COMMISSION OF THE EUROPEAN COMMUNITIES

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COMMUNICATION FROM THE COMMISSION
TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

WISE USE AND CONSERVATION OF WETLANDS

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1. The Community 5th Environmental Action Programme, "Towards Sustainability", in endeavouring to achieve a more sustainable balance between human activity and socio-economic development and the resources and regenerative capacity of nature, accorded seven priority fields of action. One of them, the sustainable management of natural resources (soil, water, natural areas and coastal zones), is the object of the present communication, centred on one of the most important, yet most threatened habitat types common to all European Union countries: the wetlands (marsh, fen, peatland, or shallow water bodies).

2. Wetlands are ecosystems of paramount importance, not only because they have become so rare and are so threatened, but because they perform very important functions, provide resources for a large number of human interests and actors in supporting human activities and represent a valuable cultural and natural heritage. This is reflected by the fact that wetlands are the only major ecosystem forming the subject of an international treaty, the Ramsar Convention, established over twenty years ago, to which all EU Member States are contracting parties, with the exception of Luxembourg which at present is in the process of becoming a contacting part.

3. Due to their complex composition and structure, wetlands perform certain functions and generate healthy vegetal, wildlife, fisheries and forest resources. The combination of these functions and products, together with the natural and cultural values of wetlands, makes these ecosystems invaluable to people. Many wetlands provide good opportunities for economic activities and recreation and sustain dense populations of fish, shellfish, cattle or wildlife.

The functions for human societies, performed by wetlands are, notably:

- wetlands can diminish devastating effects of floods downstream, by storing precipitation water and releasing it later in a more even way;

- wetland vegetation stabilises shorelines, by reducing the energy of waves and currents;

- wetlands improve water quality, by accumulating sediments, nutrients and toxic substances, and under certain conditions this can be used for tertiary treatment of domestic waste water;

- wetlands, in particular in the form of peat bogs, can reduce carbon dioxide emissions, by storing large quantities of carbon;

- wetlands harbour an extraordinary diversity of habitat types and plant and animal species, by their complexity and dynamic functioning;

- wetlands can provide renewable resources, such as reed and salt and can sustain the farming of fish, crayfish, waterfowl and grazing animals; furthermore many of the commercially exploitable fish, shellfish and crustaceans spend at least part of their life cycle in wetlands;

- many wetlands harbour a rich wildlife and provide important areas for recreational activities such as walking, birdwatching, nature photography, hunting, angling, swimming and sailing;

4. Despite their value, the loss of wetlands is widespread; available information indicates that approximately two thirds of all European wetlands existing at the beginning of this century have since been lost.

In the European Union, the following wetland types have suffered from substantial loss of surface:

- rivers and floodplains have paid a heavy tribute to hydraulic protection works;

- wet meadows, flooded grasslands and temporary freshwater marshes have suffered an extensive loss due to dam building, drainage and transformation into dry pastures and arable land;

- saltmarshes have been progressively reclaimed for conversion into arable or industrial land;

- peatlands have been considerably destroyed through unsustainable peat extraction and afforestation.

The remaining wetlands suffer from the following types of degradation:

- excessive quantities of nitrogen and phosphorus from urban sewage and agricultural runoff often causes eutrophication;

- increasing consumption of groundwater, for irrigation and drinking, threatens to dry out many wetlands;

- the building of dams upstream may cause coastal erosion due to the lack of sediment inflow.

5. The Union's involvement in wetland conservation followed the United Nations Conference on the Human Environment held in Stockholm in 1972 and started with the first Environmental Action Programme adopted in 1973.

In 1979, Council Directive 79/409/EEC on the conservation of wild birds was adopted, requiring Member States to pay particular attention to the protection of wetlands.

Between 1984 and 1992, under Council Regulations (EEC) N° 1872/84 and 2242/87 on actions by the Community relating to the environment (ACE) and Council Regulation (EEC) N° 3907/91 on actions by the Community relating to nature conservation (ACNAT),nearly two thirds of the funds (i.e. over 27 million ECUs) were allocated to 60 projects providing an incentive to maintain, restore or improve wetland sites. Many of these sites are classified as Special Protection Areas (under Council Directive 79/409/EEC) and/or designated under the Ramsar Convention on Wetlands of International Importance.

Other Community Initiatives and Council Regulations, such as ENVIREG, MEDSPA and NORSPA, supported several projects related to wetland conservation through water management measures.

Since 1992, Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora highlights, amongst others, lagoons, Mediterranean temporary ponds, active bogs, wet meadows and calcareous fens as conservation priorities.

At the same time, the European Community adopted Council Regulation (EEC) N° 1973/92 creating a financial instrument for the environment (LIFE). Although the funds made available for nature conservation under this Regulation are very limited compared to funds under other Union policies having an impact on wetlands, in 1992, 1993 and 1994, grants totalling about 30 million ECU were allocated to wetland-related projects under LIFE.

6. The Treaty on the European Union introduced in 1993, as a principal objective, the promotion of sustainable growth respecting the environment. This includes an environmental policy that aims at a high level of protection, the requirements of which must be integrated into other Community policies. In this spirit, the Fifth Environmental Action Programme "Towards Sustainability", has been formulated. The concept of sustainability laid down in that programme is identical to sustainable utilisation, compatible with the conservation of natural resources, and thus corresponds to the principle of the wise use of wetlands as defined by the Ramsar Convention.

Environmental responsibilities are shared by all economic players, including public authorities, public and private enterprises, and, above all, the general public. It must be clearly seen that the maintenance of well functioning wetland ecosystems depends more on successfully implementing this principle than the single conservation of wetland reserves. Without this having been spelt out explicitly until now, the European Union's involvement in the wise use and conservation of wetlands mainly depends on implementing sustainable structural measures and policies.

7. There have been, in the past, some facts leading to the conclusion that the European Union should dispose a comprehensive approach to the wise use and conservation of wetlands laid down in a single document. On a number of occasions, the European Parliament expressed its concern regarding wetland conservation; e.g. several Oral and Written Questions dealt with the need to have a clear Community wetland policy, to promote the wise use of wetlands and to make available special economic aid for the conservation of wetlands (H-1056/91, W.Q. 2543/91 and 701/92).

Since 1987, the Commission involved itself more intensively in the integrated management of wetlands, in particular those of Mediterranean type (Doc. C(87)2291 final).

Recent European Court rulings ackowledge the obligation of Member States to pay particular attention to the protection of wetlands (Cases C-57/89 and C-355/90).

Recognizing the very critical situation of Europe's wetlands and the urgent need for action in the perspective of their sustainable development, the Commission has included in the 1994 work plan for the implementation of the 5th Environmental Action Programm the preparation of the present Commission Communication to the Council and the European Parliament on *Wise use and conservation of wetlands.*

8. This Commission Communication provides a strategic basis for such a policy aiming at the sustainable use of wetland resources and the conservation of their functions and values for future generations. It not only considers the territory of the European Union but also Community programmes and policies for co-operation with countries in the Mediterranean and Baltic regions (LIFE-International), in Central and Eastern Europe and Asia (PHARE, TACIS), with African, Caribbean and Pacific countries (ACP), and with Asian and Latin American countries (ALA), as well as global commitments, thus also fully corresponding to the principles laid down in the "Agenda 21".

The Communication explains that wetlands are components of natural landscapes, that they perform specific functions, that they support human activities, and that they represent a cultural and natural heritage (Chapter I); summarises briefly how the European Community became involved with wetland matters and refers to the fact that wetland conservation requirements need to be integrated in all Union policies both within and outside the EU territory (Chapter II); spells out current issues that affect wetlands in a negative way and provides an outline of the actions that need to be taken to stop and reverse the loss and further degradation of wetlands in Europe and world-wide (Chapter III); mentions specific measures to be taken in a number of strategic areas towards a concerted policy and action to address the social, economic and political causes of wetland loss and degradation (Chapter IV); describes how to integrate the above measures into major Union policies (Chapter V); finally it provides resulting conclusions and policy lines.

Wise use and conservation of wetlands

INTRODUCTION

Wetlands are commonly understood as «*areas of marsh, fen, peatland, or water*, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish, or salt, including marine waters, the depth of which at low tide does not exceed six metres»[1]. Most people are familiar with wetlands in some shape or form, even if the term "wetland" has only recently become widely used. The village pond or stream, the local lake or estuary are just a few examples. For thousands of years, river valleys and their associated floodplains have served as centres of human population, with many boasting sophisticated urban cultures. Their soils brought in huge harvests, and they continue to be essential to the health, welfare and safety of millions of people.

Wetlands are ecosystems of paramount importance, not only because they have become so rare and are so threatened, but because they perform very important functions, provide resources for a large number of human interests and actors in supporting human activities and represent a valuable cultural and natural heritage. This is reflected by the fact that, besides the Antarctic continent, wetlands are the only major ecosystem forming the subject of an international treaty, the Ramsar Convention[2], established over twenty years ago, to which all EU Member States[3] are contracting parties.

Clearly, wetlands have an important economic value as a sort of natural infrastructure. However, the necessary appreciation of their economic value is almost entirely missing, as the benefits provided by wetlands are mainly for free. This led the OECD, some years ago, to find out the failure of market mechanisms in the field of the use and conservation of wetlands and their resources[4].

The Conference of the Contracting Parties of the Ramsar Convention has defined the *wise use of wetlands* as their *"human use so that they may yield the greatest continuous benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations"*, this *"in a way compatible with the maintenance of"* their *"physical, biological or chemical components, such as soil, water, plants, animals and nutrients, and the interaction between them"* (see Annex II). Consequently, the wise use of wetlands is identical to sustainable utilisation compatible with the conservation of natural resources, and thus corresponds to the concept of *sustainability* laid down in the Community 5th Environmental Action Programme[5].

Today, wetlands are affected by human activities in their entire water catchment area. They are now among the most threatened ecosystems and landscapes due mainly to drainage, land reclamation, pollution, and over-exploitation of wetland resources. It is estimated that two thirds of Europe's wetlands have disappeared since the beginning of our century, mainly lost through development processes which did not take their functions and values adequately into account.

Over the past twenty years, the European Community has adopted a broad spectrum of legislation aimed at protecting and restoring the environment in view of a constant improvement of the living standards for its people. This has included important actions benefiting wetland conservation, notably depending on the Council Directives on the conservation of wild birds (79/409/EEC)[6] and, more recently, on the conservation of natural habitats and of wild fauna and flora (92/43/EEC)[7]. The Council Directives concerning urban waste water treatment (91/271/EEC)[8] and concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC)[9] contribute much to the improvement of water quality, a key element in wetland conservation. The Fifth Environmental Programme of Policy and Action "Towards Sustainability" addresses all key actors of the European society to play their part in creating a sustainable society, based on the principles of partnership and shared responsibility.

However, as also stated in a recent evaluation report for France[10] undertaken on behalf of the French Government and approved by it, we are not yet at a stage of stabilising wetland conditions. Even with an optimistic view, the best practical achievement possible with a radically improved, ambitious and innovative policy will only slow down in some years from now the negative trend observed. This makes a strong policy in favour of the wise use and conservation of wetlands even more urgent.

The present document provides a strategic basis for such a policy aiming at the sustainable use of wetland resources and the conservation of their functions and values for future generations. It not only considers the territory of the European Union but also Community programmes and policies for co-operation with countries in the Mediterranean and Baltic regions (LIFE-International), in Central and Eastern Europe and Asia (PHARE, TACIS), with African, Caribbean and Pacific countries (ACP), and with Asian and Latin American countries (ALA), as well as global commitments, thus also fully corresponding to the principles laid down in the "Agenda 21".

The Communication is structured in the following way:

Chapter I explains that wetlands are components of natural landscapes, that they perform specific functions, that they support human activities, and that they represent a cultural and natural heritage. Most wetlands have already been lost and those remaining suffer from degradation and destruction.

Chapter II summarises briefly how the European Community became involved with wetland matters and refers to the fact that wetland conservation requirements need to be integrated in all Union policies both within and outside the EU territory.

Chapter III spells out current issues that affect wetlands in a negative way and provides an outline of the actions that need to be taken to stop and reverse the loss and further degradation of wetlands in Europe and world-wide.

Chapter IV mentions specific measures to be taken in a number of strategic areas towards a concerted policy and action to address the social, economic and political causes of wetland loss and degradation.

Chapter V describes how to integrate the above measures into major Union policies.

Finally, **Chapter VI** provides resulting conclusions and policy lines.

I

EUROPE's WETLANDS AND THEIR PROBLEMS

WETLAND ECOSYSTEMS

There exists an enormous variety of wetland types. To classify them unequivocally is not easy because of their complexity, their dynamic character and the difficulty in precisely defining their often fluctuating boundaries. The contracting parties of the Ramsar Convention adopted a wetland classification system comprising 35 categories[11].

The CORINE Biotopes classification which, in application of Council Decision 85/338/EEC on the adoption of a Commission work programme for the implementation of an information system on the state of the environment and natural resources in the Community (CORINE – Co-ordination of Information on the Environment)[12], has been elaborated in order to identify and consistently describe the sites of major importance for nature conservation, is mainly based on vegetation characteristics and includes about 20 wetland habitat types. A comparison of both classifications is given in **Annex I**.

For the sake of simplicity, wetlands in Europe can be regrouped within seven major wetland types:

Marine and coastal wetlands

A variety of wet habitats occur along flat coasts. Coastal currents form sand and shingle spits that may isolate brackish lagoons and temporary ponds. Vast mudflats, isolated dune slacks, salt marshes and meadows are typical wetlands of the Atlantic and North Sea coasts. The Danish-German-Dutch Wadden Sea is the largest wetland (8000 km^2) within the territory of the European Union. Since ancient times, large brackish to saline lagoons have provided necessary shelter for the installation of harbours and the development of important trade cities in the Mediterranean and Baltic, such as Venice or Gdansk.

Estuaries and deltas

Estuaries are situated where a river mouth widens into the sea, with intermediate salinity, and where tidal action is an important regulator. Estuaries are normally very productive due to their nutrient-rich waters and are often used by young fish as nursery areas. In the European Union they occur mainly along the coasts of the Atlantic, the Irish and the North Sea. Large centres of human trade and culture developed in connection with estuaries, for example London on the Thames, or Rotterdam, Antwerp and Gent on the Rhine, Maas and Schelde estuary complex. Intertidal mud and sand flats, salt marshes and rocky outcrops complement the range of wetland habitats. The Mediterranean Sea is notable for its river deltas which have developed in the absence of tidal water movements at the mouth of sediment-rich rivers. They consist normally of complexes of lagoons, marshes, lakes, temporary pools, river channels, irrigated agriculture and shallow coastal zones. In the European Union, the Camargue (Rhone), the Ebro, Po, and Evros deltas are among the best known.

Rivers and floodplains

The periodic flooding of the area between the river bed and the raised land on the edge of a valley used to be a common feature of many European rivers and streams. Very few rivers are still allowed to spread out periodically over floodplains that include temporary sand and gravel banks, wet meadows, grassy marshes, flooded forest, and oxbow lakes. Where flooding has been regulated, only small areas of riverine forests and floodplain wetlands remain. The French Loire is probably one of the last remaining larger rivers with substantial parts of its floodplains remaining.

Lakes

Lakes and ponds are characterised by their open water surface. They are formed in basins with badly drained soils or by geological faults, landslides or glacial action. Most European lakes are permanent with freshwater but, especially in the Mediterranean climate of southern Europe, temporary lakes with brackish water are more widespread. Along shallow lakeshores, light that penetrates to the bottom allows the development of rooted vegetation creating biologically rich transition zones between open water and dry land.

Freshwater marshes

Freshwater marshes are common wherever groundwater, surface springs, streams or runoff causes frequent

flooding or more or less permanent shallow water. Their widespread distribution and variety is a reason for the range of terms used to describe freshwater marshes. Some of the larger ones have standing water throughout most of the year and often develop uniform beds of cattail and reed.

Peatlands

Under conditions of low temperature, waterlogging and oxygen deficiency, dead plant matter accumulates as peat. Where water drainage is impeded and peat deposits accumulate, distinctive fens and bogs are created. For climatic reasons, peatbogs mainly occur in the more humid Atlantic and boreal, but also in the alpine and continental parts of Europe. Many peatlands are so delicately balanced that even very slight changes in environmental conditions may cause substantial alteration or degradation. Peat soils often still occur on the drained agricultural land of former wetland sites.

Man-made wetlands

Past and current human activities have created different types of wetlands that have a certain interest for specific plants and animals. Undisturbed, abandoned, and restored parts of gravel pits and other excavations provide a variety of habitats. Large parts of traditional and industrial salines at the Mediterranean and Atlantic coasts are important refuelling sites for migratory birds and vital breeding grounds for colonially nesting birds. The biological value of reservoirs depends much on the slope of their shores and the fluctuations of their water levels. Rice paddies can provide interesting habitats as long as they are not polluted by agrochemicals.

INTERLINKAGE OF WETLAND SITES

The interconnectedness of different wetlands is an important fact. This is already recognised with regard to those sites that regularly act as critical links during the annual migrations of waterfowl.

For some wetland types, particularly within the Mediterranean, conditions at individual sites are unpredictable as hydraulic and biotic conditions are constantly changing throughout time and space in response to fluctuating climatic conditions, namely the seasonal hydrological cycles. The Mediterranean climate is characterised by a four to five month period during which many wetlands temporarily dry. More prolonged dry periods of three to five years may also occur in the Mediterranean resulting in many shallow lagoons and floodplains remaining desiccated for several consecutive years. In such situations it is essential for the conservation of aquatic and semi-aquatic species of fauna and flora to have a wide range of alternative wetlands available, which during these unfavourable conditions can ensure the survival of these species.

For the above reasons wetlands should not be considered in isolation but as forming a global interconnecting network, often between distant areas.

WETLAND VALUES

The interactions between the main wetland elements (water, soils, nutrients, plants and animals) allow wetlands to perform certain functions and to generate healthy vegetal, wildlife, fisheries and forest resources. The combination of these functions and products, together with the natural and cultural values of wetlands, makes these ecosystems invaluable to people. Many wetlands provide good opportunities for economic activities and recreation and sustain dense populations of fish, cattle or wildlife.

Wetlands perform specific functions

Wetlands are complex natural ecosystems that function according to fundamental physical, chemical, and biological laws. Impacts on their correct ecological functioning will inevitably affect the functions such ecosystems perform for human societies, notably:

• By storing precipitation water and releasing it later in a more even way, wetlands can *diminish devastating effects of floods downstream.* E.g. the channelisation of the Rhine for flood control that already started in the 18th Century, created substantial loss of wetlands. More recently, the construction of dykes for hydropower plants on the Upper Rhine in the 1950s led to the destruction of 13,000 ha of natural floodplains. Subsequently, flood velocity and intensity increased downstream and put several large cities at greater risk. For safety reasons, it was necessary to rebuild artificial flood retention basins to store excess water during

exceptional floods. The water stored and released contributes *to prevent drought during dry seasons and periods of high demand for agricultural irrigation*, it can furthermore recharge the groundwater table, where it is over-used through pumping.

• *Wetland vegetation stabilises shorelines* and consolidate soils by reducing the energy of waves or currents, while the roots hold the bottom sediment. In the United Kingdom, the construction of sea walls protected by a saltmarshe proved to be approximately twentyfold cheaper than the maintenance of sea walls without saltmarsh protection. This protective function is of particular importance in areas afflicted by subsidence and/or rising sea levels. In parts of eastern England, where net sea level rise is currently 5 mm per year, and the sea walls and shingle dams are in great need of improvement or repair, coastal engineers are now seriously considering restoring the coastal salt marshes as a cost-efficient alternative to the traditional sea defences.

• *Wetlands improve the water quality.* They serve as pools where sediments and toxic substances settle. If reeds and grasses are present to slow down a river's flow, the opportunity for settling is increased. Wetlands retain nutrients, most importantly nitrogen and phosphorus, by accumulation in the soil and storage in the vegetation itself. Under certain conditions this can be used for tertiary treatment of domestic waste water with 1 ha of marsh serving to remove nitrogen as efficiently as a sewage plant sufficient for 500 people. Wetlands often recharge the groundwater table. Vegetated wetlands can act as buffers, to prevent nutrients of agricultural origin from reaching aquifers that are providing human drinking water. The release of nutrients during winter, when wetland plants die, provides vital support for fish breeding and nursery areas.

• *Wetlands*, in particular in the form of peat bogs, *have the capacity to store large quantities of carbon*, a fact that can reduce carbon dioxide emissions into the atmosphere, responsible for global warming.

• *Wetlands provide the habitat for a wide range of aquatic and wetland-dependent plant and animal species.* Although they only cover a small percentage of the land surface, wetlands harbour an extraordinary diversity of habitat types and plant and animal species, of which many cannot be found elsewhere. *Furthermore, wetlands serve as dispersal and migration corridors* and "stepping stones" for many species. This favours the colonisation of new habitats and genetic exchange to maintain viable fish and waterfowl populations.

Wetlands support human activities

• Many of the *commercially exploitable coastal species of fish, shellfish and crustaceans* spend at least part of their life cycle in wetlands. An intact network of wetland sites, from coastal lagoons and estuaries to upstream spawning grounds, is vital to support commercial fisheries. The Danish-German-Dutch Wadden Sea is an important nursery for plaice, mullet and sole, thus providing the recruitment area for 80 and 50 per cent respectively of the North Sea fisheries catch of these species.

• *Renewable wetland resources,* such as reed and salt are exploited for human use. Wetlands can sustain the farming of fish, crayfish, waterfowl and grazing animals. If done in a sustainable way, these activities contribute to the maintenance of outstanding ecosystems with a great biological diversity.

• Many wetlands harbour a *rich wildlife* and *provide important spaces for recreation activities* such as walking, birdwatching, nature photography, hunting, angling, swimming and sailing. More than 800,000 people visit the wetlands managed by the Wildfowl and Wetlands Trust each year, a British non-governmental organisation devoted to wildfowl and wetland conservation. About 250,000 people visit the coastal dunes and wetlands of Terschelling island in the Dutch Wadden Sea per year. They represent 2.5 million tourist nights, a considerable economic factor for the island population of 4,600.

• Economic wetland benefits have been calculated to represent nearly 5,000 ECUs per ha and year for the Wadden Sea, and more than 50,000 ECUs per ha and year for an Atlantic Spartina Marsh.

Wetlands represent a cultural and natural heritage

Wetlands have particular attributes, such as their biological diversity, landscape value and importance to the cultural heritage. Such attributes are not consumed directly but seen as a value in themselves appreciated by many people. Over the centuries, people living next to wetlands have developed sustainable techniques to exploit the resources provided by the wetlands, thus profiting from the particular environment offered by the wetlands.

The services wetlands provide and the functions they perform are often neglected and considered to be for free, when designing development schemes. Their existence and values are too often only realised once they have been lost due to the destruction and degradation of the sites.

WETLAND LOSS AND DEGRADATION

The loss of wetlands is widespread, but differences in terminology and type of data between countries still prevent a thorough analysis. However, available information indicates that approximately two thirds of all European wetlands existing at the beginning of our century have since been lost (**Figure 1** provides some national examples). The following wetland types in the European Union have suffered, in decreasing order, from substantial loss of surface :

Rivers and floodplain wetlands have paid a heavy tribute to hydraulic and flood protection works. Already at the beginning of this century, only a few untouched reaches of natural rivers remained, and yet even today new dams and hydrological works are planned for the last unregulated parts of rivers. Riverine forests have undergone a drastic reduction in size throughout Europe and in many countries only tiny forest strips remain. Of the 40,000 ha of riverine forests existing along the Alsatian side of the Rhine in 1830, only 8,500 ha remain today, of which only 400 ha are still flooded by high water levels.

Wet meadows, flooded grasslands and temporary freshwater marshes were traditionally used as grazing lands and were widely distributed throughout Europe. Post-war changes in agricultural practices provoked an extensive loss of this habitat due to dam building along rivers, followed by drainage and transformation of wet meadows into dry pastures and arable land. During the 1970s, annual losses were about 2,400 ha in Denmark, 4,000 to 8,000 ha in England and Wales, and 10,000 ha in France.

Saltmarshes have been progressively reclaimed for centuries, mainly for conversion into arable or industrial land. The extent of saltmarshes in the United Kingdom has been cut by half since the beginning of the reclamation programme in medieval times. In the Wadden Sea region, 20,000 ha of saltmarsh were lost between 1950 and 1984, with a total of 40,000 ha remaining. In the Rhone delta, the saltmarsh area was reduced from 23,900 ha to 10,400 ha between 1942 and 1984.

Peatlands have been considerably destroyed through unsustainable peat extraction and afforestation, with sixty per cent of their maximum extent remaining. In northern Germany, peatlands have disappeared by half with 300,000 ha remaining. In the United Kingdom, there are less than 6,200 ha of undamaged active raised bogs remaining, representing only six per cent of the original area. In the Netherlands the remaining raised bogs represent ten per cent of the area which existed at the beginning of this century.

The remaining wetlands suffer from degradation

The following examples provide an idea of different forms of ongoing degradation affecting the remaining wetlands:

• The correct functioning of wetland ecosystems is often indirectly influenced by human activities occurring within their catchment basin. Many wetlands are the unwelcome recipients of excessive quantities of nitrogen and phosphorus from urban sewage and agricultural runoff. The release of compounds (e.g. CO_2, Dimethylsulfide, H_2S, etc.) influences the air quality, and can drastically alter the ecology of wetland systems through atmospheric deposits of pollutants such as acid rain. Often these influences originate from outside the catchment basin.

• During the 1970s, the consumption of nitrogen fertilisers dramatically increased in the European Community Member States, in order to increase agricultural production (**Figure 2**). Consequently, the water of a growing number of wetland sites was excessively loaded with phosphorus and nitrogen, a process known as eutrophication. This proliferates unwanted vegetation and provokes algal blooms which, in turn, result in oxygen deficiencies and production of toxins. The lack of oxygen and the presence of toxins provokes the mass death of fish and destroys the essential community of planktonic organisms which constitutes the basis of the food chain. The eutrophication phenomenon is widespread and increasing throughout the European Union (**Table 1**).

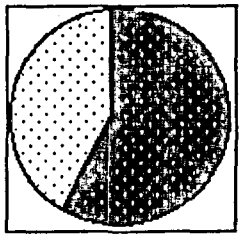
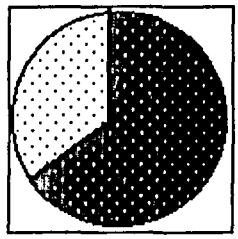
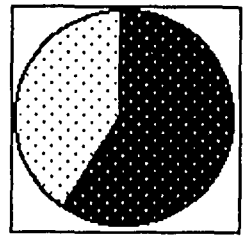
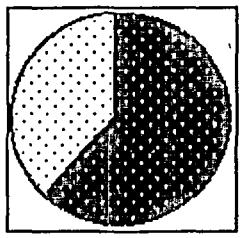
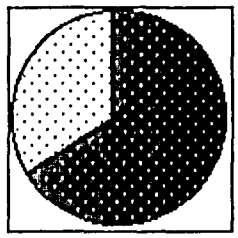
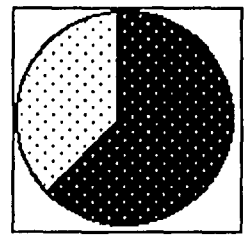
The Netherlands	France	Germany
		
55% lost between 1950 and 1985	67% lost since ca. 1900	57% lost between 1950 and 1985
Spain	**Italy**	**Greece**
		
60% lost between 1948 and 1990	66% lost between 1938 and 1984	63% lost between 1920 and 1991

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Figure 1: Estimated Recent Wetland Loss in some European Union Member States.

Table 1: Eutrophication within different aquatic ecosystems in the European Union
(extracted from: The State of the Environment in the European Community, Overview, Vol. III)[13]

	B	DK	D	GR	E	F	IRL	I	L	NL	P	UK
Natural lakes	○	○	▫	▫	○	▫	○	○	-	▫	-	○
Rivers and dams	○	○	▫	○	▫	○	○	▫	-	▫	▫	▫
Estuaries and lagoons	○	○	▫	○	-	▫	○	○	-	○	○	▫
Coastal waters	○	▫	▫	▫	-	○	○	○	-	▫	-	○

▫ Serious problems nation-wide
○ Problem identified
○ Serious local problems
\- not recorded

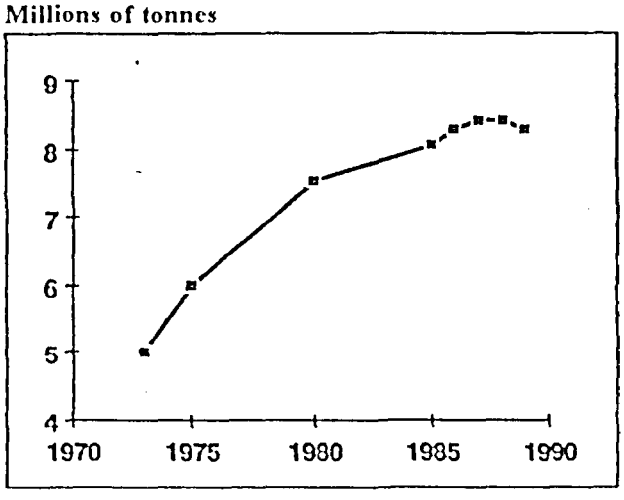

Figure 2: Consuption of nitrogen fertilizers in the EU countries.
(source: The State of the Environment in the European Community, VoLIII, OJ No. C138, 16.5.93)

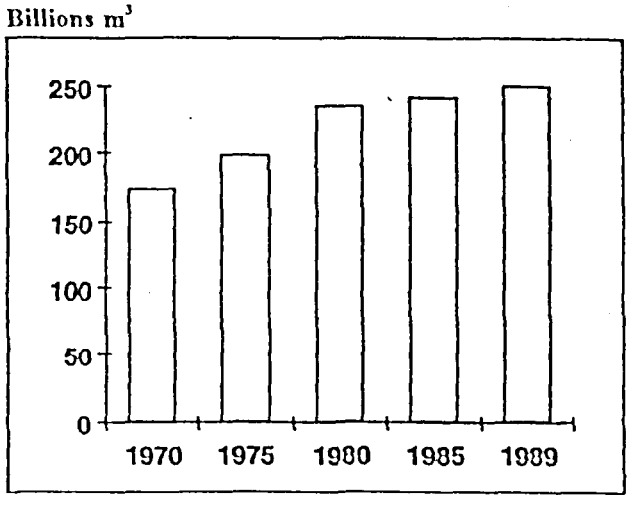

Figure 3: Estimated total water withdrawal in the EU
(source: The State of the Environment in the European Community, VoLIII, OJ N° C138, 16.5.93)

• Increasing consumption of groundwater threatens to dry out many wetlands (**Figure 3**). Groundwater abstraction of water in large agricultural areas around the National Parks of Doñana and the Tablas de Daimiel in Spain has caused a serious drop in water levels resulting temporarily in the complete desiccation of several water bodies. Costly interventions were subsequently needed for compensation. Such problems are not restricted to Mediterranean countries. In the northern part of Europe, a four-year drought in the 1980s raised major concern and excessive water abstraction is now considered to seriously damage English wetlands.

• Threats to coastal wetlands from a rise in the sea-level expected to be provoked by Global Warming can no longer be ignored. In some regions coastal erosion will be enhanced by the lack of sediment inflow, as the river sediments are now trapped in upstream dams. The sediment load of the Rhone and Ebro river deltas in France and Spain have been reduced by 90 and 80 per cent respectively. Thus, the deltas face serious and costly erosion problems. Since 1975, the sea shore in the Ebro delta is retreating annually by 1 m on average, reaching 100 m in a few places.

II

THE UNION's INVOLVEMENT IN WETLAND CONSERVATION

The United Nations Conference on the Human Environment held in Stockholm in 1972 marked the beginning of a global recognition of the need for environmental protection, reflecting an increasing public concern for environmental problems.

The European Community was among the first to respond, with the establishment of a comprehensive preventive strategy to safeguard the environment and natural resources within the framework of an Environmental Action Programme. The first action programme was adopted in 1973[14] leading to the adoption of environmental legislation and financial instruments.

Since the 1970s, non-governmental conservation organisations have devoted great efforts to identifying priority wetland sites throughout Europe, mainly in their function as bird habitats. They denounced the widespread destruction and the unwise use of wetlands and their resources, often provoked by the fact that development programmes ignored environmental concerns. In 1979, Council Directive 79/409/EEC on the conservation of wild birds was adopted. It requires Member States to classify the most suitable sites in number and area as 'Special Protection Areas' for particularly vulnerable species and to take similar measures for other migratory species. In this regard Member States are required to pay particular attention to the protection of wetlands, especially wetlands of international importance. This latter obligation is an implicit reference at Community level to the Ramsar Convention as regards wetlands of international importance as waterfowl habitat.

Between 1984 and 1992, under Council Regulations (EEC) N° 1872/84 and 2242/87 on actions by the Community relating to the environment (ACE)[15] and Council Regulation (EEC) N° 3907/91 on actions by the Community relating to nature conservation (ACNAT)[16], over 27 million ECUs were allocated to 60 projects providing an incentive to maintain, restore or improve wetland sites that are vital habitats for threatened bird species listed under Council Directive 79/409/EEC. Many of these sites are classified as Special Protection Areas and/or designated under the Ramsar Convention on Wetlands of International Importance.

Amongst other reasons, the environmental problems posed by some development projects of the Integrated Mediterranean Programmes resulted in 1987 in a Commission Decision[17] to set up a working group of technical experts for the preparation of a concept for integrated management of coastal wetlands of Mediterranean type.

In 1987, the Single European Act added to the Treaty of Rome a whole new chapter on the «Environment», and the Fourth Environmental Action Programme, adopted in the same year[18], made environmental protection an essential element for all economic and social policies.

The principle of subsidiarity, i.e. that the Community shall take action only when the objectives are better reached at Community level than at the level of the individual Member States, was also introduced through provisions concerning the environment under the Single European Act, and has been reinforced by the Treaty of European Union.

The Community Initiative ENVIREG[19] and Council Regulations (EEC) N° 563/91 on action by the Community for the protection of the environment in the Mediterranean region (MEDSPA)[20] and N° 3908/91 on Community action to protect the environment in the coastal areas and coastal waters of the Irish Sea, North Sea, English Channel, Baltic Sea and NE Atlantic Ocean (NORSPA)[21] supported several projects related to wetland conservation through water management measures. Increasingly, the European Parliament expressed its concern regarding nature conservation, and several MEPs have addressed to the Commission specific questions related to wetland conservation[22]. Recent European Court rulings[23] acknowledge the obligation of Member States to pay particular attention to the protection of wetlands, as required by Council Directive 79/409/EEC.

In 1992, the Birds Directive was complemented by Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora. This Habitats Directive highlights, amongst others, lagoons, Mediterranean temporary ponds, active bogs, wet meadows and calcareous fens as conservation priorities amongst a comprehensive list of natural habitat types of Union importance. It is foreseen that a Union-wide network of protected areas (Natura 2000) composed of the Special Protection Areas for wild birds and the Special Areas for Conservation for natural habitats and threatened fauna and flora will be completed by the year 2004. Wetlands will form a large group of the sites of Natura 2000.

At the same time, the European Community adopted Council Regulation (EEC) N° 1973/92 creating a financial instrument for the environment (LIFE)[24]. This instrument finances priority actions within the Community but can also support activities in other countries in the Mediterranean and Baltic regions or actions concerning regional or global problems provided for in international agreements. The funds made available for nature conservation under this Regulation are, however, very limited compared to the needs and compared to funds under other Union policies having an impact on wetlands. In 1992, 1993 and 1994, grants totalling about 30 million ECU were allocated to wetland-related projects from the LIFE-nature budget.

Since 1988 the Community Environment Research Programm supported some 20 multidisciplinary research projects with a total budget of ca. 15 million ECUs, to better understand the functioning of river floodplain ecosystems and to develop a generalised methodology for their integrated management, to assess the role of salt marshes in the biogeochemical cycles of organic and inorganic substances at the land-sea interface, to evaluate the role of peatlands and floodplains in global change, to develop methodologies for the rehabilitation of eutrophied shallow lakes and to investigate the contamination of the inner coastal zone as the basis for the sustainable use and development of European wetland ecosystems.

The Treaty on the European Union introduced in 1993, as a principal objective, the promotion of sustainable growth respecting the environment. This includes an environmental policy that aims at a high level of protection, the requirements of which must be integrated into other Community policies. In this sense, the Fifth Environmental Action Programme "Towards Sustainability", addresses five target sectors: industry, energy, transport, agriculture, and tourism. Environmental responsibilities are shared by all economic players, including public authorities, public and private enterprises, and, above all, the general public. It must be clearly seen that the maintenance of well functioning wetland ecosystems depends more on successfully implementing this principle than the single conservation of wetland reserves. Without this having been spelt out explicitly until now, the European Union's involvement in the wise use and conservation of wetlands mainly depends on implementing sustainable structural measures and policies.

The European Community and its Member States together have long been a large source of development assistance. Within months of the opening of the borders and the emergence of democracy in central and eastern Europe the specific co-operation programme PHARE was set up by the Community. Projects benefiting wetland conservation included support of the Foundation for the Great Mazurian Lakes in Poland and a study on the conservation of wetlands and grasslands in Hungary. The Nicosia Charter of 1990 on environmental co-operation in the Mediterranean basin spelt out a five-year programme to support and complement the Environmental Programme for the Mediterranean, initiated by the European Investment Bank and the World Bank. In the latest Lomé Convention, environmental concerns are listed as the first area of co-operation between the European Community and 69 African, Caribbean and Pacific states. Among other themes, the convention gives priority to the preservation of biological diversity and to the protection and rational use of water. The European Community also contributed to several wetland-related projects in Asian and Latin American countries.

In July 1994, the Commission adopted a Communication with the title "Europe 2000+: Cooperation for European territorial development". In its section relating to the environment, this Communication stresses the need to supplement the traditional approach adopted for nature conservation, mainly oriented towards the protection of

threatened areas, with a more horizontal approach applied to the open spaces hosting the bulk of natural and semi-natural areas as well as the habitats of wild flora and fauna throughout the Union's territory. As far as water reserves are concerned, it recommends among other things longer term plans for major catchment areas establishing estrategic objectives for water reserves and priorities for their use. For coastal areas, it recommends *inter alia* integrated management plans tailored to their specific features, functions and vulnerability.

In September 1994, an informal Council of Ministers responsible for Spatial Development agreed on the principles and spheres of action to be adressed by a European Spatial Development policy, among which the wise management and sustainable development of Europe's natural heritage.

The importance of the international dimension of the Union's work in the field of the environment will be strengthened as the Union and its Member States have a special responsibility to encourage and participate in international action to combat global environmental problems following the Rio Declaration on Environment and Development. In pursuance of Article 130R.1 of the Treaty on European Union, the Union's involvement in international environmental actions will be stepped up over the period covered by the Fifth Environmental Programme. This will also have to include a comprehensive strategy to stop and reverse the loss of wetlands on a global scale and the promotion to use their resources in a sustainable way.

III

KEY WETLAND ISSUES

STOPPING AND REVERSING WETLAND DRAINAGE AND DESTRUCTION

Since early history, wetlands have widely been regarded as unproductive land whose conversion to a more profitable use, mainly for agricultural purposes, was very beneficial for society. In the Mediterranean, the wish to eradicate malaria, the disease associated with these habitats, has enhanced the drainage works.

More recently, the development of civil engineering techniques has made the drainage of virtually all wetlands a minor obstacle to the creation of new agricultural land, industrial or commercial estates, urbanisation, tourist resorts, transport infrastructures, artificialized aquaculture units, etc.

Signs of a recent reduction in wetland loss are shown in some Member States, and in some cases the political tools to halt the decline have been put into place. However, even now, many projects that would destroy and degrade further wetlands are planned.

The fate of wetlands in other regions of the world, in particular industrialised parts, has been comparable, although their loss was probably less severe than in Europe. In the United States, it has been estimated that some 56 per cent of the original wetland area has been lost. Alarmed by this decline, the United States has been amongst the first countries to draw up a National Strategy for wetland conservation and to adopt a "No Net Loss" strategy. This recognises the fact that for specific socio-economic reasons some wetlands may have to be altered, and that in compensation, an equivalent wetland area also providing the functions of the lost site, must be created. However, although the loss in surface can approximately be compensated for, the re-creation of the precise functions that have been lost is normally very costly and extremely difficult, if possible at all.

Unlike in North America, where vast areas of natural wetlands still remain, in Europe, wetland loss has been dramatic, probably the largest in the world. Immediate measures must be taken to maintain the remaining wetlands, forming part of a unique ecological network providing different functions for society and wild fauna and flora.

The levels of development vary throughout the European Union's different regions. In some areas, most of the natural wetlands have been destroyed and great efforts are now being undertaken to restore lost wetlands, whilst in other regions, extensive natural areas remain but are under great pressure from development schemes. The bad experience encountered in a number of economically more favoured regions needs therefore to be put to good use in those other regions where it is most needed for a sustainable way of development. In a situation where agricultural land is set aside, where major diseases are under control, and where the environment is a major concern of European citizens, no further wetland drainage and destruction is justified and should, therefore, no longer be allowed in the European Union.

REDUCING WETLAND POLLUTION

Wetlands are very vulnerable to water and atmospheric pollution. However, if properly managed, they can help reduce water pollution to a certain extent.

Nutrient enrichment and acidification originating from human settlements, agricultural land and air pollution have already been mentioned as the main forms of wetland pollution throughout Europe. Whilst their effects are relatively well known and immediately visible, the impact of other pollutants, such as certain pesticides, heavy metals or chlorinated hydrocarbons on natural ecosystems and their organisms is linked to long-term accumulation processes and therefore far less understood. Environmental changes or the accumulation of pollutants in wetland sediments or soils up to the saturation point may provoke the release of the pollutants, thus creating severe toxicological problems. In this sense, pollutants accumulating in sediments and the groundwater can create problems many years after their original release into the environment. In turn, stopping their release now, means that the beneficial effects will only become evident at some future date.

Pollution accidents create great public response, particularly as a result of their visibility and the immediate economic losses they provoke, such as rendering shellfish culture or fisheries impossible, or driving away large numbers of tourists from foul-smelling or potentially toxic lagoons, lakes or coasts. Such accidents are normally followed by intensive cleaning actions at high cost, while only rarely, much lower-cost, medium to long term preventive measures are taken as a reaction to local complaints.

Unfortunately, in some cases wetlands are still considered wastelands ideally suited for disposing urban and industrial waste. Even where this is not the case, spillages that spread with coastal currents or, either in the groundwater or on the surface, downstream in river systems, can create severe pollution problems at some distance from the source.

For drinking water abstraction, and where important economic activities occur within wetlands, proper monitoring of the water quality usually takes place and pollution problems can be solved in time. Such procedures should be extended to all wetlands. Sources of waste water that pollute wetlands must be identified and cleaned. According to the "Polluter Pays" principle, cleaning costs should be borne by the originator of the pollution.

The European Community has adopted a wide range of legal instruments aiming at improving water quality. The Council Directives concerning urban waste water treatment (91/271/EEC), concerning the protection of waters against pollution caused by nitrates from agricultural sources (91/676/EEC) and on pollution caused by certain dangerous substances discharged into the aquatic environment (76/464/EEC)[25] are of particular importance in this context. The recently proposed Directive on the ecological quality of water[26] will be crucial to complete this legislation while introducing a comprehensive and integrated element. However, the full impact of these directives largely depends on the strength of their implementation in each of the Member States. Furthermore, as contained in the proposed new Directive, procedures to monitor water quality and to improve it through integrated programmes targeting all elements of the ecological quality of water systems, need to be established. The restoration or creation of a network of buffer wetlands, functioning as pollutant traps can contribute to the improvement of the water quality of the remaining natural wetlands. However, the long term limitations of such a strategy must be recognised, as these pollutants may be released again into the environment at a later stage (cf. above).

In addition, as far as pollution from maritime accidents is concerned, at the beginning of 1994, the joint Council of Environment and Transport Ministers agreed on future iniciatives to be taken by international organisations on maritime safety and the establishment of guidelines[27], some of which are clearly linked to wetland conservation and management. These are in particular :

- The promotion of initiatives to tackle the problems of the ecological vulnerability of certain maritime zones and coastal areas.

and

- The definition of maritime zones that are environmentally sensitive and the implementation of special systems involving, where necessary, restrictions on maritime traffic and an obligation for all ships carrying dangerous materials to notify the authorities of any information potentially useful for the safety and protection of these zones.

RESTORING WETLANDS

The restoration and creation of wetland ecosystems is extremely difficult, as they are very complex by their nature. It is normally cheaper to conserve existing wetlands than to rehabilitate degraded wetlands. This, in turn, is more likely to be successful than the restoration of certain functions of destroyed wetlands, while the restoration of complete wetland ecosystems to their former functions and values, is almost impossible. However, the increasing interest in wetland restoration reflects the socio-economic importance of certain wetland functions that need to be restored. Careful spatial development strategies, multidisciplinary approaches, the establishment of clear goals, and full attention to the hydrology are important prerequisites for success. Wetlands to be restored should require little

management and restoration projects need to take into account existing hydrological links within the catchment basin. Subsequent monitoring is vital to assess if the restoration objectives have been achieved and, if necessary, to undertake corrections.

Wetland restoration is particularly advanced as a policy element in the northern part of the Community, e.g. Denmark. Recently, the European Community funded some wetland projects to enhance their habitat functions for nature conservation (under the ACE and LIFE Regulations). However, other, economically important wetland functions need to be increasingly considered in future projects, such as the improvement of water quality, flood retention, biological corridor functions, etc. Large scale projects can be supported through regional programmes and the Cohesion Fund in the eligible countries. Furthermore, it is important to promote and publicise the experience gained during recent wetland restoration projects.

The current changes of the Common Agricultural Policy and accompanying measures, including long-term set-aside of arable areas, provide an unprecedented opportunity to restore vast areas of wet meadows and riparian wetlands that had earlier been converted to dry pastures and arable land. However, this requires the development of concerted policies which focus on areas with restoration potential, rather than being broadly applied in a spatially dispersed manner in all agricultural areas.

SUSTAINABLE WETLAND RESOURCE USE

Water resource management is often the central point for dispute, as different users want specific water quantities at different times of the year. When summed up, these quantities are often larger than the amount available, if provision is made to maintain the main wetland functions at a sufficient level.

Water is the basic factor in assuring the ecological functions of wetlands. It is also a valuable natural resource for agriculture (irrigation), energy (hydro-power), transport (river navigation), tourism (leisure, angling) and industry (production processes). It is essential that each of these sectors does not develop its water use policy without respecting the seasonal water quantity needed to maintain the ecological values of related wetlands and taking into account the needs of the other sectors. This clearly requires an integrated approach. With increasing water consumption in the European Union, water shortages will become more frequent. If ecological wetland characteristics are to be preserved, integrated water use plans, that ensure the long-term survival of an adequate hydrological regime on a sustainable base, need to be developed and put into practice. A strong policy of integration is therefore needed as a principal element of all Union policies. This integration must be implemented according to the Principle of Subsidiarity.

For centuries, vast areas of wetlands such as wet meadows, flooded grasslands or temporary freshwater marshes have been used as grazing lands for cattle or for hay production. These wetlands support very rich plant communities and wildlife and these traditional non-intensive forms of agriculture gave also rise to the selection of several hardy races of horses, cows and cattle. These races were well adapted to this peculiar environment, but are now disappearing. Overgrazing or altering the inundation regime of these wetland sites decrease their natural value. Adapted grazing pressure and hydrological regime need to be precisely defined and applied in order to both preserve the biological diversity of such wetlands and optimise their agricultural productivity.

Traditional fishing and aquaculture in European wetlands have been practised for a long time in a sustainable way. But recent intensification and industrialisation of these activities, combined with a degradation of the spawning habitats and the water quality, have had a severe effect on their productivity. Natural fish stocks and their renewal rate must be carefully evaluated and monitored in order to adopt the fishing mortality rate that does not deplete fish stocks. Furthermore, aquaculture projects need to be carefully evaluated in order to assess their environmental impact (notably water pollution leading to eutrophication, and the modification of hydrological features).

Peat bogs have formed over millennia, under particular climatic conditions. In north-western Europe, peat extraction has long been carried out on a small scale,

mostly for domestic fuel production and, since the 1920s, also for soil improvement in gardens and horticulture. Nowadays, extraction often takes place on an industrial scale, as fuel for electricity generation and for horticultural purposes. The current extraction rate in the European Union cannot be sustained, and the available peat stocks will further decline. Therefore, alternatives to peat must be developed. The exploitation of peat from large fens and blanket bogs can furthermore disrupt the fragile hydrology of nearby active raised bogs which are, like active blanket bogs and wooded bogs, priority habitats according to Council Directive 92/43/EEC. In addition, the origin of peat imported into the Union should be controlled in order not to encourage the destruction of valuable peat bogs outside the Union territory.

Waterfowl hunting in European wetlands is a popular leisure activity and can be an important source of income for wetland owners. Rightly, hunting associations are becoming an important driving force for wetland conservation. The principle of using the waterfowl resource in a sustainable way can substantially contribute to wetland conservation, providing it includes the use of non-toxic shot[28], the setting of bag limits, the creation of an adequate network of game refuges, and the adaptation of the hunting seasons to the ecological requirements of the species. These are also aspects covered by Council Directive EEC/79/409 on the conservation of wild birds.

In the past, the multiple benefits of wetlands were poorly recognised and neglected by developments which often sought to maximise the use of only one of the wetland resources, according to an oversimplified ecosystem concept. Many wetlands are destroyed or degraded because of the impact of external activities upon the hydrological system which supports the wetland. To address these problems, specific attention needs to be given to improving the design and operation of planning procedures and strengthening institutions with the responsibility to pursue this work.

In most cases, conflicts appear because of a lack of concertation between different wetland resource users. Often, there is little appreciation of the range of products and services provided by wetlands. Individual administrations and ministries perceive wetlands as having the potential for only one single product represented in their sector. Thus, wetlands are at the same time undervalued while some of their resources are overused. The maintenance and enhancement of their diverse productivity needs to be managed in an integrated way.

INTEGRATING THE MANAGEMENT OF WETLAND FUNCTIONS

Five principal factors contribute to institutional inefficiencies in wetland management and conservation: sector organisation, limited availability of management techniques, shortage of qualified staff, inadequate legislation and limited financial resources. The management of wetlands is often vested in relatively powerless institutions, or worst still, left to several uncoordinated bodies sometimes having important power and resources, but lacking the awareness and capacity to manage and use wetland resources in a sustainable way.

Wetland conservation is low on political agendas while there is intense pressure for traditional economic development. Wetland destruction and degradation have adverse and unforeseen long-term costs which are often borne by the state, while organisations and individuals can make short-term profits from the conversion of wetlands. Major impact occurs on wetlands through the widespread policy of under-pricing water, resulting in a sub-optimal allocation of resources. Many sector interests interfere with coherent wetland management. They either affect wetlands directly or through competition for water, through water and air pollution, through deteriorating impacts on the landscape and its recreational potential such as smell or noise, etc.

Throughout the European Union, appropriate policy and environmental standards need to be implemented, as has been decided in general for all environmental aspects. Thus, the conservation and sustainable use of wetlands and their resources must also be an integrated part of all Union policies. Wetlands need to be managed in a way that ensures the participation of local people in planning and enforcing balanced policies of sustainable resource use. The management mechanism must identify an agreed set of objectives and ensure that there is a free

flow of information and open consultation procedures between the exponents of major policies with a potential impact on wetlands, such as agriculture, industry, energy, transport, and tourism.

The 5th Environmental Action Programme «Towards Sustainability»[29] sets out clearly that environmental responsibilities have to be shared by all economic players, including public authorities, public and private enterprise and, above all, the general public, both as citizens and consumers. In order to bring about substantial changes in current trends, a broader mix of instruments which set fundamental levels of protection need to be complemented by cross sector guidelines for policies with a spatial impact to ensure their compatibility with sustainable use of wetlands, by market-based instruments designed to sensitise both producers and consumers, by horizontal supporting instruments that provide improved base-line and statistical data and by financial support mechanisms.

The Commission has instigated studies on integrated management of coastal wetlands of Mediterranean type (document XI/669/92). Their general conclusions hold also for other European wetlands.

IV

STRATEGIC DIRECTIONS

INTEGRATING WATER AND WETLAND MANAGEMENT

Water is the crucial element of wetlands. Wetlands, as water storage places, form part of the global water cycle. Threats to wetlands often originate far away from the actual wetland sites, within their catchment basin. Wetland conservation is thus directly related to water resource management, depending on and influencing in turn the quality and quantity of the water.

The main areas of water management concern water supply, pollution control, flood control, energy production, navigation, fisheries, recreation, tourism and land-use planning. These issues are inter-related and may have profound influences on wetland sites and their ecological functions and values. In turn they are linked to agricultural, forestry, industrial and urban policies.

So far, water quality has received very high consideration at European Community level. Two important Council Directives for the improvement of water quality in natural aquatic ecosystems were adopted in 1991: Directive 91/271/EEC concerning urban waste water treatment and Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources.

The impact of urban waste waters on natural wetlands is mentioned in Annex II of Directive 91/271/EEC and must be one of the main criteria for the selection of priority measures. The implications of Directive 91/676/EEC are discussed below in relation to the Common Agricultural Policy.

Recent drought periods in Europe reminded us that water is a limited resource and this exacerbates user conflicts, especially, but not only, in southern, drier regions. Often, water management competence is split between different administrations and different levels (national or regional). This can lead to unnecessary conflicts on how to share the limited resource. Legal instruments for water management most often only concern particular sectors like energy production, domestic water, or navigation, etc. It is time to integrate them into a unified catchment-based approach. The new water law adopted in 1992 in France, for example, defines water as part of the common national heritage and aims at a balanced management of water resources in order to assure, amongst other things, the preservation of aquatic ecosystems, sites and wetlands.

In 1992, the International Conference on Water and the Environment in Dublin which prepared an input to Agenda 21, the action programme for sustainable development adopted some months later at the Rio Conference, recommended three priorities for using water more wisely in the long term: 1) integrated water management needs to take into account all uses of water and all sources of contaminants within a given catchment basin, 2) a preventive approach focusing on water demand management, water conservation and pollution prevention rather than water supply management and pollution control at the "end of the pipe", and 3) the wise use of wetlands so that they may yield the greatest continuous benefits to present generations while maintaining their potential to meet the needs of future generations.

Integrated water management must be achieved considering surface and ground water as part of a system whose geographical limits are those of the water catchment basin (or aquifer), and taking all socio-economic aspects into account as well as the functioning of the aquatic ecosystem.

Such an integrated approach must be promoted as a deliberate cross-sector strategy at the highest political level (i.e. inter-ministerial). Numerous sector legal instruments need to be improved, completed or replaced in order to address the integration issues. At the catchment basin scale, it might be necessary to create new administrative institutions in charge of consulting with the public and co-ordinating the different activities and uses. This is particularly important for transboundary water basins shared by more than one administrative region, province or state. International river basin agreements for the Rhine, Elbe and Danube are the first examples for promising collaboration. Here, the European Union has a leading role to play.

For each catchment basin, a freshwater resource assessment should be undertaken as a basis for management. This should also comprise an inventory of all wetlands in the catchment, their link to surface and ground water flows and the functions they perform in relation to the water cycle (flood and sediment retention, ground water recharge, etc). All categories of water users need to be made aware of the water resource limitation and its long-term conservation.

The impact of major development schemes, such as those for which Council Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment[30] requires an Environmental Impact Assessment (EIA), should not only be assessed on site but with regard to the whole catchment basin. Furthermore, the list of development projects for which an EIA is compulsory should be extended to cover all works liable to modify surface or ground water flows.

According to the "Precautionary Principle", it is appropriate to grant water use rights only for a (renewable) limited period. Ground water abstraction should not exceed the charge rate. Water saving and re-use techniques must be further developed and publicised for wide application. Principles of long-term sustainable use of water sources and water saving are to be considered before funding measures of structural and regional development.

Water has to be considered as a common heritage and limited resource. To avoid abuse and over-use of water for human consumption, this resource should be priced at a level to cover its true cost, including external environmental costs. This may require new water pricing mechanisms, including incentives for water saving. Staff of institutions dealing with water management should be trained in order to acquire a general understanding of the main ecological processes in wetland ecosystems and nature conservation issues.

THE MANAGEMENT OF LARGE AND INTERNATIONAL RIVERS

Until very recently, rivers were often only considered as a means to carry (or evacuate) water from one point to another. However, recent ecological research revealed the important interactions between rivers, adjacent floodplains and ground water flows underneath, and proved the necessity to preserve the multiple functional aspects of these complex hydrological systems.

Alluvial (i.e. river-related) aquifers are of primary importance for domestic, agricultural and industrial water uses. Natural river beds and their associated flood areas have a great potential for water purification. Where they still exist, associated floodplains and wetlands can function as flood retention basins. During recent floods and subsequent inundation in different parts of Europe we were reminded of the dramatic loss that has occurred of areas able to play this role. Furthermore, natural river ecosystems support a high diversity of wild flora and fauna and serve as important corridors for migratory species (e.g. fish of commercial value, etc).

While the management of smaller rivers and related floodplains and wetlands is often straightforward, management and conservation problems of large rivers are more complex and have to cover geographical areas of considerable scale. At this level, an integrated approach needs to take into account the functional dynamics of the river-floodplain ecosystem including the preparation of an inventory of all floodable zones, the formulation of clear restrictions for land-use within these zones, the restoration of natural areas for flood retention and the conservation of particular habitats.

On rivers with barrages, technical installations that ensure the free movement of migratory species have to be installed, based on a careful inventory of reproduction sites for important fish and other migratory species. Sand and gravel extraction should be dislocated from river beds outside riverine floodplains, while promoting the use of alternative mineral resources (e.g. recycled building materials). Buffer zones without cultures should be established along sensitive riversides in order to reduce nutrient and fertiliser inflow. Problems caused by changes in sedimentation patterns

provoked by the establishment of barrages need to be solved. Natural, including temporary and erratic hydrological regimes of rivers should be respected. The compulsory minimum amount of water flow in rivers with important water abstraction (for energy production, agriculture, etc) needs to be defined carefully.

River management is further complicated in the case of transboundary basins, covering different administrative regions or states. Several large European rivers form the border of different countries or cross different states on their way to the sea. Along such international water courses, Member States do have bilateral responsibilities regarding the quality and quantity of the water flow, sediment transfer, migratory species, etc.

The European Union has signed two multilateral agreements concerning, respectively, the Rhine and the Elbe and is proposing to sign a similar agreement for the Danube. The agreements lead to the creation of international commissions for the protection of these rivers, focusing mainly on pollution abatement. In the case of the Rhine, specific actions regarding migratory fishes, floodplain wetland conservation and restoration are underway. In the Mediterranean region, bilateral agreements on the Guadiana and Tagus river have been signed between Spain and Portugal. Greece has signed agreements with former Yugoslavia, Bulgaria and Turkey. However, these agreements are mainly concerned with water abstraction and do not yet also cover the conservation of aquatic habitats.

The Helsinki Convention on the protection and use of transboundary watercourses and international lakes provides a framework for integrated agreements. The European Union Member States have also signed the Espoo Convention on environmental impact assessment in a transboundary context, largely inspired by Council Directive 85/337/EEC. The Espoo Convention obliges the contracting parties to undertake EIAs for big dam and ground water abstraction projects.

The following is a list of the most urgent actions to be taken towards integrated management of large rivers and their catchment:

- A short list of the remaining natural rivers and parts of rivers should be established for priority actions related to Community legislation. Subsequently, the European Union will be prepared to promote the wise use of these rivers and their resources, avoiding any financing of detrimental development projects.

  Council Directive 85/337/EEC and its implementation must still be put in line with the obligations of the Espoo Convention, i.e. stipulate that EIAs are obligatory (Annex I of the Directive) for dam and ground water abstraction projects, if located in transboundary basins. EIAs need to be carried out at river basin scale and based on studies involving more than just the bodies interested in carrying out the proposed development projects.

- The conservation of aquatic ecosystems, including wetlands, must be an integral part of international river basin agreements. The bodies to guide implementation of these acts need to have adequate funds at their disposal and the facility to acquire the most sensitive areas for river conservation, as in the case of the Elbe Commission.

- There is an increasing need to establish similar bodies for integrated river basin management in other parts of Europe either on bilateral or national level (e.g. for Mediterranean rivers, or the Loire in France).

- Finally, within the framework of Council Directive 92/43/EEC, the European Union will promote the inclusion of international and inter-regional rivers in the Natura 2000 network of protected areas.

COASTAL ZONE MANAGEMENT

About one third of all wetlands in the European Union, and an even larger proportion when considering their surface area, are located in the coastal strip, at the interface between land and sea. Consequently, coastal zone management is crucial, not only for the coastal wetlands, but in general for the conservation and wise use of the Community's wetlands. This is also reflected by the importance given to this specific subject in the

Commission Communication EUROPE 2000+ "Co-operation for European territorial development"[31].

For centuries, coastal areas have been inhabited and used by man for the abundance of food and other natural resources they provide, as well as for their strategic position for trade and transport. As a result, coastal areas are densely populated: 60 per cent of the Greek and 30 per cent of the Spanish population live in coastal areas, a third of the British live in estuarine regions. Integrated coastal zone management is therefore crucial for the wise use and conservation of wetlands.

Urbanisation, the development of industry, large-scale harbour facilities and, most recently, tourism have led to an important destruction and fragmentation of coastal natural habitats and landscapes. Resulting environmental degradation, as a consequence of water abstraction and pollution, has provoked the decline or disappearance of several species from places where they used to be abundant. Technical progress has allowed fish and shellfish catch to increase above sustainable levels. Nutrient loads of urban, industrial and agricultural waste waters are responsible for the eutrophication of coastal waters, already seriously affecting several economic activities, like shellfish and fish farming, the production of algal food, and tourism (algal bloom in the Adriatic, toxic algae in the Ligurian Sea, etc).

Coastal wetlands and lagoons, due to their location downstream of, often large, catchment basins, are particularly vulnerable to water pollution. This danger is coupled with huge population increases in European coastal areas where large-scale tourist developments occur, especially in the Mediterranean. The number of international tourists in the Mediterranean region doubled from 56 million in 1970 to 116 million in 1986 and could double again by the year 2025. It will be physically and economically difficult to satisfy the water demand and the waste water treatment needs of such numbers, especially during the dry summer months. Mass tourism can therefore not be considered a panacea in coastal regions that are suffering from industrial decline.

Furthermore, the predicted sea level rise is likely to generate serious problems for coastal defence works and to necessitate increasing public expenditure. The European Union is ideally situated to play an important role in long-term coastal management planning, guiding legislative terms of national and regional parliaments. Another administrative difficulty for coastal zone management is the fact that current responsibilities are often split between different ministries covering respectively marine and land-based aspects. Close co-ordination, or the creation of integrated agencies to manage coastal areas is therefore needed.

Coastal zones have received much attention and were the subject of specific programmes both at European Union and Member State level. For several years, the functional assessment of wetland ecosystems has formed an important part of the Commission programme for Research and Technological Development. Community actions such as MEDSPA, NORSPA, and the Commission Initiative ENVIREG provided specific funds for projects furthering integrated coastal zone management, including the preservation of natural resources and habitats. The action programme addressing the problems of sensitive marine and coastal areas along shipping routes in relation to oil spills has already been mentioned above. At Member State level, several of them have developed specific programmes and institutions for coastal protection, such as the Heritage Coast scheme in the UK, or the 'Conservatoire de l'espace littoral et des rivages lacustres' in France. Denmark, Germany and the Netherlands have taken common steps to develop the integrated and co-ordinated management of the Wadden Sea by creating the Common Secretariat for the Co-operation on the Protection of the Wadden Sea, Europe's largest coastal wetland area. With Community financial support, this body has just elaborated and approved a Common Co-ordinated Management Plan for the Wadden Sea with a view to the three Member States concerned jointly designating this area very soon as a Special Area of Conservation pursuant to Council Directive 92/43/EEC.

Based on a Community strategy for the management and conservation of coastal zones[32], the Commission identified the need for action in three fields,

1) installation of networks for data gathering, monitoring, and exchange of experience, 2) creation of public awareness on the problems and resources of coastal areas, and 3) definition of an environmental

framework and elaboration of general plans for sustainable and integrated management.

Recently, the Environment Council, through two Resolutions adopted on 25 February 1992 and 25 March 1994, invited the Commission to propose a Community strategy for the integrated management and sustainable development of the entire European Union coastline, respecting the principle of subsidiarity. That strategy will above all concern coastlines, including the shore, coastal waters and estuaries, as well as the strip of land extending to the limit of coastal marine influence and thus include a large part of the Community's wetlands. A description of the types of coastal wetlands and their functions will be one point of departure for such a strategy, which has to address, amongst others, the following points:

- Coastal waters, estuaries, deltas, and coastal land, up to the limit of the marine influence need to be treated as a single management unit, given the many ecological interactions between the terrestrial and marine environments;

- European coastal management should be considered at adequate biogeographical level. All studies and the promotion and exchange of information, techniques and monitoring results should be co-ordinated at this level;

- special attention should be paid to problems arising from sea level rise and subsidence;

- Member States should elaborate inter-ministerial coastal management strategies with clear objectives, including integrated land-use plans, species and habitat conservation goals, the maintenance of ecosystem processes, etc.;

- there should be no new encroachment on natural coastal areas of Community importance according to Council Directives 79/409/EEC and 92/43/EEC.

IMPROVING LEGAL INSTRUMENTS FOR WETLAND PROTECTION

Although the European Union Member States are contracting parties to the Ramsar Convention on Wetlands of International Importance, several make no precise reference to wetlands and their conservation in their relevant national laws. Legal conservation of many wetland sites often merely covers water quality. Even the most important wetland sites are in many cases only protected as a habitat for endangered or rare (bird) species without mentioning the whole range of other benefits they provide. Human activities frequently affect numerous wetland functions, but regulations are generally designed only to address one aspect, like fishing or hunting, etc.

At Community level, wetland sites important for migratory birds are mentioned in Council Directive 79/409/EEC without defining the term "wetland". Council Directive 92/43/EEC goes further in listing a number of wetland types that are of Community interest requiring special conservation. The classification or designation of wetland sites as Special Protection Areas (Directive 79/409/EEC) or Special Areas for Conservation (Directive 92/43/EEC) is the main Community instrument to prevent the degradation or loss of these sites. In Denmark, some types of wetlands are legally protected under the Protection of Nature Act (N°9 of 3 January 1992), i.e. all lakes larger than 1 ha, and all saltmarshes, swamps, humid permanent grassland, etc. larger than 0.25 ha. In France, wetlands are now legally defined and their protection is one of the aims of the new Water Law (N° 92-3 of 3.1.1992).

Through the above-mentioned directives, the importance of wetlands as a common natural heritage is acknowledged by the European Union, according to the definition given by the Ramsar Convention as quoted in the introduction to this Communication. Further efforts need to be undertaken to ensure that all wetland sites qualifying for Natura 2000 are designated as such and adequately managed. For wetlands, Member States should apply the instrument of management plans such as laid down in Article 6 of Council Directive 92/43/EEC as a rule. Furthermore, wetland conservation depends to a large degree on regulations ruling drainage, development planning and tenure rights, fiscal and tax rules and incentives. These regulations have therefore to be implemented in a way which is favourable for the wise use of wetland resources and their conservation.

IMPROVING ECONOMIC INSTRUMENTS

As mentioned at the beginning, at present there exists almost no economic appraisal of wetlands and their functions and values. Therefore, as the OECD discovered, market mechanisms still fail in the wise use and conservation of wetlands and their resources.

The negative consequences of these gaps are in economic terms even increased by two facts that up to now have almost never entered the minds of decision makers : Firstly, there exists a clear physical and functional solidarity between wetlands and other areas with a view to supporting human activities and augmenting economic benefits. Secondly, because of the time-lag between the loss or degradation of wetlands, on the one hand, and the negative and also economic impacts induced by them, on the other hand, the economic consequences of wetland loss and degradation are, if at all, systematically evaluated at too low a level and integrated into decision procedures with insufficient weight.

Consequently, the economic evaluation of wetlands, their functions and values, the correct pricing of the use of wetland resources and the adequate integration of cost related to wetland loss and degradation, as well as to necessary compensation, into economic appraisal and decision procedures have to be put high on both the agenda of research, as reflected in the present STEP research programme, and the agenda of improvement of instruments.

In the 1970s and 1980s, guaranteed high cereal prices were a major incentive to convert lowland pastures to arable land and public subsidies to drain wetlands were available throughout the Community. With the recent reform of the Common Agricultural Policy, this process should now be reversed. However Council Regulation EEC N° 2085/93[33] concerning the implementation of the European Agricultural Guarantee and Guidance Funds, still allows «the renovation and improvement of drainage systems». Environmental guidelines, for example as included for reparcelling schemes, have to make sure that this does not result in a negative impact on still existing wetlands.

The under-pricing of water is common in several Member States which can lead to serious over-use of water. Combined with substantial Structural Funds for the development of irrigation schemes, it can cause wetland loss or degradation. Water prices have to be adapted to reflect its real cost, including the cost of cleaning polluted water.

Regional development measures, even if located at substantial distances from a wetland, can alter its ecosystem functioning. Although significant progress has been made in the recent Regulations for Community instruments, like the Structural Funds and the Cohesion Fund, towards the full integration of environmental concerns, the assessment of the environmental impacts of proposed projects still needs to be improved and the spirit, that these Community instruments may not contribute to environmental deterioration, to be put more into practice. The extent of this work should not be under-estimated, and has to be taken seriously at all levels, with Member States playing the major role. Costs of this work need to be integrated into project costs from the beginning.

A widespread incentive for wetland drainage is the taxation of potential agricultural land, which may be based on statistics that are out of date. In France, for example, the tax value for meadows was calculated at a time when cattle breeding was one of the most profitable forms of agriculture, and means to adapt this to the current socio-economic situation are currently been sought. It is appropriate to develop standards for land taxation at the level of the European Union, reducing tax levels on remaining natural areas in private ownership and to create financial instruments in favour of those regions which integrate nature and wetland conservation into local development programmes.

SUPPORTING RESEARCH AND MONITORING ACTIVITIES, INCLUDING THE SOUND APPLICATION OF RESEARCH FINDINGS

Wetland management and conservation need to be based on a good understanding of the fundamental ecological functioning of wetland ecosystems, integrating different scientific disciplines. Whilst much is known regarding

of wetlands, there is an urgent need to better understand their functioning and the values this provides to human societies. Although there is a good deal of academic research within specific fields, often, the results of this research are not sufficiently translated into concrete conservation and management actions.
Since 1973, the Environment Research and Technological Development Programmes of the European Community have provided a driving force for co-ordinated wetland research (some examples provided in **Box A**). The Fourth Programme (1986-1990) focused specifically on wetland research. However, in the absence of any sizeable promotion, the results of these studies take too long to be published and become public knowledge. It is important, but so far most often neglected, to make research results available to environmental managers and decision-makers by presenting them in the most appropriate form and disseminating them widely.

During historic times, wetlands were used in sustainable ways by local populations. Nowadays, these traditional uses are often abandoned, mainly because they are no longer profitable under modern socio-economic conditions. However, the intensive uses which replace them are often detrimental to natural processes, habitats and species. Therefore, the identification of means to make traditional uses of wetland resources economically viable, whilst at the same time preserving wetland habitats and species, is a priority axis for applied research. This includes inter-disciplinary approaches that take economic and legal constraints and current policies into account (agriculture, fishery, etc.). It includes studies for the successful marketing of high-quality wetland products, produced in an environmentally compatible way (fish, shellfish, beef, reed, etc).

Additionally, research on how to replace wetland resources that are exploited in a non-sustainable way is a high priority (e.g. peat as energy source and for horticultural purposes).

Co-ordinated, Europe-wide monitoring of wetlands and their status is essential for their conservation and wise use. The European Commission's CORINE Landcover programme has established information systems upon which specific wetland monitoring programmes can now be based. Monitoring activities will also have to include a posteriori assessment of the success of wetland conservation and management projects and policies, e.g. on the results of measures for wetland sites of the Natura 2000 network or concerning agri-environmental measures (Regulation EEC N° 2078/92). As far as it is appropriate to undertake this at Community level, these task will have to be executed by the European Environment Agency. The implementation of the proposed new Directive on the ecological quality of water already mentioned, will also largely contribute to the necessary monitoring of wetlands and their catchment basins.

Different policies at Community, national, regional and local level have impacts on wetlands. A coherent framework for spatial development strategies fostering sustainable use of wetlands need to be established. Furthermore, multi-disciplinary investigations on the underlying interlinking between natural and socio-economic sciences to make proposals on ways of avoiding or solving typical structural and administrative problems are needed - for instances through new institutional mechanisms. Major changes in policies and new regulations must be systematically accompanied by such studies and monitoring programmes in order to evaluate their impacts. To this end, a Council Directive on the strategic assessment of environmental impacts created by Policies, Plans and Programmes (PPP) will be an essential tool.

Box A

Research and Technological Development (RTD)
Some examples of wetland-related RTD projects receiving Community support:

Framework Programme 1990-1994
Wetland-related research projects in the RTD programme in the field of the environment:

MATURE: – Biogeochemistry of the maximum turbidity zone in estuaries
EC contribution: 750,000 ECU

Biogeochemical nitrogen and sulphur cycles and ecosystems dynamics in eutrophic coastal lagoons
CLEAN 1992-1995. Coastal lagoon eutrophication and anaerobic processes
EU contribution: 949,577 ECU

Assessment of the two main and connected human influences: river disturbance and subsequent fish stocking, on the genetic diversity and stability of natural riverine fish populations
EU contribution: 500,000 ECU

Influence of nitrogen deposition on the carbon balance in peatland ecosystems
EU contribution: 258,000 ECU

ERMAS: – European river margins as indicators of global change
EU contribution: 400,000 ECU

Abiotic controls of the germination, establishment, and species distribution of woody riparian vegetation
EU contribution: 300,000 ECU

Disturbance of European salt marsh ecosystems; the impact of environmental pollution (eutrophication) in relation to sedimentation patterns
EU contribution: 500,000 ECU

The effects of environmental changes on European salt marshes: structure, functioning, and exchange potentialities with marine coastal water
EU contribution: 1,100,000 ECU

Extended HUMOR: – Extension of project HUMOR: Humic substances, modifiers for the response of aquatic ecosystems to acidification
EU contribution: 250,000 ECU

STEP projects 1989-1992:
(Science and Technology for Environmental Protection)

Emissions and absorption of the greenhouse gases nitrous oxides by agricultural soils and natural wetlands
EU contribution: 527,000 ECU

Elements, stocks, and fluxes in the Posidonia oceanica ecosystems of the Mediterranean
EU contribution: 696,000 ECU

ALPE: – Acidification of remote mountain lakes
EU contribution: 300,000 ECU

EROS 2000: – European River Ocean System Phase II
EU contribution: 2,200,000 ECU

Functional analysis of European wetland ecosystems
EU contribution: 1,160,000 ECU

IMPROVING INFORMATION AND AWARENESS

Despite recent efforts for change, the word "wetland" still connotes a negative image for many citizens. The sustainable use and conservation of wetlands will only receive the political attention it deserves, if the public acknowledges their values and understands why it is important to preserve them.

The European Union supports information and awareness campaigns for specific target audiences: administrations, decision-makers, parliamentarians, industry, farmers, and school children are but the most obvious examples. Information packages must be based on sound scientific knowledge and understanding. The wide dissemination of the results of case studies on economic success (or failure) of wetland management projects or development schemes having altered wetlands, is an efficient means to inform local decision-makers and wetland users. So far, the European Union has financed such efforts through some nature conservation projects (ACE and LIFE), often related to visitor centres located at specific protected sites. The adaptation of this information for a wider dissemination at Union-level will be useful. Information material on wetland conservation subjects, produced under the current ACNAT project on co-ordinated actions for Mediterranean wetlands (MedWet, cf. **Box B**), provides a first example to be followed by other means (videos, TV, multimedia, etc). To this end, collaboration with experienced professionals and conservation NGOs, can increase working efficiency.

A "wetland component" should be integrated systematically into related thematic campaigns, such as campaigns on water, water transport, etc. Such a campaign could be based on the network of wetland sites where the Union has already supported conservation actions (Natura 2000). The campaign has to include not only aspects of nature conservation, but also those regarding the wise use of wetland products (water, peat, fish, waterfowl) and their functions (drinking water storage or cleaning, flood retention, etc).

Box B

Coordinated Action in Favour of Mediterranean Wetlands (MedWet)

Council Regulation (EEC) N° 3907/91 on action by the Community relating to nature conservation (ACNAT)

The European Community is the main supporter of the initial phase of the MedWet programme 1993-1995 providing 66 per cent of the total costs of 6,650,000 ECU.
The project is a common undertaking of the five Mediterranean Member States (France, Greece, Italy, Portugal, and Spain), the Commission (DG XI), the Ramsar Convention, the International Waterfowl and Wetlands Research Bureau (IWRB), the World Wide Fund for Nature (WWF), and the Tour du Valat Foundation for the study and conservation of Mediterranean wetlands.

MedWet activities are intended to lead to a truly circum-Mediterranean programme in which all states bordering the Mediterranean basin and all organisations with a particular interest in Mediterranean wetlands are invited to participate. For 1993-1995 the priorities include the following:

- the elaboration of a standardised approach for detailed inventories of all Mediterranean wetlands and regular procedures to monitor their ecological change;
- the preparation of a manual for administrators and managers on the integrated management of Mediterranean wetlands;
- the design, preparation and production of education materials and the preparation of training courses for wetland managers and technicians in different countries;
- the production of easily readable syntheses of scientific studies on Mediterranean wetlands for wide dissemination among decision-makers and managers;
- the preparation of basic awareness material and media campaigns to better inform the general public about wetland functions and values on a regional basis.

EDUCATING AND TRAINING WETLAND EXPERTS

Europe has many experts in different disciplines related to wetland conservation, but few people are trained to integrate basic techniques of different disciplines to co-ordinate proper wetland management. Even more than the subjects mentioned before, the adequate education and training of wetland experts is a field where, following the Principle of Subsidiarity, progress mainly depends on the initiatives undertaken to this end by Member States and regions.

A recent European inventory of professional training institutes dealing with water management (or the environment in a broader sense) in Greece, France and Spain identified about a thousand bodies of this kind. Amongst them, virtually none was offering a specific course on wetland management. The profession of "wetland manager" is virtually non existent as such. In different countries, wetland managers executing similar tasks, possess very different levels of education and training. There exists a need to identify future training needs and to recognise a clear professional category of "wetland manager".

The European Union can provide incentives for Member States to elaborate the professional profiles and training In addition, training in basic and specific skills, including modern techniques, such as the preparation of management plans, environmental impact assessments, resolution of user disputes etc., is needed for wetland managers.

Furthermore, Member States should include basic knowledge on wetland functioning and their values into the professional training of engineers, agronomists, land use planners, aquaculturists, water managers and other professional categories dealing with water and wetland resources. Student courses in these fields already exist at some universities and professional schools; they should be expanded to cover all relevant professional training institutes.

At a more general level, Member States are invited to integrate information on wetland values and problems into primary school curricula and the study of wetland ecosystems as one of the subjects in biology courses of secondary school programmes. As far as the Principle of Subsidiarity allows, the European Union encourages this.

Box C

Wetland-related Actions of the European Community for the Environment

Council Regulations (EEC) N° 1872/84 and N° 2242/87
on action by the Community relating to the environment (ACE)

The "ACE-biotopes" programme gave the Community the opportunity to support «projects aimed at providing an incentive and contributing towards the maintenance or re-establishment of seriously threatened biotopes which are the habitats of endangered species and are of particular importance to the Community under Directive 79/409/EEC on the conservation of wild birds».

Of 92 projects supported through the ACE-biotopes programme, 59 dealt specifically with wetland conservation. The Community contributed 18,143,000 ECU (53 per cent) to the total cost of 34,419,000 ECU of these projects executed by national, regional and local authorities, and non-governmental organisations.

Fifty-six of the projects were site-related covering 65 distinct wetland sites in the European Community. Three projects covered wetland inventories and monitoring plus support to the Greek Biotope/Wetland Centre.

The specific actions at the 65 wetland sites included, in decreasing order of frequency, biotope improvement, restoration or re-establishment, land purchase, lease or exchange, awareness and education activities, elaboration of management plans, management measures, inventories, studies, and monitoring activities, improvement of the protection status, wardening of the sites, and land-use agreements with local farmers.

CONSERVING IMPORTANT WETLAND SITES

In Europe, few large wetland areas of outstanding importance remain that have a satisfactory conservation status. Most of these sites have a national or Community protection status, e.g. they are listed as internationally important sites under the Ramsar Convention, or classified as Special Protection Areas (SPAs) under the Birds Directive (79/409/EEC). However, most of these areas are exposed to different pressures (industrial, agricultural, tourism, etc.) and are in danger of degradation. The sustainable management and conservation of these key sites requires immediate actions, for their intrinsic values, but also because a failure to conserve them would discredit the efforts and agreements under which they are designated.

The European Union has been financing conservation actions at several important sites (cf. overview in **Box C**). However, due to the limitation of available funds, these actions had limited impact and generally only involved small wetland areas. Furthermore, the results of these actions can easily be undermined by parallel and uncoordinated development projects in the vicinity.

Therefore, it is crucial for the lasting conservation of key sites, to plan land-use developments and management in an integrated way, on a socio-economic basis, as was recently started for the area surrounding the Doñana National Park in Spain. To promote and actively support such integrated planning is an objective of the policy implemented by the Commission.

A procedure for strong and immediate actions, when sites of Community importance come under threat, needs to be adopted. This will include a suspension of funding for projects causing the deterioration of such sites until an environmentally satisfactory solution has been found. The criteria and guidelines on wise use of wetlands of the Ramsar Convention can serve as guidelines (cf. **Annex II**).

V

INTEGRATING UNION POLICIES

TOWARDS SUSTAINABILITY

The Treaty on European Union of 1992 introduced, as a principal objective, the «promotion of sustainable growth respecting the environment». This includes an environmental policy that aims at a high level of environmental protection, the requirements of which must be integrated into the definition and implementation of other Union policies, public and administrative decisions, the conduct of production processes and individual behaviour and choice.

Target sectors, such as industry, energy, transport, agriculture and tourism, will receive principal attention from the Union's 5th Environmental Action Programme. It is important that the consequences of developments and measures in these fields on the conservation of the remaining wetlands and the continuation of the sustainable use of their resources and functions are identified and taken into account during the project appraisal and implementation of such measures.

The 5th Environmental Action Programme does not make direct reference to wetlands, however, wetland conservation and the sustainable use of wetland resources will directly depend on actions in the fields of the protection of natural habitats and species diversity, the management of water resources, integrated management of coastal zones, and management of waste and waste water. Clearly, the general policy guidelines laid down by this programme also apply to the present subject.

Thus, sustainable use of wetland resources needs to become part of a framework of shared responsibility by the economic and social actors, the authorities, the public and private enterprise, and the general public, both as citizens and consumers. The development of less favoured regions has to afford protection to their natural assets. In order to bring about substantial changes in current trends, a broad mix of instruments, setting fundamental levels of protection, needs to be complemented by market-based instruments designed to sensitise both producers and consumers, by improved horizontal supporting instruments providing the necessary base-line and statistical data, and by financial support mechanisms. Additional horizontal instruments, including research, education, and training, will need to form part of a coherent strategy.

INTEGRATION OF AGRICULTURE AND WETLAND CONSERVATION

Agricultural policy not only has a predominant place in Community affairs, but also a large influence on wetland conservation and use.

Along with the production success achieved by Community agriculture during the last decades came negative side-effects of agricultural intensification, including the abandonment of agricultural practices maintaining semi-natural wetlands, water and soil pollution problems and the destruction or deterioration of valuable natural habitats including freshwater marshes, bogs, wet meadows and others.

Measures were soon taken to combat these negative developments and have resulted, in the meanwhile, in a set of instruments with the following main elements:

Nitrate directive and water pollution problems in agricultural areas

According to Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agricultural sources[34], Member States are required to implement a national code of good agricultural practices and to establish a list of areas vulnerable to water pollution. Within these areas, action programmes to combat pollution have to be defined and implemented. Regulation 2078/92 (see below) provides for compensation payments within such areas.

Following the Precautionary Principle, at least all Ramsar sites and wetland Natura 2000 sites located within or downstream of agricultural areas should be covered by water quality monitoring schemes. In order to prevent eutrophication, a strict procedure to consider them as vulnerable must be applied.

Increasing attention has to be paid to the phosphorus content of fertilisers. Unlike nitrates, which are recycled through denitrification processes, phosphates are not removed from the water and accumulate in the sediment. Their probable subsequent release can cause further degradation of the water quality.

Agri-environmental measures

This specific Regulation N° 2078/92 on agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside[35] follows previous Regulations on improving the efficiency of agricultural structures, which allowed compensation for loss of income to farmers applying production methods compatible with the environment in Environmentally Sensitive Areas (cf. Box D).

Box D

Environmentally Sensitive Areas

In the Eighties, "Article 19" of Regulation (EEC) N° 797/85 on improving the efficiency of agricultural structures provided financial support for agricultural practices compatible with environmental requirements in "Environmentally Sensitive Areas" (ESA). The Regulation was repeatedly revised, and its Article 19 was finally extended into four Articles (Title VII, Art. 21-24) covering not only agricultural practices compatible with the conservation of the environment and its resources (e.g. water), but favouring also habitat and landscape conservation (Regulation (EEC) N° 2328/91).

A case study: the Somerset Levels and Moors (United Kingdom)

The decline of wading birds breeding in wet grasslands in England and Wales is linked with the increase of drainage and fodder production on grassland starting in the late 1960s. The lowering of the water table reduced the surface of regularly flooded areas substantially, including vital feeding areas of these birds. The Somerset Levels and Moors in SW England consist of pastures on clay and peat soils intersected by drainage ditches in the floodplains of six rivers covering about 56,700 ha. This traditionally-managed wetland habitat supports nine bird species in numbers considered of international importance. Many rare and endangered species of aquatic flora and fauna are also found in the extensive ditch system.

The area has therefore received much attention in order to preserve its biological diversity. Governmental and private conservation bodies purchased land, and some conservation activities received Community support through Regulation 2242/87 (ACE). Grasslands belonging to this site have been designated as Sites of Special Scientific Interest (SSSI), and management agreements have been passed with farmers under a specific national scheme. Moreover, in 1987, 27,000 ha of the area were designated as Environmentally Sensitive Area according to Regulation 797/85. The ESA included 14,000 ha of farmland eligible for financial compensation to farmers willing to apply traditional management practices aimed at the protection of the landscape and wildlife of the area.

In order to evaluate the past changes in breeding birds numbers and establish a baseline for the monitoring of future changes, a survey was organised in spring 1987. The results showed that the overall densities of breeding waders within the ESA had severely declined since 1977, due to the lowering of the water table. This proved the importance of adequate water management despite the willingness of many farmers to adapt their farming methods. The case illustrates the necessity of an adequate monitoring system for wildlife, agricultural and hydrological parameters. Subsequent exchanges of information and experiences between people involved in the Somerset scheme and in similar schemes in the Cotentin Marshes proved to be very useful for the drawing up of an ESA scheme in NW France.

Box E

The Agri-Environmental Regulation 2078/92

This regulation has the potential to create a breakthrough towards true integration of environmental requirements into the Common Agricultural Policy. Its aid scheme promotes, amongst others, the use of farming practices that reduce pollution, environmentally favourable extensification of farming, ways of farming which are compatible with the protection and the improvement of the environment, long-term set aside of agricultural land for environmental reasons, and education and training for farmers in types of farming compatible with environmental protection. With regard to wetlands, programmes to conserve temporarily flooded pastures and wet grasslands could profit from agri-environmental measures. In 1994, a total budget of 483,000,000 ECU is foreseen for environmental measures accompanying the Common Agricultural Policy.

A case study: the Zonal Programme "Mancha Occidental - Campo de Montiel" (Spain)
The eligible area includes two well-known wetland complexes, the Tablas de Daimiel National Park and the Lagunas de Ruidera Natural Park. Both sites are known to host several species of plants and birds of Community interest. Although a part of this area is protected under national or international status (Ramsar Site, Biosphere Reserve, SPA), the important development of irrigated agriculture in the catchment basin during the last fifteen years led to a decline in the water table. Ecologically rich wetland areas consequently dried up and solutions to restore these areas had to be sought for.

The main objective of the agri-environmental programme is to adapt the regional agriculture to a sustainable form, through the limitation of the irrigated surface and a reduction in the water consumption, in order that the extraction rate does not exceed the recharge rate of the aquifer supplying the wetlands.

The total cost of this project amounts to 107,200,000 ECU for the period 1994-1997, of which the European Union covers 75 %, as the area lies within an Objective 1 region; otherwise Union support would amount to 50 %.

Unlike its predecessors, Regulation 2078/92 (cf. Box E) is compulsory in all Member States. It still involves farmers on a voluntary basis. The budget for these measures have been substantially increased, but still represents only a small percentage of the overall CAP budget. However, the Fifth Environmental Action Programme targets 15 per cent of the arable area to be under management contracts by the year 2000.

The Agri-Environmental Regulation, which also foresees compensation payments to farmers reducing fertiliser inputs in vulnerable areas designated under Directive 91/676/EEC, is a necessary and useful step towards the integration of environmental concerns into the CAP. Three years after the entry into force in the Member States, the Commission shall present to the European Parliament and the Council a report on the aplication of this Regulation. The publication and circulation of the results of the evaluations will be essential to revise and improve the scheme.

Other instruments
Council Regulation (EEC) N° 1765/92 establishing a support scheme for producers of certain arable crops[36], allows, under certain conditions, direct compensatory payments to farmers setting aside agricultural land in order to lower production. Non-rotational set-asides, with a locally adapted management, can be interesting and should be encouraged around protected wetlands or rare wetland types to act as buffer zones, along rivers to constitute vegetated buffer strips, or within previously drained wetlands that are still easily or often flooded.

As far as the implementation of Council Regulation (EEC) N° 2080/92 instituting a Community aid scheme for forstry measures in agriculture[37], is concerned, great

care has to be taken with regard to wetlands. Indeed, afforestation can have detrimental effects on certain types of wetlands, namely wet meadows, fens, and peatbogs. Inappropriate afforestation can also seriously affect the hydrology of nearby wetland sites. Afforestation schemes supported by the Community aid scheme must therefore be concentrated on agricultural areas of low environmental value, strictly avoiding natural or semi-natural open spaces of high interest for nature conservation, such as wet and temporarily flooded meadows and bogs. Furthermore, the environmental impact of large plantation schemes needs to be evaluated at a water catchment basin scale.

In general, Member States and the Commission have an important role in assuring that the measures promoted by the CAP (e.g. production of non-food crops on set-aside land or direct payments for silage maize) are not counterproductive to the Union policy for the wise use and conservation of wetlands.

Towards a deeper integration of agriculture and wetland conservation

Up to now, the CAP instruments with positive effects on wetland conservation mainly offer ad hoc measures and, as yet, no comprehensive integration of agricultural and environmental concerns. In the long term, it will not be feasible to carry on with industrial production methods throughout most of the arable area, whilst a small part only is farmed in a way compatible with the environment. A network of small and dispersed wetlands inside the arable area is vital for the dispersal and survival of many organisms and ensures important ecological and hydrological functions. Runoff of waters polluted by agriculture (and other sources) into wetlands is equally a problem that has to be dealt with at the scale of the catchment basin and ecosystem and should not be focusing only on restricted vulnerable areas.

A Union-wide code of good agricultural practice, including guidelines on the type and quantities of agrochemicals to be used, the prohibition of drainage or filling in of wet areas of conservation interest, the maintenance of uncultivated buffer zones along wetlands including rivers, could form the basis of the more comprehensive approach that recognises the positive role agriculture has to play for the maintenance of the quality of countryside as an ecosystem.

FISHERIES POLICY AND AQUACULTURE

One of the main concerns of the Common Fisheries Policy (CFP) is the conservation and management of fisheries resources by controlling fishing capacity in order to reach a balance between fishery efforts and available resources. Within the framework of studies dealing with fisheries, which have been financed by the Directorate General for Fisheries (DG XIV), some of them are related to wetlands (cf. **Box F**). In those regions whose economies greatly depend on fishing activities, aquaculture is seen as one of the potential alternatives. Wetland conservation on the one hand, and fishery and aquaculture uses on the other hand, are positively interlinked through the fact that wetlands are essential spawning and nursery grounds and through a common need for good water quality. But, if not properly developed and managed, fishery and aquaculture operations may result in significant negative impacts on wetlands.

Aquaculture and wetland conservation

Whilst some types of traditional non-intensive aquaculture and fisheries have led to the creation and maintenance of interesting wetland types since ancient times (north Adriatic lagoons, fishponds in France, etc.), recent installations of industrial aquaculture projects in wetlands of high natural value have led to concern about their environmental impacts. Aquaculture requires good quality water flowing in, but its wastes flowing out can cause a deterioration of the quality of surrounding waters, especially in confined areas such as lakes, bays, inlets, and lagoons. The accompanying infrastructure (tanks, roads, power lines etc.) may contribute to the physical deterioration of natural habitats. Further potential negative environmental impacts include the disturbance of sensitive wildlife species, the attraction of predators, the release of exotic species competing with native ones and over-exploitation of natural fry stocks in lagoons.

Methods and criteria to identify the maximum acceptable environmental impacts need to be developed further. In the Commission proposal for amending Council Directive 85/337/EEC on the assessment ofthe effects of certain public and private projects on the environment[38], intensive production units of shellfish and fish have now been listed in Annex II.

Box F

Directorate General for Fisheries, Unit for Conservation and Environment Issues (DG XIV, C-1).

Studies in the fisheries sector including Mediterranean lagoons

Between 1978 and 1991, some biological studies in the fisheries sector were financed under DG XIV budget. Some of them dealt with fishing in the Mediterranean lagoons, which is an important economic activity using renewable wetland resources that must be carefully planned in order to be executed in a sustainable way.

- Studies on resource evaluation and collection of statistical data for better fishery management of the Mediterranean coastal lagoon fisheries (1982)
- Definition of a strategy for the evaluation of Mediterranean lagoon fisheries in the Languedoc-Roussillon region in France (1984).
- Study of interactions between lagoon, coastal and trawl fisheries in the Gulf of Lions, France (1985).
- Study of the coastal fishery around the Balearic islands (1987).

With the revision of the Structural Funds regulations in 1993, a new Financial Instrument for Fisheries Guidance was introduced that will be able to support studies on fishing fleets, aquaculture and coastal waters.

Moreover, no new project, including aquaculture, can be accepted within wetlands qualifying for the designation as Natura 2000 sites, unless a full EIA has proved that it is environmentally harmless or that compensation for the impact is possible in the case where alternative sites do not exist. This procedure has been partially supported by the Court of Justice regarding the Santoña marshes, which is a wetland of international importance in Spain (2 August 1993, C-355/90).

When aquaculture units are installed close to or within rich wildlife areas, it is likely that fish predators are attracted from the surroundings. As some of these species are likely to be protected under Directives 79/409 and 92/43, such aquaculture projects have to include appropriate deterring devices.

Inside wetland areas, rather than promoting new installations, the renewal and maintenance of existing traditional, non-intensive aquaculture systems in wetlands already modified to this end must be the priority, provided the cultivation can be done on a sustainable basis. Integrated projects, including aspects of cultural and nature tourism, and aiming to produce specific products of high environmental quality are likely to produce a better sustainable economical revenue. Such activities should be executed in the framework of a management plan, according to Article 6 of Directive 92/43/EEC. The Structural Funds could finance pilot projects of this kind, given the new Financial Instrument for Fisheries Guidance (FIFG)[39].

Fisheries support and wetland conservation

According to this regulation, there is now a general obligation for fisheries and aquaculture projects to take environmental concerns into account. The Commission will therefore require that environmental regional authorities be involved at all stages of the projects and check that Community and national laws regarding the environment are respected.

Therefore, in order to be most efficient, the planning on which fish harvest is to be based and which has to define the long-term sustainable yield according to the best scientific advice available, must be part of an integrated management approach for coastal lagoons and wetlands as well as major rivers. Future Union support for structural adjustments and specific installations will also take into account the full integration of these concerns.

In several regions of the European Union traditional methods of fish culture exist in semi-natural fish ponds. It is worthwhile to investigate the socio-economic and environmental constraints on how best to continue and improve such forms of fisheries and aquaculture which have both environmental and economic advantages, especially in rural areas with high unemployment; to this end, further specific EU-supported studies might be useful. Environmental training of aquaculturists and

actions to increase public awareness on a local and regional scale on environmental concerns related to fisheries and aquaculture must be promoted.

Recently, the Council Regulation N° 1626/94 stating certain technical measures for the conservation of fishery resources in the Mediterranean, introduced a management system in harmony with the features peculiar to this area. According to this, part of the coastal fringe is reserved for the most selective fishing systems, to be exploited by those fishermen using traditional methods. It also addresses the specific needs of conservation concerning species and particular habitats considered vulnerable or threatened. The two habitats listed in its annex I are wetlands and seagrasses.

COHESION

A. REGIONAL DEVELOPMENT POLICIES

The importance of the European Union regional development polices is increasing. Its spending has a major influence on land use, including that of the remaining wetlands.

Structural Funds and wetland conservation

Since the early stage of implementation of the Community regional development policies, there has been an evolution in the understanding and implications of the integration of the environment that now allows the avoidance of negative impacts like those created in the mid-eighties by some projects of the Integrated Mediterranean Programmes implemented in wetlands or their catchment area.

Since 1988 the Structural Funds have, and should do so even more in the future, also financed projects for the conservation of natural wetlands, their restoration, or sustainable use of their resources.

There have been several cases, where wetland conservation projects have profited from Structural Funds. This includes support to traditional forms of agriculture and fisheries, management and restoration of hydraulic systems and water resources, the protection of most sensible areas, the development of sustainable tourism, and the training of local land managers and farmers, especially in Objective 1 regions (whose economic development is lagging behind) and Objective 5b regions (rural areas). A particularly interesting example is the case of the Objective 5b area of the Poitou-Charentes marshes (France). The Community Support Framework for this region not only includes a large number of measures as mentioned above, but its elaboration and implementation also involved two non-governmental organisations for nature conservation.

Community Initiatives to complement the projects submitted directly by the Member States include ENVIREG[40] (cf. **Box G**), which supported wetland conservation actions at the Biguglia lagoon in Corsica and INTERREG[41] (cf. **Box H**), which provided funds for the cleaning of the river Timavo on the border between Italy and Slovenia. In parallel, however, wetland damage still occurred at different sites through industrial, urban, and tourist development projects implemented with Community funds.

The main reason for this was the lack of participation of the regional and national environment authorities in the development of the projects, coupled with a lack of appropriate assessment of the environmental impacts of projects by independent experts.The 1993 revision of the Structural Funds Regulations[42] filled these procedural gaps.

For the current programming period, 1994-1999, the Structural Funds can provide funding for projects aiming at the sustainable use of wetland resources, including traditional forms of agriculture and fisheries, management and restoration of hydraulic systems, the protection of most sensitive areas, the development of ecotourism and the training of local land managers and farmers. Such activities should be actively promoted.
In order to fully integrate wetland conservation into regional development policies, it is necessary:

- to guarantee the full respect of environmental decisions during the implementation phase;
- to develop the set of environmental indicators already defined by the Commission with particular reference to wetlands. These indicators should allow the measurement of environmental and socio-economic impacts on

wetlands at the ex-ante, monitoring, and ex-post stages of evaluation;

to integrate into the cost-benefit analyses aspects related to sustainable use such as aquifer recharges or sustainability linked to traditional land use practices and fishery; and

to increase the possibilities of supporting the improvement of institutional parameters, at present deficient in different regions.

Box G

Community Initiative ENVIREG

A small part of the European Structural Fund was devoted to the Community Initiative ENVIREG during the period 1989-1993.

The Initiative ENVIREG aimed at reducing pollution of coastal areas, particularly in the Mediterranean regions whose economy depends significantly on tourism, to promote land use in coastal areas in a way to conserve natural areas, and to contribute to the control and management of toxic and hazardous industrial waste. One billion ECU devoted to this initiative (60% from Commission) have been used for waste water treatment (51per cent of the funds), that benefited indirectly several wetland sites. About 11 per cent of the funds have been used for habitat conservation.

A case study: the Maroni river mouth (French Guiana)

At the mouth of the Maroni river in French Guiana, Hattes is a site of great ecological interest, including several marshes and a coastal sand beach, which is one of the few reproduction sites in the world for the Giant Leatherback Turtle. The area attracts a growing number of visitors, causing disturbance as well as aggravating waste treatment and water pollution problems that threaten the ecological balance of the site seriously. The ENVIREG project mainly financed the establishment of a properly supervised, intermunicipal rubbish tip for household waste and a system to collect and process waste water. Tourist infrastructure, such as car parks, etc, are also built in order to better control the influx of visitors.

Box H

Community Initiative INTERREG

The Community Initiative ENVIREG has not been reconducted during the Structural Funds programme 1994-1999 because actions eligible under this initiative are now integrated in the Community Support Framwork undertaken at the initiative of the Member States. However, wetland conservation actions and the sustainable use of their resources can be promoted and supported by the Commission through other Community Initiatives, such as INTERREG (in border areas), LEADER (in rural areas), and PESCA (in areas depending on fisheries).

The Community Initiative INTERREG is designed to help border areas to prepare for a frontier-free Europe. Transport and communication have yet absorbed about 45per cent of the Community contribution (914,000,000 ECU at 1992 prices). Projects related to the environment amount to about 10 per cent covering the following fields: tourism and the environment, land management and the environment, and environmental protection. These are the areas included in the operational programmes with potential benefits to wetlands. Several INTERREG projects include programmes benefiting wetlands were financed in different internal or external transborder parts of the European Union, such as the feasibility studies for the cleaning-up of the severely polluted river Tivamo at the border of Italy and Slovenia, the cleaning up of the lakes Lugano and Maggiore, between Switzerland and Italy, or a project between the United Kingdom and France including measures to preserve and protect the Channel cliffs at the English and Nord–Pas-de-Calais coast.

A case study: the Lavezzi islands and Magdalena archipelago (France/Italy)

Between the Islands of Corsica (France) and Sardinia (Italy) lie two rocky archipelagos, the Lavezzi islands (declared as a Special Protection Area under Directive 79/407/EEC) and the Magdalena archipelago, of great importance for numerous species of seabirds. Leisure activities are an important factor of human disturbance in these areas and must therefore be controlled. An INTERREG project included the implementation of measures for a better protection of these sites. The total cost of the project amounted to slightly more than 5,000,000 ECU, of which the Community provided about 50 per cent.

Box I

The Cohesion Fund

This fund can provide new opportunities for wetland conservation. In particular, it can support projects that contribute to the implementation of the protected areas network "Natura 2000" stipulated by Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora in the four eligible countries. Until now the balance of supported projects is in favour of transport infrastructure projects, but there is still the opportunity for eligible Member States to submit more environmental projects. Most of them submitted until now relate to water management, and water and waste treatment.

A case study: the Clara and Raheenmore bogs (Ireland)

Ireland is of outstanding importance for the conservation of active raised bogs, that have become a very rare type of wetland habitat. The Clara and Raheenmore raised bogs represent an excellent example of such a habitat type. A project to secure 1,000 ha of these bogs will help Ireland to meet its obligations under Directive 92/43/EEC whilst providing the basis for a sustainable form of tourism based on the long-term conservation of this habitat type.

The total project costs are 969,000 ECU of which the European Union is granting 85 per cent. The measures will finance the restoration of the hydrology of the sites, their subsequent monitoring, and an initial phase of land acquisition.

B. THE COHESION FUND

The Cohesion Fund adopted by Council Regulation (EC) N° 1164/94[43] provides funding to Greece, Ireland, Portugal and Spain for investments in the transport infrastructures and environment sectors. This also allows important funding that contributes to the implementation of measures related to wetland conservation and management being in line with the priorities of the 5th Environmental Action Programme. A major wetland-related project was recently attributed to Ireland (Box I).

TRANSPORT INFRASTRUCTURES

Most of the European wetlands are located in estuaries, valleys, lowlands, flat and not built-up areas; these areas, by their favourable topography and morphology, may therefore at times be chosen as preferred location for the establishment of transport infrastructures like roads, motorways, railways, ports and airports.

The updating or construction of new waterways may pose several threats to remaining wetlands. Infilling with dredged and excavated material from channelization and other works can result in the destruction of smaller wetlands. Gravel extraction, sometimes used for transport concrete constructions poses another threat to actual and former river beds. The construction of transport routes and new navigation channels may fragment natural habitats, thereby further isolating populations of wild animals or disrupting hydrological systems.

The proposal to amend Council Directive 85/337/EEC enlarges the scope of Annex I transport infrastructures subject to an Environmental Impact Assessment and lists a set of criteria to identify Annex II projects necessitating EIA. Wetlands and coastal zones are amongst the environmental sensitive areas requiring impact evaluation.

EIA is an essential part of the decision-making process on whether a specific infrastructure measure should be implemented and how this should be done with the least impact.

The impacts arising from new transportation infrastructures need to be carefully assessed beforehand and solutions, where possible, should involve the best available technology. It is critical that the evaluation fully examines alternatives: this is essential procedure for any proposed developments affecting Natura 2000 sites.

TOURISM

Mass tourism affects wetlands most through the competition for freshwater resources, direct destruction due to buildings and infrastructure works, water pollution and disturbance created by leisure activities.

The European Union action plan adopted in 1992 to assist tourism[44] includes eleven measures, out of which one concerns tourism and the environment, whose aim is to ensure that the environment is more fully taken into account (cf. Box J).

To this end, the Commission will support:

- initiatives increasing the awareness of tourists and suppliers of services about the interaction between tourism and the environment;
- innovative projects to reconcile nature protection and tourism;
- the development of institutional networks to ease exchange of experience; and
- initiatives encouraging forms of environmentally friendly tourism.

The proposal to amend Council Directive 85/337/EEC on EIA mentions that several tourist and leisure infrastructures shall be made the subject of an EIA, where Member States consider that their characteristics so require. It also stipulates that special attention must be paid to wetlands (amongst other natural habitats) and sites benefiting from a national or regional protection status while evaluating the need for an EIA. Therefore, the existence of a wetland or protected area in the catchment basin or downstream of a proposed development site should result in an EIA. This will also have to cover issues related to water and waste management.

Recently, DG XXIII supported a study on sustainable tourism in Europe's nature and national parks[45]. It elaborated concrete recommendations for actions in wetlands and coastal areas. Providing the carrying capacity of the site is respected according to the results

of a careful EIA, wetlands offer important opportunities to increase public awareness about wetland values and functions.

Tourist developments in wetland areas need to be part of a plan covering the whole catchment basin; infrastructures need to be based on careful evaluation of the capacities of water supply, sewage and waste disposal possibilities and the particular landscape character of the site. Zoning of the area and the strict control of access are particularly important in wetland areas, to conserve their biological diversity and natural character. Wetland conservation issues are more complex than those concerning the conservation of other habitats. Therefore guided tours, interpretation centres, exhibitions and nature trails should be a key management tool to develop sustainable tourism in and around wetland areas.

Box J

Tourism and Environment

Following its call for proposals 92/C 51/16, the European Commission allocated about 2,700,000 ECU to 23 pilot projects in the field of tourism and the environment. Amongst these, three projects will have positive effects on wetland conservation:

- Planning and management tools for the establishment of sustainable tourism in the Wadden Sea, one of the most important coastal wetland of NW Europe, shared by the Netherlands, Denmark and Germany.
- Development of practical approaches for the integration of water policies within a sustainable development framework. This "tourism and water" project will involve France, Greece and Spain.
- Elaboration of an ecological protection and environmental guide on tourist management techniques for coastal areas in collaboration with local populations. This project will involve Denmark, the Netherlands, Portugal, Spain, and the United Kingdom.

EUROPEAN UNION INTERNATIONAL CO-OPERATION, DEVELOPMENT AND TRADE POLICIES

External aspects of the common environmental policy include actions in Europe and the Mediterranean outside the Union territory. In 1991, the Council adopted MEDSPA (see page 11). Regarding wetlands, the programme included projects on the protection of natural lakes in Corsica, river basin management in France, wetland restoration in Italy, studies on integrated management for lake Ichkeul inTunisia and others (cf. Box K). Some months later, NORSPA (see page 9) was adopted as a counterpart. It included two wetland-related projects in Denmark to improve the water quality by restoring eelgrass beds and by manipulating fish populations. During the years preceding the regulations, the measures in question were the subject of corresponding pilot projects. In 1992, both regulations, MEDSPA and NORSPA, were integrated into the new LIFE environmental regulation. Five per cent of the LIFE budget is spent on actions outside the Union territory in the Baltic and Mediterranean. This also includes specific projects on integrated wetland management (cf. Box L).

The economic co-operation with Central and Eastern European countries and the Independent States of the former Soviet Union also includes aid for environmental protection. In 1989, Council Regulation (EEC) N° 3906/89[46] established the PHARE programme to support economic restructuring in central European countries. The programme includes several projects that benefit wetland conservation, such as providing support to the Great Mazurian lakes in Poland and the international Danube river commission (cf. Box M). Up to 1994, TACIS, the Community programme to help economic restructuring in the countries of the former Soviet

Union, has not yet financed specific wetland projects.

In June 1992, the Community and its Member States jointly signed the Convention on Biological Diversity at the Earth Summit in Rio. Wetland loss world-wide is seen by the European Union as a global environmental problem as they are key habitats for species diversity. It has been estimated that some 25-50 per cent of the earth's swamps and marshes have already been destroyed. The European Union and its Member States have a special responsibility to encourage and participate in international action to combat global environmental problems. Since the Rio summit in 1992, the opportunities to fund wetland conservation measures through development aid programmes have increased, as 10 per cent of the budget has to be devoted to environmental actions.

In the latest Lomé Convention for African, Caribbean and Pacific countries (ACP), environmental concerns are listed as the first area of co-operation between the Community and ACP states, before agriculture, food security and rural development. Under the specific budget line for the protection of the environment in developing countries, the Union supports the elaboration of a Resource Guide on Tropical Freshwater Wetlands. It is also contributing to several wetland-related projects in Asian and Latin American countries (ALA)(**Box N**).

This short overview clearly shows that wetland conservation is already part of the European Union development assistance policy, albeit as yet little noticed by the public at large. Currently, the Commission participates in the task force to formulate guidelines for improved conservation and sustainable use of tropical and sub-tropical wetlands, i.e. in those countries most benefiting from EU development aid and co-operation. These guidelines are prepared by the Development Assistance Committee of OECD, the principal forum where bilateral donors adjust the pattern of their aid to changing priorities and new perspectives on the development process. This is a clear indication that, together with the international community and large development assistance banks and administrations, the European Union wants to play a leading role in guiding global policies and implementing their recommendations.

Wetland conservation and the wise use of their resources also concerns European Union trade policies and those of its Member States. The same strict environmental rules and guidelines applied within the Union are to be applied for importation of wetland products from third countries, like peat from Central and Eastern Europe and Russia, or fish from ACP and ALA countries. The Commission will undertake specific efforts to promote the integration of these concerns into the respective trade regulations.

Box K

Wetland-related Projects in the Mediterranean

The following projects have been supported under Regulation (EEC) N° 563:91 on action by the Community for the protection of the environment in the Mediterranean region (MEDSPA) in countries outside the European Community:

Algeria: - Elaboration of an integrated management plan for the conservation and development of the El Kala complex of coastal wetlands and National Park.
Project costs: 300,000 ECU, 50 per cent covered by MEDSPA, 50 per cent by a grant of the European Investment Bank under the METAP technical assistance programme for the Mediterranean.

Tunisia: - Support for management activities in the Ichkeul National Park.
EU contribution: 155,000 ECU; 50 per cent of the total project costs.

Morocco: - Elaboration of a management plan for the Al-Hoceima coastal National Park, including the preparation and setting-up of structures to preserve the biogenetic diversity, with particular emphasis on the protection of the Osprey and the Monk Seal.
EU contribution: 170,000 ECU; 100 per cent of project costs.

Cyprus: - Management of the Akamas National Park, including the evaluation of all ecologically sensitive areas, the provision of assistance to the introduction of management control procedures, mitigation measures,and the introduction of necessary legislation.
EU contribution: 145,000 ECU; 100 per cent of project costs.

Box L

LIFE Wetland-related Projects Outside the European Union Territory

Regulation (EEC) N° 1973/92 establishing a financial instrument for the environment (LIFE) can finance actions outside the Community territory in the Baltic and Mediterranean region, for the establishment of administrative structures, technical assistance, and transfer of environment-friendly technologies, fostering sustainable development, and providing assistance during ecological emergencies. On an indicative basis, five per cent of the annual budget of the LIFE Regulation is allocated to projects outside the Union territory.
Specific, wetland-related projects have so far concentrated on the Baltic, including the support of protected areas in the lower Oder valley in Germany (EU contribution 400,702 ECU; nearly 20 per cent of project costs).

A case study: the integrated management of Baltic lagoons and coastal wetlands

Under the new Helsinki Convention for the Protection of the Baltic Sea from Pollution, signed by the border states in 1992, a working group on "Management plans for lagoons and coastal wetlands (MLW)" was created in 1993. The European Community is a signatory of the new Convention and the Commission participates actively in the working group, supporting its activities with a contribution of 547,575 ECU covering about 72 per cent of the total costs, the rest being contributed by the Swedish Environmental Protection Agency.
The group is currently establishing Area Task Teams to supervise and guide the elaboration of integrated management plans for selected wetland areas in the Curonian lagoon, shared between Lithuania and Kaliningrad Oblast of Russia, the Matsalu bay in Estonia, the Vistula lagoon, shared between Kaliningrad and Poland, the Oder lagoon, shared between Poland and Germany, and the Gulf of Riga, shared between Estonia and Latvia.

Box M

European Community support for Central and Eastern Europe

Within the PHARE economic cooperation programme, specific projects benefiting wetland conservation include the following:

- Support to the Great Mazurian Lakes Foundation in Poland, 1990.
  EU contribution: 1,800,000 ECU.

- Support to the Warta River Foundation in Poland, 1990.
  EU contribution: 500,000 ECU.

- Support to the Green Lungs of Poland project for integrated regional development planning, 1991.

- Support for the wetlands and grasslands protection study in Hungary, 1990.
  EU contribution: 200,000 ECU.

- Support for the establishment of Fertö Lake National Park in Hungary, complementing the Neusiedler See National Park on the Austrian side, 1990.
  EU contribution: 1,400,000 ECU.

- Support for two components of the Integrated Environmental Programme for the Danube River Basin, specifically related to nature conservation: 1) support for applied research in the Danube Delta; EU contribution 3,500,000 ECU, and 2) support for an inventory of biological resources in the Danube River Basin.

Box N

Budget Line B7-5040: Environment in Developing Countries
Activities related to sustainable use of wetlands:

Belize: - Elaboration of a coastal zone management plan,1993.
EU contribution: 570,000 ECU.
Cameroon: - Elaboration of recommendations for a management plan for Mount Kupe forest for a sustained and improved water supply, 1991.
EU contribution: 501,910 ECU.
Costa Rica: - Consolidation of the conservation area of Llanuras de Tortuguero, Phase II.
EU contribution: 857,000 ECU.
Chad: - Study on the Kouri bovine race and its interaction with the agro-pastoral system at lake Chad, 1993.
EU contribution: 345,000 ECU.
Ghana: - Establishment of a surveillance system of water weeds and development of integrated control measures to avoid infection of further water bodies in order to protect the fishery resources, 1993.
EU contribution: 485,000 ECU.
Gulf Region: - Marine Habitats and Wildlife Sanctuary for the Gulf Region; Phase II.
EU contribution: 2,600,000 ECU.

Guyana: -Study on the environmental value of the Courida mangroves, 1989.
EU contribution: 67,700 ECU.
Indian Ocean: - Elaboration of a regional strategy for environmental protection, with particular emphasis on land and water resources, 1992.
EU contribution: 153,560 ECU.
Mauritania: - Wildlife inventory of the coastal zone and its impact on fishing and agricultural activities of the local population, 1993.
EU contribution: 537,000 ECU.
Mauritius: - Study on the protection of coastal ecosystems, 1989.
EU contribution: 141,000 ECU.
Mauritius: - Elaboration of a strategy for developing and managing the south-western coast, including beach, lagoon, wetland and drainage systems management, 1993.
EU contribution: 350,000 ECU.
Morocco: - National Environmental Education Centre at Sidi Boughaba Ramsar Site.
EU contribution: 394,000 ECU.
Mozambique: - Gorongosa-Marromeu integrated conservation area study following the loss of wetland coverage due to declining water inputs since the construction of dams on the Zambezi River, 1993.
EU contribution: 180,000 ECU.
Sahel region: - Publication on hydrobiology and piscicultural use of small water resources in the Sudano-Sahelian region, 1992.
EU contribution: 36,600 ECU.
Tanzania: - Elaboration of a coastal zone management plan for the establishment of marine protected areas for equitable distribution and sustainable use of natural resources, 1991.
EU contribution: 57,955 ECU.
Tanzania, Kenya and Uganda: - Review of the availability of biodiversity information including tropical humid forests, tropical dry woodlands, deserts and semi-deserts, mountain and highland ecosystems, 1992.
EU contribution: 50,000 ECU.
Togo: - Research project on the impact of dam constructions on the vegetation cover and on underground water level in savannah regions, 1993.
EU contribution: 600,000 ECU.
Venezuela: - Technical assistance for the development of the Environmental Agency of the Basin of Lake Valencia.
EU contribution: 875,000 ECU.
Zambia: - Elaboration of a management plan for the Kafue flats and the Bangwuelu basin, 1991.
EU contribution: 685,494 ECU.

Identification of a global coral reef management strategy, 1991.
EU contribution: 100,000 ECU.

Preparation of camera-ready documents on inland fishery resources, 1990.
EU contribution: 11,690 ECU.

Resources Guide on Tropical Wetlands, 1990.
EU contribution: 155,000 ECU.

NB: The above described activities only provide for a partial overview of development co-operation in the area of sustainable use of wetlands, as these activities only refer to budget line B7-5040 "Environment in Developing Countries".

VI

CONCLUSIONS AND POLICY LINES

GENERAL FACTS

1) Wetlands are essential for the ecological character and the wealth of the regions in which they are found. Individual wetlands cannot be viewed in isolation as they are ecologically linked to other, sometimes distant, wetlands.

2) Wetlands are particularly important ecosystems performing vital functions, providing resources and support for numerous human uses and activities and representing a valuable cultural and natural heritage. However, up to now dramatic wetland loss and degradation have taken place throughout Europe. Therefore, wise use and conservation of wetlands are strongly required, which corresponds to the concept of sustainability as laid down in the 5th Environmental Action Programme.

3) The quantity and quality of ground and surface water available in and running into wetlands is crucial for their ecological values and functions.

4) Wetlands form an integral part of wider catchment areas or coastal zones. Their wise use and conservation is therefore dependant on factors operating over these wider areas.

5) The essential reasons for wetland loss and degradation are social and economic factors and man-induced changes in the use of and activities in the wetlands and their catchment areas resulting from them. They therefore need to be of central concern for wise use and conservation of wetlands.

6) There is almost no economic appreciation that wetlands are a sort of natural infrastructure, especially concerning the pricing and use of their resources. This has resulted in a failure to develop market mechanisms for their wise use and conservation and has led to an increased rate of wetland loss and degradation.

7) The factors which from a practical viewpoint merit the highest concern as causes of wetland loss and degradation are those changes in use and all infrastructures that physically convert wetlands into non-wetlands or impair their quantitative or qualitative hydraulic conditions or their functions.

8) Although one agency may be responsible for co-ordinating wetland conservation action at national or regional level, other public and private institutions have expertise which is important for effective long-term wetland management. Therefore, the wise use and conservation of wetlands depends on good institutional conditions in each policy field affecting them, but equally also on managing them in an integrated way.

9) Local communities, who will be the first to benefit from improved management of wetland sites, play a particular role in this respect.

10) A wide range of Community instruments and policy elements favouring the wise use and conservation of wetlands are already available, in particular

- the provisions of Article 130r of the Treaty on European Union and the policy guidelines of the 5th Environmental Action Programme "Towards Sustainability", which both require an integrated approach to environmental issues and their integration into other policies; which, by the way, has already had a corresponding impact on the Regulations reforming the Structural Funds;
- the existing and proposed Community legislation related to nature conservation, water and environmental impact assessment;
- the contribution provided by the Community to a better knowledge of wetlands, their functioning and their functions in the

framework of its research policy;
• the financial support that the Community has granted over the last ten years and continues to do so, to projects aiming at the maintenance and restoration of wetlands which are sites of Community importance for nature conservation;
• the funds that the Community has provided and, with a considerable increase in funding, is able and prepared to provide for measures in the framework of the Structural Funds (including Community initiatives), the Cohesion Fund and sector approaches like agri-environmental measures or set-aside as well as its different assistance and development policies outside of the European Union and world-wide, aiming at and supporting the wise use and conservation of wetlands, either through relevant investments, equipment, technical assistance, institution building, training , information, improving knowledge or raising awareness.

However, despite this, a continuing regression of wetlands in the European Union is noticed. Thus, under the current conditions the Community will fail to maintain its wetlands at their present state.

11) A coherent Community wetland policy still does not exist, partly because of the fact that at national and regional level there is not yet a sufficiently developed framework to integrate environmental concerns at any stage, from policy definition to project implementation into other policy fields. Even where, at whatever level, this framework exists, its practical implementation, in particular on the operational level of projects and measures, is rather unsatisfactory.

12) Therefore, a comprehensive strong Community wetland policy must be set up. To this end, the instruments and policy elements which already exist must partly be put in more concrete form or specifically targeted and partly complemented.

13) The objectives set out below must be included in the European Spatial Development Perspective to be drawn up during 1995 with a view to establishing a common strategic platform for policies with an actual or potential spatial impact.

EUROPEAN UNION WETLAND POLICY

OVERALL OBJECTIVES

The Community wetland policy is based on the following objectives :

- *No further wetland loss*

For each NUTS level II region, the total surface area of wetlands has to be maintained at its present figure. This not only concerns all wetlands together, but also the surface area of the seven major wetland groups, i.e. (i) marine and coastal wetlands, (ii) estuaries and deltas, (iii) rivers and floodplains, (iv) natural lakes and ponds, (v) freshwater marshes, (vi) peatlands, and (vii) man-made wetlands of noticeable interest as ecosystems. Any future loss of wetlands may, exceptionally, only be admitted for imperative reasons of overriding public interest and must, in any case, be compensated, within the NUTS level II region concerned, by the restoration of former wetlands or creation of new wetlands of at least the same surface and at least performing the same functions and providing the same ecological values.

- *No further wetland degradation*

The wetlands in the European Union must be maintained in such a way that they at least continue to perform their present functions and to provide their present ecological values. In particular, the water flowing into and to be found in each wetland must be kept at least at its present seasonal quantity and quality. If low water quality is causing a progressive degradation of a wetland, it has to be improved in a way that this degradation is halted and possibly reversed. In all cases, where the functions and values of a particular wetland or a part of it cannot be maintained at the present level, compensation has to be provided, as far as possible on the same wetland type, either in the wetland concerned or through improvement, restoration or creation of adjacent or nearby wetlands.

- *Wise use of wetlands*

Wetlands must be used in a sustainable way, not exploiting their resources beyond their natural or, exceptionally, man-induced capacity of regeneration.

Whilst comprehensive understanding of the ecological constraints of a wetland system should be sought, activities affecting wetlands need to be governed by the Precautionary Principle where such knowledge is not available. To be precise, if the impact of specific actions is not clearly understood, then these actions should not be executed, even if it is argued that there is insufficient evidence to prove a direct link between the activities and resulting wetland degradation.

- *Wetland improvement and restoration*

In addition to the needs resulting from the above objectives, existing wetlands should be improved and former wetlands restored, as far as is feasible. This should happen with a view to providing the best level of wetland functions and values. Wetland improvement and restoration should have priority over the creation of new wetlands.

- *International co-operation and action favouring the wise use and conservation of wetlands*

In the framework of international co-operation, policies have to be designed and implemented so as to favour the wise use and conservation of wetlands. In general, apart from regional peculiarities, the objectives formulated for the wetlands of the European Union should also be respected for other regions of the world. The Community must play an active role in the conservation of wetlands globally, within the framework of international Conventions to which the European Community is a contracting party and through existing and future co-operation measures with non-Member States.

OPERATIONAL APPROACH

European network of wetlands

The European Union and, furthermore Europe as a whole, must have a dense, coherent and interlinked network of wetlands benefiting from the necessary protection ensuring their wise use and conservation. This network has to be graded according to the different levels of administrative regions. Member States must give priority to incorporate all wetlands of Union importance identified under Directives 79/409 and 92/43 within Natura 2000, defining sites by ecological meaningful boundaries. Wetlands designated under the Ramsar Convention represent the global link. Member States must complete the network at each level and, normally, integrate their Ramsar sites into the Community Natura 2000 network, applying to them the respective provisions, even if, exceptionally, they are not Natura 2000 sites.

Integration policy, integrated management and land use planning

The wise use and conservation of wetlands requires a co-ordinated and integrated approach. This necessitates appropriate provisions within the framework of policies that have a broad scope, such as environment policy (including the water and nature conservation policy to apply water laws) or regional and territorial development policy (including a resource planning policy), as well as in specific fields of sector policies related to this issue (like agriculture and aquaculture).

Integrated management means, above all, the synchronisation of opposing interests related to a given wetland and its resources with a view to achieving a common goal of conservation and wise use. This implies that all parties with decisive or influential power over this wetland take part in the common process of reaching a consensus or finding a compromise. To this end, the interests, actors, competent authorities and responsible bodies need to be identified and the necessary institutional and administrative arrangements to be made at Union, national, and regional level. A practical tool is to define a list of measures requiring an integrated approach and a list of bodies to be involved and consulted during the relevant procedures.

In order to achieve a wetlands policy to be implemented at all levels the decision makers will need to be convinced of the real value of wetlands and of the way in which wetland management can underpin regional development. This in turn requires authorities to understand the full value of wetland ecosystems and the role that their sustainable use can play in achieving social and economic growth.

Integrated management can be divided into four main activities: avoidance of negative influences, regulation of ecological and socio-economic influences, use of natural resources, and positive human intervention, i.e. the planning for a desired evolution. The approach must have both temporal and spatial dimensions through incorporating long-term, sustainable goals and considering the catchment area or the coastal zone of which a given wetland site forms part.

If the economic and social potential of wetlands is to be used wisely and maintained and the operational approach of integration successfully implemented, there must be effective land use planning, which takes into account the wetlands, their functions and values. Subject to the competence laid down in the Treaty, Community initiatives and concepts existing in this field must be strengthened.

Knowledge of wetlands and their values

Research fields that deserve further attention are both identification and quantification of wetland values, sustainability of wetland use and landscape functioning and modification. It is equally important to communicate the results of such studies in easy to understand language to those who take decisions on wetland use or development.

Effective land-use planning and integrated management instruments will be much more successful and many of the changes required to wisely use and conserve wetlands more likely, if citizens and decision-makers understand why they should safeguard these ecosystems and their resources, as well as being aware of the actions required to do so. The value of the many direct and indirect benefits that wetlands provide and the social and economic consequences of wetland degradation and loss need, therefore, to be documented and communicated to the widest possible audience. The European Union and the Commission acting on its behalf must play a major role in pursuing this task.

One of the most significant changes in the field of wetland conservation in recent years has been the increasingly interdisciplinary approach to management. Much of the concern for wetland conservation has its origin in the importance of wildlife, and wetland conservation was for decades the exclusive domain of specialists in this particular subject. However, with growing awareness of the broader values of wetlands to human society, a much wider range of institutions, including those concerned with fisheries, agriculture and livestock, have become involved in wetland conservation. At the same time recognition that wetlands need to be maintained as functioning units in the landscape - rather than simply in a limited number of national parks and other protected areas - has led to a growing understanding that conventional approaches to wetland conservation are largely inadequate. These aspects have still to become more common understood and widely practiced.

Legal framework and administrative provisions

The Commission and the Member States need to make full use of their legal and legislative instruments to promote and apply a coherent wetland policy that follows the principle of integration. Most of the Member States still have to establish or to considerably improve their legal instruments. This also demands a periodic review of existing legislation at all relevant levels, including Community legislation, and to ensure that it is compatible with the strategic directions outlined in this Communication. The necessary adjustments need to be made, including the removal of economic incentives like tax benefits or subsidies and legal encouragement to destroy wetlands. The authorities competent for land-use planning should specifically indicate wetlands in land-use plans and, according to the case, define special management and conservation measures for them.

Member States should generally subject activities affecting wetlands and their functions to prior authorisation that involves the body charged to supervise their wise use and conservation and consider Environmental Impact Assessments mandatory for them. Special provisions have to ensure that no important factor specifically related to wetlands is overlooked. EIAs must also be prepared, not only for projects in the wetlands concerned, but also for activities outside these sites within their catchment area or the coastal zone harbouring them, when these projects can have significant effects on the wetland concerned.

Innovative measures

When establishing suitable models of management, much should be learnt from traditional forms of wetland

use. Such sustainable practices must be adapted to today's conditions and provide local communities, rather than individuals or central powers, with greater control over wetland resources. These practices should then be integrated and supported by current Union policies, notably the Common Agricultural Policy and the Regional Development Policy.

During the next reform of the CAP, even more attention has to be paid to the wise use and conservation of wetlands. In particular, it is appropriate to further extend the possibilities under the agri-environmental support scheme to allow for full compensation of cost generated by measures aiming at the wise use and conservation of wetlands. On the other hand, public expenditure directed to farmers in the framework of the CAP will have to be increasingly linked to environmental conditions. These must include the control of practices liable to alter the functioning of wetlands, within the wetlands themselves or in their catchment basin.

Furthermore, under the Structural Funds a Community initiative targeting this issue is to be introduced when the next occasion arises, as well as the immediate use of Article 10 of the FEDER, with a view to effective land-use planning being a prerequisite for the wise use and conservation of wetlands.

INSTRUMENTAL IMPLEMENTATION

With a view to the overall objectives laid down above, the Commission strives to implement the instruments available at Community level in such a way as to avoid negative impacts on the wetlands and to maximise the positive contributions to their wise use and conservation.

Legal instruments

The Community legislation as sell as international conventions relevant to the wise use and conservation of wetlands have to be implemented consistently. This concerns above all Council Directives 79/409/EEC and 92/43/EEC in the field of nature conservation, the relevant Directives concerning water quality and waste water treatment (91/271/EEC), including the proposed Directive on the ecological quality of water, and Council Directive 85/337/EEC concerning Environmental Impact Assessment in its proposed amended form. With a view to a preventive and integrated approach, it will be essential to complement the latter by a directive concerning strategic EIA of policies, plans and programmes.

As far as the nature conservation Directives are concerned, the Commission will continue to insist on the widest possible classification and designation of wetlands as Natura 2000 sites. Furthermore, it will see that Member States consistently apply and respect Article 6 of Council Directive 92/43/EEC. This clearly offers and prescribes the instruments for the wise use and conservation of wetlands, i.e. management plans, appropriate statutory, administrative or contractual protection measures, appropriate EIA of measures likely to have a significant impact on a site in view of the site's wise use and conservation objectives, agreement to such measures after having ascertained that they will not adversely affect the site's functions and values, involvement of the public, compensatory measures to ensure in a coherent way the same functions and values in the case where a measure must be carried out despite the negative implications for the site.

With respect to wetlands not qualifying as Natura 2000 sites and where existing Community legislation does not provide a basis for wise use and conservation, the Commission will regularly monitor the extent to which the above formulated overall objectives and operational approach are respected. If required, the option exists to introduce for all wetlands additional provisions laying down instruments similar to those of Article 6 of Council Directive 92/43/EEC and compulsory EIA in the case of projects listed at Annex II of Council Directive 85/337/EEC. However, it is preferable that Member States, in application of Article 130t of the Treaty, implement more stringent measures than those required by the existing and proposed Community legislation, in order to meet the overall objectives set out above.

International co-operation

The Commission intends to entirely support the development of co-operative arrangements for water systems shared between two or more Member States or regions. However, it is up to the national and regional authorities to take the necessary initiatives. This is particularly relevant in pursuance of the obligation of

the 1992 Helsinki Convention on the Protection and Use of Transboundary Watercourses and International Lakes, the 1979 Bonn Convention on the Conservation of Migratory Species of Wild Animals, and the 1991 Espoo Convention on Environmental Impact Assessment in a Transboundary Context, all ratified by the European Union and most of its Member States.

Inventory and monitoring

A Union-wide review of the distribution, status and trends of European wetland types and sites is still unavailable and our current knowledge is therefore based on piecemeal information. Even an unequivocal classification of European wetland types is missing, because of their complex structure, dynamic character and the difficulty in precisely defining their often fluctuating boundaries. These facts show the imminent need to have available a co-ordinated and Union-wide system for wetland inventory and monitoring of their ecological change. As far as wetland sites in the European Union requiring special conservation measures pursuant to Council Directives 79/409/EEC and 92/43/EEC are concerned, this will be provided within the framework of the Natura 2000 network. The European Environment Agency should be charged by the Commission and the Member States to set up, as far as wetlands are concerned, the necessary supplement to this network in order to provide the comprehensive system needed that, for example, will also includes those wetlands being sensitive areas in the sense of Council Directive 91/271/EEC. Ideally, such a system would cover the whole continent including the non-Union States. The inventory must also include up to date information on the status of the wetlands established under monitoring programmes. It should not be seen as a final document, but rather as a continuing process and database that provides base-line information for landFinancial instr-use and management planning, future monitoring and impact assessment.

Financial instruments

Whilst the financial support at present totalling about 60 million ECUs spent since 1984 on wetland conservation and restoration projects by the Community within the framework of its environmental actions and financial instruments has proven to be of great incentive value, it cannot have sufficient long-term impact in the face of huge amounts spent on dams, polders, aquaculture and other projects for structural development, having a negative impact on wetlands and marginalizing rural communities that use wetland resources in a traditional way. Clearly, Article 7 of the new Framework Regulation for the Structural Funds, that new development plans must comply with the Union environmental policy, needs to be put fully into practice by the competent bodies. For all wetlands subject of such developments, compliance of measures funded under Community financial instruments in general requires the widest possible implementation of provisions such as laid down in Article 6 of Directive 92/43/EEC or of similar provisions.

The Treaty and the 5th Environmental Action Programme provide a good legal basis and framework for practical integration of policy related to wetlands and for their integrated management. The Commission, for its part, has put in place administrative arrangements to comply herewith. In the light of future experience, it will adjust and amend these arrangements where needed.

Increasingly, the Commission will grant Community financial support to measures aiming at the wise use and conservation of wetlands. Following the principle of integrating environmental concerns into other Community policies, as laid down in Article 130r of the Treaty, and with a view to the implementation of Article 8 of Council Directive 92/43/EEC, the Commission ensures that, as far as feasible, all available financial instruments are used to this end. Within respect to the financing principle laid down in Article 130s(4) of the Treaty, grants available under the Community policy for the environment can only to a very limited extent satisfy the financing needed to support the wise use and conservation of wetlands.

However the Commission invites the Member States to make, for this purpose, wider use of the numerous financial possibilities existing under other Community policies, including those for training related to the wise use and conservation of wetlands. Given the long-term economic benefits induced by the wise use of wetlands, the Community must be prepared to favour, in its funding inside and outside the European Union, development measures which follow the wise use approach.

FINAL CONCLUSION

In summary, the wise use and conservation of wetlands require a radical change from the way these ecosystems have been dealt with in the past. This can only occur on the basis of a comprehensive and coherent wetland policy that assures: the recognition of the functions and values that wetlands provide to mankind, the physical and functional solidarity through space and time between wetlands and other areas and between the generations depending on them, and the appreciation of their important economic value. The implementation of such a policy has to comprise basically innovative and ambitious initiatives. Its key aspect is to follow an integrated approach.

The four most significant areas of importance in this context, in particular with a view to Community policy, are :

- the full coherence of the Natura 2000 network and respect of the obligations related to it;
- integrated water management with respect to both quantity and quality;
- a spatial development strategie based on community wide principles and guidelines with clear land-use implications;
- significant financial support of co-ordinated, multi-sectoral policies, integrated programmes and plans and projects fostering the wise use and conservation of wetlands.

ANNEX I:
Comparison Between the Ramsar and CORINE Wetland Classifications

Note:
As the Ramsar classification is specifically based on wetland landscape units, while the CORINE classification for natural and semi-natural habitats is essentially based on vegetation characteristics, the two cannot be matched perfectly. Both, Ramsar and CORINE classifications are hierarchical. Here, only higher level categories of the CORINE classification are represented.

Ramsar (wetlands)	CORINE (natural habitats)
A) MARINE & COASTAL WETLANDS	
MARINE	
A1 shallow marine waters	11.1 Open marine waters
A2 marine aquatic beds	11 Ocean and seas 12 Sea inlets
A3 coral reefs	11.2 Seabed
A4 rocky marine shores	18 Cliffs and rocky shores 19 Islets and rock stacks
A5 sand /shingle beaches	16 Coastal sand-dunes and sand beaches 17 Shingle beaches
ESTUARINE	
A6 estuarine waters	13 Tidal rivers and estuaries
A7 intertidal mudflats	14 Mud flats and sand flats
A8 salt marshes	15 Salt marshes, salt steppes and gypsum scrubs
A9 mangrove, tidal forest	n.a.
LACUSTRINE / PALUSTRINE	
A10 brackish/saline lagoons	21 Lagoons 23 Standing brackish and salt water 15.1 Salt pioneer swards
A11 coastal fresh lagoons	22 Standing freshwater 53 Water-fringe vegetation
B) INLAND WETLANDS	
RIVERINE	
B1 permanent rivers	24 Running water 37.7 Humid tall herb fringes 53 Water-fringe vegetation
B2 seasonal/intermittent rivers	24 Running water 37.7 Humid tall herb fringes 53 Water-fringe vegetation
B3 inland deltas	22 Standing freshwater 24 Running water 37.7 Humid tall herb fringes 53 Water-fringe vegetation
B4 floodplain wetlands	37 Humid grasslands and tall herb community 44 Alluvial and very wet forests and brush

LACUSTRINE	
B5 permanent freshwater lakes	22 Standing freshwater 37.7 Humid tall herb fringes 53 Water-fringe vegetation
B6 seasonal freshwater lakes	22 Standing freshwater 37.7 Humid tall herb fringes 53 Water-fringe vegetation
B7 saline lakes and marshes (permanent/seasonal)	23 Standing brackish and salt water 15 Salt marshes, salt steppes and gypsum scrubs 18.3 Vegetated cliffs of saline lakes
PALUSTRINE	
B8 permanent freshwater marshes	22 Standing freshwater 53 Water-fringe vegetation
B9 seasonal freshwater marshes	22 Standing freshwater 37 Humid grasslands 53 Water-fringe vegetation
B10 shrub-dominated wetlands	15.6 Saltmarsh shrubs 31.1 Wet heaths 44 Alluvial and very wet forests and brush
B11 freshwater swamp forest	44 Alluvial and very wet forests and brush
B12 peatlands	51 Raised bogs 52 Blanket bogs 54 Fens, transition mires and springs 53 Water-fringe vegetation
B13 peat swamp forest	44A Birch and conifer swamp woods
B14 alpine/tundra wetlands	31.1 Wet heaths 37.8 Subalpine and alpine tall herb communities 44 Alluvial and very wet forests and brush
B15 freshwater springs/oases	54.1 Springs
GEOTHERMAL	
B16 geothermal wetlands	66 Volcanic features

C) MAN-MADE WETLANDS

URBAN AND INDUSTRIAL	
C1 reservoirs, barrages, dams	89.2 Freshwater industrial lagoons and canals
C4 salt pans/salines	89.1 Saline industrial lagoons and canals
C5 gravel pits	86.4 Old industrial sites
C6 sewage farms	89.2 Freshwater industrial lagoons and canals
AGRICULTURE	
C2 farm pond/small tanks	89.2 Freshwater industrial lagoons and canals
C7 irrigated land	81.2 Humid improved grasslands
C8 seasonally flooded agricultural land	81.2 Humid improved grasslands 82.4 Flooded crops
AQUACULTURE	
C3 fish/shrimp ponds	89.2 Freshwater industrial lagoons and canals

Annex II:
Guidelines for the Wise Use of Wetlands

Note:
This is an abridged version of the Guidelines and Additional Guidance for the Implementation of the Wise Use Concept adopted by the contracting parties to the Ramsar Convention of wetlands of international importance at their IVth and Vth Conferences in 1990 (Recommendation C.4 Revised plus Annex) and 1993 (Resolution C.5.6 plus Annex).

Definition

«The wise use of wetlands is their sustainable utilisation for the benefit of humankind in a way compatible with the maintenance of the natural properties of the ecosystem.»

Sustainable utilisation is defined as «human use of a wetland so that it may yield the greatest continuos benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations».

Natural properties of the ecosystem are defined as «those physical, biological or chemical components, such as soil, water, plants, animals and nutrients, and the interactions between them».

General

The wise use provisions apply to all wetlands and their support systems within the territory of a Contracting Party. The concept of wise use seeks both the formulation and implementation of general wetland policies, and wise use of specific wetlands. These activities are an integral part of sustainable development.

It is desirable in the long term that all Contracting Parties should have comprehensive national wetland policies, formulated in whatever manner is appropriate to their national institutions. However, elaboration of national wetland policies will be a long term process, and immediate action should be taken to stimulate wise use. The guidelines presented below therefore include both elements for comprehensive national wetland policies and priority actions.

Establishment of national wetland policies

1. Actions to improve institutional and organisational arrangement, including *a)* institutional arrangements to integrate fully wetland priorities into the planning process, and *b)* establishment of mechanisms and procedures for incorporating an integrated approach into planning and execution of projects in order to secure wetland conservation and sustainable development.

2. Actions to address legislation and government policies, including *a)* review of existing legislation and policies, *b)* application of existing legislation where appropriate, *c)* adoption of new legislation, and *d)* use of development funds for projects which permit conservation and sustainable utilisation of wetland resources.

3. Action to increase knowledge and awareness of wetlands and their values, including *a)* interchange of experience and information on wetland policy, *b)* increasing the awareness and understanding of decision-makers and the public of the full benefits and values of wetlands, *c)* review of traditional techniques of wise use, and *d)* training of appropriate staff which will assist in implementation of wetland conservation action and policies.

4. Actions to review the status of, and identify priorities for, all wetlands in a national context, including *a)* execution of a national inventory and classification of wetland sites, *b)* identification and evaluation of the benefits and values of each site,and *c)* definition of the conservation and management priorities for each site.

5. Actions to address problems at particular wetland sites, including *a)* integration from the outset of environmental considerations in planning of projects which might affect the wetland, including projects upstream of the wetland, *b)* regulated utilisation of the natural elements of wetland systems such that they are not over-exploited, *c)* establishment, implementation and periodic revision of management plans which involve local people and take account of their requirements, *d)* establishment of nature reserves at wetlands, and *e)* serious consideration of restoration of wetlands whose benefits and values have been diminished or degraded.

Priority actions at national level

Whether or not national wetland policies are being prepared, several actions should receive immediate attention at national level in order to facilitate the preparation of national wetland policies, and to avoid delay in practical implementation of wetland conservation and wise use.

Contracting Parties may wish to *a)* identify the issues which require the most urgent action, *b)* take action on one or more of these issues, *c)* identify the wetland sites which require the most urgent action, and d) take action at one or more of these wetlands, along the lines set out below.

Priority actions at particular wetland sites

Immediate action may be required in order to avoid destruction or degradation of important wetland values at particular wetland sites. These actions will undoubtedly include some elements listed under point 5 above.

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