

Marine and Coastal Environment

Annual topic update 1998

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Printed in

Printed on recycled and chlorine-free bleached paper

ISBN

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1. Introduction

1.1. The European Environment Agency

The European Environment Agency (EEA) was established by Council Regulation 1210/90, which also aims at the setting up of the European Environment Information and Observation NETwork (EIONET). This network is coordinated by EEA and consists of European Topic Centres (ETCs) under contract to EEA, National Focal Points (NFPs) as co-ordinating Institutes and National Reference Centres (NRCs) as expertise centres in the participating countries.

The mission of the Agency, derived from the main objective for the second Multiannual Work Programme (1999-2003), is:

‘to support sustainable development and to help to achieve significant and measurable improvement in Europe’s environment through the provision of targeted, timely, relevant and reliable information to policy making agents and the public’.

EEA and its ETCs use the existing capacities in member countries and also co-operate actively with the Community Services, other bodies and international organisations to build synergy and avoid duplication of effort.

1.2. The European Topic Centre on Marine and Coastal Environment

The European Topic Centre on Marine and Coastal Environment (ETC/MCE) was established in 1994 with the aim to help the European Environment Agency to carry out its work programme on these issues.

The main objective of the ETC/MCE is to provide reliable and comparable information linking the state and pressure of the marine and coastal environment of Europe. The ETC/MCE also has the mandate to develop appropriate tools and procedures to assess the quality of the marine and coastal environment. In this respect, an effort towards the harmonisation of reporting and assessment has been initiated by the ETC/MCE and is still in progress.

The ETC/MCE consortium consists of experts from six national institutes:

- Ente Per le Nuove Tecnologie, l’Energia e l’Ambiente (ENEA) - CRAM La Spezia - Italy
- Institut Francais de Recherche pour l’Exploitation de la Mer (IFREMER) - Brest and Toulon - France
- National Centre for Marine Research (NCMR) - Athens - Greece
- National Environment Research Institute (NERI) - Roskilde - Denmark

- National Institute for Coastal and Marine Management (RIKZ)- The Hague the Netherlands
- National Institute for Water Research (NIVA) - Oslo - Norway

The Management Committee of the ETC/MCE, which consists of representatives from each of the partner institutions meets in a plenary session at least twice a year to discuss the state-of-play of activities and problems as well as plan and agree with the EEA on the future activities.

Representatives from the European Commission services (DGXI/D1 and the Joint Research Centre), are invited to participate in the Management Committee meetings in order to better focus future activities and to develop possible future co-operation.

The ETC Workplan in 1998 was derived from the EEA Multiannual Work Programme 1994-1999 and Annual Work Programme 1998.

Each task is developed by a team consisting of relevant experts from the consortium and led by a task leader, who is responsible for the activities and related deliverables and reports to the ETC Leader. Ad-hoc meetings, with the participation of the interested partners and the ETC Leader, are usually held in order to discuss specific issues.

For further information on the ETC/MCE contact:

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1.3. Main points of contact

In order to develop the activities ETC/MCE has established direct contacts with relevant international and national organisations.

List of the principal contact points (NFPs and NRCs) for the ETC/MCE

Country	Name	Institutions	Tel/Fax/e-mail
Austria	Wilhelm Vogel	Federal Environment Agency	43 1 31304 3550/ 43 1 31304 5400 vogel@ubavie.gv.at
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The ETC/MCE also has contacts with the following Regional Commissions, Action Plans, International Organisations and Institutes within the Joint Research Centre (JRC):

Organisation	Name	Address	Tel/Fax/e-mail
OSPARCOM (Oslo and Paris Commissions)	Mr. Ben van de Wetering Executive Secretary	New Court, 48 Carey Street, London WC2A 2JQ, UK	44 171 242 9927/44 171 831 7427 secretariat@ospar.org
HELCOM (Helsinki Commission)	Mr. Kjell Grip Environment Secretary	Katajanokanlaituri 6 B, FIN-00160 Helsinki, FINLAND	358 9 6220 2227/358 9 6220 2239 kjell@helcom.fi
UNEP/MAP (United Nations Environment Programme Mediterranean Action Plan)	Mr. Gabriel P. Gabrielides Senior Programme Officer	Vas. Konstantinou 48, P.O.Box 18019, 11610 Athens, GREECE	30 1 7253190/30 1 7253196-7 gpgmedu@compulink.gr
AMAP (Arctic Monitoring Assessment Programme)	Mr. Lars Otto Reiersen Executive Secretary	Stromsveien 96, P.O. Box 8100 Dep 0032 Oslo, NORWAY	47 22573544/47 22676706 lars-otto.reiersen@sftospost.md.dep. telemax.no
BSEP (Black Sea Environment Programme)	Mr. Radu Mihnea Coordinator	Dolmabahçe Sarayı, 2nd Hareket Kosku 80680 Besiktas, Istanbul. TURKEY	90 212 227 9927/90 212 227 9933 rmihnea@dominet.in.com.tr
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1.4. Objectives

1.4.1. Background

The activities carried out since 1996 by ETC/MCE can be summarised as follows:

- To facilitate the exchange and integration of existing data and information produced by Regional Conventions/ Action Plans through the organisation of an Inter-regional Forum,
- Development of specific technical tasks on the identification of common and major threats to European marine and coastal areas, the development of a preliminary set of indicators for coastal zone characterisation and management, the description of the state and pressure of the marine and coastal environment on specific areas such as the Mediterranean Sea, the description of marine eutrophication;
- Support to the EEA on relevant matters, providing advice to specific users and representing the EEA in working groups, committees, etc.

1.4.2. Objectives of the ETC/MCE for 1998

The ETC/MCE, in agreement with the EEA, addressed the following main objectives for 1998:

- To contribute to the key report *EEA State of the environment and outlook* (EU98);
- To strengthen co-operation with the European Commission Services (DGXI/D1 and JRC) on specific issues of common interest;
- To further work on the technical tasks from earlier years, through the testing and further development of field data collected from international and national organisations as well as through EEA reporting (*Europe's Environment: The Second Assessment*, *EEA State of the environment and outlook* (EU98), *Excessive Anthropogenic Nutrients in European Ecosystems* and *State and Pressures of the Marine and Coastal Mediterranean Environment*);
- To further develop the activities agreed upon at the Second Inter-regional Forum, particularly the setting up of a working group to demonstrate the potential of a Geographical Information System as a tool for assessment.

2. Progress

2.1. EEA state of the environment and outlook report (EU98)

The ETC/MCE contributed to the completion of the marine and coastal chapter of the EEA state of the environment and outlook report (EU98), taking into consideration and updating the information collected for *Europe's Environment: the Second Assessment, State and Pressures of the marine and coastal Mediterranean Environment* and the LACOAST Project. The EEA state and outlook report is the main periodical report produced by EEA and is due to be published in June 1999.

Main findings

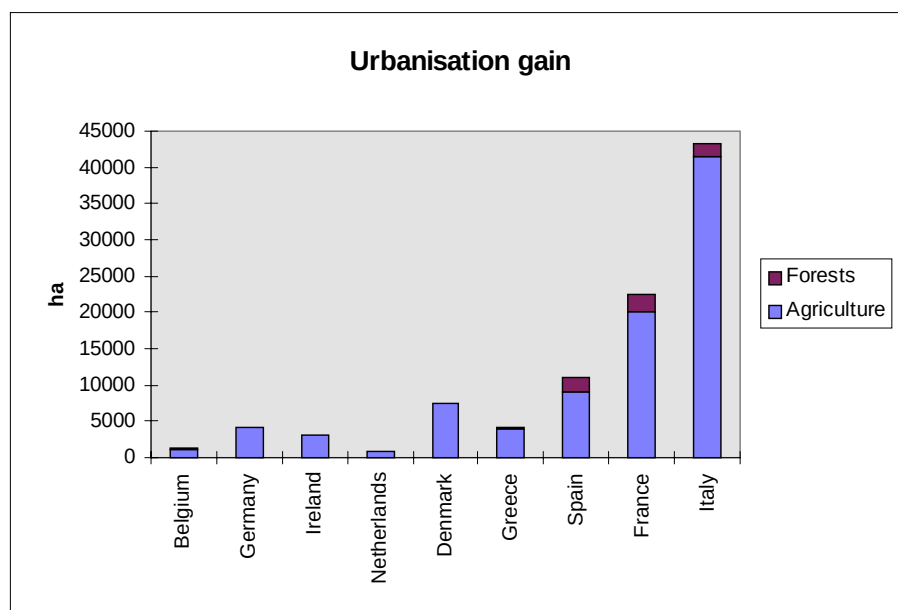
Some 85% of European coasts, where about a third of Europe's population lives, are at high or moderate risk from different kinds of pressures, among which sea level rise from climate change. Poor water quality, coastal erosion and the lack of integrated coastal zone management are the main problems. Coastal erosion, caused by human activities or natural causes, is a major issue in some regions in the EU with 25% of the coast length subject to erosion, 50% stable while 15% is receiving material (aggradation); for the remaining 10%, the evolution is unknown.

Among the 25 less favoured areas in EU in 1983, 23 were coastal areas. The fact that 19 remain so in 1996 shows that in spite of the high expenditure under EU financial instruments (about two-third of the EU Structural funds are allocated to coastal areas) the cohesion results have not yet been achieved. This lack of economic growth curbs the conditions for environmental management.

Coastal areas could provide the best example of environmental integration. To date, an integrated approach to *Coastal Zone Management* (ICZM) is still missing at national level, where a sectoral approach dominates. Key areas of action for ICZM are environmental impact assessment, coastal land planning, habitat management and pollution control. The results of the EU 'Integrated Coastal Zone Management Demonstration Programme' and the initiative of the proposed EU Water Framework Directive should provide concrete examples on how to tackle the coastal zone management issues as they occur in the Member States.

Urbanisation, in general, has increased from 1975 to 1990 in the coastal zones in the EU Member States (Figure 1). Agriculture, although a declining source of employment, remains a major economic activity. Recent reforms of the Common Agricultural Policy (CAP) have had an effect - for instance, set-aside is expected to lead to a decline of at least 10% in the area of arable land under cultivation on the North Sea coasts, while a further 4-5% of arable land will be farmed less intensively, chiefly because of stricter environmental controls.

Figure 1: Urbanisation increase in EU Members states in the coastal zones from 1975 to approx. 1990



Source: LACOAST Project

The Mediterranean is the world's leading tourist destination, accounting for 30% of international tourist arrivals and for one-third of the receipts from international *tourism*. The number of tourists in the Mediterranean coastal region is set to rise from 135 million in 1990 to 235-353 million in 2025. Tourism is also important for other coastal regions including the Baltic Sea states, the North Sea and North East Atlantic coasts. Overall, the annual growth rate for tourism in Europe is 3.7% per year. Whether this growth rate will continue depends on Europe maintaining the quality and attractions of its tourist areas and its market share in competition with other tourism destinations.

All EU *regional seas* are covered by conventions which share the aim of protecting the marine environment. The conventions are relatively complete (by means of appropriate scientific and management tools) but they still need to be enforced and co-ordinated to provide comparable information.

The North Sea catchment area and coasts are densely populated with considerable industrial development, and the offshore oil and gas industry is a major economic activity. Large areas such as the industrialised estuaries have concentrations of contaminants clearly above the North Atlantic background level. Synthetic organic compounds could be found in the North Sea although higher concentrations are clearly identifiable in the estuaries; known distributions are strongly influenced by sampling distribution. Contaminants come from major rivers – Elbe, Weser, Rhine, Meuse, Scheldt, Seine, Thames, Humber – and also from dredged material and atmospheric inputs. Nitrogen and phosphorus levels are high, especially in the southern part of the North Sea.

Areas surrounding the European Arctic Seas are sparsely populated, with little industry. The major sources of pollutants and radionuclides are atmospheric long range transport, Russian rivers, ice-drift and ocean currents. High levels of persistent organic pollutants are found in some top predators, such as polar bears.

In the Baltic Sea, maritime traffic is intense. There is considerable transport of oil, which is likely to increase. There have been improvements in the marine environment: discharges of organo-halogen compounds from pulp industry have been reduced by nearly 90% since 1987, and concentrations of polychlorinated biphenyl (PCBs), dychlorodiphenyltrichloroethane (DDT), hexachlorocyclohexane (HCH) and hexachlorobenzene (HCB) have also declined – although they are still several times higher than in the open North Sea and the Atlantic Ocean. Eutrophication is a serious problem due to a combination of excessive nutrients, topography, and the physical and chemical nature of the Baltic Sea. The Baltic Sea states decided in 1988 to reduce nutrients, heavy metals and persistent organic pollutants by 50% by 1995 but this common objective is not yet reached by all countries.

In the **Mediterranean**, there are serious problems with increasing concentrations of hydrocarbons which contaminate water and beaches. Heavy metals and PCBs, while present, are not a major environmental threat. Eutrophication is a problem in places, and while the situation has been mitigated by the installation of urban wastewater treatment plants, much of the municipal sewage in the Mediterranean is still untreated.

In the last 30 years the **Black Sea** has increasingly attracted the attention of scientists, governments and the public as a region suffering ecological deterioration. In the 1973-1990 period, 60 million tons of bottom dwelling animals were found dead (including 5 000 tons of fish). These phenomena may be linked to the increase in mineral and nutrients river discharge.

2.2. State and pressures of the marine and coastal Mediterranean environment

The Report on the State and Pressure of the Marine and Coastal Mediterranean Environment was written in collaboration with UNEP-MAP and is to be published in early 1999.

The main objective of the report is to describe the environmental status of the Mediterranean Sea for policy development and management and identification of missing elements. The report follows the EEA DPSIR assessment framework (Driving forces, Pressures, State, Impact, Response) and could be also used to improve monitoring capacities in the area.

Main findings

The overall state of the Mediterranean Sea, based on the findings of this report, is considered to be good. Waters in the open sea are classified

among the most oligotrophic of the world ocean; marine ecosystems are still well functioning and the Mediterranean Sea is characterised by a high diversity of marine species; concentrations of heavy metals and organo-chlorinated compounds in the seawater in most cases are below the detection limits. In several cases natural peculiarities (e.g. sea water masses movement and the circulation patterns) determine the state of the Mediterranean Sea and the potential environmental threats.

In contrast to the above, only a relatively small percentage of the coastal zone is still in pristine condition, of which an even smaller proportion is protected. This report showed that the current threats (e.g., localised eutrophication, heavy metals, organic and microbial pollution, oil spills, introduction of non-indigenous species) are mainly the results of pressures from anthropogenic activities and more attention is hence needed. Although these activities are very localised today, future goals for monitoring and action across the Mediterranean area should be identified. The presence of pollution ‘hot spots’, located generally in semi-enclosed gulfs and bays near major harbours, large cities and industrial areas, is probably the major problem of the Mediterranean Sea. The pressure from tourism, especially in the northern Mediterranean countries, is one of the problems that have to be managed correctly to avoid any further degradation of the marine and coastal environment. Given the state of the Mediterranean Sea and its connection to the pressures from human activities one could say that efforts for environmental amelioration need to be directed towards the coastal zones, through a better spatial planning, rather than the sea.

The report has identified some major issues which could be the building blocks for higher quality and better integrated information from the region and could be further developed:

1. **Coastal zones:** An integrated approach to the coastal zones is missing. Decisions and management of the coastal zones should be made at regional, national and local level, taking into account the driving forces and the pressures of the human activities in order to integrate environmental protection into economic development. Integrated coastal zone management can be a success story only if the experience and expertise are maximised and budgets allocation to projects, which take into account the holistic environmental dimension, is enhanced. Organisational and legal instruments – including market-based instruments – should be developed to control and manage coastal development, land reclamation and groundwater exploitation.
2. **Agriculture practices:** In most Mediterranean countries, all types of agricultural practices and land use are treated as non-point sources of water pollution. Quantification of diffuse sources is very difficult to determine. Countries should adopt a holistic approach to water-resource management, based on the integrated assessment of water quality and ecosystem health, from the coastal waters to the entire catchment area.
3. **Climate change:** Multidisciplinary research is still needed to assess the major environmental and socio-economic problems that may follow from accelerated sea-level rise, erosion and desertification, floods and

other threats that originate from climate changes, and to distinguish natural fluctuations from the effects of anthropogenic activities.

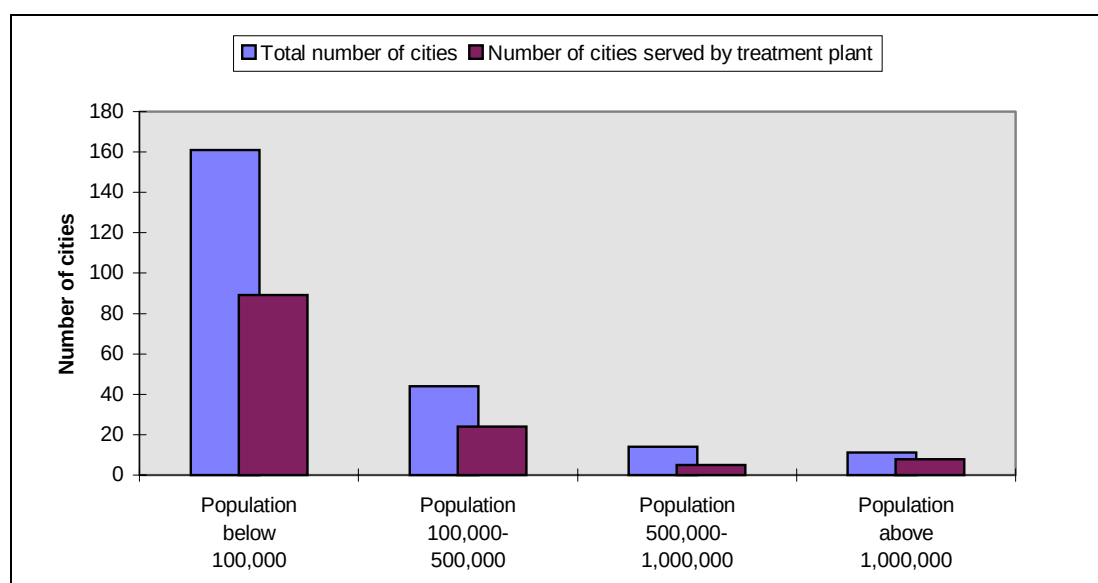
4. **Biodiversity:** The creation of marine parks and protected areas for conservation purposes is often not sufficient as an impact limitation measure, as many of the impacts derive from pressures that are not locally originated. A specific inter-Mediterranean approach to the monitoring of marine biodiversity and the identification of important risks threatening the present state is still missing. Special attention is essential in species introductions and habitat loss, to avoid biodiversity reduction. Research on processes related to ecosystem changes and rehabilitation of degraded coastal ecosystems is also required.

The following missing elements have also been identified:

1. **Coastal erosion:** New information – and access to existing information for its compilation – is not available throughout the basin. Dispersal of the data among different administrative bodies, lack of knowledge of the existing inventories, data contained in reports considered confidential, or accessible only through long and hard administrative procedures make the problem worse. Uncertainties about the evolution of numerous coastal segments still exist in cartographic atlases. The coastal evolution trends are thus often considered on the basis of experts' judgements in the absence of studies or of preliminary measurements.
2. **Contaminants:** Although an effort has been made through the MEDPOL programme, there is still a scarcity of comparable data. The technical, monitoring capabilities of the Mediterranean countries have to be improved.
3. **Oil pollution:** Attention should be given at the planning stage to identifying areas that need protection, their order of priority and the techniques to be used to do so; oil reception facilities should be recommended for all major ports along the basin. Straits and ports vicinities already appear to be top priorities.
4. **Microbial pollution:** The problem of the effects of microbiological pollution on the Mediterranean coast remains and is mainly related to urban waste water. Further research and data on virus contamination is required on a basin scale. The geographical imbalance of data is more acute. Intake of pathogenic micro-organisms causing damage to health on a Mediterranean-wide basis still has to be determined. Furthermore, there are still large stretches of the Mediterranean coastal zone, mainly in the southern and eastern parts, for which records are very sparse.
5. **Sewage discharges:** Sewage treatment plants are still missing from the coast and about 60% of urban waste treatment is still untreated (Fig. 2). There is a need for further data and information to be available. However, based on the existing information, sewage should be discharged after advanced treatment in adequately designed treatment plants. The technology is available and reasonable cheap. As analysed convincingly by several studies, the health costs and other economic losses, especially in touristic regions due to contamination of coastal waters, is much higher than the investment necessary for achieving an acceptable sewage effluent quality.

6. **Radionuclides:** Information on radionuclide distribution is missing from some areas of the Mediterranean Sea, particularly from the eastern and southern basins; background data should be established in these areas.
7. **Fisheries:** Knowledge of Mediterranean fisheries needs to be improved. Quality of statistics, particularly of landings is still one of the main weaknesses. Information about landings, structure and capacity of the different types of fishing fleets should be improved. Overfishing is still a big issue in the Mediterranean and fish stock assessment studies and management measures need to be enforced for sustainable fisheries.
8. **Marine aquaculture:** The careful selection of sites, with precise definition of their carrying capacity, needs to be strongly regulated and enforced. Open sea practices should be further developed to avoid coastal problems.

Figure 2: Number of cities in the Mediterranean basin served with waste treatment plants according to existing population



Source: WHO/UNEP

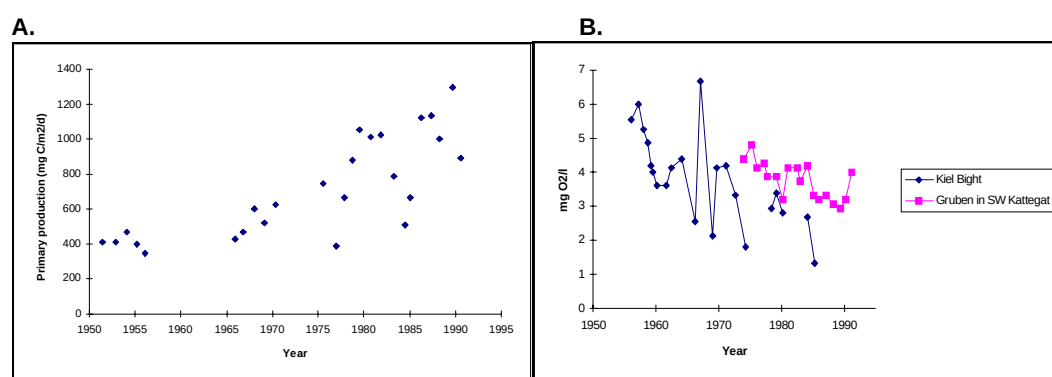
2.3. Excessive anthropogenic nutrients in European ecosystems

Eutrophication caused by excessive concentrations of nitrogen and phosphorus affects marine biodiversity, fish and shellfish stocks as well as human health and the recreational use of marine coastal zones. The main affected areas are the Black Sea, with severe anoxic effects at a basin scale due to the increase of nutrient discharges mainly from the Danube run-off; the Baltic Sea, because of excessive nutrients, topography and physical and chemical nature. Eutrophication in the Baltic Sea is now identified as one of the most serious problems. The increase in primary production and the subsequent increase in algal sedimentation and decomposition in the benthic system have decreased the oxygen content of the deep water (Figure 3); the North Sea because of high nutrient discharges, particularly phosphorus; the Mediterranean Sea, but only in 'hot spots' in shallow and coastal waters with high nutrient discharges and favourable physicochemical conditions for algal growth; and, at a basin scale, the Adriatic Sea.

Measures against eutrophication need to be taken at international level, because of the transboundary, nature of the phenomenon. This will require uniform definitions and harmonisation of reporting and criteria for assessing eutrophication. The Oslo and Paris Commission (OSPARCOM), covering the north-east Atlantic, the North Sea, the Norwegian Sea and parts of the Barents Sea, has initiated a process to harmonise reporting of nutrient discharges from point and diffuse sources in the North Sea. The European Commission and the European Environment Agency support this action to enable the process to be adapted for the other Member States.

The political goal in the OSPAR region and the Helsinki Commission (HELCOM) regions covering the Baltic Sea is to reduce discharges of nutrients by 50% where these inputs are likely, directly or indirectly, to cause eutrophication.

Figure 3. A: Trend in phytoplankton production over the period 1950-90 (Richardson and Ærtebjerg, 1991) and B. Trend in bottom water oxygen content in Kiel Bight 1957-86 (during September) and in the south-western Kattegat (Griben) over the period 1974-92 (yearly average) (NEPI,1994)



In the Mediterranean Sea, the eutrophication of some areas ('hot spots'/semi-enclosed bays) is an issue of concern. The priorities of the Mediterranean Action Plan Assessment (UNEP/MAP) are to create an inventory of land-based sources and to encourage action on the factors controlling eutrophication, based on scientific knowledge of the functioning of the ecosystem.

The priority in the Black Sea Environment Programme is the control of nutrient inputs primarily from river run-off.

References

NERI, 1994. Environment and Society, NERI Tech. Rep. 108, Roskilde Denmark.

Richardson, K. and Ærtebjerg, G. (1991). *Effects of nitrogen and phosphorus in Kattegat and the Danish Belts*. In *Report from a consensus conference*. Danish Ministry of Education and Research. (in Danish).

2.4. Coastal zone indicators/Inventory of European estuaries, lagoons and fjords

One of the tasks of the ETC/MCE is to identify the common major threats to the European coastal zone.

This has been carried out through the development of a preliminary system of indicators at European level for coastal zone characterisation and management and a preliminary inventory of European estuaries, lagoons and fjords, to provide relevant information on the state and characteristics of the European estuarine areas for management purposes and decision support.

The following activities form the basis of the methodology:

- Gathering the available data from both international and national organisations,
- Improving the inventory and database of the European estuaries, lagoons and fjords,
- Developing and testing the preliminary system of indicators for the coastal zones,
- Producing thematic maps of the characterisation of the environmental state and pressures on the European coastal zones.

The first products from the ETC/MCE for example are foreseen late 1999.

The importance of a common system of indicators was stressed at the European Conference of Ministers of the Environment in Aarhus in June 1998. Indicators can play a vital part in focusing and illuminating the significance of environmental change and the progress of sustainability. Providing the data and information to support widely agreed key indicator systems in a consistent and timely way should be one main objective for the improvement of monitoring and data gathering.

Indicators are quantified information which help to explain how things are changing over time and varying spatially. Indicators depend on the availability of data, proposed use and possibilities for aggregating the information to a level which still has a relevance to indicate change.

EEA will produce, starting from 1999, an annual indicator based report, to address policy questions. The preliminary system of indicators already developed by the ETC/MCE will be tested and further improved for use in this series of reports.

In 1998, the ETC/MCE gathered the relevant available data at European level from international and national organisations.

A comprehensive list of 80 physical, chemical and biological parameters suitable for the further development of the system of indicators was

developed. Starting from these parameters, taking into account the available data at European level, it is envisaged to produce some 30 indicators. Examples and an overview of the list of indicators is presented in Table 1.

A questionnaire was prepared, also taking into account previous experiences in data collection, and the data already gathered by the ETC/MCE for different reports: *Europe's Environment: The Second Assessment*, *Excessive Anthropogenic Nutrients in European Ecosystems* and *State and Pressures of the Marine and Coastal Mediterranean Environment*.

The questionnaire will be sent to EIONET and ICES early in 1999. ICES is the data holders for Oslo and Paris Commissions (OSPARCOM) and Helsinki Commission (HELCOM). The questionnaire will produce a structured database, to be held in the ETC/MCE, on coastal typology and on the themes relevant in EU policy such as ecosystem quality (eutrophication, harmful substances and oil pollution), biodiversity and information on the coastal zone.

From the EIONET perspective the database will provide comparable information which could improve national monitoring and reporting programmes, as the gaps in knowledge and information will become more visible. Furthermore the database will give the possibility of using the data collected by ETC/MCE for their national needs.

2.5. Follow-up from the Second Inter-regional Forum

GIS EUMARIS

At its second meeting in November 1997, the Inter-regional Forum decided to set up a working group to investigate the potential of a Geographic Information System (GIS) as a tool for assessment. The objective of the working group was to satisfy the first level of assessment cited in the report of the second meeting of the Inter-regional Forum: description of the state and development over time of the environmental conditions and the anthropogenic factors/influences that determine these conditions.

In order to illustrate to the Inter-regional Forum the potential of a GIS as a tool for assessment, the working group will demonstrate the usefulness of a Geographic Information System as a tool to support the Assessment of European Seas (EUMARIS).

A document on *User Requirements*, was written by the ETC/MCE in 1998. This document contains a proposed set of user requirements for the EUMARIS project, namely the actions that an end-user will be able to perform with the GIS. It is the basis for interaction with the users so that their requirements will be taken fully into account during the design phase.

Table 1: Examples and an overview of the list of indicators following the DPSIR assessment framework for marine and coastal environment

ISSUE: EUTROPHICATION	
State:	Pressure:
- the total concentration of nitrogen for its diverse forms in mg/l, - the total concentration of orthophosphates in mg/l, - the total concentration of dissolved oxygen in mg/l.	- the load of total nitrogen in tonnes per year, - the load of total orthophosphates in tonnes per year.
Impact:	Response:
the algal blooms expressed as (frequency*extent) in km²/yr	- Environmental: the rate of restoration in percentage of the base level of total dissolved oxygen. - Policy: the rate of progress in nutrient discharge control measures.
ISSUE: CHEMICAL POLLUTION	
State:	Pressure:
- the concentration of the rivers or seawater in metals (Hg, Cd, Pb), - the concentration of the rivers or seawater in organo-halogenated compounds, - the volume of mineral oil spills per year.	- the total load of metals - the total load of organo-halogenated compounds
Impact:	Response:
the overall relative trend shown by bio-accumulation of substances or group of substances in biota	- Environmental: The rate of restoration of baseline conditions of the level of metals in seawater - Environmental: The rate of restoration of baseline conditions of the level of organo-halogenated compounds in seawater - Policy: The rate of narrowing the distance between the observed value and an existing target value.
ISSUE: FISHERIES	
State:	Pressure:
the spawning stock biomass	- the total level of catch or landings per year, - the proportion of by-catch in percentage of the total catch - the fishing mortality
Impact:	Response:
- The overall relative trend shown by the proportion between short-lived species and long-lived species, - the spawning stock for vulnerable non-commercial species	- Environmental: The percentage of the total commercial catch achieved in sustainable conditions, - Policy: The rate of narrowing the distance between the observed spawning stock values and an existing target value.

User have the opportunity to confirm the proposal or to make amendments so that their needs are correctly identified. It is therefore expected that this document will evolve through several versions. The document has been sent to all the regional conventions to get a first feed-back on their appreciation as users and will be amended accordingly, based on their reactions. At this first step the EUMARIS end-users have been identified as the EEA and the Inter-regional Conventions.

Two more documents were prepared during 1998 and are interconnected with the *User requirements* report:

- Data Specifications, which propose the data to be included in EUMARIS and show how it will be organised in order to meet the user requirements,
- Functional Specifications, which show how the software will meet user requirements.

All these reports will be finalised for presentation at the next Inter-regional Forum (September 1999).

Proposed user requirements for EUMARIS

The user requirements proposed have been kept as simple as possible. It is necessary to come to an agreement with the users at this basic level initially. All requirements must be identified and agreed with the users. Links also have to be made to common features of other topics and ETCs.

The end-user should be able to:

- Have consistent and comparable data sets, over space and time
- Define the area of geographical interest
- Build up thematic maps interactively on the screen
- Manipulate the tabular/statistical data associated with each thematic layer in the map
- Move backwards and forwards between the thematic layers in the map and the tabular data on which they are based
- Save a set of thematic layers and associated tables
- Create export files of thematic layers and tabular data
- Print hard copies of thematic maps from the screen
- Combine thematic layers, text and other graphics in a cartographic layout
- Print cartographic products from pre-defined layouts
- The system will be based on widely available PC hardware and software products in a Windows environment

3. Products

Reports produced by the ETC/MCE and published by EEA in 1998:

- Annual Topic Update 1997, EEA Topic Report 2/1998
- Data Collected Within The Framework of the Regional European Sea Conventions, EEA Technical Report No 3
- Availability and Access to Data on Europe's Marine Environment, EEA Technical Report No 4
- Report of the Second Meeting of the Inter-regional Forum, EEA Technical Report No 10

The ETC/MCE contributed in 1998 to the completion of the following EEA Environmental Assessment reports:

- Europe's Environment: The Second Assessment – Chapter on Marine and Coastal environment
- EEA State of the environment and outlook – Chapter on Marine and Coastal environment
- Excessive Anthropogenic Nutrients in European Ecosystems – Chapter 7: Marine eutrophication

The following Environmental Assessment report was finalised in 1998, in collaboration with UNEP/MAP, and will be published in 1999:

- State and Pressures of the Marine and Coastal Mediterranean Environment

The following Technical Reports were finalised in 1998 and will be published in 1999:

- Recommendations for improving procedures on marine and coastal data treatment and storage at European level
- Numerical model packages for coastal management and review. framework on integrated models and indicators for European coastal zone management

4. Workplan 1999

4.1. Maintain and develop the marine and coastal aspects of EIONET

In 1999 the ETC/MCE will continue to develop co-operation with the NFPs and NRCs/PCPs. This will be done firstly through the Indicator Questionnaire: the ETC/MCE partners will visit the National Primary Contact Points. If additional information is required, and in agreement with the NFPs, partners could present and discuss the questionnaire and the procedure followed to collect data, the related activities and foreseen results, and to help the organisations to find the better way to provide data.

Emphasis will be put on the information, access to databases and elaborated data that the ETC/MCE could provide to NFPs and NRCs for national purposes. The second EIONET workshop in the Marine and Coastal Environment will be held in November 1999 and the results from this new co-operation will be discussed.

4.2. Co-operation with DGXI

The ETC/MCE's co-operation with the DGXI will be enhanced, taking into account the Commission priorities and the EEA Annual Work programme. The co-operation covers the following issues:

4.2.1. Technical support to DGXI

In several Directives, such as 76/464/EEC, 91/271/EEC or 91/676/EEC, the Commission is required to assess whether the measures taken by the Member States are in compliance with the Directives. This assessment usually concerns impacts on marine and coastal waters as well as inland waters. The ETC will support the Commission on the technical aspects.

4.2.2. Evaluation of eutrophication in Community waters

In a more general framework on the assessment of eutrophication at European level and on the actions to be taken in order to reverse the eutrophication status where this problem is relevant, there is a need to evaluate, in the short term, the state of estuarine, coastal and marine eutrophication in Europe. The ETC/MCE will undertake this task on the basis of the existing information.

Remote sensing information as well as data from other sources will be used where available; remote sensing activities will be carried out in co-operation with the EU Joint Research Centre (JRC) in Ispra (Space Application Institute).

Already available information on the eutrophication from the report on 'excessive anthropogenic nutrients in european ecosystems', produced by the ETC/IW, ETC/MCE and ETC/NC, will also be considered.

4.3. Inter-regional Forum

The objectives of the Inter-regional Forum are mainly to facilitate the exchange of existing data and information between these organisations and EEA and to improve working relations and task sharing between them.

The third meeting of the Inter-regional Forum will be held in Venice on 27-28 September 1999 and will be focused on the actions/activities agreed upon during the Second Inter-regional Forum:

- Assessment tools: geographic information systems, indicators, statistical tools,
- Harmonisation of reporting, data exchange and management, and
- Improving co-operation between the EEA and the regional marine commissions

4.4. State and trends of the coastal zone

The aim of this activity is to further collect available European data for the set of indicators proposed by the ETC/MCE during the 1998 and early 1999 (see section 2.3). In that respect a further development of the set of indicators proposed is possible in order to supply concise, reliable, quantitative information on a regular basis to support EEA reporting.

A delineation of the coastal zones in each country will be also investigated and proposed; this will be a difficult task, as several European countries do not officially have such a delineation and sometimes the adopted criteria are different from country to country.

4.5. Contribution to EEA's annual indicator-based report

The EEA is required to produce a regular indicator environmental report to deliver trend information on a wide range of environmental, policy related problems across the whole DPSIR chain including socio-economic information. The ETC/MCE will be involved in the process of compiling relevant data and texts for the marine and coastal zones and contribute to the development of the contents of the indicator report. The indicators for coastal zones, developed from the ETC/MCE under other tasks, will be taken into consideration while preparing the set of indicators for the coastal and marine zones.

4.6. Contribution to the report on Europe's biodiversity

In 1999-2000, EEA intends to publish a comprehensive report on Europe's Biodiversity integrating biodiversity resources from nature, agriculture, fishery, forestry, their overall state and trends and roles in economy and ecology. This report will help develop the EEA information strategy for nature.

In 1999 the ETC/MCE in co-ordination with ETC/NC and ETC/IW will develop the data requirements for the report and data gathering and its connection to the Community clearing house mechanism for the

Convention on Biological Diversity also being developed by the EEA. The report will be a key deliverable in 2000.

5. Summary of the ETC/MCE workplan 1999

EVENT/ACTIVITY	EVENT DATE	RESPONSE DEADLINE	EXPECTED OUTPUT	OUTPUT DATE
Workshops				
Inter-regional Forum	27-28 September 1999		Progress in harmonisation. Avoid duplication of work. Meeting report	December 1999
EIONET workshop	8-9 November 1999		Progress in implementation of the work programme. Meeting report	December 1999
Questionnaires				
Indicator/ estuaries/fjords and coastal lagoons questionnaire	March 1999	May 1999	Input to inventory and thematic maps databases First draft. Contribution to the indicator report (data collection)	September 1999
Draft reports for review				
Further development and testing of system of Indicators	1 October 1999	15 December 1999	Technical report	early 2000
Inventory and database for estuaries/fjords and coastal lagoons	1 October 1999	15 December 1999	Access to inventory and database	early 2000
Indicator fact sheets (follows the questionnaire for indicators)	March 1999		Fact sheets of the marine indicators by June 1999 to EEA	December 1999
Water quality problems and objectives	June 1999	September 1999	Technical report	October 1999
Thematic maps	October 1999	30 November 1999	Technical report	early 2000
Marine biodiversity technical document	March 1999	June 1999	Technical report; input to Biodiversity report	September 1999
Harmonisation of reporting	March 1999	May 1999	Technical report; input to the Inter-regional Forum Meeting	September 1999