requires an efficient development and effective implementation of a coherent set of measures founded on the application of an ecosystem based approach whereby each policy sector through impact assessment will contribute to sustainable development. This in turn requires a pragmatic co-operation and co-ordination of activities of all institutions and organisations, which are concerned with the protection and sustainable use of the marine environment.

The publication of this document marks the first step in the development of the Marine Strategy. With this as a starting point, the Marine Strategy will be developed in an open and collaborative process involving the Community institutions and relevant regional organisations and other stakeholders.

The Commission requests the Council and the European Parliament to endorse the approach it has set out in this Communication.

ANNEX 1 - Overview of the Quality Status of European Seas

1. Introduction

The following is a summary of the environmental status/quality of the marine environment. The presentation is focussed primarily on Europe' s regional seas. This summary is based extensively on the reports of the regional marine conventions[4], reports from the European Environment Agency as well as the information collected and reported in the context of the EU' s own policy actions such as the common fisheries policy.

2. Biodiversity alterations (diversity, abundance and structure)

Changes in populations of commercially exploited fish species represent the most evident information the impact of fisheries on the marine environment.

Analysis of the main target species over the period 1994-98 indicates that the status of populations of cod, herring, wild salmon and eel fishery was unsustainable in the Baltic Sea. Whereas improvement has been achieved for wild salmon in the larger rivers there is still concern about the development in salmon in smaller rivers, herring and cod. The populations of the commercially important cod are declining due to overexploitation and environmental degradation. The Baltic sturgeon is presumed to have disappeared from Baltic waters.

[4] These reports include; the Fourth Periodic Assessment of the Helsinki Commission (to be published in 2002), the "QSR2000" of the OSPAR Commission (published in 2000), which includes a contribution made by AMAP, the "State and Pressures of the Marine and Coastal Mediterranean Environment" of the EEA and UNEP/MAP (published in 1999), the "Black Sea Pollution Assessment" of the Black Sea Environmental Programme (published by the Black Sea Environmental Programme in 1998) and information taken from the website of the Black Sea Environmental Programme and "Europe' s Environment: The Second Assessment", published by the EEA in 1998. Information regarding the impact of fisheries on the main commercial fish stocks was updated taking into account the Commission' s Green Paper on the Review of the Common Fisheries Policy.

Among the stocks of the commercially exploited fish species of the NE Atlantic, many are either exploited beyond their safe biological limit or are exploited within that limit to an extent that risks the limit being breached. In specific areas, fisheries for 40 out of 60 stocks of these species are believed to be unsustainable and an increasing number of stocks have fallen to critical low levels. Even for stocks that are still within safe biological limits, fishing has altered the size composition. Age compositions have also become truncated. In regions where commercial stocks decline, fishing pressure is often transferred to other stocks or to deep-sea populations where management is particularly difficult and to a large extent non-existing. The slow growth rates and low fecundity of many deep-sea fish makes them particularly vulnerable to overexploitation and several of the deep-sea populations show signs of overfishing. The declining trend in eel landings and recruitment has raised concern about the status of the European eel and the eel fisheries.

Although poor statistics make it difficult to follow marine populations of the Mediterranean and to assess stocks, there is evidence that the demersal stocks are being over-exploited. There is concern about the situation for larger pelagic species (such as tuna and swordfish) as large numbers of immature fish are being caught and there are signs that the stocks are overfished and declining.

A stable total of 168 different fish species have been found in the Black Sea. The introduction of two non-indigenous species has been recorded. Changes in ichthyofaunal composition of the Black Sea primarily involved the alterations in the number of individuals in specific populations. In the past three decades from the about 26 commercially exploited fish species some six species remained their commercial importance. Apart from overfishing, an invasion of Menmiopsis undermined the feeding resources of fish stocks. The fish productivity of the Sea of Azov suffered most. Most commercially exploited stocks such as sturgeons collapsed mainly due to illegal fishing. Fishing fleets of Bulgaria, Georgia, Romania, Ukraine and Russia collapsed partly due to the lack of fish and difficulties in overcoming the transition to a market economy. Much of the anchovy population moved to the Turkish coast, less impacted by eutrophication and Mnemiopsis, and the Turkish fleet expanded considerably to benefit from this fortuitous situation. Information suggests that this expanded fleet is already over-fishing.

Fisheries also have an impact on other parts of the marine ecosystem. Although there are gaps in knowledge, this is best documented for parts of the NE Atlantic. By-catch of undersized or unwanted commercial species, mortality of non-target species including benthic animals and marine mammals and high levels of discards are continuing problems in many areas. Discarding half the weight of the catch (as happens in fisheries for some stocks) results in many more fish (in terms of numbers) being discarded than actually landed. The discards can also alter the competitive relationships within communities by favouring scavenging species.

Harbour porpoises, dolphins and seals are the most common mammals entangled in fishing gear. Harbour porpoises are particularly vulnerable to bottom-set gillnets. Dolphins are vulnerable to drift nets and towed pelagic gears. There are strong indications that the mortality rates of harbour porpoises caught in fishing nets, which have been estimated for parts of the NE Atlantic and in the Baltic Sea are unsustainable. Increase in the population of grey seals in some parts of the Baltic Sea has created problems for fishermen mainly because seals are damaging fishing gears. Due to disturbance of their habitats, monk seals became almost extinct and are only seen very seldom. The two major factors are critical to the fate of the monk seal population - availability of adequate habitats for reproduction and sufficient food supply. At present there is a little scope for optimism that this situation might improve. Although all Black Sea countries imposed a ban on hunting of the Black Sea dolphin in 70s and 80s of last century, recent observations conducted in the northern part of the Black Sea reported a dramatic reduction in the population compared to the 60s.

Disturbance of the seabed by fishing gear can change the species and size composition of the benthos especially where the disturbance is repeated. For example, where bottom trawling has occurred in the North Sea over a long period of time, there has been a shift in benthic diversity and composition from larger, more long-lived benthic species to smaller, more opportunistic species. The damage caused to deepwater coral formations by past trawling activities is quite extensive.

High fishing pressure over long time has lead to fishing down the food chain and excessive impact on habitats which has resulted in less effective and possibly simplified food-webs. Possible consequences are less resilient and less stable ecosystem. In addition there is a risk that such ecosystem may have reduced capacity to adjust to changes driven by natural or human induced climatic processes. Moreover there is a growing concern that the genetic variability has been reduced. The extent of the seriousness is not fully understood, as our understanding of the marine biodiversity in relation to function, structure and genetics remains poor.

During the last few decades intensive forms of aquaculture have increased considerably in the NE Atlantic, in particular salmon farming. In some countries, aquaculture production has become comparable in economic value to that of the demersal and pelagic fishing. It is likely to expand in the future both in the volume and range of fish species cultivated.

Concerns exist over the potential impacts of aquaculture. The introduction and transfer of marine organisms create risks of transporting competitors, predators, parasites, pests and diseases, and can result in the introduction of non-indigenous species. A few non-indigenous species have been deliberately introduced to the maritime area, mainly for aquaculture purposes. Interbreeding from escaped cultured salmonids can affect the genetics of wild stocks.

Changes to benthic communities have been identified over areas surrounding established oil and gas production platforms. Impacts are largely caused by past disposals of cuttings contaminated with oil and chemicals in the immediate vicinity of some platforms. There is a consequent reduction in species diversity near platforms, with opportunistic species dominating the biomass. Biological changes have been detected up to 3 km from such installations. However, it should be noted that these impacts are not irreversible and that natural recovery does take place, albeit rather slowly in the deeper parts of the northern North Sea.

In the NE Atlantic, over 100 non-indigenous species have been recorded, mainly in the North Sea, the Celtic Sea, the Bay of Biscay and along the Iberian coast. The main vectors of such unintentional introductions are ships' ballast water and associated sediments, and fouling on ships' hulls, although aquaculture is also a significant vector.

Over the past twenty years, a growing number of non-indigenous species have been transported into the Baltic Sea from around the world. As ship traffic increases, more and more "stowaway species" arrive in the Baltic Sea from abroad. In some cases, alien species have been intentionally introduced. Due to its naturally low species diversity, the Baltic Sea is considered very vulnerable for introduction of non-indigenous species.

More than 50 non-indigenous species of algae, invertebrates and fish penetrate to the Black Sea during last century. Some of them (and in particular the comb jelly Mnemiopsis leidyi) are the main reason of collapse in the fisheries in the area since 1990. Mnemiopsis is the main consumer of zooplankton and of larvae of benthic invertebrates and fish resulting, inter alia, in a 30% decline of zoobenthos biomass in the Sea of Azov.

Impacts on biodiversity resulting from enhanced inputs of nutrients are described in section 6.

3. Habitat modifications and disturbance

Along the coasts of European seas habitats and associated ecological processes have been changed and, occasionally, destroyed by coastal protection, land reclamation, sand and gravel extraction, recreational activities and development of industries, ports and harbours. Many of these coastal areas are also densely populated and tourism has been growing steadily. Many of the habitats and locations are jeopardised by the sheer number of visitors they attract, increased traffic and growing demands for accommodation and improved services.

Several salmon populations have been brought to extinction due to loss of habitat. Some of the Baltic wild salmon populations still face extinction, partly due to physical obstructions in salmon rivers that hinder adult fish from reaching their spawning grounds and partly due to the impact of fisheries. Loss of habitats might in combination with other factors such as fishing be responsible for the observed decline in European eel.

The majority of offshore oil and gas installations are located in the North Sea. There is scope for considerable expansion in other regions, for example, the Arctic, the wider Atlantic and in Irish waters. Offshore exploration in these areas is at an early stage of development but it is anticipated that the sector will continue to expand there in future. Offshore oil and gas activities can cause impacts at all stages of exploration, development and operation. Discharges of oil and other chemicals are the main problems (see Section 5).

There are extensive searches in progress for new sites for coastal wind power stations, where human population would not be disturbed. Apart from the space required, the impact of this activity includes some visual and acoustic disturbance. The impact on the marine environment during the construction phase should be minimised.

4. Pollution (hazardous substances)

Inputs of hazardous substances to the marine environment arise from a number of industrial processes and commercial and domestic uses. Given their intrinsic properties of toxicity, persistence, and liability to bioaccumulate, there is clear evidence that a diverse range of natural and man-made substances have the potential to impair biological processes in aquatic organisms, for example through interference with their endocrine (hormonal) systems.

There is a significant correlation between shipping intensity and TBT (originating from antifouling treatments of ships) levels in biota/sediments and the occurrence of imposex (development of the sexual characteristics of the other sex) in gastropods. This suggests that vessels using TBT-based antifouling paints (i.e. those longer than 25 m) represent the main source of TBT for the marine environment.

PCBs emitted and deposited during the years of intensive production and use are still a diffuse source of pollution and contamination of the global environment, despite a ban on the production of, and the introduction of controls on the marketing and use of, PCBs in many countries. PCBs can disturb enzyme and endocrine systems in marine mammals as, for example, observed in harbour seals in the Wadden Sea. High levels have also been shown to affect the immune system of the polar bear. In the Baltic Sea, many female seals are unable to produce pups due to uterine occlusion related to PCBs and dioxins in the environment.

From mesocosm studies, there is evidence of a correlation between the occurrences of pre-stages of liver tumours in North Sea flatfish and of contaminants, particularly PAHs and possibly chlorinated hydrocarbons.

Various studies indicate that some organochlorine pesticides are detected in various marine species at low levels, which may give rise to concern. While levels are generally decreasing and restricted to local situations further work is needed on toxaphenes. Although the use of most organochlorine pesticides has been phased out for sometime, they are still detected in the marine environment, due to their extreme persistence, to illegal use or to use elsewhere. In addition, leakage from inadequate storage facilities of obsolete pesticides cannot be excluded as a source.

In the Baltic Sea, an emerging problem is that an increasing number of young grey seals are affected with chronic intestinal ulcers. While these are probably caused by contaminants disrupting the seals' immune system, the precise mechanism remains unknown.

In the Black Sea concentrations of DDT congeners in sediment are reported to be lower than those reported for the Baltic Sea. The ratio of DDT/DDE indicates that DDT is still used in spite of existing bans in most Black Sea countries. Elevated concentrations of lindane in samples near the Romanian shore indicate an intensive use of this pesticide in the Danube basin.

Other persistent organic substances identified are not yet included in any long-term monitoring programme. Their occurrence in the marine environment can either be predicted on the basis of information about their production and use, or has been demonstrated in various national studies or one-off surveys, either of actual concentrations in water or biota, or of biological effects on particular species. These substances include: brominated flame-retardants, chlorinated paraffins, synthetic musks, octyl- and nonylphenol ethoxylates (known endocrine disrupters) and dioxins.

Apart from the known effects of the above-mentioned substances, there is however relatively little information on actual incidences of effects of other substances.

5. Pollution (Oil)

Oil inputs from produced water from offshore installations in the NE Atlantic have increased progressively as oil fields have matured and the number of installations has increased, particularly in the North Sea. They now constitute the largest source of oil for the oil and gas sector. Oil discharged as part of the disposal of cuttings contaminated with oil-based drilling muds has ceased at the end of 1996. Leaching from old drill cuttings is a possible source of oil, but quantities released will be very small if the cuttings are not disturbed. Overall, inputs of oil from the offshore industry have reduced by over 60% in the period 1985 to 1997.

In spite of various restrictions aimed at preventing discharges of oil at sea, violations in all European seas are frequent and there are still many ships cleaning tanks or discharging bilge water with an oil content of more than 15 ppm at sea, resulting in the oiling of seabirds, shellfish, other organisms and the coastline. Pollution from such illegal activities remains at an unacceptably high level, so far without a clear downward trend. Only a small proportion of ships illegally discharging are actually detected and of these only a small proportion are eventually prosecuted.

The risks associated with accidental spills are addressed in section 10 below.

6. Pollution (metals)

The concentrations of most heavy metals measured in organisms inhabiting the Baltic Sea are either stable or even decreasing. An exception is cadmium, the concentration of which increased in fish living in the central Baltic Sea during the 1990s. The reason is unclear, however. The concentrations are higher in organisms living in the southern part of the Gulf of Bothnia and in the Baltic Proper.

Trends in levels of metal contamination in the NE Atlantic are generally decreasing. Effects are normally localised and occur most frequently in estuaries and in the coastal zone.

In the Mediterranean Sea, heavy metals are considered to come mainly from natural processes, while anthropogenic sources are deemed to have a limited and spatially restricted effect. The relative importance of the various sources is, however, difficult to estimate due to the limited data available. Total mercury values in Mediterranean species were generally higher than those found in the Atlantic, deemed to be the result of the region being in the Mediterranean -Himalayan mercuriferous belt.

In the early 1970s, very high mercury concentrations were observed in some coastal areas, in ' hot spots' , near harbors and industrial areas. As a result of dramatic reductions, starting in the late 1970s, in mercury releases from chlor-alkali plants there have been quick recoveries (2-5 years for half-life of mercury) in biota and indications of slower (6-33 years) reductions of concentrations in sediments.

Contamination by trace metals does not appear to be a basin wide problem in the Black Sea. Slightly elevated levels of some metals are reported for areas influenced by the Danube and Dnister rivers. Elevated levels of lead are reported from the Bosphorus area.

7. Eutrophication

Eutrophication resulting from enhanced inputs of nutrients has caused marked changes in the species composition in the Baltic Sea. As a result the abundance and distribution of eelgrass and bladder wrack has been reduced. Dinoflagellates have increased the biomass of the phytoplankton in the central and western part of the Baltic Proper since the 1980s, whereas diatom biomass has decreased.

After a chain of unfortunate events, the stage was set in the Gulf of Finland (with probably the highest nutrient loading anywhere in the Baltic Sea) for the development of a record bloom of toxic blue-green algae in the warm and calm summer of 1997, which was the most extensive ever recorded. Since then, the process has reoccurred with increasing frequency.

In the NE Atlantic, eutrophication is mainly confined to coastal areas of the eastern part of the North Sea, the Wadden Sea, the German Bight, the Kattegat, and the eastern Skagerrak. More localised, specific estuaries and fjords are or may be showing signs of eutrophication.

Inputs of nutrients into the Mediterranean are significantly lower than the outflow through the Gibraltar Strait, making it one of the most nutrient-poor seas. However, eutrophication problems occur in semi-enclosed bays, many of which still receive large amounts of untreated sewage. The most endangered area is the northern and west coast of the Adriatic Sea, which receives the nutrient load of the River Po.

Eutrophication is regarded as the most significant cause of the Black Sea' s environmental decline since the 1960s. During the 1970s and 1980s, the NW Shelf ecosystem catastrophically collapsed due to eutrophication. Changes in the structure of the ecosystem as a result of eutrophication can be seen throughout the whole Black Sea. Organisms, which are specialised in feeding on surplus organic matter, have appeared in large numbers all around the Black Sea coast. Such species are often regarded as "dead end" species as they do not serve as food for zooplankton and the rest of the food chain.

In the Baltic Sea, the 50 % reduction target with regard to nutrients was achieved by 1995 for phosphorus from point sources by almost all the Baltic Sea countries. Most countries did not reach the target for nitrogen from point sources. In general, the reductions were biggest both for point and non-point sources in the transition countries, due to fundamental changes in their political and economical systems in the early 1990s. In EU Member States, the observed decrease was usually smaller and was based on water protection measures implemented during the period. For some countries, like Denmark, Finland, Germany (western part) and Sweden substantial reductions from point sources took place already before the declaration was adopted in 1988. Contributions from agricultural sources usually showed smaller decreases than contributions from other sources. Overall, reductions in inputs of nitrogen were generally smaller than reductions in inputs of phosphorus. Reductions in fertilization have not yet resulted in

reductions in soil phosphorus concentrations. There will therefore be a long time lag before any changes can be seen in the Baltic Sea.

The 50% reduction commitments by North Sea states were achieved for phosphorus, but reductions for nitrogen were estimated to be of the order of 25% between 1985 and 1995. Efforts to collect and treat urban and industrial wastewater have resulted in reductions in direct inputs of nitrogen of 30% and of phosphorus of 20% between 1990 and 1996. However, because of fluctuations in river flow over the same period, no consistent reductions in riverine or atmospheric inputs to the North Sea were detected. No reductions have been achieved in inputs from other diffuse sources such as the leaching of fertilisers and slurry from agricultural land. In coastal areas directly influenced by anthropogenic inputs, the reductions are reflected in reductions in nutrient levels. However, there are no clear trends in nutrient levels for the North Sea as a whole.

In the Black Sea region, about half the nutrients discharged to rivers are from agriculture, one quarter from industry and a similar proportion from domestic sources. The current loads of nutrients entering the Black Sea from the Danube has fallen in recent years due to the collapse of the economies of most lower Danubian and former Soviet countries (resulting, inter alia, in a reduced use of mineral and organic fertilisers), the measures taken to reduce nutrient discharge in the Danube countries, the implementation of a ban in polyphosphate detergents in some countries. Current phosphate levels appear to be roughly the same as in the 1960s but total nitrogen levels are still at least four times as high as those observed during that period. There is evidence of some recovery in Black Sea ecosystems but this remains limited.

8. Pollution (radionuclides)

The question of radioactive contamination, particularly that arising from the Cap de la Hague and Sellafield nuclear-fuel reprocessing plants, is a matter of public concern. This stems from the higher levels of radioactivity discharged in the past and from recent increases in the discharge of certain less radiologically significant radionuclides, particularly technetium-99. Low concentrations of some man-made radionuclides are found in seaweed, shellfish and wildlife far from their sources. Impacts of radionuclides on wildlife have not been assessed.

The levels of 90Sr and 137Cs are high in the Baltic Sea compared with other water bodies in the world. The calculated radiation doses from man-made radioisotopes are, however, below the limits of the EU Basic Safety Standards.

Pollution with radionuclides in the Black Sea is, in general, one order of magnitude higher than in Mediterranean but does not lead to risks to man. The major inputs of man-made radionuclides occur through the Dnieper and Danube rivers. The perceived risk and public concerns are related to potential increase of radionuclides inputs through the Dnieper river and to the safety of ageing reactors in the Black Sea basin.

The greatest threats in the future are accidents in the civilian and military nuclear sectors. Releases from disposal sites are considered to pose negligible radiological risk to man, although it is difficult to draw firm conclusions about environmental impacts.

9. Pollution (microbiological)

Microbiological pollution is principally the direct result of the discharge of untreated or partially treated sewage into the immediate coastal zone.

In 1995 the total amount of untreated municipal wastewater direct discharge to the Baltic Sea was nearly 500 million m3 /year or 15 % of the total amount of wastewater generated, making bathing at some of the beaches in the Baltic Sea dangerous for the health of bathers. However the installation of new urban wastewater treatment plants and the upgrading of existing plants, continuously improves the sanitary conditions in the coastal waters of the Baltic States.

In the NE Atlantic, there are still a number of beaches where the standards of the EC Bathing Water Directive are not met. Contamination of shellfish with E. coli has led to restrictions on marketing shellfish. The associated increased processing costs have caused concern within the shellfish industry.

Microbial pollution and its effects have been mitigated along the EU Mediterranean coast since the installation of urban wastewater treatment plants in most of the European urban areas. However, elsewhere in the region, the problem remains as before.

Results of measuring campaigns in the Black Sea area are rarely published but health authorities try to close beaches when bacteriological sewage pollution reaches dangerous levels. However, these

warnings are often ignored. Accidental discharges of untreated waste waters to the Black Sea is common in the northern and eastern parts due to worn out canalisation system and waste treatment facilities. The level of sewage treatment of small municipalities and villages still is very low.

10. Pollution (litter)

Sources of marine litter (for 95% consisting of non-degradable plastics) are mainly related to waste generated by shipping (fishing and commercial) and tourist and recreational activities. Floating litter and sunken pieces have been found in large quantities in all regions of the North-East Atlantic. Information for other sea areas was not available but it could be assumed that the situation does not differ very much.

Impacts on marine life include the drowning of birds entangled in plastic sheeting, and the death of birds, turtles and cetaceans caused by ingested plastic objects. Litter has also been found to carry a variety of epiphytic organisms to sea areas that these organisms would not normally reach. As tourism, urban development and industrial pressure for development in the coastal zone increase, the problem of litter may also increase.

11. Risk associated with accidents

The greatest potential for damage from shipping disasters lies in the spilling of hazardous materials close to ecologically sensitive areas (e.g. spawning grounds, bird colonies, nature conservation areas), or centres of human activities (e.g. aquaculture sites, tourist centres). Oil spills from tanker accidents or spills involving other hazardous and noxious substances do have major economic and biological impacts, including effects on aquaculture and loss of wildlife. Clean-up efforts to protect tourist interests and temporary restrictions on fixed fisheries are often required, particularly in the short-term.

Offshore oil and gas activities are expanding into deeper waters and into environments seasonally covered by ice. The risk of accidental releases of oil, and the potential effects of such releases, will increase because of the depth of operations and the difficulties of taking remedial actions in cold environments.

12. Climate change

Potential consequences of climate change are far reaching. Changes may occur in ocean current strength and transport, water mass formation rates, sea level height, the strength and frequency of weather systems, and rainfall and run-off with downstream effects on ecosystems and fisheries. Predicted rises in sea level are of particular concern especially for the Dutch coastal zone, other low-lying areas and intertidal habitats of the NE Atlantic region. The formation of North Atlantic Deep Water in the Arctic Region constitutes one of the deepest branches of the thermohaline circulation of the world' s oceans; any changes in the level of formation of this water in the Arctic may change the thermohaline circulation and result in a colder climate in Europe.

The predicted increase in rainfall and fresh-water run-off may change the water exchange between the North Sea and the Baltic Sea and thus affect the whole ecosystem of the Baltic Sea.

ANNEX 2 - Description and Evaluation of Current Activities – Policy

1. EU policy and legislation relevant for the protection of marine environment

1.1. Introduction

Apart from the Community legislation in preventing marine pollution and the complementary Community action programme in the field of response to accidental marine pollution at sea, there is no broad EU policy or specific legislation on protection of the marine environment. However, many policies and pieces of legislation on sustainable development, environmental protection, internal market, maritime transport, agriculture and fisheries indirectly contribute to the protection of the marine environment. The legal bases for this legislation vary according to the human activity.

EC environment legislation is based on arts 174 - 176 of the Treaty and generally aims at defining common minimum standards beyond which Member States may impose stricter regimes provided these are not inconsistent with competition and internal market rules. The relevant sectors are water, air, waste, chemicals, and nature protection.

The Treaty Revision in Nice explicitly refers to groups of Member States agreeing to common measures which would apply to that group. In addition there is Community legislation on free circulation of goods and services, on transport, agriculture and fisheries management, which is relevant for the protection of the marine environment.

Some of this legislation explicitly refers to geographic limitations cf. water legislation. In contrast, other pieces of legislation should be applied wherever activities of the Member State in the EEZ are subject to Community legislation. These include provisions for marketing and use of substances, Integrated Pollution Prevention and Control and Environmental Impact Assessment. These pieces of legislation apply to wherever the sectoral activity takes place within Community waters. Although actual controls may be effected onshore, Market based legislation per art 95 of the Treaty and Fisheries Management per Art 32 and Transport Policy per article 70 to 80 have direct effects on the sectoral activity offshore.

The Environmental Impact Assessment Directive provides for the assessment of the environmental impact of projects likely to have a significant effect on the environment. This directive applies to relevant projects within the territory of the EU and thus offshore oil and gas installations and windmills. In the Framework of the Strategy for Sustainable Development, the Commission has published a Communication on (Sustainability) Impact Assessment.

The Commission Proposal for a Directive on the Protection of the Environment through Criminal Law aims at establishing a minimum standard on constituent elements of criminal offences in breach of Community law protecting the environment. This proposal requires Member States to provide for criminal penalties against the most serious breaches of Community law protecting the environment.

1.2. Coastal Zones

The Commission adopted a cross sectoral strategy on integrated coastal zone management (ICZM) to improve the effectiveness of existing legislation and financial and planning tools in the coastal zone and the management of the diverse pressures on the coastal zone and its resources. Since many of the problems of the marine environment are most pronounced in the coastal zone, the importance of policy co-ordination, availability of information and the involvement of stakeholders in particular at local, regional and national levels, is stressed.

A European Parliament and Council Recommendation regarding Coastal Zone Management was adopted in 2002. This recommendation encourages Member States to develop, on the basis of a national stocktaking of all relevant issues, national strategies under which the roles of the different national administrative actors should be identified and which should include mechanisms for their coordination.

At the international level, the Recommendation encourages Member States and non-Member States in the same regional sea to enter into or maintain a dialogue with neighboring countries for better coordination of responses to cross-border issues.

1.3. Nature Protection

The main Community instruments on nature protection are the Birds and Habitats Directives. Under the former, protection of birds includes, inter alia, the creation of special protection areas. The latter provides for the protection of species and the establishment of a European ecological network of special areas of conservation, known as "Natura 2000". The Commission is of the opinion that both directives are to be applied in the Economic Exclusive Zone. The Fisheries Council has endorsed this interpretation.

The Natura 2000 network aims at the protection of habitats and habitats of species as listed in the directive, including those areas protected under the Birds directive. There is a chapter of "marine habitats" in the annexes of the directive and some marine species are also listed. Nevertheless, the Commission accepts that the classification system underlying these annexes as well as the list of habitats to be protected should be substantially revised after the network is implemented. Most of the areas containing these habitats or species already proposed by Member States are located within territorial waters.

Some problems have been already noticed when dealing with the management of marine protected areas. They mainly concern the competence to adopt measures in these areas on the grounds of nature conservation needs and which are aimed at regulating, inter alia, activities like fishing, transport or dredging. Commission services are considering how to integrate these different policies, and the outcomes of some research and LIFE projects will undoubtedly contribute to that.

1.4. Fisheries management and Agriculture

The Common Fisheries Policy (CFP) based on art 32 has a direct impact on marine ecosystems in that it manages the abstraction of significant quantities of wild species from the marine environment. The CFP operates on the basis of a basic regulation, which provides for appraisal of the state of the commercially relevant stocks and the setting of total allowable catches on an annual basis. In addition CFP provides for technical measures on net mesh sizes, selection of gear and closed areas and closed seasons to reduce mortality of spawning fish, juveniles and non-target species.

This policy is presently under review following publication of various papers on the reform of the CFP, integration of environmental concerns into fisheries management and biodiversity action plans. Collectively these call for, inter alia, improvement in the conservation and protection of marine ecosystems by application of a an ecosystem approach and governance, conservation and sustainable use of stocks, reduction of fishing effort and capacity, reducing the impact of aquaculture, promoting sustainable fisheries beyond Community waters.

In contrast to most environment and transport legislation, fisheries management is an exclusive competence of the Community and Member States are not at liberty to establish national regimes or to enter international agreements. More stringent national regimes can be established but could only be applicable to their own fishermen.

The Common Agriculture Policy (CAP) also based on art 32 is relevant to the extent that the Rural Development Regulation1257/99 provides for support for environmental commitments which go beyond the respect of good farming practice. These aim, inter alia, to reduce inputs of, inter alia, nutrient fertilisers and plant protection products, which are also addressed in specific chemicals and water legislation. They also provide support for farming in less favoured areas provided that good farming practice is followed, which includes in any case the respect of environmental legislation.

Furthermore in relation to agricultural sectors eligible to direct support, Member States are required to take appropriate measures where there is failure to respect environmental requirements. These measures may include a reduction or the cancellation of the support. Within sectoral support there are also possibilities to extensify production, most notably in beef. As there is little or no CAP support regarding non-land intensive agricultural sectors (pigs and poultry), there is thus more reliance on environmental legislation itself to regulate nitrate pollution.

1.5. Prevention of pollution from maritime transport

Community legislation regulating maritime transport and the safety and environmental aspects thereof is based on four principles in relation to international legislation. With reference to the International Maritime Organisation (IMO), Community legislation may:

- ensure harmonised implementation and enforcement of IMO legislation across the EU, for instance on port state control;
- strengthen international legislation at Community level, for instance as regards waste reception facilities in ports;
- fill policy gaps in IMO legislation, for instance in relation to domestic trade;
- speed up the implementation of international legislation, for instance in relation to double-hull oil tankers.

Given the global nature of shipping, it is considered that legislation at a global level, generally is the preferable choice. However, should the international level falls short of meeting, the expectations on maritime safety and environmental protection, specific Community legislation will be considered.

The main Community instruments of relevance to marine protection and which apply to ships using Community ports are the Directives on requirements for vessels carrying dangerous goods, on port state control and on port reception facilities aimed at reducing discharges of ships' waste at sea and the Regulation on the phasing out of single-hull oil tankers.

Apart from these, other maritime safety legislation aiming at improving safety in general, are also of importance. Following the sinking of the oil-tanker Erika in December 1999, the Commission has made a series of proposals for improved monitoring of classification societies, a shipping information and monitoring system that would strengthen and replace the requirements for vessels carrying dangerous goods, an additional compensation scheme for victims of oil-spills and a European Maritime Safety and Pollution Prevention Agency. The Agency will have an important role for monitoring safety-related aspects

of maritime transport in European waters, such as accidents that may cause pollution of the marine and coastal environments.

In addition, Community legislation for a harmonised implementation of the IMO Convention on harmful anti-fouling systems on ships (adopted in October 2001) is under preparation.

1.6. Response to accidental and deliberate marine pollution

The action programme on controlling and reducing marine pollution by hydrocarbon discharges agreed in 1978 was later extended to cover hazardous and noxious substances (HNS). This comprises various training programmes and a Community information system and later (when necessary) the mobilisation of experts to assist in response activities. More recently (in 2000), a Community framework was set up to support Member States efforts in responding to accidental and also deliberate marine pollution. One of the main elements of this is a contingency (response) plan with a 24-hour alert system, formation of task forces, the rapid acquisition of satellite images and co-ordination of observers.

Furthermore, in 2002 a Community mechanism to facilitate reinforced co-operation in civil protection assistance interventions, including accidental marine pollution, has been established.

1.7. Water Protection

The recently adopted Water Framework Directive introduced a regime for management of river basins and contiguous coastal areas based on their drainage basins rather than administrative barriers. It introduces the principle of the combined approach whereby emission controls and quality objectives are both applied. The objective of the directive is the attainment or preservation of good ecological and good chemical status.

This directive provides for the various monitoring, assessments and reporting requirements, which also apply in the coastal zone. An analysis of the pressures of human activities to the coasts and marine waters and their impacts will provide the basis for a programme of measures. Priority substances will be subject to control at Community level while management plans to restore or maintain good status will be based on measures at drainage basin level. This directive replaces some earlier legislation dealing with different types of water, but pre-existing legislation on nitrate pollution from agriculture, urban wastewater treatment, bathing water, integrated pollution prevention and control (IPPC) will be retained to address specific threats to water quality.

Member States, Norway and the Commission have agreed informally on a Common Implementation Strategy for the directive.

1.8. Air

Emissions of atmospheric pollutants affect water quality through deposition. The recent Directive on national emission ceilings for certain atmospheric pollutants introduced a new approach to improve air quality in setting upper limits on a country basis on SO2, NOx and NH3 emissions. These aim to reduce acidification and eutrophication. Directives on Large Combustion Plant, Waste Incineration and the previously mentioned IPPC address the point source approach. The Commission is presently preparing a strategy to address emissions from maritime transport as ship SO2 emissions are high and cause acidification while NOx emissions may be a significant factor in marine eutrophication. The overall policy framework is being developed through the Clean Air for Europe (CAFE) thematic strategy which is due to be finalised by 2005. In contrast to some water legislation, which has a geographic delimitation, these directives apply to sources be they on- or offshore.

1.9. Hazardous Substances

Community Chemicals legislation is based on Article 95 and aims at a high level of protection of health, safety and the environment and consumer as well as the integrity of the internal market. This policy is presently under review. The objectives for the future are to have a single coherent and transparent system with the overall aim of sustainable development. This will be realised through shifting responsibility to industry for the generation of data and assessment of risks, addressing the gap in knowledge on the properties and uses of substances and extending this responsibility along the distribution chain to downstream producers and users and importers.

Presently various pieces of legislation (based on the Directive 67/548 and 76/769), classification and labelling, provide for assessment and control of new and existing chemicals. Whereas these presently

provide for different approaches to use of risk assessment, this is under review in the reform of the chemicals policy which aims at a common approach. Once Community control measures have been established, Member States must justify any further stricter rules at national level by demonstrating specific need and may not negotiate international agreements on restrictions.

Separate instruments for biocides and plant protection products include provisions for positive listing at Community level of which substances may be used, product authorisation is addressed at national level. In addition, there is also indirect regulation of chemicals through the previously mentioned Water Framework Directive and specifically its work on hazardous substances, Waste Legislation and IPPC as well as legislation on occupational safety, major accident hazards, consumer protection, food packaging, cosmetics and toys and the recently published strategy for dioxins, furans and PCB' s.

1.10. Radioactive Substances

The Euratom Treaty provides a series of basic safety standards for the protection of workers and the general public from the effects of ionising radiation. While Euratom also provides for recommendations on the levels of radioactivity in water, air and soil, this provision has so far not been utilised for the marine environment. European Commission is carrying out an update of the MARINA Project on the Radiological Exposure of the European Community from Radioactivity in North European Marine Waters. This project addresses, inter alia, (i) discharge data from various sources and trends in á, â, ã emitters and tritium, (ii) Cs-137 concentrations in the periods 1976-1980 and 1986-1990, (iii) modelling trends in Cs-137 and Pu-239 concentrations, and (iv) radiological impact on mussels in the vicinity of discharges from a phosphate fertiliser plant and nuclear fuel reprocessing plants.

1.11. Waste Management and Resource Policy

The Community waste management strategy is based on the principles of prevention, re-use and recovery, optimisation of disposal and regulation of transport. The basic requirements are laid down in the Waste Framework Directive, which applies in the EEZs and which specifies that disposal or recovery should not endanger man or the environment. Further rules on ship generated waste and cargo residues are provided for in the directive on port reception facilities.

The offshore production of waste, the run off and land based discharges are addressed by the hazardous waste directive and the waste framework directive and specific instruments on waste oils, PCBs, batteries, sewage sludge, titanium dioxide and, recently, on waste electric and electronic equipment. The Commission' s integrated product policy aims at a reduction of the impact of products across the whole life cycle. This covers all products, which impact on the marine environment.

1.12. Funding Mechanisms

Where reference is made in the following section to funding by International Financing Institutions of projects on remediation in the Baltic, Black and Mediterranean sea, the Community contribution to this comprises the various programmes on ISPA and PHARE regarding accession States, TACIS, the Northern Dimension and EUROMED regarding third countries in the former USSR and Mediterranean. To the extent LIFE projects address the marine environment, the regional structural and cohesion funds in the Community are relevant.

2. Policy and legislation of other bodies on protection of marine environment

2.1. Introduction

The other bodies comprise regional marine conventions and regional instruments whose scope is protection of specific regional seas or sea areas in Europe, regional conventions whose objective is regional fisheries management as well as international bodies whose activities cover the law of the sea, maritime transport, water protection.

In most of these bodies where the Community is participating either as a contracting party or observer, the Presidency and Commission co-ordinate the views of the Member States to assure a common EU position consistent with Community legislation regardless of whether the Community itself is a member of the body or of whether the substance is of exclusive or mixed competence. The enunciation of that position depends on the nature of the competence.

2.2. United Nations Convention of the Law of the Sea

The United Nations Convention of the Law of the Sea (UNCLOS) can be considered the overarching instrument on the marine environment. In addition to delimiting national jurisdictions and establishing rights of navigation and the legal regime for the high seas, it provides the legal basis for the protection and sustainable development and addresses environmental control, scientific research, economic activities and settlement of disputes. States have the sovereign right to exploit their natural resources in accordance with a duty to protect and preserve the marine environment. UNCLOS introduced the concept of Exclusive Economic Zones and defined the limits of territorial seas and rights of passage, the freedom of navigation, fishing and laying of submarine pipelines and cables in the high seas, which are those outside territorial waters.

The UNCLOS provisions are reflected and reinforced by several other instruments including Agreement on the Conservation and Management of Straddling Stocks and Highly Migratory Fish Stocks which is aimed at the long term sustainability of these stocks based on the best scientific knowledge available and the precautionary approach.

To further develop the implementation process of UNCLOS and the regulation of ocean affairs per chapter 17 of Agenda 21, the UN General Assembly established an informal consultative process. This will report to the General Assembly and Rio + 10 on, inter alia, reinforced co-ordination of the various intergovernmental bodies and agencies addressing oceans.

On the environment side, UNEP has established a global programme of action (GPA) which addresses the reduction of impact on the marine environment of land based activities. It acts as a source of conceptual and practical guidance on e.g. wastewater treatment and provides a clearinghouse on activities and expertise. Other UNEP activities include the Global Inter national Waters Assessment which aims to produce a comprehensive and global assessment of the ecological status of 66 water areas including marine and coastal waters.

2.3. Regional marine conventions

At regional level, the Community is a contracting party to the (OSPAR) Convention for the protection of the marine environment of the North-East Atlantic, the (Helsinki) Convention on the Protection of the marine Environment of the Baltic Sea Area (HELCOM) and the (Barcelona) Convention for the Protection of the Mediterranean sea against pollution.

All of these Conventions have a common aim to protect the marine environment and preventing and eliminating pollution. They were agreed in the 1970' s and given renewed political impetus through revision in the 1990' s. While their initiation coincided with the first EC action on the Environment, which did not address the marine, they currently complement and overlap to an extent with Community legislation. Nevertheless, they provide a mechanism for dealing with regional differences and for co-operation with non-EU Member States.

OSPAR whose contracting parties include 12 EU Member States, 2 EEA states, Switzerland and the Community has as its overall aim the prevention and elimination of marine pollution and the protection of the marine environment against the adverse effects of human activities (although it acknowledges that fisheries management should be dealt with under other arrangements). It has developed thematic strategies to address hazardous substances, radioactive substances, eutrophication, biodiversity and the offshore oil and gas industry as well as programme of monitoring and assessment. These strategies are of a political nature and serve to elaborate the corresponding annexes of the Convention.

While some of its programmes and measures are of an essentially political and influencing nature, several binding decisions have been taken regulating industrial emissions. While there the strategies are broadly comparable and consistent with EC legislation, there is a degree of duplication of effort given that these issues are also addressed in the EU. The large overlap in membership means that the OSPAR relation to the Community needs careful co-ordination, the relation is likely to evolve with EU enlargement, when it is likely that OSPAR will comprise less than half of the Member States.

In some cases, the different voting rules and representation have lead to different and inconsistent outcomes on the same issues between the Community and OSPAR notwithstanding the large overlap in membership. However, more recently, OSPAR has usefully brought its concerns on the impact of fisheries and hazardous substances to the attention of the EC where the latter is better placed to act.

The Helsinki Convention' s Contracting Parties comprise 4 EU Member States, 4 Candidate Countries, the Russian Federation and the Community. In terms of membership, EU enlargement will lead to a situation where with one exception, the Contracting Parties are EU Member States.

Its scope of activities include measures against harmful substances, the implementation of best environmental practice and best available technology to address pollution from land based sources, prevention of pollution by shipping and offshore activities and response to pollution incidents, nature conservation and coastal zone management as well as a monitoring and assessment programmes to assess the state of the Baltic sea. Through its Programme Implementation Task Force (PITF) under the Joint Comprehensive Environmental Action Programme (JCP) HELCOM also co-ordinates, in close co-operation with International Funding Instruments, investments and financial assistance directed towards reducing the pollution from hot spots in the Baltic Sea area. Its rule making is based on unanimously accepted recommendations.

Some of the HELCOM recommendations on hazardous substances, wastewater treatment and nutrients are not strictly equivalent to measures in the EU. The inconsistencies should disappear when HELCOM has completed a current exercise of harmonising its Recommendations with EU legislation and OSPAR measures.

The Barcelona Convention involves only 4 EU Member States, 4 Candidate Countries and the Community among its 21 contracting parties. It is a UNEP Convention in the context of its regional seas programme. It also differs from OSPAR and HELCOM in that the non-EU contracting parties are and will remain the majority.

Its contracting parties work to implement the Convention through the Mediterranean Action Plan (MAP), taking account of the advice of the Mediterranean Commission for Sustainable Development (MCSD), an advisory body through regional activity centres (RACs) each of which have a thematic focus. These include environment and development, integrated coastal area management, special protected areas, remote sensing, cleaner production and emergency response.

The decision making process involves adoption both of protocols to the Convention and recommendations. The protocols cover dumping, accidents (emergencies), land-based sources, specially protected areas, hazardous waste and offshore activities.

In the Mediterranean, the strategic action programme provides targets for the implementation of the land based sources protocol over 25 years. Similar action plans have been adopted to address the monk seal, cetaceans, marine turtles, and marine vegetation. The practical implementation is facilitated by the engagement of the International Financial Institutions and the EUROMED programme of the EU.

In contrast to OSPAR, HELCOM through its link to the Baltic Agenda 21 process and Barcelona through its link to the Mediterranean Commission for Sustainable Development have a scope that addresses the sustainable development of the region.

The 6 Black Sea countries, Bulgaria, Georgia, Romania, Russian Federation, Turkey, and Ukraine have adopted the (Bucharest) Convention on the Protection of the Black Sea against Pollution. The focus is on land based and vessel based sources of pollution, emergency and dumping on which it has agreed protocols. A Strategy on Conservation of Biological and Landscape Diversity is being prepared for adoption by the Ministers of Environment of the Black Sea states in 2002. The Contracting Parties implement the Convention through its Black Sea Strategic Action Plan (1996) the timetable for which will be revised in 2002. This implementation is to the great extent conditioned by active international support through regional programs and projects. A Regional Contingency Plan on Combating the Black Sea Pollution by oil is being negotiated.

The European Community is not a contracting party as no current EU Member State is a contracting party but since 2001, the Community has an official observer status and participates actively at all meetings and activities. Although not a contracting party, the EU is involved in support for the secretariat of the Convention and has recently been instrumental in establishing a task force to facilitate implementation of projects in the Danube river / Black sea basin (DABLAS). Upon the accession to the EU of two contracting parties, Romania and Bulgaria, the Community itself should become a contracting party. Independent of the state of play on enlargement, the strategy should not ignore the state of the Black Sea in its monitoring and assessment of European seas.

In its recent Communication on co-operation in the Danube - Black Sea region, the Commission invited Council and Parliament to consider a concerted EU initiative to facilitate the environment remediation and sustainable development in the Danube - Black Sea region. Governments of the region recently declared renewed commitment to improve the water quality of the region and a wish that the Commission and the International Financing Institutions further develop their partnership with the countries in the region in identifying, preparing and supporting projects.

On implementation, the work of four regional sea Conventions varies. Where in OSPAR, the focus is on implementation reporting which involves an element of naming and shaming, in Barcelona and Bucharest there is focus on practical implementation through funding projects on infrastructure and other capacity building programmes. HELCOM combines both approaches in its work.

Co-operation has been enhanced with a greater mutual recognition of the respective strengths. This has lead to recognition of areas where the other organisation might take a lead. In the areas of marine monitoring and classification of marine habitats, the EC might benefit from the experience of HELCOM and OSPAR and the Barcelona Convention.

2.4. Other regional Agreements and Conferences

The Arctic Monitoring and Assessment Programme (AMAP) was established in the framework of the Arctic Council (with participation of the Nordic countries, USA, Canada and the Russian Federation) to monitor, assess, and prepare reports on the State of the Arctic Environment. The Arctic Council provides a mechanism to address the common concerns and challenges faced by the Arctic governments and the people of the Arctic. While the Arctic Council does not constitute a legal Convention, it has responsibility for implementing the Arctic Environmental Protection Strategy that was adopted in 1991, which addresses protection of all environmental compartments, including the marine. In the European region, the area covered by AMAP overlaps part of the OSPAR area. To avoid duplication of effort, the AMAP 1997 assessment provided the basis for the information that was reported in the QSR2000 for the OSPAR Arctic sub-region.

Where OSPAR does not address shipping, the Bonn Agreement and the Lisbon Agreement (which is not yet in force) on co-operation with pollution of respectively the North Sea and part of the North-East Atlantic have been agreed by the European Community and the countries bordering these areas.

In addition there are Ministerial Conferences for some regions and sub-regions, e.g. the North Sea and the Wadden Sea. These represent less structured and occasional gatherings of Ministers, which serve to steer discussion of concerns to implementing bodies.

2.5. Nature and Environmental Protection – Biodiversity

On Nature Protection, the Bonn Convention on the Conservation of Migratory Species of Wild Animals aims to conserve migratory species and their habitats. At regional level, ASCOBANS establishes a management plan for the conservation of small cetaceans of the Baltic and North Sea through, inter alia, modification of fishing gear and fishing practice. The related ACCOBAMS concerning cetaceans of the Black and Mediterranean seas provides for a network of protected areas for marine mammals. The Community is not a party to these regional agreements and measures adopted in these forums may not be integrated into Community acquis. Commission services, however, tries to meet regularly the secretariats to exchange views and information.

The Council of Europe adopted on 4 November 1998 a Convention for the protection of environment through criminal law, which establishes as criminal offences a number of acts committed intentionally or through negligence where they cause or are likely to cause lasting damage notably to the quality of the water, or result in the death of or serious injury to any person. It defines the concept of criminal liability of natural and legal persons, specifies the measures to be adopted by States and enable them to confiscate property and define the powers available to the authorities, and provides for international co-operation.

Within the framework of the Convention on Biodiversity, the Jakarta Mandate on marine and coastal biodiversity identified the thematic issues of resource management, sustainable use, protected areas, and aquaculture and alien species. These issues were picked up in the Commission' s Biodiversity Action Plan in 2001.

2.6. Fisheries management

On Fisheries, the Food and Agriculture Organisation (FAO, an autonomous agency of the UN) aims at the promotion sustainable development of responsible fisheries and contributing to food security. Its code of conduct provides a framework of principles and standards for the conservation, management and development of the sector. It recently organised a meeting on how ecosystems considerations can be further included in fisheries management.

At a regional level, the Convention on Fishing and Conservation of the Living Resources of the Baltic Sea is aimed at preserving and increasing the living resources of the Baltic Sea. Its regulating body, the

International Baltic Sea Fisheries Commission (IBSFC), has given special attention to the wild Baltic salmon. The North-East Atlantic Fisheries Commission (NEAFC) provides for technical measures concerning the management of fishery resources within the area covered by the convention. In these bodies, the European Community represents the interests of Member States.

The General Fisheries Commission for the Mediterranean promotes the development, conservation, and management of living resources and aquaculture in the Mediterranean. The North Atlantic Salmon Conservation Organisation (NASCO) has as aim the conservation, restoration and enhancement of wild salmon stocks which migrate beyond the fisheries jurisdiction of coastal States. In 1997, it adopted guidelines on transgenic salmon. The International Commission for the Conservation of Atlantic Tunas (ICCAT) is responsible for the conservation of tuna and tun) like species in the Atlantic.

A Fisheries Convention for the Black Sea is being negotiated in the framework of the Black Sea Economic Co-operation.

2.7. Maritime Transport

The International Maritime Organisation (IMO) is the specialised UN agency responsible for the safety of international shipping and the prevention of pollution from shipping. Of its some 40 Conventions and protocols, the following are particularly relevant to this strategy. This includes the London Convention on the prevention of marine pollution by dumping wastes and other matter, the Convention for the Prevention of Pollution from Ships (MARPOL 73/78), the Convention on Intervention on the high seas in cases of oil casualties and the Convention on Oil Pollution Preparedness, Response and Co-operation. Under the latter the protocol on hazardous and noxious substances provides a framework for co-operation in combating marine accidents.

The Baltic Sea area, the Black Sea area, the Mediterranean Sea area and the North-West European waters have been designated and have become effective as special areas under Annex I (oil) of the MARPOL Convention. As a result, discharges of oily water, from any ship, may only be permitted if the oil content in the effluent does not exceed 15ppm. The designation as a special area is subject to the provision of adequate port reception facilities. There have also been enhancements of the adequacy of port reception facilities in some of the areas, such as the Baltic Sea Area and the Northwest European waters. A Regional Contingency Plan for Combating Pollution of the Black Sea by Oil (developed with IMO assistance of IMO) is being negotiated currently in the Black Sea area. The North Sea and the Baltic Sea area have also been designated and become effective as a special area under Annexes II (noxious liquid substances carried in bulk) and V (garbage) of the MARPOL Convention.

Paris Memorandum on Port State Control covers the waters of the European coastal States and the North Atlantic basin from North America to Europe. It aims to eliminate the operation of sub-standard ships through a harmonised system of port state control.

2.8. Hazardous substances

On Chemicals, both UNEP and OECD are engaged at global and international level in regulatory activity. Where OECD focuses mainly on methodology development including testing methods and hazard and risk assessment, it has also regulated the mutual acceptance of test data. At UN level, the Stockholm Convention controls the production, import, export and use of a group of persistent organic pollutants and the Rotterdam Convention provides for a prior informed consent regime regulating export of domestically banned or heavily restricted substances.

At Regional level the UNECE Convention on the protection and use of Trans-boundary watercourses and international lakes which aims at reducing pollution from land based sources is also relevant for the abatement of pollution of the marine environment. It might also be considered as an analogue of the EU legislation on urban wastewater treatment and integrated pollution prevention and control. Similarly the UNECE Convention on Long Range Trans-boundary air pollution is relevant to protection of the marine environment where the pollutants addressed are also deposited in marine waters.

2.9. Nuclear safety

The International Atomic Energy Agency (IAEA) develops nuclear safety standards and promotes the achievement and maintenance of high levels of safety in applications of nuclear energy as well as protecting man and the environment from the effects of ionising radiation. These standards are endorsed by other international and UN agencies including the International Commission on Radiological Protection

(ICRP), the United Nations Committee on the Effects of Atomic Radiation (UNSCEAR), the World Health Organisation (WHO) and the International Labour Organisation (ILO).

2.10. Non-Governmental Organisations

Non-governmental organisations have recently become more involved in the various activities described above. In general these include both green organisations and industry sector associations. Their involvement has been facilitated through new rules of procedure, which allows their presence in most of the meetings of many of these bodies. Their actual and legitimate contribution includes both influencing of process and outcome as well as technical contribution in which NGO' s are sometimes more efficient in collating and presenting relevant information than regulators. They also play an important role in influencing the general public.

ANNEX 3 - Description and Evaluation of Current Activities – Knowledge

This Annex outlines the marine monitoring, assessment and research and related reporting activities.

1. Activities in Europe

1.1 Monitoring

At present monitoring carried out by Member States does not provide comprehensive information to assess the status (in chemical or biological terms) of Community territorial waters nor the pressures on the marine environment (e.g. the loads of pollutants).

Under the Water Framework Directive (WFD) information to assess the quality of the coastal environment (chemical and ecological status) up to one nautical mile should become available. For the remaining part of the Community territorial waters, the Water Framework Directive only addresses chemical status.

While the Water Framework Directive itself does not provide details regarding monitoring to be carried out in these waters, the development of guidance on monitoring is one of the key points of the Common Implementation Strategy of the Directive. On marine monitoring, informal guidance documents on the design of a monitoring network will be developed. These will cover (i) criteria for the identification of significant water bodies of the basin or basin district; selection of monitoring sites in relation to pressures, impacts, and the presence of protected areas, (ii) network representation in geographical information systems, (iii) integration of national existing networks and integration of national network at European level and (iv) monitoring procedures/protocols in accordance to Annex V of WFD for rivers, lakes, transitional waters, coastal water, artificial and heavily modified water bodies, groundwater.

All regional marine conventions have established monitoring and assessment programmes. A detailed overview of these programmes will be published in a separate report. While they rely on the results thereof for their assessments and reports, the European Environment Agency (EEA) and the International Council for the Exploration of the Sea (ICES) do not manage monitoring programmes.

In the framework of food safety[5], EU Members States are developing monitoring programmes addressing some of the pollutants. These programmes often use the same species (bivalve molluscs in particular) and additionally address the same pollutants: chemicals, heavy metals, radiation, nitrogen and bacteria. In the absence of co-ordination and guidelines for monitoring, such situation leads to duplication of efforts, and costs, but also to gaps as some pollutants are not being monitored at all.

When seen in a European context, the existing monitoring programmes of the regional marine Conventions are not very coherent in terms of scope, content (issues covered), approach of assessment and detail (geographic and temporal density). Some of the divergence may be attributed to differences in environmental conditions and differences in socio-economic and political situations in the countries bordering these seas.

In addition there are common problems including inadequate spatial coverage of monitoring stations and/or sampling frequency as the limited resources of Contracting Parties do not allow comprehensive and regular monitoring activities in offshore areas and consequently a lack of data, incomplete or non-reporting of available data and inadequacy of data. The latter includes uncertain reliability of the data,

[5] See Directive 91/492/EEC on shellfish, Directive 91/493/EEC on fish and fishery products and Directive 96/23/EC on monitoring of residues in food.

lack of consistency within data sets and lack of harmonisation between data sets, which makes their scientific analysis and comparison nearly impossible.

Although it need not be the aim to develop a single overall programme, there is scope for harmonising the strategic approach, overall structure and content of these monitoring programmes and the methodology of the related assessment activities. Activities carried out in the framework of the implementation of the Water Framework Directive could act a stimulus in leading to some form of integration of the monitoring programmes of the regional marine conventions with that of the Framework Directive.

1.2. Assessment

The EEA has established a network with its 31 member countries and with relevant international organisations on the MDIAR chain (Monitoring, Data, Information, Assessment, Reporting) to support policy action. The information relevant for marine policy development is provided in the marine chapters of EEAs reports: State and Outlook on Europe' s Environment (SOE), the Environmental Signals series, sector/environment reporting mechanisms and Topic reports. A core set of 81 water indicators including marine and coastal indicators and covering the DPSIR assessment framework are being developed in order to answer policy questions related to the above policies. A core set of fisheries and environment integration indicators is under development as well as a core set on biodiversity indicators.

In the context of the implementation of the Water Framework Directive, activities with regard to developing guidance on (i) the development of typology and classification systems of transitional and coastal waters and (ii) criteria for the assessment of water quality status for each water body type, are of particular importance for preparing marine assessments.

All regional marine conventions publish regular assessment reports concerning the state of the marine environment. These reports address the input of pollutants to the marine environment, the impacts of human activities on the marine environment and provide a picture of the state of the marine environment making use of all sources of information available to them.

In carrying out its advisory role for, inter alia, the Community and regional fisheries organisations, ICES is preparing annual assessments of the status of ca. 135 commercial fish stocks and their harvesting.

There is some degree of similarity in the content and method of assessment between the assessment products of the EEA on marine and coastal issues and assessment products of the regional marine conventions, and hence in the work required for producing such products.

There are also differences in the way the organisations work. Some reports are produced by a central actor and finalised by editorial groups and data verified by Member States after the assessment has been made and prior to publication. In other cases there is a more collective effort based on consensus of the Contracting Parties, which make voluntary contributions from these Contracting Parties.

Without endorsing either of these methods as the more effective method to influence policy development, the former may be more resource efficient and the latter' s conclusions may be more easily incorporated in policy action.

A certain level of duplication of effort can be observed in reading the most recent assessment products of the EEA and of the marine conventions. This duplication might be reduced by synchronising the frequency and timing of and streamlining the content of assessment products and harmonising the way assessments are made. Where several assessments are based on the same raw data, procedures to make contributions to assessment products of other organisations should be established and barriers to access to publicly funded monitoring data should be removed.

1.3. Reporting and Handling of Data and Information

The situation with regard to reporting and management of data and information is also far from ideal. It is rather common that different international organisations are mandated to collect largely the same type of data and information from their member countries but in a different way and in different timeframes. This has lead to a proliferation of reporting procedures and exercises and information systems and information centres. Data are then not always available in electronic form and data policies and conditions on use impede easy exchange of information.

There is a need to improve the situation with regard to reporting, the handling and the management of data and information. This could be usefully realised on a European level and be based upon a common policy on generation of, access to and use of the different types of data and information

Some initial discussion on these issues has taken place in the Inter-Regional Forum (IRF) and in the implementation of the Water Framework Directive.

1.4. Research

Substantial amounts of scientific information on the understanding of coastal and marine ecosystems have been provided by EU funded environment research programmes (former Framework Programmes) in particular through the ELOISE projects cluster which comprises both contributions from the continent to the sea and understanding the processes in the coastal zone up to the ocean shelf.

The current EC framework for funding research projects related to the marine environment is the programme "Energy, Environment and Sustainable Development"(EESD) under the Fifth Framework Programme for Research and Technological Development (FP5, covering the period 1999-2002). In the EESD, there is a special Key Action called "Sustainable marine ecosystems and Infrastructure". Also the EESD Key Action "Sustainable management and quality of water", through "ELOISE", contributes to coastal and marine research. In addition, international scientific cooperation enabled numerous collaborations with developing and emerging economies to understand and manage marine ecosystems.

The Commission' s proposal for the Sixth Framework Programme (2002-2006) was adopted in January 2002, and represents a deliberate break with past FPs with regard to ambition, scope and instruments to be used in its implementation. The aim is to achieve greater focus on questions of European importance and a better integration of research efforts on the basis of an improved partnership between the various actors (different research communities, national authorities, end-users and decision-makers) in the European research area. Marine research is one of the FP6 priorities within the Union.

The aim of EU funded marine research is to provide new concepts, tools and indicators for integrated management of European Seas in the open ocean as well as in the coastal zone and the catchment area relevant to land management, at scales ranging from local to basin-wide, and to contribute to relevant conventions. Research partnerships with third countries provide knowledge and mutual benefits in relation to often highly interconnected ecological and socio-economic issues. EU research creates the means to implement sustainable management of the coastal, pelagic and deep-sea environments and to understand the diversity of these ecosystems, not only by adding relevant knowledge and technology, but also by investigating interrelated processes, by considering socio-economic factors, and by enabling better forecasts of the anthropogenic and environmental parameters which have an impact on marine activities.

EU funded research on the landward side of land-ocean interactions aims to conceptualise, quantify and to predict the inputs from river basins and catchments to the sea, considering all routes (river outflow, atmospheric loads, groundwater seepage, diffuse releases) and assessing the underlying drivers, pressures and impacts.

The Union actively supports several international fora with developing and emerging economies on using international scientific and technological cooperation to harness the knowledge, policy, capacity and action to progress towards sustainable development, including in relation to the marine environment and its ecosystems. In the context of the Mediterranean, coastal ecosystems have been a priority over the last few years and will continue to be so in the foreseeable future. Likewise, other bi-regional dialogues between Europe and partner-regions have given attention to marine and coastal ecosystems and their sustainable management. These are in particular with NIS; Africa, Caribbean and Pacific countries (ACP); Asia (through ASEM - Asia-Europe Meetings); and Latin America and the Caribbean.

In addition, the Commission' s Joint Research Centre (JRC) provides technical and scientific support needed for European policy-making. As the European Union' s scientific and technical research laboratory, it combines short-term technical support with longer-term strategic research. Much of the work is carried out with partners across Europe, including Member States institutions, research institutes, universities and high-tech businesses.

Marine and coastal research is carried out in the Institute for Environment and Sustainability (IES) which concentrates on numerical modelling of physical and biogeochemical processes in coastal areas and regional seas, bio-optical modelling for quantitative retrieval of waterborne substances (e.g. chlorophyll-a, total suspended matter) from satellite data and subsequent processing on regional and global scale, development and validation of spatial indicators related to coastal/marine eutrophication, development of methods and tools for the assessment of the interactions between river catchments and coastal zone, and (atmospheric modelling (regional/global scale) including emission and sinks in the marine environment.

Of the other international organisations involved in marine research, ICES acts as a forum for the promotion, coordination, and dissemination of research on the physical, chemical, and biological systems in the North Atlantic and adjacent sea regions, including the Baltic Sea, and advice on human impact on its environment, in particular fisheries effects in the North-East Atlantic. ICES has an advisory role to regional marine conventions (AMAP, HELCOM and OSPAR) and to fisheries management authorities.

The regional marine conventions do not act as funding instruments. While the Conventions are also not directly engaged in marine research, some research institutes, which receive Community funding, are also involved in their work.

While much research has been funded by the Community as outlined above, it is not immediately evident that the results of this publicly funded research are available to or exploited by those engaged in monitoring and assessment of the marine environment. There is scope to increase the role of the Marine Conventions in identifying and stimulating EC funded marine research - and vice versa - EC funded marine research yields substance for policy options and future strategies.

2. Activities at global level

On the global level, several international organisations and institutions are involved in monitoring, research and assessment of the marine environment and provide valuable information on the physical conditions and/or the state of the marine environment. Some of the most relevant organisations are described below.

The Intergovernmental Oceanographic Commission (IOC) under UNESCO has, over the last three decades, focused on promoting marine scientific investigations and related ocean services, with a view to learning more about the nature and resources of the oceans. It develops, promotes and facilitates international oceanographic research programmes and facilitates that ocean data and information obtained through research, observation and monitoring are efficiently handled and made widely available.

Programmes carried out under the IOC include, the Global Investigation of Pollution in the Marine Environment Programme (GIPME, an international co-operative programme of scientific investigations focussed on marine contamination and pollution co-sponsored by UNEP and IMO) and the Global Ocean Observing System (GOOS) and its regional sub-programmes (such as EUROGOOS, and in this frame the Baltic Operational Oceanographic System 1999-2003 (BOOS Plan)).

The Joint Group of Experts on the Scientific Aspects of Marine environmental Protection (GESAMP, is based on a secretariat at IMO and co-sponsored by FAO, UNESCO-IOC, WMO, WHO, IAEA, UN, UNEP) provides advice on scientific aspects of marine environmental protection, periodic reviews and assessments of the state of the marine environment and identifies problems and areas requiring special attention.

The Global International Water Assessment (GIWA), a programme led by UNEP is to produce a comprehensive and integrated global and systematic assessment of the environmental conditions and problems in international waters, comprising marine, coastal and freshwater areas, and surface water as well as groundwater.

UNEP recently started a process aimed at establishing regular assessments of the state of the marine environment at a global scale. As a first step, a feasibility study will be carried out.

The UNEP World Conservation Monitoring Centre (WCMC) was established in 2000 as the world biodiversity information and assessment centre of the United Nations Environment Programme. It provides information for policy and action to conserve the living world. Programmes concentrate, inter alia, on species, protected areas, marine waters and habitats affected by climate change such as polar regions.

ANNEX 4 - Overview of a selection of Regional and Global Conventions, Agreements and Agencies

ANNEX 5 - Timeschedule of Activities to Implement the Marine Strategy