PART TWO
REGIONAL STRATEGIES, SECTOR PLANS, GUIDELINES AND MEASURES

1 INTRODUCTION

The actions that must be applied in order to ensure the conservation and sustainable use of biodiversity vary in their degree of urgency. They affect the whole of Spanish society (both the public administrations and the private sector) and must be put into practice by making use of different instruments.

The current strategy must, of course, always be interpreted within the flexible framework in which the autonomous regions draw up their own strategies for biodiversity conservation given that they are empowered to conserve them. It would also be advisable for municipal councils to draw up strategies, plans and programmes for their own sphere of action.

The regional strategies should be approved within a maximum time limit of three years dating from the definitive approval of the national strategy. That should not involve a delay in the drafting of the sector plans or in the implementation of the measures outlined below, the reformulation and implementation of which at the requisite territorial level also fall to the regional and local governments and other institutions.

Thus, the Spanish Strategy describes to what extent Spain's institutions and civil society as a whole consider they should orient the actions aimed at conserving and fostering sustainable use of biodiversity. The autonomous regions may find it serves as a reference when planning actions as part of their strategies. Thus, the principle of subsidiarity informs the drafting and implementation of the various strategies of the different nationalities and regions.

The function of the guidelines is to promote the horizontal criteria to which the sector plans should be adapted as their neutral character makes them applicable to all, or almost all, sectors. Some measures and plans do not need a subsequent action plan in order to be implemented. Many of them may be initiated at once given the consensus reflected in the drawing up process. Others require an additional period of reflection or greater certainty as regards the positions that will be adopted within the supranational framework, such as those pertaining to access to genetic resources or the introduction of the 'species of general interest' category.

Implementation of many of these measures is inconceivable without the active co-operation, or even exclusive participation, of diverse public and private institutions and of society in general. In this sense, the regional governments have a special responsibility as they have the powers to act within the framework governing these measures.

SECTOR PLANS AND SECTOR PLAN GUIDELINES 2

2.1 SECTOR PLANS

The critical analysis of the negative effects the different sectors shown in Annexes II to XII have had or are having on biological diversity and the restating of forestry policy that the approval of the Forestry Strategy and Basic Countryside and Forestry Uses Act (see Annex II) will involve do not mean that past actions will be ignored. Both the above were determined at each stage in the past by lesser degrees of knowledge and awareness of this matter. Instead, they necessarily involve the acknowledgement of impacts on biodiversity with the aim of drawing clear conclusions and adopting effective measures in order to avoid or at least palliate the aforementioned negative effects in the future.

In order to achieve the participation of agents and sectors, together with the active incorporation of the principles of conservation and sustainable use of biodiversity in sector policies, the analysis of effects and the identification of sectors responsible should be complemented with an environmental assessment and an economic evaluation.

The different agents involved in the sector activity targeted by the plan must necessarily take part in drafting it and incorporating its results as a variable into the sector's daily activity. They must also assume the costs that the loss and conservation of biodiversity resulting from their activities would involve for society as a whole. To do so, these processes and their effects must be organised in a hierarchy that is evaluated and, if possible, assigned a value in the corresponding sector plans. In this sense, responsibility for the analyses and determination of the capacity and way to apply the conservation measures and sustainable use of biodiversity fall primarily to each sector involved, which must consider it as its own objective. Moreover, as interaction among sector activities produces synergic effects, it is particularly important that there is adequate co-ordination among the different sector plans and strategic initiatives.

Moreover, it must be borne in mind that as the Community Strategy (see Annex XIV) adopts the same methodology and similar action plans, co-ordination of Spain's sector plans with the latter must be an important future monitoring indicator.

Drafting and implementation of the sector plans must necessarily be co-ordinated and participative, and must take into account at least the points outlined below.

1.- For obvious reasons of coherence, the plans will consist of those necessary to cover the sectors dealt with in the analysis of this Strategy; namely, agriculture, forestry, fisheries and aquaculture, hunting and fish farming, energy, tourism, industry, land planning, transport, water policy, health and commerce. All of them have been identified as causing processes that have adverse effects on biological diversity. The economic sectors involved will aim to analyse the legislative reforms and practical or behavioural codes required to make operators and those involved aware and take action regarding which specific measures and practices minimise impacts on biodiversity. There must be full communication with the regions, which will take part in drafting the national sector plans so that they have the option of incorporating sector achievements in their regional strategies. Given the breadth of some of the latter, it might be possible to draft and implement more than one plan per sector. On the contrary, in cases where great similarity exists, one plan can be drafted for several sectors.

These plans must include at least the following sections:

- Analysis of the overall situation of the sector.

- Analysis of the repercussions of sector activities on biological diversity conservation.

• Analysis of possible changes in sector actions so that they respect the principles of sustainable development.

• Particular actions to be carried out.

• Guidelines or orientative criteria for methodologies and principles regarding how to carry out assessments of environmental impacts affecting the sector.

• Completion dates for the different actions, bodies responsible for each of them and budgets required.

• Duration of plan, monitoring mechanisms and review process.

2.- The plans needed to cover the fields in the section on Strategy instruments; namely, social, scientific, institutional, legislative and economic. These plans must include at least the following sections:

• Analysis of tools used in that sphere with a view to the conservation and sustainable use of biodiversity.

• Analysis of deficiencies in the field in question in order to improve achievement of Strategy objectives

• Particular actions to be carried out to improve the instruments.

• Completion dates for the different actions, bodies responsible for each of them and budgets required.

• Period in which the plan is in force, monitoring mechanisms and review process.

3.- All the plans needed to respond to specific serious problems or that correspond to matters closely linked with conservation and which cannot be covered by those previously mentioned. An action plan to combat desertification might serve as an example of the first, while the Wetland Sector Plan would be an example of the second. The drafting of the latter is, moreover, an obligation according to the resolution of the contracting parties to the Ramsar Convention.

The plans must not remain in mere desideratum, but must be drawn up in a maximum time limit of three years dating from the definitive approval of the Strategy. They must incorporate their own implementation schedule, which must be effective within the framework of the current strategy, i.e. with a maximum completion date of 2010.

Furthermore, said plans must establish the bases for fora for negotiation and consensus on a smaller territorial scale, especially at regional level, where proximity to the territory and to the prevailing socio-economic conditions will enable them to be more specific. The autonomous regions will thus be able to conserve and implement sector plans that are not only adapt the measures and commitments agreed at state level to their territory, but also those which, overall and in accordance with comparable and compatible methods of measuring development may involve improvements in sector sustainability even though they are derived from strategies or tactics that are different from those agreed at state sector level.

2.2 PLAN GUIDELINES

Outlined below are a series of guidelines that are considered to be essential in the drafting of sector plans.

A. Integration of the methods of sustainable usage of resources in the different production sectors and at all stages of production, including extraction, transformation, distribution and marketing.

This matter must always be governed, whatever the sphere of action of each proposed measure, by active participation and negotiation with all the sectors and social agents involved at each stage of the processes of biological diversity utilisation, as well as with the sectors which, directly or indirectly, affect the conservation status and opportunities for use of such components. Moreover, sustainable use of the components of biological diversity requires that the necessary assessment processes be implemented in the relevant sectors that are mentioned in various connections in this section. The following measures are proposed as special measures for the most relevant sectors:

A.1 Foster agriculture via methods that make sustainable use of biodiversity, by favouring the introduction of biological agriculture, or at least of minimum environmental impact, and by maintaining extensive systems that are adapted to the territory.

A.2 Maintain and promote systems combining livestock farming and forestry which lead to extensive livestock farming that is balanced and compatible with natural systems viable.

A.3 Foster the establishment of economic measures to enhance farming production using traditional varieties of plants and livestock breeds and to provide incentives for their consumption.

A.4 Promote and maintain hunting and fish farming using methods based on sustainable use of resources.

A.5 Integrate the concept of multiple use and function (ecological, economic and social) of woodland in resource planning.

A.6 Incorporate in water resource management the requisites needed to ensure conservation and maintenance of diversity in aquatic environments.

A.7 Incorporate the principle of responsible fishing in the use of fishery resources.

A.8 Regulate and inventory mining and quarrying so that possible negative effects on biological diversity are avoided, mitigated, corrected or compensated for according to case.

A.9 Plan and establish infrastructure and industrial installations according to minimum impact criteria and take preventive or corrective measures when required.

A.10 Redirect tourism towards models involving minimum impact on biological diversity. By way of immediate application of this guideline, the fragments of coastline that have not as yet been built on, especially on the shores of the Mediterranean and sectors of the Atlantic coast (Western Andalucía and the Canary Islands), must be strictly and urgently conserved.

A.11 Include clean technologies in production processes.

A.12 Take precautionary measures as regards energy infrastructures and their distribution networks in order to safeguard biological diversity.

A.13 Replace, as far as possible, use of non-renewable energy sources with renewable sources.

A.14 Producers will adopt procedures and methods governed by criteria in which environmental concerns take priority as a quality factor.

A.15 The commercial distribution sector will pay special attention to promoting environmentally friendly products and goods in the market place.

A.16 Reduction in waste production at each stage of manufacturing.

A.17 Reduction in use of the resources involved in the manufacturing processes.

A.18 Development and implementation of programmes to monitor the proposed guidelines, including the setting up of specific bodies involving broad social participation.

A.19 Assess sustainability of sector and cross-sector plans and programmes.

A.20 Adopt the necessary legislative and administrative measures to control the risks derived from utilisation and release of modified living organisms as the result of biotechnology. In this regard, the provisions of the Biosecurity Protocol must be strictly adhered to.

B. Adapt the degree of exploitation of each resource to its sustainable level.

B.1 Harmonise and plan exploitation processes that guarantee the natural renewal rate.

B.2 Improve technologies and systems of exploitation for balanced utilisation of biotic and abiotic resources.

B.3 Establish legal and administrative measures or harmonise existing measures in order to guarantee balanced and lasting resource utilisation.

B.4 Design and implement financial, institutional and social, etc. mechanisms and instruments to promote compliance with existing legislation.

B.5 Include the principles of 'integrated management of coastal areas' in plans and actions affecting the coastline.

B.6 Develop and implement monitoring programmes for the proposed guidelines, including the setting up of specific bodies with a broad social base.

B.7 Promote farming, forestry, fishing, hunting methods and strains of aquatic organisms that are compatible with the conservation and sustainable use of biological diversity by regulating them and establishing suitable financial mechanisms. Inclusion of biodiversity conservation criteria in forestry planning plans.

B.8 Foster differentiated farming production in accordance with criteria such as geographical criteria, production method medium, genotype, etc.

B.9 Support for independent third party certification processes via labelling that provides consumers with a guarantee of sustainable manufacture, production and marketing of natural resources.

C. Develop institutional and co-ordination measures for the sustainable use of the components of biodiversity.

C.1 Respond suitably, in institutional terms, to the need to integrate conservation and sustainable use of biological diversity criteria into policies, plans and sector programmes.

C.2 Establish measures for co-ordination, information exchange and participatory organs applicable to plans and programmes that affect several administrations, in particular for national plans, the implementation of which involves the regional administrations.

C.3 Provide appropriate personnel and material to develop said institutional response and the necessary co-ordination tasks.

C.4 The proposed institutional response and co-ordination must be implemented in the technical, legislative and administrative spheres.

C.5 Develop and establish mechanisms that promote participation in resource conservation by agriculturists, livestock farmers, foresters and game and fishery managers.

D. Optimise the application of environmental impact assessment

D.1 Broaden the regulations for assessing environmental impact to national and regional sector and inter-sector plans and programmes, as well as the general frameworks in which such plans and programmes are inscribed.

D.2 Promote this measure in Spanish participation in the definition of European Union policies, plans and programmes.

D.3 Broaden regulations governing environmental impact to national and regional sector and cross-sector plans and programmes financed by the European Union.

D.4 National and regional legislation should adopt the obligatory provision to carry out prior strategic assessment for plans and programmes.

D.5 Update environmental impact assessment procedures and mechanisms for all programmes, projects and activities that may have adverse effects on biological diversity.

D.6 Study the broadening of the provisions of the Royal Decree on Environmental Impact to encompass those not currently included. In all those cases, environmental impact assessment must be included from the initial stages of the programmes, projects and activities.

D.7 Foster public participation, and, above all, the participation of the environmental administrations in environmental impact declarations and in prior strategic assessments of plans and programmes.

D.8 Improve monitoring of the extent to which declarations of impact and stated corrective and compensatory measures have been fulfilled, including the setting up of specific organs to that end.

D.9 Analyse the cumulative effects and/or synergic effects of plans, programmes and projects on the natural environment.

D.10 Develop protocols for environmental impact assessment that can be applied simply and quickly.

E. Access to genetic resources and technologies.

E.1 Revise, and, when necessary, create regulations for access to genetic resources to allow sustainability in the use of the components of biological diversity. This regulation must provide access to resources and avoid misappropriation or inappropriate use.

E.2 Define a fair and equitable system in the field of technology transfer and distribution of benefits derived from sustainable use of resources.

F. Promote education and public awareness.

F.1 Guarantee public access to information on biological diversity, ways of conserving it and the potential benefits derived from it.

F.2 Promote and increase co-operation and collaboration among public administrations public or private bodies to develop actions geared to fostering awareness among citizens.

F.3 Effectively integrate civic participation in the processes that foster inclusion of the principles of conservation and sustainable use of biodiversity in sector policies, plans and programmes via legislative, financial, institutional, technical, educational and training instruments.

F.4 Create the necessary participative processes, as well as of the information mechanisms that would ensure useful and effective participation.

F.5 Promote environmentally friendly behaviour in daily life by developing comprehensive environmental programmes geared to formal and informal education and to occupational training (workshop schools and similar).

F.6 Promote knowledge about biological diversity in educational programmes.

G. Research and training.

G.1 Promote research programmes aimed at furthering knowledge, inventory and monitoring of biological diversity, which must be implemented, above all, within the framework of the National R&D Plan for Sector Programmes and those of the regional governments.

G.2 Include sector responsibilities in the lines of research aimed at maintenance and sustainable use of biological diversity in the sphere of the relevant powers

G.3 Foster research programmes applied to the conservation, utilisation and enhancement of genetic resources.

G.4 Promote co-operation as regards research among the appropriate administrations, research centres and the different sectors involved, and in particular, the participation of livestock and arable farming, forestry and fishing organisations in the drafting, management and implementation of research programmes in the relevant sectors.

G.5 Promote training of specialists in areas of interest concerning knowledge of and management of biological diversity.

G.6 Set up a system of indicators to evaluate the status of biological diversity and its management and utilisation by the different sectors.

H. International Co-operation.

H.1 Incorporate the principles of conservation and biodiversity in international co-operation programmes.

H.2 Foster environmental impact assessment in international co-operation programmes.

H.3 Establish international exchange programmes involving experts in scientific, technical and legal subjects.

H.4 Increase institutional support and human and financial resources for non-governmental organisations in international co-operation plans and programmes.

2.3 OPERATIONAL IMPLEMENTATION OF THE PLANS

Putting into practice the provisions of this Strategy and promoting and implementing the action plans requires several immediate actions as outlined below.

1.- A technical unit should be set up to monitor the drawing up and implementation of sector action plans, and the unit should be incorporated into the Subdirectorate-General for Biodiversity Conservation of the Nature Conservation Directorate-General, Environment Secretariat-General. The unit's basic mission will be to provide the necessary driving force and to co-ordinate the whole process of implementation of the action plans on the part of the administrations, institutions or social groups empowered to undertake such actions. To this end, it is essential to have sufficient human, material and economic resources, and for the appropriate budgets to be designated for those purposes.

2.- The unit's first mission should be to draw up its own work schedule, giving priority to sector plans, to indicate participants, contributors and those responsible for drafting each plan and establishing the time limits, respecting the three-year maximum dating from Strategy approval. It must also develop criteria and indicators, as well as monitoring guidelines regarding the management of biodiversity conservation once the sector plans are in operation.

3.- The technical unit should periodically publish a report on the state of the drafting of the plans or the degree to which they have been fulfilled, should they already be underway, as well as the application of the monitoring criteria to management of the whole process mentioned in the previous section. It should also cover the setting up and updating of a biodiversity information centre connected with the unit and dependent on the Biodiversity Centre in Sevilla.

4.- There must be co-ordination, collaboration and exchange of information among all parties interested in everything pertaining to Strategy implementation similar to that which existed during the drafting process. It is, therefore, essential to maintain the participation of the work-

shops that were set up for the drafting of the current Strategy. Moreover, for the objectives set, it is essential that there be close liaison between both the technical group and the workshops with the Sector Conference on the Environment, the Consulting Council on the Environment, the National Nature Protection Commission and the co-ordination workshops between the Ministry of the Environment and other ministries. It is particularly important that the appropriate regional ministries with specific interests in each plan and the regional environmental authorities take part in the drafting and monitoring of all the action plans without detriment to the provisions in the corresponding section to said plans regarding their territorial dimension.

The participative process based on the workshops that are set up must, above all, be maintained throughout the implementation of the strategy around specific targets, such as, in particular, the drafting of national reports on the application of the Convention which are periodically submitted to the Conference of the Parties.

Both the drafting process of the plans and their implementation must basically be financed via reorientation budgets within each unit. In this sense, the economic needs and means for the Special Monitoring Unit to function must be covered by the Subdirectorate General of Biodiversity Conservation's own budgets, while other administrations, both the departments of the General State Administration and those of the different regional governments, must meet the organisational needs and means to draft the action plans in which they take part. Once the latter have been drafted, the costs of applying the strategy must be assumed through them by the sectors themselves by reorienting activities and, therefore, the budgets involved in activity implementation.

The drafting of said action plans must be completed within no more than three years from the approval of the current strategy, and the measures they include must be fully underway by the year 2010.

MEASURES 3

Within the framework of the established guidelines and in response to the need to implement measures, a series of actions considered to be very important is detailed below. They should be urgently implemented once this strategy has been approved, independently of the drafting process, and within the stipulated time limits of the sector action plans and regional strategies.

The public administrations are basically responsible for applying these measures. There needs to be efficient and stable co-operation between the General State Administration, which is responsible for co-ordination, and the regional governments, which have the powers to carry out many of them.

3.1 NATURAL RESOURCE AND LAND PLANNING

Conserving biodiversity is based on preventing risks of unacceptable environmental deterioration; in other words, those that exceed the thresholds laid down for the monitoring parameters of the conservation status. Several mechanisms come into play on different scales. On the one hand, there is a 'coarse grain' cross-sector scale that may or may not be applied in the territory in which the guidelines must operate to inventory natural resources and sector and territorial planning, complemented by strategic environmental assessment. These instruments will endeavour to achieve a level of conservation that is acceptable throughout the territory and will facilitate the success of the protection measures on a smaller scale, thus becoming ideal tools for the planning needed to inventory resources at local level. On the other hand, there is a 'fine grain' scale, on which protection policy reaches its maximum expression, and which corresponds with protection of areas and species.

Given the importance of the topics proposed here, which affect the different sector policies, a special committee of the National Nature Protection Commission will be set up to prevent risks to biodiversity conservation. This committee will be co-ordinated in the Subdirectorate General of Biodiversity Conservation of the Nature Conservation Directorate-General, General Secretariat of the Environment via a specific prevention and monitoring department. It will thereby cover some important gaps in current knowledge, consultation and co-ordination, and will initiate the projects outlined below.

• Project to determine biodiversity conservation status. It will work in conjunction with the Nature Data Bank, including layers of information relating to hot spots of high biodiversity, habitat fragmentation, intra- and interspecific genetic variability, size and distribution of populations of threatened species and indicator species (keystone, engineer ecosystems, etc.), as well as layers of information about the course, location and dispersion of risk factors. The information will be analysed in order to anticipate conflict situations or extent of risk and to provide mechanisms to seek and assess alternative solutions.

• Biodiversity monitoring project. This project will start up a monitoring system based on functional models with the aim of identifying the most suitable parameters to measure the changes that might affect biodiversity. It will be linked to broader national and international monitoring systems.

• Project to draft and review the guidelines for the inventory of natural resources pursuant to Act 4/1989. The guidelines will arise from the recommendations provided by the aforementioned projects, sociological and economic recommendations and those derived from the Risk Prevention Committee for Biodiversity Conservation. Given their basic nature, adherence to these

guidelines will be compulsory, and they will affect both territorial management and the use or treatment of natural resources. The guidelines will cover matters such as excessive water wastage, fertilisers and pesticides, unsuitable arable and livestock farming methods, ways of conserving abandoned crops, accidental transport and release of allochthonous organisms, poisons, dangerous materials and substances into the natural environment, limitations to barriers to dispersal of organisms as regards the multifunctional nature of forests, protection of land through listing, public utility and social interest, incentives to conserve, incentives to promote companies working in the field of prevention aims and techniques, among others.

• Project concerning collaboration in the European Territorial Strategy and implementation of the future European Council Convention on Landscape.

• Project (co-ordinated with the aforementioned project) to have landscape enshrined in law as an essential component of people's living framework and an expression of their cultural, ecological, social and economic heritage. A List of Landscapes of European Interest will be drawn up.

• Project to introduce into Spain the Geosites Programme to enhance geological heritage. Within the framework of UNESCO's IUGS-GEOSITES Project, which is connected with the Convention for the Protection of the World Heritage, a General Indicative List of Geological Sites will be drawn up (GILGES List).

IN-SITU CONSERVATION 3.2

In-situ conservation is based on both the network of protected natural areas and management of the territory outside that network. From that general perspective, periodic reviews of the conservation status of species and habitat types must be planned both at state and regional levels. The plans must include priorities for legal proposals for protection and research into conservation.

3.2.1 PROTECTED NATURAL AREAS AND OTHER MUNICIPAL AND PRIVATE AREAS

A system of protected areas that is representative of Spain's biological diversity, its ecosystems, landscapes, habitats and terrestrial and aquatic species must be set up and equipped with suitable instruments for planning, use and management. This first requires the identification of areas that are important for biodiversity conservation in Spain, by completing the studies undertaken for the structuring of the Natura 2000 Network, for which a databank on biodiversity and natural areas will be set up as a basic back-up tool for territorial planning policy.

Furthermore, there will be an increase in participation in international initiatives that seek to establish systems of protected areas in other biogeographical spheres, such as the Ramsar Convention and the Council of Europe, as well as in the different task forces and fora set up within the framework of the European Federation of Natural and National Parks, the World Nature Conservation Union, Wetlands International and the European Union, etc.

Heading the series of protected areas and a prime example of biological diversity in Spain is the national parks network. Pursuant to the recently passed Act 41/1997, the procedure for setting up the new system needs to be stepped up so that the network can be operational as soon as possible. In this sense, the new organs (mixed commissions in each park and a council in the

network) must be created and the currently existing organs (boards, director-curators and the autonomous body itself) must be adapted to the new joint-management criteria.

The Steering Plan, which has already been drafted and is pending a report by the new Network Council, will be the basic item that gives coherence to the national parks as a whole. It will be possible to complete the plan's contents in the future through implementation in the sectors with other plans such as that governing voluntary work.

The protected natural areas in the regions will continue to be the normal instrument for habitat protection. Given that their introduction has given rise to a slow, yet firm, process, consolidation of the existing regional networks now that the Strategy is being implemented is also considered a priority.

Given the large number of protection categories established by the different regions, they should, as far as possible, conform to the categories laid down by the IUCN if their proponents wish to have recourse to existing international support in order to improve management or make the requisite investments.

Despite state powers being virtually non-existent, but given that the main problems facing the regions are similar, the continuation of the Areas Committee of the National Nature Protection Commission is considered necessary even though it has not carried out any functions to date. The committee's contents and activities will be considerably enlarged when it takes on the new tasks involved in the setting up of the future Natura 2000 Network.

A List of Protected Natural Areas in Spain will be drafted and kept up-to-date. As part of this project, the mapping of all the areas on the list will be completed and the resulting information will be included in the Nature Data Bank.

From a technical point of view, greater importance will be given to the presence of native ecotypes as a criterion for protecting and managing flora and fauna resources. Equal consideration will also be given to recovering the natural structure of predator and prey communities in certain protected areas in order to regulate wild herbivores ecologically.

Strict reserves will be set up in protected areas with the aim of maintaining zones in which processes related with biological diversity follow their natural course, thus allowing for the existence of natural laboratories, where those processes can be studied. The possibility of setting up a network with areas of special scientific interest will also be considered.

The areas likely to be included on the List of Specially Protected Areas Due to Their Importance in the Mediterranean (SPAMI) will be identified in accordance with the fourth Protocol of the Barcelona Convention. Similarly, marine areas will be identified in the process of applying Annex V of the Convention on the Prevention of Marine Pollution (OSPAR). A technical-administrative databank for these areas will be set up.

Maintenance of suitable incentives for traditional agricultural activities that contribute to biological diversity conservation will be enhanced in protected natural areas thereby avoiding the pressure that the expansion of the tertiary sector exerts on these areas.

The environmental administrations will take part in the drafting and design of agro-environmental and reforestation programmes for arable land to be applied in protected natural areas.

Priority will be given to disseminating information on biodiversity to local people in protected areas, the headquarters of said areas, interpretation centres and even information points

and nature classrooms, and the instruments necessary for sustainable use of biodiversity will be included in the sector development programmes for local people.

The co-ordination channels for policies, regulations and actions between the different administrations involved, particularly the regional governments, will be strengthened. The future National Nature Protection Commission, which will be under the Sector Conference on the Environment, must play a fundamental role in this task.

A common methodology to monitor conservation status and assess potential risks will be designed, which can be applied to protected natural areas.

As regards the Birds Directive's Special Protection Areas for Birds (SPAs), their peculiar –for being non-existent in formal terms– transposition to internal legislation and the constant increase in their legal force through the gradual accumulation of verdicts of the Court of Justice of the European Communities make it necessary to take the definitive step and proceed with their formal recognition as a protection category, thereby following the example of some regions. It is absolutely necessary to proceed with the publication –as an act of declaration– in the Official State Gazette (BOE) of both the areas and their exact territorial boundaries, and to legally consolidate –regulating the process– the modification and constitution processes for new SPAs. This should occur whether or not they are also Sites of Community Interest (SCIs) because they contain species or ecosystems that are supplementary to those listed in the Birds Directive.

Some regions have decided to take a different approach to the situation of its SPAs by adding some, while others consider that as the original process was carried out in too much haste, they should be adjusted to the real situation. The most recent jurisprudence, especially the verdict of the Court of Justice of the European Community of 19 May 1998 (Subject C-3/96, the Commission v. Holland), also offers the opportunity to consolidate the system by including the entire contents of the Birds Directive in order to achieve maximum legal security, bearing in mind all the scientific contribution already provided by the administrations and non-governmental organisations, especially the Spanish Ornithological Society.

As regards the Natura 2000 Network, the actions to be followed pursuant to the Strategy are necessarily linked to the contents of the Habitats Directive. The lists of SCIs must be completed so that they become definitive, and the required actions must be initiated so that they may be set up as Special Areas of Conservation (SACs). Given that it appears that there will not be a specific European financial instrument, the maximum structural funds possible (especially rural development funds) must be channelled towards initial capital investments that would ensure that costs are reduced to maintenance costs. These areas should be enhanced by providing incentives for private actions so that they help maintain a sustainable economy in the surrounding areas.

There is an urgent need to create models to estimate the economic impacts on municipalities and towns in the areas and, via suitable regulation of environmental impact assessment, to set up mechanisms so that the additional maintenance or compensation costs are allocated to the specific infrastructure projects that cause damage or impairment. The widespread publicity that the SCIs are receiving in some areas (and the collection of observations that the departments and regional ministries in charge of infrastructures have proposed) appear to be the start of this type of strategic action. Maximum legal security for private property owners and all the administrations should be guaranteed through compliance with the public information concerning regional proposals for SCIs.

The Spanish contribution to the Natura 2000 Network must in the long term be one of the backbones of territorial planning by the State and the regional governments, with the former keeping up the co-ordination that currently exists. To do so, the Areas Committee on the National

Commission, delegate of the Sector Conference, will enact orientative guidelines (modifying Royal Decree 1997/1995) that are applicable to that network. The same committee will have to evaluate the cost of conservation measures resulting from setting up the network, taking into consideration the necessary financial framework, and will have periodically to monitor, assess and inform on the development, application and achievement of the objectives. Such criteria must tend to consolidate the principle of legal security in determining possible uses for owners of private land within the areas that make up the network.

The existence of these formal categories of areas must not impede utilisation by regions that wish to do so of other strategies based on policies with aims that are in principle not connected with conservation. Nothing prevents the utilisation of legislation governing land to protect areas (withdrawing land from urban development) or of legislation governing countryside that is for public use (especially in regions where areas have been declared as such because they existed thanks to the countryside having been listed).

In areas containing many structures typical of classic economic development (cities, industrial estates) the figure of biosphere reserve will be enhanced, its basic framework being laid down in the new act which replaces Act 4/1989 in a way that complies with UNESCO's MaB Programme in accordance with the philosophy introduced in 1995 at the Sevilla Meeting.

The current Strategy openly supports the setting up of municipal protected areas. Use of the category "specially protected land not liable for development" has occasionally proved to be very effective, and so its use is recommended, especially for municipally owned land. Regional legislation should recognise municipal reserves by including them (without assuming powers) in their area networks.

Private reserves, which several non-governmental organisations have already begun to set up, are a special case. Some municipalities also manage patrimonial real estate in the same way. Utilisation of private law is impeded, however, by transaction costs (businesses are considered as "inter vivos" or "mortis causa" as if they were profit-making commercial transactions and are liable for tax purposes in the same way) and by the classic limits of the real effects of the limitations of property (limits of trusteeship substitutions, by analogy). All the ordinances which have lately revised their area systems have fully recognised private reserves, with or without property, (agreements between owners and NGOs) and the reform of Act 4/1989 must also do so, regulating its regime of civil law, but leaving regional governments sufficient regulatory power to draw up models to implement the permissive principle of private reserves in their territory. The Nature Conservation Directorate-General, General Secretariat for the Environment should begin to inventory them so that they appear on maps with a view to proposing to the regions that such reserves form a network in the medium or long term. The grants stipulated in the Sixth Supplementary Provision to Act 4/1989 must, of course, be upheld and preference given to private reserves the management of which is voluntarily included to a greater degree in the regional area networks.

CONSERVATION OUTSIDE PROTECTED AREAS 3.2.2

The special attention given to protected area policy must be complemented by ensuring that biological resources outside such areas are conserved. To do so, the requisite measures and legal regulations must be established in order to guarantee said conservation. From this point of view, it is essential, among other things, to promote agrosystems that support great biological diversity and foster agro-environmental measures in order to regenerate agrosystems that have been degraded due to abusive practices. Forestry inventory plans require updating of their instruments and the drafting of monitoring measures. The section below contains many measures which would be implemented throughout the territory, both within and outside protected areas.

A policy to make those parts of the territory with the largest concentration of endemic and/ or threatened biological diversity into public heritage should be fostered to facilitate conservation of that diversity. However, this measure must never be applied in a generalised fashion; but rather it should be restricted to cases in which this option is undoubtedly the most efficient way of achieving the planned objectives.

The urban environment represents one particular case to be taken into consideration as regards conservation outside protected areas. It must be recognised as a factor influencing biodiversity by incorporating it into sector plans, either as a sector sui generis or as part of several sectors (energy, tourism, industry and land or town planning). It would be very useful if, based on this Strategy, a task force were to be set up to draft a manual or type bylaw to focus actions concerned with biological diversity in the local environment and to develop guidelines and suggestions for actions concerning several characteristic aspects of this environment, including the following:

- The peculiar character of urban biodiversity itself (for example, the excessive proliferation of some species) and the problems urban areas represent for biodiversity in a broader context (barrier effect on corridors).

- The role of botanical gardens and zoological parks in conserving biodiversity.

- Regulation and control of animals as pets, both in the case of threatened species subject to special regulations and in that of any species liable to be released into the environment.

- Gardening as a factor affecting biodiversity in two ways. Firstly, it affects it quantitatively because a large number of small actions mean changes over a wide area. Secondly, there is a qualitative effect due to the large number of new species and varieties being introduced from other countries for gardening purposes.

- The involvement that municipalities must have in defining and managing the areas making up the future Natura 2000 Network, and all protected natural areas in general.

However, regardless of these particular considerations, conservation outside protected areas must always be governed by the natural resources inventory, which is especially important in the local sphere. To do so, information channels from the Ministry of the Environment and the regional governments to the municipalities must be developed and enhanced so that, knowing their importance within the zones made up by municipalities, they are able to develop the conservation and sustainable use of biological diversity, serving at the same time as a source of information for the public.

3.2.3 SPECIES CONSERVATION

The fundamental technique to conserve species will be suitable protection of the areas hosting their habitats. However, establishing measures applicable to the territory with others that are applicable to things other than territory by classifying territory in categories is still essential. For this reason, protection of threatened species will continue to be based on the lists of threatened species and so the corresponding recovery plans, conservation and management of these species must be carried out by the appropriate administrations within reasonable time limits by establishing priorities and taking action in a co-ordinated manner. These national and regional lists must, therefore, be periodically revised and updated. Local administrations that deem it necessary will be able to draft lists of species of flora and fauna as their own management instruments to orient their conservation policies, but they will not be able to list new species from these categories, nor change the categories of those on the national and regional lists.

However, implementation of the National List (stepping up listing and-delisting) was a painful process and will probably continue to be so given the advisability of adapting the lists to the new lists established by the IUCN, an adjustment that is proving to be very difficult with species of flora and invertebrates. The new act that modifies Act 4/1989 will have to restate the categories, given the fact that the four current ones do not work.

The most urgent matter is not to study the categories (and the species that may be included in them) again, but to make the consequences of the fact of being listed effective. It may be pointed out (from the analysis) that few recovery plans have been approved. Many regions prefer to establish measures, such as those governing agro-environmental or hunting, which are sometimes acknowledged by the ordinance, or sometimes purely economic incentives acting on the behaviour of agents that affect mortality. Moreover, the courts have recognised that recovery plans are more binding than any other type of plan or land zoning.

In order to make the system credible again, the possibility of creating a special category of measures for threatened species by the Government or Parliament declaring them of general interest could be looked into. Such a declaration could entail the obligation to provide an extra budget and/or create a special tax regime to provide incentives for the support measures, such as, for example, deductions in the IRPF tax for owners of land containing said species. Proposals should always be based on the Sector Conference. This classification would only be applicable to emblematic and endemic species declared of general interest and, therefore, clearly in danger of becoming extinct worldwide. The declaration of general interest would, of course, expire when the recovery plan had proved to be effective.

Regardless of any attempts to study more thoroughly the question of whether the idea of declaring some species of general interest has greater or fewer advantages or drawbacks, it seems clear that a certain consensus does already exist in the sense that declaring species to be endangered does not necessarily entail in the future the formal approval of a recovery plan with binding legal effects and the imposition of strict obligations. Instead, the regions could establish consistent plans in pacts or general agreements with the sectors involved or in the application of other economic, social or legal measures (based on other legal sources e.g. a LIFE programme, in applying agro-environmental measures in certain areas, etc.). Thus, the demands would be fulfilled by listing as threatened species with the establishment of a package of measures which would not necessarily take the form of a decree approving a formal recovery plan. The latter possibility would always exist, and the regional governments could use it without having to agree on it by common consent. The fact that the regions could always approve formal recovery plans would give them great scope for negotiation. Thus, if other measures which, posing fewer restrictions on people's rights, would ensure species recovery are not agreed upon, a formal recovery plan could always be imposed by making use of the regulatory administrative power.

The recognition that comes from the demands resulting from listing with a series or package of measures not necessarily stipulated by law should include the condition that the privately negotiated package of social, economic or scientific measures has a system of self-"quality" control of its formal nature and of ongoing assessment of its results. It might be necessary for these voluntary (i.e. not legally binding) recovery plans to be reported on favourably by the relevant task forces of the Fauna and Flora Committee or a similar technical administrative body. In any case, the series of measures as a whole should be documented and transparent. The mere possibility of establishing plans via negotiation with the social surroundings that affect threatened species' habitat would act as an incentive to participation and collective responsibility in designing the plan and would, of course, facilitate the implementation costs, as it is always cheaper and more efficient to depend on self-fulfilment of a plan by being parties to it than by implementing mechanisms to enforce compliance, inspection and administrative sanctions in order to impose adherence to strictly compulsory legal norms.

It also seems to be clear that a consensus exists as regards maintaining and enhancing the category of the guiding criteria, to be approved by the National Nature Protection Commission, when the species or group of species listed and affected by the regional recovery plans are inter-regional, as laid down in Article 8.1 of Royal Decree 439/1990, which is currently in force and which governs the National Endangered Species List.

The type of measures that the guiding criteria might include will be defined in greater detail in the future act, which modifies Act 4/1989. It should outline the series of basic regulations that the guiding criteria would apply to specific species, providing links –whether or not agreed with the owners– concerning the use of private land, establishment of corridors, banning of fences, poisons or hunting methods for other species which affect threatened species, reintroduction of species that serve as a food resource, capture for captive breeding, investments in infrastructures that represent mortality black spots.

In any case, it does not appear to be opportune to maintain a situation which, although it yields successful results (reintroduction of the bearded vulture, reintroduction of the ferreret in Mallorca, recovery of the white-headed duck -notwithstanding problems still pending, survival –albeit difficult– of the brown bear), does not appear to work for other emblematic species (wolves south of the River Duero, lynx) nor for flora. Thus, there appears to be a need for a review of the system proposed in Act 4/1989 and implemented in 1990.

All the above would not prevent the existence of regional lists with the efficacy that the regional regulations may have, or, even, of local lists.

Other necessary actions are outlined below.

• Avoid fragmentation of wild populations and facilitate genetic exchange between them via a network of ecological corridors and achieve closer links between areas by taking them into consideration in the planning and management of the territory; river ecosystems must play a primary role in these policies. Drover roads (long-distance livestock routes) could also be assessed in this regard and, where necessary, managed as possible corridors, their use being regulated in accordance with the extent to which they fulfil such an objective. Interstitial landscapes (hedges, river banks, verges), especially in simplified environments.

• Draft and harmonise the legal and technical mechanisms needed to control, and when necessary prevent, the introduction of exotic species that might threaten systems, habitats, species or native populations.

• Draft and develop plans for the recovery of domestic varieties or cultivars and threatened or endangered native livestock breeds, paying special attention to civic participation by maintaining orchards and livestock operations with due incentives.

• Designate zones for in-situ conservation of native local and district flora in the urban and peri-urban environment and study the potential of the latter as corridors that will be useful for that end.

• Draft conservation plans for paleontological resources.

• Finally, the 1994 Act on biosecurity will be applied, with the regional governments ensuring that the laboratory and field trials are carried out correctly and the General Administration of the State ensuring that marketing conditions restrict as far as possible the risks of impact on or hybridisation with other wild or domestic species.

HABITAT CONSERVATION 3.2.4

Plant associations, as original combinations of flora, linked with precise environments and with specific histories, form part of the habitat diversity that needs to be conserved. To do so, regardless of the conservation of the environments, the typological vegetation units that make them up have to be conserved. In this sense, the list of associations included in the implementation document of the Habitats Directive in Spain is the requisite point of reference for plant conservation in Spain.

Furthermore, recovery plans for natural terrestrial, marine and degraded freshwater habitats should be drafted. To do so, the requisite guidelines for their drafting and implementation need to be drawn up beforehand.

WETLANDS 3.2.5

Despite receiving early protection, prior to Act 4/1989, in the Water Act (Article 103) and the Regulation Governing the Public Water Domain (Article 275 and subsequent articles), there is still no coherent policy on wetlands as the inventory has not even been drafted. The recent approval of the plans for basins (containing the wetlands to be protected), the decision to integrate both inventories of the Secretariat of State for Water and Coasts and of the Nature Conservation Directorate-General, General Secretariat of the Environment) into a single one and the decision to implement a wetland sector plan based on the Strategy indicate the guidelines of the policy to be applied. The Wetlands Committee of the current National Nature Protection Commission must continue its functions in the future as delegate of the Sector Conference. The General Directorate for Water Works and Water Quality, the General Directorate for Coasts, the Technological Geomining Institute and the Nature Conservation Directorate-General of the Secretariat General of the Environment, jointly with the aforementioned committee, will draft a sector plan to co-ordinate wetland management planning with hydrology. There will also be active participation in the regional Mediterranean Group of the Ramsar Convention (MedCom) and measures will be established so that the ample knowledge and know-how in this sector (Spain is at the forefront of wetland management techniques) will be translated into an exercise in leadership in this group and in international circles. Annex XV includes an advance of such a Strategic Plan for the Conservation and Rational Use of Wetlands which is finally provided for in the White Paper on Water.

THE MARINE ENVIRONMENT 3.2.6

As a general measure, the use of maritime territory and areas must be planned, ensuring the conservation of biological diversity, and this principle must be enshrined in land legislation and in legislation pertaining to territorial inventories. Landscape protection measures must also be specified as a way of preserving habitats and species outside the Special Conservation Zones as stipulated in Article 7 of Royal Decree 1997/1995.

The analysis has highlighted the existence of many protection categories for marine areas. The series of factors outlined below make management of the biodiversity of this medium an urgent imperative: the fact that as regards proposals for SCIs, there are many more areas than those that have received protection to date, the recent signing of Annex V on biological diversity of the OSPAR Convention for the North Atlantic, the imminent ratification by Spain of the IV Protocol of the Barcelona Convention, of Special Protection Zones and of the Biological Diversity in the Mediterranean and of the Agreement on the Protection of Small Cetaceans in the Mediterranean within the framework of the Bonn Convention, and the recent completion of the national cetacean inventory by the Nature Conservation Directorate-General of the Secretariat General of the Environment.

There is a definite lack of management experience in this field as these areas often have very different characteristics to those managed to date. Such is the case, for example, of pelagic or benthic areas, or the upwellings in the open sea where species liable to protection congregate. The new act that modifies Act 4/1989 must, therefore, create the category of marine reserve or marine sanctuary, which would make it possible to develop the basic lines for their management. Although in exterior waters the State must exercise its powers, there is nothing to prevent management agreements with the regional governments having jurisdiction over the coast. In this sense, the Valencia Regional Government's plan to set up of a Centre for Marine Biodiversity of the Mediterranean will be very useful. This centre must co-ordinate its efforts with those of the recently formed Biodiversity Institute and the José Cavanilles Evolutionary Biology Faculty of the University of Valencia, the SEHUMED Centre, Institute of Coastal Ecology of El Campello (University of Alicante), the Spanish Oceanography Institute and the Institute of Sea Sciences (CSIC; Barcelona).

There is an urgent need for a committee to be set up with representatives from the Ministries of the Environment and Agriculture, Fisheries and Food, and, in particular, from the Spanish Oceanography Institute and the coastal regions of the Mediterranean in order to apply the Monaco and Barcelona Conventions and to establish measures to be implemented in the reserves and sanctuaries of the Mediterranean. The Cabrera Archipelago National Park and the Chafarinas Islands Reserve would form part of this network.

An equivalent system would subsequently be established in the Atlantic when the Biodiversity Protocol is negotiated in the framework of the 1993 Convention on the Prevention of Marine Pollution (Oslo-Paris). A third would also probably be established jointly with the Canary Island Regional Government, which could be extended to the entire Macaronesic Region.

In this sense, consideration should be given to the Commission of the European Communities' communication to the Council and the European Parliament about the *Report concerning the application of the conclusions of the interim ministerial meeting on the integration of fishing and environmental policies* held in Bergen March 13-14 1997.

3.2.7 MODIFIED LIVING ORGANISMS

As regards modified living organisms resulting from biotechnology, the necessary means must be established to apply the accord previously agreed with regard to cross-border movements of these organisms, including the designation of a focal point and one or several authorities to be responsible. Programmes to assess risks and prevention in general must be developed as a priority, and programmes to study the long-term effects that their introduction in the environment may have on conservation and the sustainable use of biodiversity must be developed as a priority. Also, the need for environmental impact assessment prior to the use of modified living organisms must be established.

Furthermore, all available information on transference, manipulation and use of modified living organisms must be public.

EX-SITU CONSERVATION 3.3

The analysis highlighted the existence of a series of germplasm banks, genetic strains of flora and the associated knowledge. The Strategy recommends co-ordination and effective exchange of information between all these sources.

Ex-situ conservation of fauna presents more problems. With very few exceptions, Spanish zoos do not see the reintroduction and utilisation of their animals to help species in the wild as an integral part of their function (conservation programmes are nowadays components of the certification of quality of zoos throughout the world). In this sense, zoos and botanical gardens whose policies agree with the Strategy must be provided with incentives via certificates of quality.

Likewise, captive breeding that is not formally planned as part of the management of recovery plans is not satisfactory, as it goes on within a certain legal and institutional vacuum halfway between management and research. Capture of threatened species for captive breeding must be exceptional and necessarily included in the guiding criteria, recovery plans or alternative measures authorised by the Sector Conference or its committees or task forces, which will inform the corresponding protocols so that all researchers, managers and centres involved are co-ordinated via said protocols. A captive breeding programme does not necessarily have to exist for the criteria, plans or measures to be passed.

Innocuous research techniques must be developed (both for species and, as far as possible, for individuals) for the capture or collection and in-situ conservation of mainly threatened native biological resources, including marine resources. Breeding and acclimatisation techniques that make it possible to strengthen and restore natural populations must also be designed and tested, as should the appropriate techniques to carry out such restorations.

Furthermore, the measures outlined below may be applied in this field.

• Regulate, where no regulations exist, the collection of native genetic material and of material included in the Spanish genetic heritage for its conservation, reproduction and reintroduction into the natural environment, taking into account adherence to Article 8j of the Convention on Biological Diversity regarding the rights of local and agricultural communities, and attempting to harmonise regulations. In this sense, study and knowledge of the traditional uses and techniques relating to the components of biological diversity will be enhanced.

• Broaden national coverage and increase the capacity of germplasm banks, botanical gardens, zoos and wildlife rescue and recovery centres involved in conserving genetic resources, including marine resources.

• Characterise the material stored in the germplasm banks and draft a detailed inventory of the collections by means of co-ordination between ministries at national level and with the regional governments. The inventory must include the activities being carried by the various institutions.

• In the case of phytogenetic resources for agriculture and food (the recommendations contained in the publications 'Norms for Gene Banks' and 'International Code of Conduct for the Collection and Transference of Plant Germplasm'), the inventory must include related wild varieties and wild species of direct use besides cultivated varieties.

• Establish core collections, when appropriate, containing the maximum available variation in a small number of samples, which permits their greater and more effective utilisation.

• Adopt measures to control genetic erosion in germplasm banks caused during conservation and in multiplication and regeneration. In this sense, the seed collections must be subject to assessment, checks and, where necessary, the conservation methods employed should be replaced.

• The banks of semen, eggs and embryos will guarantee the genetic and geographic origin of the conserved material as well as the maintenance of appropriate fertility indices.

• Improve cultivation techniques and reproduction of species of ethnobiological interest, both to supply users and as a support for possible restoration programmes for natural populations.

• Enhance the maintenance of areas for ex-situ conservation of native local and district flora in the urban and peri-urban environment.

• For domestic varieties and game species, task forces will be set up to recommend the measures to be adopted.

3.4 ACCESS TO GENETIC RESOURCES AND TECHNOLOGIES. TRADITIONAL KNOWLEDGE

The measures proposed to regulate access to genetic resources are outlined below.

• Draft specific regulations concerning access to genetic resources, which enshrine the spirit of the Convention on Biological Diversity relating to access, utilisation and benefits associated with said utilisation, with special reference to farmers. This regulation must take into account the guidelines that are being drawn up by the European Union, as well as co-ordination with the Council's Regulation 338/97 on the implementation of the Washington Convention in the European Union. As regards phytogenetic resources used in agriculture and food, the criteria of the International Commitment on Phytogenetic Resources for Agriculture and Food will be applied. This will occur even though, both nationally and in shaping international will, Spain will foster the misnamed 'farmers' privileges' i.e. the farmers' right to the use and knowledge of varieties and plants that are part of the agrogenetic heritage in recognition of the conservation and improvement work they have done over generations, which has made it possible to access such resources nowadays.

• Establish an administrative system to monitor access to Spain's genetic resources. The system would monitor all requests to explore/exploit resources and would differentiate between 'non-commercial' access (botanical gardens, zoological parks, universities, scientific research, etc.) and 'commercial access' (private companies, multinational companies, agents, individuals).

• Set up of a genetic resources network. The network must be co-ordinated nationwide and include the need for all banks and collections of germplasm, seeds and micro-organisms, such as botanical gardens, agricultural research centres, nurseries producing select varieties and herbaria, to be subject to its guidelines. This network will be co-ordinated by a mixed commission of the Ministries of Agriculture, Fisheries and Food and the Environment as well as the regional governments.

• Include in the network, directly under the aegis of the regional governments, resources being exploited in the wild and in co-ordination with implementation of the Habitats Directive, which has identified threatened species and ecosystems in Europe.

• Set up a secondary system of the network to incorporate traditional knowledge (ethnoecological, medicinal or other). Collecting said knowledge will be fostered via a special project that will follow international norms for mechanisms to enhance said knowledge in order to foster returns to the communities that were historically the depositories of such knowledge.

• Create a database within the network to identify potential resource users in Spain, such as biotechnology companies, research centres and universities which would potentially explore the applications of these resources together with the Patents Office.

• Reactivate and update the List of Common Varieties established by Act 11/1971 on nursery seeds and plants as a back-up tool for conserving and managing plant varieties that are currently of lesser commercial value.

• Implement these strategy measures via the infrastructure and resources of the Biodiversity Centre in Sevilla and liaise with the BIOTRADE office.

• Establish the instruments needed to guarantee appropriate technology transfer and sharing of benefits derived from sustainable use of genetic resources in accordance with Convention stipulations. These instruments will be of a legislative, institutional and financial character and involve social participation, research, training, education, communication and co-ordination among administrations and other parties involved.

• Set up a task force to carry out and monitor the implementation of the stated measures. Its initial task would be to devise Spanish legislation governing access to genetic resources once the current international discussions on the matter have established clearly and in mutually agreed terms how this end is to be achieved. It would also draft a plan outlining the basic research and studies needed to implement better the stated measures.

3.5 INSTITUTIONAL REFORMS

Strategy implementation would require that, in order not to duplicate its functions with the delegated organs of the Sector Conference, the National Nature Protection Commission be an organ of the latter, with the existing committees also being rationalised. The Flora and Fauna and the Wetlands Committees must be maintained, and the Protected Natural Areas Committee must assume the functions entailed in establishing the Natura 2000 Network.

Creating and operating the Nature Data Bank as an organic structure forming part of the Ministry of the Environment pursuant to Royal Decree 1894/96 requires the setting up of specific units for external information. Implementation of the Free Access to Environmental Information Act must guarantee the financing of these services via the system of public rates and prices.

As back-up organs for the current strategy and following the corresponding agreements or pacts with the institutions involved, the following centres could be set up:

A Biodiversity Centre in Sevilla, which would cover the following functions:

• H.Q. of the office of BIOTRADE, an UNCTAD Programme aimed at establishing exchanges of biodiversity resources between the countries of the North and South and between the private sector and the public administrations that manage the resources.

• H.Q. of the permanent centre for training civil servants from developing countries who are responsible -as the administrative or scientific authority- for implementing the Washington Convention (CITES).

• Branch office of the Araucaria Co-operation Programme with Latin America for biodiversity conservation matters, which is a product of the agreement between the Spanish Agency for International Co-operation and the Ministry of the Environment.

• Manage the MAB Programme for Biosphere Reserves.

• Any others that the Subdirectorate-General for Biodiversity Conservation might delegate to it.

A Mediterranean Marine Environment Biodiversity Centre (which would contribute to the formulation of policies for marine reserves and sanctuaries, and for protecting cetaceans and Mediterranean wetlands), which might be located in the Valencia Region. Also, a Centre of Excellence for studies and pilot projects involving rural and socio-economic development and management of SPAs and SICs in the Natura 2000 Network, which might be located in La Rioja.

The three centres of excellence specialising in the three biodiversity sectors mentioned above (international, Sevilla; Mediterranean marine environment, Valencia; and development of rural areas comprising the Natura Network 2000, La Rioja).

Furthermore, another biodiversity centre specialising in the Macaronesian region could be set up in the Canary Islands. Its functions would be as follows:

• Create a data bank on the species, habitats and protected natural marine and terrestrial areas of Macaronesia.

• Liaise on a permanent basis with the abovementioned centres.

• Support the implementation of the Spanish strategy in the national Macaronesian sphere.

• Foster and co-ordinate policies, plans and programmes for conservation and research into species and ecosystems characteristic of Macaronesia.

• Foster co-operation with other countries in Macaronesia.

Finally, the IUCN has also proposed that the Mediterranean office (for integration of programmes in the whole basin), which is different from the constitutive mandate of the European office in Holland (for integration of Western, Central and Eastern Europe), be located in Spain. Siting this office in Spain, possibly in Malaga, (oriented towards the Mediterranean and the Maghreb) will make Spain a focal point in the world for biodiversity management.

Given the growing presence of private bodies and non-profit making organisations in the management and conservation of natural resources, joint working agreements between the public administrations and those organisations must be promoted, establishing for it the institutional and legislative mechanisms needed to make immediate joint working possible. Thus, for example, fora could be established, as is the case with the Spanish section of the European Federation of National and Natural Parks, which has to date provided an excellent informal framework for regional and state technicians working in the management of protected natural areas to meet and exchange experience. Another example is the fora represented by international organisations such as Wetlands International or Eurosite.

LEGISLATIVE REFORMS 3.6

From the aforementioned measures, it can be deduced that there is a need to update Act 4/1989 with contents not dealt with in the reforms of Acts 40/1997 and 41/1997. There is an urgent need to adapt the legislation in force to the spirit of the Convention on Biological Diversity so

that the text includes the protection categories not already mentioned (especially the SPAs and the Natura 2000 Network, as well as the biosphere reserves), providing and regulating the categories in private civil law governing the management of the areas and the new marine reserves or sanctuaries, restating the operational techniques for managing threatened species (guiding criteria, recovery plans, conservation and management, and alternative measures), integrating, where appropriate, the network of areas into the municipal, regional and private networks, regulating ex-situ conservation and access to genetic resources, and creating liaison organs between the State Administration and the regional governments that would replace the National Nature Protection Commission, making it part of the Sector Conference on the Environment.

The new act will also include economic incentives and will regulate the assessment of impact on biodiversity (both aspects are dealt with later), setting the framework of the State's external action in the matter and of planning by sectors.

Furthermore, sector plans must include recommendations for pertinent legislative reforms in both state and regional spheres for the better implementation of those plans.

3.7 ECONOMIC REFORMS

Biodiversity management must, of course, be provided with greater resources from both public and private sources.

Regardless of maintaining current grants to NGOs and regional governments, which are for an almost symbolic amount, biodiversity management will as far as possible be integrated into Agenda 2000 and the new Structural Funds. Spain will maintain the position of defending a broader and more effective LIFE III Programme than the one that currently exists.

The private sector must, however, also be given incentives. There will be multiple tax incentives for private reserves (for example, exemption from the heritage tax on land acquisition for private reserves, exemption from the taxes involved in the registration of private property for conservation uses in perpetuity, lower solicitors' fees for those who agree to manage their private land in the most favourable way for biodiversity conservation –the 'conservation easements' of legislation in English-speaking countries–, facilities to join private networks with regionally managed areas, etc.).

There needs to be a specific measure to co-ordinate and to harmonise compensation for damage caused by wildlife both among the regions and for the territory as a whole, whether or not it is protected, in order to avoid the marked differences that currently exist.

Orienting rural development towards these protection categories may lead to an expansion of the tertiary sector among activities in generations of youngsters, towards which it may be sensible to direct grants and aid from Articles 18.2 and 22 of Act 4/1989.

The centre in La Rioja must specialise in supporting these activities so that Spanish biodiversity is enhanced with market techniques.

In the international sphere, BIOTRADE will base its actions on the search for a North-South equilibrium governed by Articles 8j, 11, 15, 16 and 19 of the Convention on Biological Diversity.

This strategy's philosophy is based on the idea that its principles and measures can and must be applied, leaving aside the existence of ad hoc public funds (see Annex XVI).

ENVIRONMENTAL IMPACT ASSESSMENT 3.8

It is difficult to establish a system of alarm indicators that will indicate clearly when a project may a priori affect biodiversity so that it then becomes compulsory to carry out studies or environmental impact assessments.

The current situation in which natural resource planning plans determine which activities must be subjected to assessment or study must of course be maintained at all costs in the alterations to Act 4/1989. It is also clear that modifying Act 4/1989 or legislative Royal Decree 1302/1986 also stipulates that all projects listed in Annex II of Directive 337/1985 must be subject to environmental impact assessment whatever the threshold when the project is in a protected area or a Natura 2000 Network site.

Finally, the guiding criteria and recovery, conservation and management plans will also be able to determine geographically or by sector which activities of those liable to have a negative effect on a specific protected species must be subject to study or environmental impact assessments, provided that this obligation is expressly reflected in an officially published regulation. This must, therefore, be stipulated in the new act modifying Act 4/1989.

Sector plans referred to in Section 3.13 will also determine, for subsequent recognition, in an officially published regulation, the activities or determining factors that will motivate the need to carry out a study or impact assessment.

Internally, the function of the Nature Conservation Directorate-General, General Secretariat of the Environment, will not be limited to the prior report established in Royal Decree 1131/1988; it will instead co-ordinate project information with the appropriate administrative departments in regional nature conservation matters to provide either the organ that is planning the project or the relevant organ that is going to carry out the environmental impact declaration with all possible information on the natural environment and biodiversity from both from its data banks and from the aforementioned departments of the regional governments.

The role of the Network of Environmental Authorities will have to play is worth highlighting. This body was set up within the Regulation Framework 2081/93 of the Structural Funds, and comprises representatives of the regional governments, the State and the different units of the Commission, the overall aim being to ensure the environment is taken into account when carrying out initiatives financed with Structural Funds. This network is envisaged as a prime preventive feature, and also as an extraordinary tool to monitor the effects that Fund implementation has on biodiversity by using indicators that are coherent with the EIONET System, especially when these Funds are seen as the only solid source of financing for the Natura 2000 Network.

EDUCATION AND PUBLIC AWARENESS 3.9

The necessary assumption of responsibilities by society as a whole as regards conservation and sustainable use of biodiversity requires in the first place abundant and adequate information, as well as the necessary educational and training activities to achieve the social participation that the proposed aims require. These aspects will be achieved by means of the following measures:

INFORMATION

• Development of public information systems relating to biological diversity, ranging from setting up documentary bases and data banks to special mechanisms for public access and information distribution.

• Provision of information for consumers and users, business people and those involved in distribution and marketing networks for products, services or activities that may threaten biological diversity.

• Incorporation of information on the status of biological diversity in reports on the state of the environment. This information must be produced jointly in liaison with the socio-economic agents in the sectors involved.

• Creation of in-situ information points in particularly relevant areas of biological diversity, whether or not they are protected natural areas.

EDUCATION AND TRAINING

The environmental strategy promoted by the Ministry for the Environment will contain a special section for planning environmental education for biodiversity conservation, which must cover the three aspects of education, awareness-raising and training. The strategy will involve the specific measures to be adopted by the National Environmental Education Centre, as well as mechanisms to involve the population at large in the problems raised by biodiversity.

The following are among the specific measures the relevant bodies must carry out:

• Incorporate training in biological diversity issues and methodology for conserving biodiversity into students' curricular development in all spheres of education.

• Develop, by means of the provision of suitable instruments, educational functions and functions related to disseminating biological diversity values in Spain's rural environment, especially in protected natural areas.

• Enhance the components of biological diversity, especially among the rural population, as essential elements of their material culture.

• Foster specialised training in biological diversity in all the relevant sectors and levels of the different public administrations.

• Promote environmental education and training regarding knowledge of biodiversity from the local administrations, in particular by including them in their development programmes.

• Foster participation of the private sector in planning and implementation of environmental education and communication activities.

PARTICIPATION

• Establish the channels needed for the necessary co-ordination between the general State administration and the regional governments as regards education and awareness-raising.

• Increase social participation, mainly of local economic and social agents, in managing protected areas and in species conservation.

• Create the appropriate mechanisms for the integration of the specific contents resulting from participation in planning, management and activities derived from them.

• Regulate the ways voluntary work can be incorporated into conservation.

• Foster participation of non-governmental organisations in formulating and monitoring activities associated with the conservation and sustainable use of biodiversity, and create participative frameworks and mechanisms suitable for implementing this measure.

• Establish and implement regulations governing the degree and nature of co-ordination for the conservation of species and protected areas among institutions, non-governmental organisations, the private sector and research centres.

• Promote the participation of the public and private sector in setting up local development associations and programmes that would foster conservation and sustainable use of biological diversity.

RESEARCH 3.10

Basic knowledge needs to be increased as a guarantee of the selected conservation norms. In this regard, conservation must be one of the priority research areas for bodies responsible for furthering science in Spain. This also requires the development of the administrative infrastructures and mechanisms needed to ensure research in the medium and long term, a joint effort by the State administration and the regional governments.

Besides the aforementioned advances needed in basic research, conservation needs to provide for the rapid transfer of current and future knowledge to be applied in the conservation of diversity and the sustainable use of resources. The environmental administrations must open specific lines of action to carry out work directly geared to identifying and clarifying environmental problems, as well as bringing specific solutions to bear.

The current amount of knowledge does not yield the results needed due to a lack of co-ordination and an absence of accessible banks of harmonised data. At present, the research teams tend to work in narrow geographical spheres and within their own specialist fields, but environmental problems are wide-ranging and complex, and so it is necessary to promote multi-disciplinary teams and problem analysis from general perspectives on the basis of appropriate co-ordination and co-operation.

The following are suggested as priority measures for the implementation of everything outlined above:

• The National Nature Protection Commission should draft a Biodiversity Research Plan which would identify the subjects to be included in the scientific-technological fields (currently still potential) of the Proposal to Identify the Scientific-Technological and Sector Fields of the National R+D Plan (2000-2003) of the Office of Science and Technology of the Presidency of the Government. Said action will aim to specify the contents of Scientific-Technological Natural Resources (Area 4), Agro-fisheries Resources (Area 5) and Biotechnology (Area 6), which have the greatest impact on biodiversity management. Contents related with biodiversity in the potential sector areas of the future R+D Plan (2000-2003) will also be identified: 1.- Tourism and Leisure (tourism and the Natura 2000 Network, tourism and wetlands, tourism in protected natural areas, impact of classical tourism on biodiversity); 3.- Historical and Cultural Heritage (integration of heritage in the concept of cultural heritage, integrated projects involving tourist development enhancement in areas with inseparable natural and historical heritage features); 4.- Transport (impact of transport networks on links between habitats of threatened terrestrial and marine species); 7.- Education (biodiversity environmental education technologies); 9.- Health systems

(enhancement of medicinal plants and traditional knowledge with equitable returns in accordance with Article 15 of the Convention on Biological diversity); 10.- Town planning and land planning strategic projects for integrated mapping as an expression of the biotic and abiotic factors determining territory utilisation); 11.- Social welfare (strategic project for income generation models for the rural population through biodiversity enhancement); 13.- Energy (impact of energies on biodiversity); 14.- Civil construction (traditional construction in protected areas); 15.- Information society (information project on biological diversity); and 16.- Environment (correct wetland management; captive breeding of threatened species; population census technology, etc.). The Subdirectorate-General for Biodiversity Conservation will maintain an ongoing technical liaison unit with the Office to keep the National Nature Protection Commission fully informed of the Office's actions and programmes.

• Develop the Nature Data Bank according to precise and well defined standards.

• Create data bases on biological diversity, besides providing support for existing ones in conjunction with research centres so as to allow rapid decision-making.

• Promote thematic environmental mapping as an appropriate tool to summarise and update information on the physical environment relevant to the study of biodiversity, as well as complete current knowledge on the classification and distribution of habitats and plant communities.

• Promote co-operation among the appropriate administrations and research centres in easily accessible networks and data bases on biological diversity.

• Foster the transfer of scientific and technical knowledge on biological diversity to those responsible for land and natural resource planning and for managing protected natural areas.

• Set up thematic networks, and support existing ones to integrate the results of research into biological diversity with the aims of avoiding duplicated effort, making up for shortcomings and fostering the provision of concise data.

• Promote the setting up and maintenance of complete and significant scientific reference collections and genetic banks of wild flora and fauna, herbaria and different animal collections, and pertinent data banks, and establish suitable mechanisms to facilitate access to such information and use of those resources, establishing, where appropriate, criteria governing levels of access conservation purposes.

• Create a network of depository institutions for genetic material from wild and domestic flora and fauna for its care, conservation, inventory and make it a regulated public service available to society in different forms, where possible.

• Promote and support associated organisations among research centres on the conservation and sustainable use of biodiversity.

• Foster the inclusion of business sectors in jointly financed research projects.

• Promote specialist training programmes in national or foreign research centres or institutes. Such programmes should be approachable from different fields and geared to the training of multi- and inter-disciplinary teams that include the widest possible range of points of view.

• The centre in Sevilla will set up a Spanish research clearing house so that specialists and specialised centres in the different fields and areas involved in managing biodiversity can be easily identified.

Finally, monitoring biological diversity management requires the definition and harmonisation of indicators applicable to its different components and processes, which will be reviewed and updated periodically by means of systems that will also constitute publicly accessible information.

INTERNATIONAL COOPERATION 3.11

In general terms, international co-operation in conservation and sustainable use of biodiversity involving both the various public administrations and all interested social sectors will be carried out by means of the measures outlined below.

• Development of co-operation programmes to design and set up comprehensive networks of protected areas. Special attention must be given to common cross-border areas and common zones that act as ecological corridors or could potentially act as such.

• Development of co-operation programmes involving international species (sea turtles, cetaceans, etc.). In this sense, action must be taken in close conjunction with the actions derived from the Bonn Convention and other applicable agreements.

• Ongoing liaison with the administrative and scientific authorities of the Washington Convention (on international trade in threatened species) and prior consideration to the obligations generated by compliance with it in any international co-operation project.

• Development and implementation of international co-operation mechanisms that would facilitate integration of national systems for ex-situ conservation in international networks.

• Development of co-operation programmes to apply the Convention on Biological Diversity as well as possible in terms of access to genetic resources, technology transfer and fair and equitable distribution of the benefits derived from use of such resources.

• Work with developing countries to identify their environmental priorities via technical assistance.

• Participation in co-operation programmes with developing countries to avoid or minimise adverse effects on biodiversity and promote its sustainable use.

• Evaluation of negative impacts on biodiversity in all development aid projects, including the need for possible corrective and/or compensatory measures.

• Active collaboration with organisations of social agents as regards developing the best practices for implementation of the Convention on Biological Diversity.

• An increase in institutional support and human and financial resources to non-governmental organisations in international co-operation activities. In this regard, legislative measures are needed that would establish clear criteria and permit speedy procedures.

• Establishment of programmes and co-operation and exchange of experts in the fields of science, technology and the law.

• Co-operation with the international scientific community in research programmes aimed at improving knowledge, conservation and sustainable use of biodiversity.

• Planning and implementation of the Araucaria Programme in a participative way so that Spanish co-operation has a real impact on conservation of biodiversity in situ in Spanish-speaking Latin America, and so that it is seen by local, traditional and native communities as a real contribution to their development as people.

For its part, the national administration will have an active international co-operation policy based on the following guidelines and actions:

• Faithful and proactive participation in the agreements currently in force (Mediterranean, Bonn, Bern, Ramsar, CITES, Law of the Sea, Biological Diversity, etc.).

• Consolidation of the co-operation line initiated with the Spanish Agency for International Co-operation through the Araucaria Programme and the training of civil servants who will be able to apply CITES.

• Centre of reference in the North-South dialogue by using the BIOTRADE and IUCN for the Mediterranean offices, consolidating the joint offer made to the IUCN by the Spanish Administration, the Regional Government of Andalucía and Malaga City Council.

• Fostering co-operation in the Mediterranean (MedCom, cetacean protection, IUCN Office, the centre in Valencia), in Macaronesia (with Portugal, Cape Verde and countries of North Africa) and the Atlantic (marine conservation with the countries of the Atlantic coast).

• Orientation of leadership in the enhancement of the Natura 2000 Network given Spain's proportionally large contribution to the European network.

TECHNICAL MONITORING UNIT 4.1

• **Constitution:** within a maximum of three months following final approval of the strategy.
• **Drafting of work schedule for the drawing up the sector plans:** two months after the unit is created.

SECTOR PLANS 4.2

• **Approval:** three years from final approval of the strategy.
• **Implementation:** immediately following its approval, clearly recognisable as being in action around 2003-4 and fully implemented (or almost its entire contents) by 2010.

REGIONAL STRATEGIES 4.3

• **Approval:** within three years from final approval of the Spanish Strategy.

MAIN MEASURES 4.4

• **Modification of Act 4/1989 and constitution of the new National Nature Conservation Commission under the Sector Conference of the Environment:** during 1999.
• **Inauguration of the Biodiversity Centre** in Seville: 1998/1999.
• **Nature Data Bank fully operational:** during 1999.
• **Drafting of guidelines for the Nature 2000 Network:** within one year from the approval of the final list of sites.
• **Constitution of the Genetic Resources Access Task Force:** first six months of 1999.
• **National Commission for Nature Conservation drafts the priorities and guidelines to develop a National Research Programme for Biodiversity Management:** during 1999.
• **Drafting of the National Research Programme for Biodiversity Management:** before the end of 2001.

ANNEXES

This is one of the production sectors with the closest relationship and level of interdependence with biodiversity conservation, mainly due to its extensive character. Activities in this sector have had a considerable influence on shaping the countryside and the conservation status of countryside resources, both positively or negatively.

Analysis of this ambivalent relationship between agriculture and biodiversity must first take into account that agricultural activities entail a profound transformation of the natural systems of the territory where they occur. These transformations mainly involve the simplification of ecosystems, as well as, in particular, the effects of certain aspects of intensive agriculture and livestock farming, which are dealt with later. One outstanding illustrative example of this is the disappearance of roughly 50% of Spain's wetlands over a thirty-year period from 1950 to 1980, mainly as a result of drainage for agriculture.

Agricultural and livestock farming practices have elsewhere given rise to new habitats, as well as the development of varieties and livestock breeds that did not previously exist in the natural environment. Furthermore, events such as the delay in mechanising the countryside have contributed to maintaining the natural features of Spain's agrarian systems, thereby contributing to the conservation of considerable biological and landscape diversity in systems that are subject to constant intervention.

In this inter-relationship, people have developed great know-how and a store of knowledge as regards managing natural resources, which have made it possible even today to maintain over large areas agrarian systems that are compatible with conserving high biodiversity levels. This includes valuable agricultural varieties and unique local livestock which should form the working base for rural planning geared to the conservation and sustainable use of biodiversity in both its wild and domestic forms. Extensive livestock rearing in Spain involves, in particular, a series of grazing land management techniques which demonstrate both great know-how and an ability to maintain them which could be deemed sustainable.

The Common Agricultural Policy (CAP) currently governs the destinies of the sector in the European Union, and therefore determines both the threats and the opportunities in the relationship between the agrarian sector and biodiversity. This is particularly important in Spain, where approximately 80% of the territory is managed from the primary sector (including forestry, which is analysed separately). This same area contains what is without doubt one of the most important natural heritages in Europe in terms of richness and variety. Its value stems from its original natural wealth and from the intervention that has given rise to semi-natural countryside that hosts sustainable features which can be harnessed in the future.

At its inception, the CAP fostered and made possible very intensive agriculture and livestock farming, basically to maintain high levels of trading competitiveness. The consequences for biodiversity were, and continue to be, very negative as intensification brought with it the transformation and homogenisation of huge areas that had previously contained many of the aforementioned natural or semi-natural features and hosted relatively high levels of biodiversity.

Thus, massive alterations to and eradication of habitats again appears to be the main factor causing changes in biological diversity, in this case due to the CAP. However, intensification of agriculture and livestock farming entails other effects that are equally pernicious for biodiversity and which are dealt with below.

Firstly, soil and water pollution occurs, both diffusely and from direct dumping in the beds of water courses. This is particularly serious when it affects aquifer systems, the waters of which are reused for various purposes. Intensive livestock farming produces animal waste, purines

and manure, which, when not duly managed and treated, can give rise to heavy pollution of soil and water, seriously altering plant and animal communities. They pose a serious problem in certain areas of several basins on the Iberian Peninsula. Non-sustainable utilisation of water resources is increasing, mainly associated with the introduction of irrigation operations and wasteful water usage. Soils tend to be used in an equally unsustainable way, with yields based on often exaggerated use of artificial fertilisers, causing overuse and consequent loss of productive capacity.

Massive use of chemical products, especially pesticides, eliminates not only one or more target species (the possible pests), but also other animal and plant communities that are basic for maintaining ecological processes; for example, a large number of arthropods and other invertebrates that constitute the bases of the trophic networks and keep the earth healthy and fertile. In this sense, there should be a move to help integrated pest control become more established.

This general policy of intensifying the sector also brings about the gradual disappearance of traditional agricultural systems, which had developed in the slow collective evolution of people and their surroundings, and which host the knowledge and potential for sustainable use of many components of biodiversity. Thus, certain biodiversity features inherent in these systems are lost, such as the agricultural varieties and livestock breeds best adapted to each territory, which are gradually replaced by improved high-yield varieties that are uniform and have a narrow genetic base. The management techniques for these resources also disappear, their absence making resource viability at least doubtful. Such techniques are in themselves a cultural heritage worth conserving for the potential utilisation of the natural resources contained therein.

The 1992 CAP reform acknowledges some of the aforementioned aspects of deterioration. Its provisions include maintaining features that enrich the countryside or which attempt to halt degradation in its plans. In this regard, the interest of certain traditional management techniques for agrosystems is at least implicitly recognised and attempts are being made to re-introduce them although with very few repercussions to date in Spain.

At present, attempts to harmonise rural living standards and conservation, especially sustainable use of biodiversity, are clearly moving increasingly towards the sector's progressive transformation in a way that would make compatible the requisite production, respect for and development of the natural values that are in increasing demand and conservation of the traditional knowledge needed to manage semi-natural systems and which contain features of sustainability that can be incorporated into sector development.

The Ministry of the Environment has prepared a second draft of the National Forestry Strategy for public debate. Together with the Draft Basic Countryside and Forestry Act, it will attempt to adapt the framework in which forestry policy will be applied to today's society. This framework has not undergone great changes since the passing of the Countryside Act (1957) and its Regulatory Provision (1962), which are currently in force.

The four cornerstones of the new Forestry Strategy and the Basic Countryside Act are:

1.- Definition of the geographical scope for the application of what are generically known as forestry policies. The former will be what are also generically known as forested countryside or forested areas and will include not only tracts of dense tree cover, but also desertified areas, grazing land, and generally all land not used for residential or industrial purposes nor for intensive or extensive market agriculture.

There are plans for actions to be taken jointly with agricultural policy in order to maintain and possibly restore the *dehesas* (savannah-like grassland with scattered tree cover), areas of *matorral* (scrub), lowland uncultivated countryside and other multiple-use areas. In Spain, these areas host great biodiversity to the extent that they have been pinpointed as "exportable" ecosystems as regards their yields as sustainable development. They are tending to disappear due to economic pressure in the surrounding area.

2.- Creation of a suitable framework to apply decentralised forestry policies. The regional governments will be responsible for creating and implementing their own forestry policies so that State action is restricted to setting, where appropriate, national objectives for reforestation, investing in areas where erosion and desertification are causing irreversible effects and loss of fertile soil and maintaining services for obtaining information on status as well as other data on the agents affecting forests (forestry inventory, forest map, list of uncultivated countryside for public use).

In ongoing liaison with the regions, it will also fall to the State to take action as regards pests, conservation and improvement of seeds and forest genetic resources, preventing and combating forest fires and in those aspects of forestry research that can only be carried out at national level because of the costs involved and which are directly related with non-agricultural countryside management problems.

3.- Multi-use as a basic tenet of forest utilisation i.e. the assurance that each specific tract of forest is given over to the most appropriate function if that function is incompatible with the others, or to a series of balanced functions, provided they are compatible.

The functions that forests must fulfil on a general or individual level and which most closely accord with the international instruments ratified by Spain are ecological functions (regulating the water cycle, avoiding erosion and desertification, the sink-hole effect in the atmosphere, conserving the biodiversity of forest species themselves and conserving the biological diversity of the flora and fauna living in those areas); social functions (establishing centres of population, recreational, educational and cultural functions of non-agricultural countryside); and economic functions (production and marketing of forestry produce so that a minimum income is guaranteed for those working in forest management and, above all, for owners of small-scale forested land).

The mechanisms that have been proposed to ensure this multi-use character (in which conservation and sustainable use of biodiversity are basic pillars) are the creation of networks that identify forest tracts which principally fulfil ecological functions at national, regional and local

levels to ensure those functions are conserved, as well as strategic assessment of environmental impact of forestry plans and assessment of the environmental impact of a series of specific management activities, such as the initial replanting schemes, felling, etc.

4.- Satisfactorily ensure sustainable forest management for the sector and society in general by creating fora and procedure that make it possible to guarantee certification of sustainable management of the forest from which produce is obtained.

Furthermore, the regions will have to move toward forest management that is carried out under forestry plans governed by the idea of sustainable use of the resource, stressing this application in the first instance in the case of public utility countryside, whether it is public or private property. In general, positive and negative incentives will be offered for privately owned non-agricultural countryside (66% of this type of land in Spain) in order to foster sustainable management, thereby contributing to maintaining the environmental benefits and general and public use benefits that non-agricultural countryside offers.

As a result, both genetic diversity and improvement of forest species and minimisation of forestry impacts on flora and fauna biodiversity of must be guaranteed by introducing effective measures and guarantees of multi-use and sustainable management by means of certification. In default of the latter, they could be guaranteed by a reform of the 1970 planning regulations for forested countryside, which are only of value as a reference norm for regions and owners.

Sustainable management and the safeguarding of biodiversity could by implemented by creating centres and networks, which should include the noteworthy tradition of the Lourizán Centre (Pontevedra) and the Regional Government of Extremadura's experience in sustainable management of *dehesas*.

Activities in this sector include the use of components of biodiversity, and the sector itself is responsible for its effect on those components. The diversity on which their activity is based is also subject to the influence that other sectors may exert on marine ecosystems.

Traditionally, the sea was mainly used for its biological production. Fishing had a great effect on marine diversity as the continuous taking of species is one factor affecting diversity. The effects include overfishing, mortality of species not liable to be fished, discarded fish, which vary greatly depending on the fisheries, and mortality of animals such as dolphins and other mammals, turtles and birds that accidentally get caught in the different kinds of fishing equipment. There are other effects with little known consequences, such as imbalance in the food chains and effects of certain fishing methods, such as trawling, on the open sea and its communities. These factors mean that several fisheries are currently operating beyond the limits of sustainability and should be dealt with as a priority in a sector action plan.

Marine ecosystems, especially coastal ecosystems, are, however, also affected by activities related with other sectors, such as industry, agriculture and tourism, which take place both on the coast itself and in adjacent inland areas. For example, river inputs full of contaminants, sediments and residues from industry and agriculture and from the urban areas in the basin may affect extensive coastal areas and their flora and fauna. Alterations to coastal environments, usually associated with diverse activities such as building ports, marinas, breakwaters, improving and/or creating beaches, dredging shallows, marshland drainage, modifying and improving river beds, etc., have a direct impact on diversity. Activities that are valued positively by society with the consequent added value of biodiversity, for example, increasing visitor numbers in protected marine areas, must be regulated because an uncontrolled excess of visits may have a negative effect on maintenance and utilisation of the resource.

Fishing is going through a period of severe restrictions and great upheaval in which countries like Spain, with large fleets and few resources of their own, have had to adapt to new impositions resulting from ideas geared to more responsible fishing and derived from the concept of resource ownership on the part of the shoreline states within their exclusive economic zones.

Spain's fishing operations are currently geared to groups of fish, crustaceans and molluscs (bivalves, cephalopods and gastropods), and there is a special type of fishing involving exploitation of red coral.

Different criteria exist to classify the level of exploitation of fishing resources depending on the international body charged with carrying out scientific study and monitoring; however, Spain's fisheries are, generally, either considered to be "fully exploited" or overfished.

The international character of commercial fishing often leads to overfishing of the fishing resources of third party countries or international waters. This aspect should occupy a prime place in planning sustainable management in the sector. The analysis chapter includes information on this aspect.

Legislation concerning fishery planning basically consists in regulating fishing according to boat capacity and fishing method, and by establishing technical conservation measures (mesh and minimum sizes, close season zones, etc.), or even by banning certain fishing methods, such as drift nets and pelagic trawling.

Aquaculture has enormous potential as a complement to fishing as it makes it possible, at least potentially, to reduce takes from the marine environment while maintaining supplies of fish and other marine produce in the marketplace. However, it may have negative consequences

for the natural environment in three main ways. Firstly, it may alter the chemical balance of systems and pollution processes; secondly, by altering biological processes through the introduction of alien species, pathogenic agents and invading the genetic reservoir of wild populations and, finally, by altering the physical balance due to constructions and actions affecting coastal relief.

Aquaculture should be developed further. Proper planning, regulating and monitoring of the aforementioned possible negative aspects could make a solid contribution to more sustainable management in the fishing sector.

As with the above, hunting and fishing are obviously closely related with biodiversity as they make direct use of it. The management of hunting and fishing in itself constitutes a tool for planning and managing natural resources of extraordinary potential as it applies to a large part of the territory and works directly with the components of natural and semi-natural ecosystems.

However, these activities are occasionally carried out in an unsustainable way, through, for example, the inappropriate use of game fencing, introduction of alien species and varieties, excessive livestock load of wild ungulates and the use of poison, traps, snares and other non-selective methods to eradicate species that compete with hunting resources.

These practices can produce certain damaging effects on biological diversity and, in the long term, on the very hunting and fishing sectors that depend on it. This can lead to habitat alteration and fragmentation, species overuse and alterations to the food chains due either to the introduction of certain species or varieties or to predator eradication.

Hunting is an economic and development alternative for parts of the countryside where other sectors are in decline. In this regard, it is important for it to be planned with sustainable criteria so that conserving habitats and ecosystems in good condition is the best guarantee of the sector's lasting survival and of the survival of game species.

Sport fishing is another interesting sector in biodiversity use as, besides bringing people closer to nature and increasing their understanding of it, in principle it entails minimal or almost no aggression to natural systems. In some regions, it has important economic implications, which should be maintained and fostered as far as possible while maintaining sustainability. However, although the most damaging effects stem from large hydraulic and transport infrastructures and from generalised environmental deterioration of water and soil, the drive for greater and more interesting takes or occasional negligence have induced the deliberate or accidental introduction of fish and crustacean species (river crabs) that are alien to Iberian waters. This has occurred throughout Spain's basins, occasionally causing important alterations to native communities, which are often of great interest, given that Iberian rivers host a large number of endemic species (exclusive to Peninsular rivers). Introduced species are often predators, and as such threaten the survival of local species and communities and cause a reduction in river biological diversity; they also reduce the variety of possible takes and fishing methods.

Another important aspect to take into consideration in planning sport fishing is the introduction of alien varieties of native species, a typical case being the common trout. Common in sport fishing, it moves a lot of money and its introduction into basins and rivers may be threatening the survival of local varieties due to genetic contamination.

Sustainable resource planning, which enshrines conservation of the diversity of species and varieties belonging to Iberian rivers, must pay greater attention to the aforementioned aspects.

The use and consumption of energy is very closely linked to environmental factors through the raw materials it uses, the necessary production and distribution structures and the effects derived from them.

The building of infrastructures, such as reservoirs and electricity power lines, usually involves habitat alteration and destruction and direct mortality of birds in the case of the latter. Even though the advantages of clean production of wind energy sites have been acknowledged, they are considered to have an impact on landscape and bird mortality.

The energy sector has a particular impact on biodiversity via the processes of transformation and use of energy, the most notable impact arising from various kinds of pollution. Aside from the problem of eradicating radioactive waste, nuclear refrigeration plants warm up waters (thermal pollution), thereby altering life in the surrounding area. Conventional thermal plants, especially those using coal and low quality fuel, an atmospheric pollutant, are responsible for important carbonic anhydride emissions and depositions of ash with a high sulphur and nitrogen content.

Interactions between energy and the environment indirectly cause problems, such as pollution of inland and marine waters, especially linked to the use of certain fossil fuels, such as oil and its by-products. Coal is also a common source of pollution in waters in the basins where it is mined.

Climatic change is especially linked to the emission of combustion gases from oil by-products, which are currently the most common fuels. This phenomenon will have repercussions on biological diversity that are difficult to evaluate well at present mainly because of their great scope and the varied implications. What does seem certain is that there may be substantial changes in many basic aspects of the functioning of living systems on Earth, affecting agriculture, livestock farming, forestry and fishing.

It is envisaged that climatic change will effect tropical forests by altering rainfall patterns, bringing about an increase in forest fires and a rise in the frequency and intensity of hurricanes and cyclones. In temperate and boreal latitudes, forest species will not be able to migrate fast enough to adapt to the temperatures, in particular where habitat fragmentation occurs over a large part of the potential territory, and many species will not survive.

Other direct and indirect consequences of current energy use are the reduction in the ozone layer and heavy metal deposits, the polluting effects of which occur in water and soils.

The policy of the National Energy Plan for 1991 to 2000 aims to achieve a suitable balance between its different aims: cost minimisation, diversification, fostering of native resources and environmental protection. Achieving these interesting aims, particularly those referring to environmental protection and promoting renewable or clean energy sources, requires the appropriate co-ordination between the administrations involved and all the agents in the sector in order to ensure via a sector action plan that the principles of conservation and sustainable use of biodiversity are included in energy planning and management.

Spain has great potential for producing low impact energies and there are important developments in the sector in this regard. A joint study needs to be undertaken to seek solutions to the problems. It must be principally directed towards the search for low environmental impact infrastructures, a reduction in pollution from production and use of current fuels as well as promotion of the least polluting types, and optimisation of efficiency in energy use in all spheres.

This is a very important sector as regards conservation and use of biodiversity. On the one hand, its conventional development has usually entailed important alterations to biodiversity, while, on the other, over the last ten or twenty years so-called ecotourism, nature tourism and adventure tourism, etc., which are based on making use of the economic potential of some components of biodiversity, have become increasingly important.

The tourism sector affects biological diversity via a variety of instruments, which are often activities that compete with other sector policies, as may be the case of uncontrolled building and town planning and land planning policies; however, the underlying cause continues to be tourism as regards the kind of tourist activities that are fostered and the effect they have on other relevant policies.

Construction of high-impact infrastructures, pollution, overuse of biological and water resources, exceeding ecosystem carrying capacity through large-scale development, producing residues and behaviour that is incompatible or insensitive to the natural environment are the most noteworthy processes affecting biodiversity in this sector.

On the other hand, on a positive note, recreational activities carried out in the countryside make use of biodiversity features, with all that this entails as regards valuing resources and adding value to such features. Limits and conditions for such use need, however, to be set at sustainable levels so the resource is not exhausted and so that the possibility of using it and its economic potential can be maintained indefinitely. Picking mushrooms, mountain biking, submarine fishing and many other similar activities need to be regulated to prevent all those valuable resources deteriorating and losing their value.

Inclusion of the principles of conservation and sustainable use of biodiversity in the development of the tourist sector must be considered an added value of great economic potential. This factor can be applied to renew the most conventional focuses and to provide scope for rural development on land which until now has not been involved in tourism.

The interaction of this sector and biodiversity conservation and its capacity for sustainable use is broad and varied due to industry's presence in today's society and to its very varied range of activities.

This interrelation is ambivalent. Although the industrial sector is acknowledged as having the most negative consequences for biodiversity, the activity of certain industrial sectors is based on utilisation of its components, and so, in these cases, the starting point must be conservation and rational use of such components.

Causes of alterations to biodiversity derived from industrial activities include soil, water and atmospheric pollution, especially the introduction of synthetic substances that cannot be assimilated naturally, the building of high-impact infrastructures, overuse of species and other biotic and abiotic components of ecosystems, irreversible changes in land use, radiation emission, high energy consumption and scant re-use and recycling of waste, etc. Other more general alterations with broader repercussions, such as destruction of the ozone layer and global warming, arise from some of these relatively special processes.

Mining is an economic activity which, in all its forms, exerts a particularly negative effect on biodiversity. The scope of certain operations greatly alters the land. Planning and impact-minimising techniques and appropriate environmental restoration have to be applied to these alterations.

Improvements to the current situation as regards environmental impact assessment procedure and generalised use of prior strategic assessment for policies, plans and programmes would go a long way to improving the application of environmental criteria to industrial activity.

Incorporating the criteria of conservation and sustainable use of biodiversity in the industrial sector should be interpreted as an added value which is of interest to the sector itself. For those related directly with biodiversity components, it is a matter of ensuring that the resource being used will always be available and maintain its economic potential. In other sectors, it is a competitive factor that is increasing in importance and which is gradually acquiring greater market value; it is applicable to the extraction, conversion, production, distribution and marketing processes.

This sector in itself holds great potential as regards conservation and sustainable use of biodiversity as, in Spain, it possesses extraordinarily valuable tools, such as natural resource planning plans and specific tools for land planning and town planning in a general sense.

However, use of these tools has not become daily practice, while factors causing alterations continue to act on natural resources, in general, and biodiversity in particular. The processes involved are mainly changes in land use, including consumption of natural land, above all *vegas* (fertile plains), large-scale urban developments in the countryside and peri-urban environment, unregulated urban development and the building of negative-impact infrastructures, etc. All the above can be grouped together under the all-embracing idea of the application of inappropriate planning norms that are not in keeping with the best use of natural resources.

Furthermore, the city generates a large amount of waste of all kinds, shifting the pollution and habitat conversion caused by dumps and other infrastructures to peripheral zones. In this regard, the city must halt these cycles and stop shifting the problems arising from its activities elsewhere to areas which rapidly become increasingly degraded.

Peri-urban areas often undergo many virtually irreversible impacts precisely as a result of the proximity of the conurbation. These impacts include the demand for large amounts of raw materials, such as gravel and sands from river basins, and the building of peripheral transport infrastructures which usually entail changes to the land, etc. The countryside is currently experiencing a phenomenon of large-scale suburbanisation throughout the country, affecting both large urban conurbations and all kinds of cities and towns, even the smallest localities, which are usually second homes for people from large cities.

The proliferating construction of houses and various infrastructures around natural areas, which are used to attract tourism and investment, is paradoxical and serious. Alterations to habitats and ecosystems are particularly serious in such cases since they eliminate the necessary shock-absorbing function these areas must fulfil for the natural areas to ensure their survival.

The latter aspect highlights the social and economic acknowledgement of biodiversity, which in this case is expressed in valuable natural areas and which although it involves an important added value in varied economic sectors needs to be modelled and regulated by land planning that incorporates conservation and sustainable use of natural resources. Appropriate co-ordination between the different administrations responsible and other social agents involved is seen as the best tool to make all interests compatible in devising environmentally sensitive land planning schemes.

Over the last ten or twenty years, the need for mobility inherent in today's model of society has determined the great developments in the transport sector throughout Spain, a phenomenon to which biodiversity is not immune.

The main negative effects on biodiversity ascribed to this sector are habitat fragmentation and alteration and, on a lesser scale, animal mortality mainly due to collisions with vehicles. The processes giving rise to these effects on biodiversity include the installation of large infrastructures, such as airports, ports, railways and especially roads, atmospheric and acoustic pollution and pollution of inland and marine waters, as well as alterations to the atmosphere due to air transport, etc. Air pollution caused by the spread of private road transport is particularly relevant. The climatic changes caused mainly by this pollution have been attributed to profound changes in the Earth's major ecological systems.

Great developments in this sector have seen the beginnings of planning and techniques aimed at palliating the damaging effects of the aforementioned activities. Assessment of environmental impact and prior strategic assessment of plans and programmes are useful and valid tools and their introduction and use must be improved and fostered. The number of infrastructures that respect the characteristics of the land and its natural resources is increasing and by dint of more thorough common efforts, this concept must be extended to the large-scale planning processes involved in devising and drafting sector policy and programmes.

This is of prime relevance for biodiversity conservation and possible sustainable use of biodiversity due to the fact that water in itself is the habitat of many living communities and also makes life possible wherever it occurs. Secondly, all sectors and spheres analysed above have an essential need for water to function and so they have a great effect on water amount and quality. As a result, water policy may be the sector that most cuts across all the rest, in particular in its relationship with biodiversity. From these prior considerations it is possible to deduce the prime importance of developing integrated planning and sustainable management of water resources.

Aquatic ecosystems generate and sustain highly valuable species and biological communities, which have been greatly affected by alterations to water courses and which exclusively evaluated in economic terms. All possible planning to alter natural water courses must be valued beforehand as regards the potential impact it may have on the biodiversity it sustains. In this regard, invertebrates and communities of micro-organisms have, in general, scarcely been considered as something liable to be conserved and it is worth pointing out that there are many endemic species in Spain associated with water courses, as well as communities very rich in species which are disappearing due to the alterations to river courses, indiscriminate exploitation of aquifers and the degradation and draining of wetlands.

Between 1980 and 1992 water demand grew by 10% in Spain in spite of the reduction in the rhythm of conversions to irrigation and of undoubted greater efficiency in water management. As a result of this increase, water resource overuse, in particular underground resources, began to pose a serious problem in the basins of the Rivers Guadiana, Guadalquivir, Segura, Júcar, the rivers on the southern side of the Mediterranean in some districts of Cataluña, Valencia and Murcia and in the Balearic Islands and the Canary Islands.

However, the Basin Hydrological Plans, which have been passed, contain provisions for converting nearly one million hectares into new irrigation operations (although the National Irrigation Plan restricts the amount of land conversion that can be financed by the State to 180.000 ha). If it proves technically and economically feasible, it would aggravate and extend to other areas the aforementioned overuse as agriculture accounts for approximately 80% of the water used in Spain. These provisions should be adapted to the National Hydrological Plan and in any case, be subject to prior strategic assessment in which the conservation of biodiversity and sustainable use of water as a resource itself have a definitive role. Adapting the National Irrigation Plan requires, among other things, modernisation and efficient use of water on irrigated land, making the environmental and social perspectives of this planning compatible, an aspect that is difficult to achieve now given the obsolete character of much of today's irrigated land.

Pipelines, especially the inter-basin lines, may transport species to basins to which they are alien thereby altering the structure of the aquatic ecosystems and giving rise to genetic contamination. This phenomenon has not been taken into account until now and in certain animal groups, such as fish, the answer would be as simple as to install suitable filters at certain sites.

Pollution of surface and underground waters poses a serious threat to biodiversity conservation. One effect, water eutrophication, leads to modification of aquatic habitats and of species associated with lentic (running waters) and lotic (lakes and lagoons) environments. Industrial effluent from towns and agriculture is the main source of specific or diffuse water pollution in which land and tourism policies also exert a great influence. The dynamic character of the aquatic environment means that the degradation from pollution spreads across extensive areas and long sections of river from the points of origin. At present, current national and regional initiatives are geared to preventing pollution of surface waters; they will have a very positive impact on surface water quality, but not so much so on underground waters. The minimum application of the legislation currently in force does not guarantee the expected results.

The implications of agriculture on water planning have generally had negative results for biodiversity via actions such as the occupation of river margins, canalisation work and embanking, alterations to river courses and flow reduction, which cause beds to dry up.

Building dams has altered river water patterns i.e. their natural ecological dynamics, affecting not only the strictly aquatic environment, but also riverside terrestrial systems. These dams are for agricultural uses, for producing electrical energy and supplying towns and industry, and it is very common in Spain for them to be of mixed use. At present, the small hydro power stations on rivers are considered to be a serious threat to biodiversity and the natural riverine environment as there are increasing demands for more to be built, often linking several of the best conserved stretches of many rivers on the Iberian Peninsula.

Wetland drainage, associated with farming or town planning, is still going on.

Finally, there is another series of uses of river systems which require strict and urgent adherence to current legislation (mainly the Water Act and the Regulation Governing the Public Water Domain) to avoid or at least palliate their damaging effects on biodiversity. They include gravel and sand extraction, currently very uncontrolled in several basins on the Peninsula and causing great local damage to aquatic and riverside environments, recreational uses of rivers and river margins, use of river banks for uncontrolled dumping and of river beds of the public water domain for all kinds of buildings and private uses.

In this regard, both the aforementioned Water Act and its implementation via two regulations embrace the capacity for water resources to be managed in a much more sustainable way than is currently the case. Drafting a sector action plan which would involve all users and would be based on the potential of the aforementioned pieces of legislation would open the way to more sustainable water use and its contribution to biodiversity conservation.

This sector is mainly related with biodiversity and its use in the pharmaceutical industry via genetic modification of organisms.

Many properties of plants, above all, are utilised, and, in this regard, it is important that extraction from the natural environment and utilisation in general is based on the sustainability and lasting survival of the resource in the long term. If that is not the case, it can lead to over-use of certain species, especially those with restricted distribution areas, and may even threaten their survival.

Traditional knowledge stemming from use of plant species applied to medicine and other activities is particularly important in this sector. The pharmaceutical industry is currently showing as much or more interest in this knowledge as in the active properties since in the know-how lies a large part of the potential for using the different species and by-products. This traditional knowledge must also be a reason for conservation and sustainable use on the part of interested parties, taking sustainability in this case, inter alia, to mean the equitable sharing of the benefits derived from the use of genetic resources mentioned in the Convention on Biodiversity.

Furthermore, the health sector throws away particularly dangerous waste which often contains pathogenic micro-organisms or radioactive products that are not always suitably treated given the potential danger they entail. There is an obvious pollution risk from liquid and solid waste, and it is important that plans governing health sector waste disposal, whether drafted or already operating in some regions, be implemented as soon as possible and in a generalised way.

The use of genetically modified organisms by the pharmaceutical industry and health sector in general to obtain products for diagnosis, therapy and prophylaxis must be taken into special account because of their impact on biodiversity.

Although this sector cuts across many others already dealt with, it has its own function, which may occasionally have repercussions on biodiversity. The main mechanism by which this occurs is market globalisation, which can give rise to commercial structures that are oversized in relation to real demand. Other processes in the commercial sector effecting biodiversity are the imbalance between production and demand for renewable resources, the trade in threatened species and poaching induced by high market prices.

Marketing is a very important part of overall management of any product or resource, including the components of biodiversity. Furthermore, sustainable management of those resources is a value that is on the rise in the marketplace such that it is increasingly common for buyers to demand, or for producers to offer, sustainable extraction, production and processing of raw materials as an added value. In this regard, the trade sector should incorporate this ability to influence conservation and sustainable use of natural resources and biodiversity into its planning, both via the contribution they may make to the latter and via the competitive advantage involved in trade based on sustainable production.

Spain's strategy for the conservation and sustainable use of biodiversity is based on the aforementioned analysis and measures, on the pre-existence of a structural latticework of relationships between the human factor and the biotic and abiotic environment in which people function. This latticework finds external expression in what has come to be known generically as the countryside or rural environment and without whose at least partial existence and maintenance it is impossible to implement this strategy.

Many of the processes mentioned in the last few sections of the analysis, and which justify the drafting of the sector plans as the main measure for strategy implementation reflect the process of profound change which Spain's countryside is undergoing.

As a result, it is unthinkable for the strategy to be successfully applied without extremely careful parallel planning of the model of rural development applicable to Spain in the same time span i.e. from 2000 to 2010.

The European Union, which besides being the obligatory frame of reference, is the main source of finance for the structural measures for rural development, is immersed in a profound debate concerning Agenda 2000. The prime aims and objectives of the latter are the long-term phasing out of some structures of the Common Agricultural Policy that are based on maintaining prices to generate farming incomes. The overall aim is to generate incomes based on countryside activities which do not need the support of a pricing policy.

This will necessitate a very careful analysis of which countryside activities must receive structural fund resources, which will grow according to the extent to which the increase in the classic agricultural budget is halted.

Appreciation of biodiversity is, of course, one of the parameters, if not the only one, that the European Union is prepared to consider as justifying these new structural investments. Many of the guidelines for actions and measures envisaged in this document have been devised in line with the actions that the debate concerning Agenda 2000 appears to highlight.

Consequently, it should be clear that when drafting the individual national programmes envisaged in the European project to regulate rural development, a very special effort must be made to include all this strategy's features in the operative subprogrammes that will be the beneficiaries of those regulations.

The very recent modification to the basic structure of the Ministry of Agriculture, Fisheries and Food, passed by Royal Decree 1490/1998 on July 10, is a clear step forward on the road to acknowledging powers for drafting the programme, and part of its contents must be reoriented towards environmental aims.

COMMUNIQUÉ FROM THE EUROPEAN COMMISSION TO THE COUNCIL AND THE PARLIAMENT ON A EUROPEAN COMMUNITY BIODIVERSITY STRATEGY.
Brussels, 04.02.1998.

I. INTRODUCTION

A) The challenge

1.- Biological diversity (also called biodiversity) is essential to maintain life on earth. It has important social, economic, scientific, educational, cultural, recreational and aesthetic values. In addition to its intrinsic value, biodiversity determines our resilience to changing circumstances. Without an adequate level of biodiversity, events such as climate change and pest infestations are more likely to have catastrophic effects. It is essential for maintaining the long-term viability of agriculture and fisheries for food production. Biodiversity is the basis for the development of many industrial processes and the production of new medicines. Finally, biodiversity often provides solutions to existing pollution and disease problems.

2.- The UNEP Global Biodiversity Assessment estimates that on a world-wide scale, biodiversity is decreasing at a faster rate now than at any other time in the past. The situation in Europe is also a cause for concern. The rich biodiversity of the European Union has undergone slow changes over the centuries due to the impact of human activities. The scale of this impact has accelerated dramatically in recent decades. The UNEP Assessment has confirmed that in certain European countries, up to 24% of species of certain groups such as butterflies, birds and mammals are now nationally extinct.

3.- The reasons for this decline in biodiversity in Europe make it highly likely to accelerate unless action is taken. The European Environmental Agency 'Dobris Assessment' states that 'the decline of Europe's biodiversity in many regions derives mainly from highly intensive, partially industrial forms of agricultural and silvicultural land use; from an increased fragmentation of remaining natural habitats by infrastructure and urbanisation and exposure to mass tourism as well as water and air pollution. Given the projected growth in economic activity, the rate of loss of biodiversity is far more likely to increase than stabilise'.

4.- In spite of past efforts by the Community and its Member States to address the problem of biodiversity reduction or loss, existing measures are insufficient to reverse present trends. It is therefore both essential and urgent for the Community to develop a strategy and take action towards biodiversity conservation and sustainable usage.

B) The response

5.- The global scale of biodiversity reduction or loss and the interdependence of different species and ecosystems across national borders make concerted international action essential. The framework for this action is the Convention on Biological Diversity (CBD). The European Community ratified the CBD on 21 December 1993. The CBD pursues three objectives, namely the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. Biodiversity is defined in the CBD as "the variability among living organisms from all sources, including, inter alia, terrestrial, marine, and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems".

6.- Article 6 of the CBD specifically requests each party to:

• "Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned.

• "Integrate as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sector or cross-sector plans, programmes and policies."

The Conference of the Parties has provided additional guidance for the elaboration of such a strategy.

7.- The European Union is playing a leading role worldwide in furthering the objectives of the Convention. It does so to respond not only to the legal obligations under the Convention, but also to the expectations and aspirations of its citizens, which in addition to the proven economic and environmental values of biodiversity, include the ethical principle of preventing avoidable extinctions.

8.- The Community Biodiversity Strategy set out in this Communication provides the framework for the development of Community policies and instruments in order to comply with the CBD. The "First Report from the European Community to the Conference of the Parties of the CBD" provides a summary assessment of the importance and status of biodiversity in the European Union. It also provides a comprehensive overview of ongoing and planned Community initiatives and instruments relevant to achieve the objectives of the CBD. This report therefore constitutes an important background document for the strategy.

9.- The Council of Ministers conclusions of 18 December 1995 considered that "with regard to matters within the field of its competence and in close co-operation with its Member States, the Community should elaborate a Community Strategy to identify gaps in the European Community conservation policy, and to promote biological diversity into the policies of the Community, complementary to strategies, programmes and plans of the Member States, in order to ensure the full implementation of this Convention".

10.- All Member States of the Community are Contracting Parties to the CBD. As a consequence, they have either already developed their respective national biodiversity strategies or are in the process of doing so. By developing and implementing their national strategies Member States make an essential contribution to achieve the aims of the Convention. Many Member States have established a national biodiversity co-ordinating body, assembly or committee. All have integrated, or intend to integrate, conservation and sustainable use of biodiversity into relevant sector or cross-sector plans. Policy sectors concerned and the approach taken vary from country to country in response to the specific characteristics of their biodiversity and relative importance of pressures affecting them. Environment, agriculture, forestry and fisheries policies are generally perceived to have the greatest priority. Science and technology, energy, industry, transport, tourism and recreation, health, education and defence are also considered in many cases. In their national strategies, Member States place different emphasis on various themes contained in the CBD. The European Environmental Agency has drafted an initial assessment on the implementation by the Member States of the different measures contained in the CBD.

A more up-to-date review is contained in the Member States' reports to the Conference of the Parties on the implementation of the CBD.

11.- Successful implementation of the CBD requires co-operation both within Member States and at Community level. The development and implementation of national strategies in all Member States is essential, but a number of Community policies and instruments also have an important impact on biodiversity. The Community therefore needs to take action in these areas to both complement and avoid frustrating national efforts. The Community strategy focuses on the further development and implementation of Community policies and instruments.

C) Scope and objectives of the strategy

12.- As a key player on the international stage, the Community must obviously ensure that its own policies and instruments, many of which have a significant impact on biodiversity, reflect concerns about and contribute to biodiversity conservation and sustainable usage.

13.- The proposed Community Biodiversity Strategy therefore aims to anticipate, prevent and attack the causes of significant reduction or loss of biological diversity at the source. This will help both to reverse present trends in biodiversity reduction or losses and to ensure that species and ecosystems (including agro-ecosystems) have a satisfactory conservation status, both within and beyond the territory of the European Union.

14.- The Community Biodiversity Strategy is an element of the 5th Environmental Action Programme, "Towards Sustainability". It must also be viewed in the context of the obligations to integrate environmental concerns into other sector policies, in accordance with article 130 R (2) of the Treaty. It is in line with the strengthened commitments to sustainable development contained in the Amsterdam Treaty, which states that "environmental protection requirements must be integrated into the definition and implementation of Community policies and activities, in particular with a view to promoting sustainable development". The strategy also takes into account a number of Council conclusions and the relevant objectives from the Pan-European Landscape and Biological Diversity Strategy.

15.- The Strategy defines a framework for the actions necessary to fulfil the European Community's legal obligations under article 6 of the CBD, The relevant obligations of the CBD for the European Community are set out in section II of the strategy, in the context of four major themes. Section III specifies the objectives to be achieved in the context of the relevant Community policies and instruments in order to meet these obligations.

16.- The implementation of the CBD by the Community calls for a two-step process. The adoption of this strategy containing the general policy orientation is the first step. The second is the development and implementation of Action Plans and other measures by the Commission through its services responsible for the policy areas concerned. This second step will enable the objectives deriving from the Convention to be translated into concrete actions.

17.- The Action Plans and other measures will enhance the links between the objectives under each theme and the objectives in each policy area. By establishing a mechanism to ensure the inclusion of biodiversity concerns in other policy areas and instruments the strategy, they will be filling a shortfall in existing Community conservation policy.

18.- Action Plans and other measures to achieve the objectives should build on and complement existing policies and planned initiatives. The development of Action Plans will need to take into account the objectives and actions envisaged by Member States' strategies to ensure real value-adding, consistency and complementarity. How this can best be done will only be clear once all Member States strategies are available.

19.- Given that the Community and its Member States participate in a number of int-ernational conventions and agreements relevant to the objectives of the Convention on Biological Diversity, this strategy provides guidance to ensure coherence in initiatives taken in different international forums. The implementation of this strategy will therefore help to achieve Community objectives committed under other Conventions.

20.- Progress in the implementation of the strategy and the performance of the Action Plans and other measures will be monitored and assessed using biodiversity indicators and meas-

urable targets with a view to assessing the effectiveness of action taken and to provide guidance as to further actions needed. The process of farther development, implementation and monitoring is described in section IV.

II. STRATEGY THEMES

1.- The Community Biodiversity Strategy is developed around four major Themes. Each Theme highlights the specific objectives that will need to be achieved in the context of Action Plans and other measures. These objectives emerge from and qualify the specific obligations relevant for the Community contained in the CBD.

Theme 1. Conservation and sustainable use of biological diversity.

2.- Under this Theme, the Community should seek to conserve and, where relevant, restore ecosystems and populations of species in their natural surroundings. It should also focus on the conservation of ecosystems where crop species and varieties and domestic animal breeds have developed their distinctive properties. In some cases, in-situ conservation needs to be complemented by additional ex-situ initiatives. This Theme also refers to the measures required to ensure that use made of natural resources is sustainable.

In-situ conservation

3.- The Community will continue supporting the establishment of networks of designated areas, particularly the EU NATURA 2000 network. However, for a large number of wild species, crop species and varieties and domestic animal breeds, the establishment of a system of protected areas alone is not sufficient or appropriate. Therefore, in-situ conservation requires that within relevant sector and horizontal policy areas, the Community should consider impacts on biodiversity conservation and sustainable usage across the rest of the territory outside protected areas. This aspect constitutes one of the major shortfalls in the existing Community conservation policies. Where appropriate, the Community should therefore seek:

- To promote and support the conservation of ecosystems characteristics.
- To ensure that the population size, structure, distribution and trends of wild species that occur naturally are in a satisfactory conservation status, and also support recovery plans for the most threatened species.
- To take measures to maintain the gene pool of wild and domesticated species and prevent processes of genetic erosion.

4.- The presence or introduction of alien species or sub-species can potentially cause imbalances and changes to ecosystems. It can have potentially irreversible impacts by hybridisation or competition on native components of biodiversity. Applying the precautionary principle, the Community should take measures to prevent that alien species cause detrimental effects on ecosystems, priority species or the habitats they depend on and establish measures to control, manage and, wherever possible, remove the risks that they pose.

5.- Also, while biotechnology in general presents a number of potential benefits to society, the introduction of genetically modified organisms into the environment can have negative impacts on biodiversity. Applying the precautionary principle, the Community has established mechanisms, notably under directives 90/219/CEE and 90/220/CEE, to assess, regulate, manage or control the risks associated with the use and release of genetically modified organisms resulting from biotech-

nology which may affect biodiversity. Moreover, the Community took the lead to finalise a Protocol on Biosafety under the CBD by the end of 1998. This Protocol should establish international-level procedures in the field of safe transfer, handling and use of living modified organisms, specifically focusing on cross-frontier movement of any living modified organism resulting from modern biotechnology that may have adverse effect on biodiversity conservation and sustainable usage, and should set out in particular appropriate procedure for advance informed agreement.

Ex-situ conservation

6.- Gene banks, captive breeding centres, zoos and botanical gardens can play a very valuable role if their activities are integrated in the framework of co-ordinated re-introduction or integrated conservation schemes. For crop species and varieties, including plants used for forestry, as well as for domestic animal breeds, there is a need to avoid genetic erosion and maintain a diverse genetic pool to ensure the future viability and improvement of the qualities of the varieties and breeds involved. In some cases, the maintenance of adequate gene banks within the Community will require the collaboration of third countries. The Community should:

• Encourage within and outside the Community adequate ex-situ conservation of both wild species and genetic resources of wild crop relatives, wild plants and domestic animal breeds useful for food production, whenever they cannot be conserved in situ or whose in situ conservation is under serious threat.

• Encourage zoos, aquariums, botanical gardens, gene banks and collections to keep species, crop varieties and domestic animal breeds, under satisfactory standards that guarantee their conservation and integrate their work in co-ordinated action plans which aim at the restoration of the species to a satisfactory in-situ conservation status.

Sustainable use of components of biodiversity

7.- Human activities may have positive or negative impacts on the sustainable use of biodiversity. A good assessment of the impact of strategies, policies, programmes, plans and projects on biodiversity is key to the promotion of sustainability. In the first instance activities with a potential negative impact need to be identified in order to find solutions that will avoid or minimise such an impact. Secondly, the most efficient options for meeting the needs of biodiversity should be identified. The Community therefore should:

• Consider the objectives of this strategy in the environmental assessment of its sector and cross-sector strategies, plans, programmes, policies and projects.

• Where feasible, develop cost-effectiveness analyses of relevant Community strategies, plans, programmes, policies and projects to ensure the achievement of the objectives of this strategy.

• Develop appropriate methods and techniques to enable stakeholders to participate in assessment procedures and in the implementation of remedial and preventive actions.

8.- Economic and social incentives such as subsidies, taxes and duties may have a considerable effect on biodiversity. In some cases they may be used as instruments to change or maintain patterns of production and consumption relevant to biodiversity. The Community encourages methods to promote that well-informed consumers can take as much as possible individual decisions benefiting biodiversity conservation and sustainable usage. The recent Commission Communication on Green Levies defines several proposals to achieve these objectives. The Community should therefore aim to promote, where feasible:

• Eco-labelling schemes based on life cycle analysis for products whose production, distribution, use or disposal could affect biodiversity. the internalisation of biodiversity values in costs/benefit analyses.

• The internalisation of biodiversity values in costs/benefit analyses.
• The integration of biodiversity concerns into liability mechanisms.

9.- Alongside the identification and introduction of incentives to support conservation and sustainable use of biodiversity, it is necessary to consider removing incentives which have a negative impact. This includes reviewing certain systems of property and use rights, contractual mechanisms, international trade policies, and economic policies. Therefore, the Community should in particular focus on:

• Shifting incentives to encourage positive instead of negative effects on the conservation and sustainable use of biological diversity.
• Contributing to the social and economic viability of systems supporting biodiversity as well as to the removal of incentives with perverse effects on biodiversity conservation and sustainable usage.

Theme 2. Sharing the benefits arising from the utilisation of genetic resources

10.- The sharing of benefits arising out of the utilisation of genetic resources relates to the implementation of the CBD in a number of aspects, inter alia access to genetic resources and distribution of the benefits of biotechnology including research and commercial partnerships between providers and users of genetic resources; technology transfer; technical and scientific co-operation; knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles.

11.- The CBD reaffirms the sovereign right of Parties over their genetic resources. It also stipulates that Parties should not impose inappropriate restrictions and that access should be on mutually agreed terms. Correspondingly, a whole range of solutions regarding access to these resources needs to be considered. Therefore, the Community should :

• Promote appropriate multilateral frameworks.
• Promote guidelines for bilateral co-operation on a voluntary basis to be applied particularly in cases where only some countries have or need access to the genetic resource in question.
• Support the countries of origin of genetic resources to develop national strategies on bioprospecting and access taking into account relevant multilateral frameworks and instruments.

12.- Technology transfer should be understood in a broad sense encompassing technology co-operation with respect to access to and availability of technologies as well as institutional development and capacity building to identify and use appropriate technologies, including indigenous and local technologies. Objectives are based on the fact that useful technologies exist in the public as well as in the private domain and that an adequate legal and economic framework, including intellectual property regimes, is necessary in order to facilitate technology co-operation and transfer. The need for relevant technology is especially present in developing countries. The Community should therefore endeavour to:

• Increase the development of technology for biodiversity conservation and sustainable usage.
• Facilitate transfer of technology for conservation and sustainable use of biodiversity to developing countries.

13.- Technical and scientific co-operation should in particular aim at strengthening the basic capacities in developing countries for biodiversity conservation and sustainable usage and its

components and the establishment of joint research programmes, in particular as regards identification, monitoring and exchange of information. The Community should:

• Promote both within and outside the Community the wider application of knowledge and technologies for conservation and sustainable use of biodiversity, including knowledge, innovations and practices of local and indigenous communities.

Theme 3. Research, identification, monitoring and exchange of information

14.- It is widely recognised that the current incomplete state of knowledge at all levels concerning biodiversity is a constraint on successfully implementing the Convention. This should not however slow down ongoing activities based on the existing state of knowledge. It is therefore necessary to strengthen efforts to identify and monitor the most important components of biodiversity as well as pressures and threats on them, paying special attention to the indicative list of categories of important components set out in Annex I of the CBD. It is also necessary to strengthen basic research into biodiversity, its principles, concepts and fundamental mechanisms.

15.- Tasks and targets identified in the Action Plan and other measures in this area should be incorporated in the activities within the Framework Community Programme on Research and Development. The importance of data held by the NGO community, Member States, their agencies and private collections should be taken into account.

16.- Research initiatives should build in particular upon the work of the Ad hoc European Working Group on Research and Biodiversity (EWGRB) established in the framework of the European Commission DG XII "Environment and Climate Research Programme" and could focus on:

• Establishing a network between European centres of excellence in biodiversity research in order to foster basic research into the importance and functioning of biodiversity on all levels.

• Promoting the implementation of appropriate research activities concerning the functional mechanisms of the natural evolution of biodiversity, including tools and methods needed to implement the biodiversity policy objectives.

• Increasing knowledge about how to safeguard biodiversity in nature, agriculture, forestry and fisheries and its wider role in life-support systems;

• Increasing the understanding of how the biosphere functions at different spatial scales: global, regional and local level and understanding of the effect of human activities on life-support systems.

• Assisting in identifying the necessary changes in legislation, programmes and political actions for the conservation and sustainable use and equitable sharing of the benefits arising from the use of biodiversity. This should include addressing the policy, organisational and management factors affecting the sustainable use and conservation of biodiversity in Third Countries, in the context of economic globalisation.

• Promoting research activities using molecular methods in biodiversity measurement and validation of these technologies.

• Promoting the creation of tools and choices for partners in the conservation and utilisation of biodiversity, including research on clean technologies and on ex-situ conservation technologies.

• Promoting the evaluation of the various forms of biodiversity from the perspective of all societal actors.

• Supporting the development of a global interface with Third Countries, addressing in particular the sustainable use and management of biodiversity in transition economies, as well as in emerging ones and developing countries.

17.- With respect to identification the Community will promote further support activities by the European Environmental Agency and its Information and Observation Network (EIONET) including tasks to:

• Develop a baseline study to identify and catalogue important components of biodiversity that exist –in situ or ex situ–, or that have become extinct in the last 50 years.
• Identify the conservation status and trends of components of biodiversity.
• Identify relevant pressures and threats, together with their causes, on components of biodiversity.
• Apply modern taxonomy to build scientific tools for policy on conservation and sustainable use, aiming, inter alia, to fulfil gaps in taxonomy knowledge.

18.- As it would be impractical to monitor and continuously assess all the components of biodiversity as well as the pressures and threats that may affect them in the Community, the Commission proposes the development of a system of indicators based on a species and ecosystem approach.

19.- The Community will support research on this system in its research programme and such work will be included in the new Multi-annual Work Programme of the European Environmental Agency and its Network. In addition, Eurostat is developing indicators of pressures affecting biodiversity in the context of its Pressure Indices Project. The identification of these indicators and the monitoring of their evolution are essential elements of this strategy because it will provide the required information to assess the performance and impact of the Action Plans and other measures. They should therefore include:

• The identification of a set of indicators to assess how components of biodiversity are affected by the sector and assess progress on the implementation of the strategy.

• The mechanisms for monitoring the evolution of the indicators having regard, inter alia, to activities causing habitat degradation, unsustainable harvesting, emission of pollutants and release or spread into the environment of alien species and genetically or living modified organisms.

20.- The importance of assessments and international exchange of information for achieving the objectives of the CBD is underlined by the cross-border nature of many ecological processes, the interdependence between ecosystems, the migratory behaviour of various wild species, the need for international collaboration to maintain gene pools of crop varieties and domestic animal breeds as well as the cross-border nature of many pressures and threats affecting biodiversity. The strengthening of cross-border co-ordination in between Member States as well as with other Parties to the CBD, on a bilateral or regional basis, is therefore an important objective.

21.- This includes support for consolidation and further development of the Clearinghouse Mechanism (CHM) which is established as the prime vehicle for international information exchange on biodiversity. The European Environmental Agency and its Information and Observation Network (EIONET) should consolidate and further develop the Community CHM in order to become an efficient vehicle for promoting and facilitating technical and scientific co-operation. This should be needs-driven, decentralised and allow for provision of information useful for meta-data levels of analyses. The provision of information by the CHM is of particular importance for the compilation of national and Community reports and for information on progress in implementing concrete measures for biodiversity. The Community CHM will establish links to the Member States CHM focal points.

22.- Consequently, Action Plans and other measures should help to:

• Identify and review existing mechanisms to facilitate the exchange of relevant information through the Community clearinghouse Mechanism.

• Establish or strengthen systems for the exchange of information at national and int-ernational level and make existing knowledge of biodiversity available and useful to the public and decision makers.

Theme 4. Education, training and awareness

23.- Many of the pressures and threats on biodiversity conservation and sustainable usage have their origin in human perceptions, attitudes and behaviour. Similarly, the biodiversity strategy could be difficult to implement if actors involved are not aware of the problems affecting biodiversity and their possible solutions. Changing these factors requires long-term concerted efforts in education and public awareness.

24.- Public awareness is essential to ensure the success of many actions in favour of biodiversity, e.g. a consumer policy promoting biodiversity conservation and sustainable usage. Therefore, public awareness campaigns and the main instruments available to achieve the CBD objectives should be considered. In all these aspects NGOs play a very important role.

25.- Finally, the implementation of any strategy on biodiversity will require specific up-to-date technical expertise on the part of the various actors involved. This expertise can only be obtained if relevant training schemes are adequately adapted to scientific, technical and technological progress.

26.- The Community should therefore encourage the development of:

• Programmes for public information, education and awareness raising on conservation and sustainable use of biodiversity.

• Programmes to ensure the training required for the human resources involved in the implementation of this strategy at Community, National and local levels.

• Capacity building to monitor, assess and report on the impact of Community strategies, plans, programmes, policies and projects on biodiversity in third countries.

III. POLICY AREAS

1.- In the following paragraphs the importance of different policy areas and sectors for the conservation and sustainable use of biological diversity are highlighted, and objectives for the Community are identified in order to achieve the objectives of the Convention as described in section II.

1) Natural resource conservation

2.- The conservation and sustainable use of natural resources involves specific measures for wild species, including the establishment and management of NATURA 2000 ecological network:

OBJECTIVES

• To fully implement the Habitats Directive, as well as the Birds Directive.

• To support the establishment of networks of designated areas, particularly the EU NATURA 2000 network, and to provide adequate financial and technical support for their conservation and sustainable use.
• To develop management plans for selected threatened species and certain hunting species.
• To implement the EC CITES Regulation and to adapt it to reflect further decisions by the Conference of the Parties to CITES.

3.- Initiatives for biodiversity across the rest of the territory outside protected areas need to be developed and promoted. The Community does not have a comprehensive legal instrument in this field but efforts have been made as part of the implementation of the 5th Action Programme to promote the integration of environmental considerations into sector and cross-sector policy areas. In this context, the Commission's recent proposal for a Council Directive establishing a framework for Community action in the field of water policy is especially relevant. Water quantity and quality (particularly in relation to pollution by pesticides and fertilisers) are essential parameters for the functioning of all ecosystems. The competing and potentially conflicting demands of this limited resource from different sectors, make water policy highly strategic to biodiversity conservation and sustainable usage. Wetlands are also vitally important for biodiversity conservation and sustainable usage, as acknowledged by the Ramsar Convention and the Commission' s Communication on wetlands.

OBJECTIVES

• To develop instruments to enhance biodiversity conservation and sustainable usage across the territory outside protected areas in co-operation with Member States.
• To use the Water Framework Directive as a tool for biodiversity conservation and sustainable usage and in this context to develop analyses of water quantity and quality versus dem-and for every river basin including agricultural irrigation, energy generation, industrial, drinking and ecological uses.
• To enhance the ecological function of land cover, including riparian and alluvial vegetation, to combat erosion and maintain the water cycle supporting ecosystems and habitats that are important for biodiversity.
• To protect wetlands within the Community and restore the ecological character of degraded wetlands.

4.- A number of global processes have serious impacts on biodiversity, in particular climate change, desertification and ozone layer depletion. The impact of climate change on certain sensitive ecosystems and crop varieties as well as the effects of certain actions to combat climate change, for example can be relevant to the objectives of the CBD, these reforestation and afforestation initiatives should incorporate measures that ensure additional benefits for biodiversity. Moreover, policies related to biodiversity conservation and sustainable usage should take into account changes that could occur in ecosystems as a consequence of the accelerated rate of change in climate. The effects of ozone layer depletion on marine productivity and fisheries, as well as on certain crop varieties and the impact of the use of several ozone-depleting substances on local biodiversity are equally important. Desertification has a significant impact on soils, the maintenance of the water cycle and the conservation of different ecosystems. It leads to decreasing soil productivity and the potential local extinction of wild species. Problems caused by desertification are particularly relevant in the Mediterranean and other regions outside Europe.

OBJECTIVES

• To promote better co-ordination between different initiatives in the international forums in the field of climate change, ozone layer depletion and desertification to avoid duplication of efforts, in particular with respect to reporting procedures.

• To identify interactions between the CBD and activities under other existing international agreements in order to optimise the opportunities for synergy.

2) Agriculture

5.- Land use patterns and practices have a major influence on biodiversity in Europe and around the world. In some cases, land use patterns and practices support biodiversity conservation and sustainable usage, while in others they cause serious threats. In this context, agriculture generates both benefits and pressures on biodiversity depending, in many cases, on practices, biogeography, grazing periods, etc.

6.- The agricultural sectors are heavily influenced by varying degrees of government intervention, employing measures that have often led to levels of commodity production and the adoption of farming practices that have not been conducive to sustainability, or have discouraged more sustainable practices. The increase in productivity is being achieved in many cases at the cost of degrading natural] capital (fertile soil, clean water, natural and semi-natural ecosystems). In addition, the factors behind the decline of biodiversity can be understood by considering the incentives and disincentives facing a country or an individual farmer with regard to sustainable use of genetic resources

7.- On the other hand, certain externalities generated by agriculture have positive characteristics of a "public good". Fields and pastures, along with forests and natural areas, form part of the rural landscape. Agricultural land often provides and creates important habitats for wildlife. Land, or the soil itself, plays an important function in the hydrological cycle and in cleansing the air of noxious gases, such as ammonia.

8.- Farming communities have an intrinsic interest in ensuring that land use practices are sustainable and contribute to biodiversity conservation and sustainable usage. Some semi-natural habitats can be preserved only if appropriate farming activities are continued. In many situations where agriculture production is a key element of sustainable ecosystems, abandonment of agriculture would lead to the irreversible degradation of different habitats. There has been an increasing awareness among farmers on the gains to be made by adopting environmentally sound agricultural practices, which have been underpinned by rapid advances in "green technologies". However, such practices will not be adopted to the extent necessary unless agricultural and environmental policies give farmers complementary signals.

9.- Because of the interaction of sustainable agriculture and rural development, with biodiversity conservation and sustainable usage and the need for integrated land-use planning as mentioned in Agenda 21, the conservation and sustainable use of agro-biodiversity should be based on the combination of two mutually coherent approaches:

10.- First, the conservation and sustainable use (both in situ and ex situ) of the genetic resources of species, varieties, domestic animal breeds and microbial life-forms with actual or potential value as agricultural commodities and the equitable sharing of benefits arising from the utilisation of genetic resources in agriculture requires a wide range of in- and ex-situ actions. Firstly, in-situ conservation of local species, varieties and domestic animal breeds requires an adequate system of economic and social incentives, combined with increased consumer awareness. Some farming and breeding activities help to maintain endangered plant and animal species. Secondly, gene banks in the Community are not as well developed as elsewhere and action should be taken to improve the situation. These initiatives would help to meet present and future requirements for global food security and they should focus on the key elements of the Global

Plan for Action for the Conservation and Sustainable Use of Plant Genetic Resources for Food and Agriculture.

In the Action Plan for agriculture, Community initiatives in the field of genetic resources should, inter alia, build upon the existing legislation.

OBJECTIVES

• To formulate policy measures, programmes and projects which promote the implementation of the Global Action Plan for the conservation and sustainable use of plant genetic resources for food and agriculture.
• To promote the development of technologies assessing levels of diversity in genetic resources.
• To reinforce the policy of in situ and ex situ conservation of genetic resources with current or potential value for food and agriculture.
• To promote the development of adequate gene banks useful for the in-situ and ex-situ conservation of genetic resources for food and agriculture so that they will be available for use.
• To endeavour to ensure that legislation does not obstruct the conservation of genetic resources.

11.- Secondly, the conservation and sustainable use of agro-ecosystems and their interface with other ecosystems. Agriculture is an important element of the ecosystems where it takes place. Sometimes it also influences other ecosystems in the surroundings or downstream. In both cases interactions could be positive or negative for biodiversity conservation and sustainable usage. Agriculture has played and continues to play a major role in the diversity of ecosystems and in the creation and maintenance of semi-natural ecosystems. Therefore the conservation and sustainable use of agro-ecosystems require:

a) The maintenance and development of farming with a view to optimising its positive impact on biodiversity conservation and sustainable usage; recognising and supporting the role of farming communities in the creation and maintenance of semi-natural habitats; taking into consideration the positive role of non-intensive agricultural systems for wildlife and wild plants habitats; and optimising the positive impacts of agricultural practices and production systems on biodiversity conservation and sustainable usage. In particular, the maintenance of certain well-established traditional methods of extensive agriculture, sometimes in marginal areas, is essential to preserve the value that such areas have for biodiversity.

b) The mitigation of the negative impact of agricultural activities on biodiversity. In particular, certain land use practices, the use of agro-chemicals, the overgrazing and pollution consequences of excessive livestock intensity, monoculture, the elimination of wetlands and hedgerows, and the use of heavy machinery, has serious effects for biodiversity. Pesticides, for example, can have a negative effect on the conservation of biodiversity not only in the place where they are applied but also in other ecosystems (i.e. by pesticide run-off).

12.- In this context, the Action Plan on agriculture should build upon the existing policies and those foreseen in Agenda 2000 and complement them so that they contribute to biodiversity.

13.- OBJECTIVES

• To encourage the ecological function of rural areas.
• To integrate biodiversity objectives into the relevant instruments of the CAP.

• To promote farming methods enhancing biodiversity by linking agricultural support to environmental conditions where appropriate.
• To promote standards for good agricultural practice with a view to reducing the risk of pollution and of further damage to biodiversity.
• To increase awareness among all producers of the polluting potential of specific agricultural practices both short and long term and the need for all producers to be protectors of both environment and biodiversity. This includes the development of an integrated strategy for the sustainable use of pesticides.
• To promote and ensure the viability of those crop species and varieties and domestic animal races which have to be farmed to conserve the ecosystems of priority wild species.
• To promote and support low-intensive agricultural systems especially in high natural value areas.
• To further develop the agri-environment measures to optimise benefits on biodiversity by:
    1.- Reinforcing targeted agri-environment measures
    2.- Assessing its performance against a specific set of biodiversity indicators
    3.- Increasing the relevant budget and resources, as proposed in Agenda 2000

14.- The impact of trade policies on agricultural commodity production and land use is particularly relevant for biodiversity conservation. Direct investment by producers should be a strong force in promoting sustainable development and biodiversity. Implementation of global, regional and bilateral trade agreements is certain to have effects on land use in many countries. The global process of trade liberalisation leads to important changes in existing subsidies and protective mechanisms. Together with changes in the pattern of trade, changes in global and regional patterns of agricultural production are likely to entail displacement or abandonment of certain long-established local production systems, or load to their intensification to maintain competitiveness, or to supply new markets.

15.- In this field legislation on quality labels can also contribute to biodiversity. It helps to maintain a genetic pool of rustic domesticated species and plant varieties contributing to prevent genetic erosion. It also helps to maintain land use practices beneficial for biodiversity. Organic farming should also be supported by certification systems. Protection of geographical indications and designations of origin and specific characters for agricultural products and foodstuffs is also important and can contribute to the conservation of special agro-ecosystems enhancing biodiversity.

16. OBJECTIVES

• To promote trade related agricultural policies and disciplines which respect the needs for conservation and sustainable use of biodiversity as well as the principles of the World Trade Organisation.

3) Fisheries

17.- The increasing pressure exercised by human activities on marine and coastal environment stresses the importance of integrating biodiversity concerns into marine resource policies, including fisheries, and into agreements on the protection of coastal and marine environment and on fisheries. The conservation and sustainable use of marine and coastal ecosystems is essential to maintain the livelihoods of fishermen and fishing communities.

18.- Although fisheries policies have a major impact on the conservation of biodiversity and sustainable use of biological resources, the Common Fisheries Policy has not yet fully achieved

the objective of sustainable fishing. This objective requires implementation of upper limits of exploitation rates (fish mortality rates) and minimum levels of stock biomass, so that there is a high probability of ensuring viability and sustainability of fishing for a species or group of species. Once the maximum exploitation rate to be allowed in respect of each species is defined, the mechanisms to keep it below the critical level will need to be defined. The tools to limit exploitation rates should be defined, as appropriate, as maximum levels of fishing effort, as total allowable catches or as combinations of these two instruments. The Common Fisheries Policy provides the necessary operational tools to define both allowable exploitation rates and the associated ancillary measures.

19.- Research efforts should ascertain how to ensure that irreplaceable genetic resources are not lost by genetic contamination affecting indigenous populations by hybridisation or competition. Moreover, the integration of CBD objectives within the fisheries policy sector requires action at three different levels: a) the conservation and sustainable use of fish stocks, b) the protection of non-target species

20.- OBJECTIVES

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

4) Regional policies and spatial planning

21.- The Commission's Communication Europe 2000: Co-operation for European territorial development highlights how spatial planning can contribute to conservation and sustainable management of ecosystems. Indeed, spatial planning can play an important role, in biodiversity conservation and sustainable usage across the entire territory:

a) at the local and regional level, by pointing out the benefits to be expected from sustainable land-use -notably in socio-economic terms- when it can facilitate partnership between the local/regional authorities, economic actors, local and indigenous communities, NGOs and biodiversity conservators; and

b) at the strategic level, spatial planning highlights the inter-linkage between the different tiers of Government and between different policies competing for the same natural resources. Spatial planning means setting out a common set of longer term objectives to be carried out through mutually compatible measures tailored to the socio-economic and environmental characteristics of the space to which they apply.

22.- Spatial planning should promote sustainable land use while ensuring a more balanced geographical distribution of economic activities. It should help avoid excessive pressure on

certain parts of the territory and take account of ecological requirements everywhere. The Commission has incorporated and integrated spatial planning approach into its Demonstration Programme on Integrated Coastal Zone Management which is considering, among other things, biodiversity. In order to further develop a European-wide approach to spatial planning, the European Spatial Development Perspective is being drawn up and the first official draft was endorsed at the Nordwijk informal ministers meeting in June 1997. It addresses biodiversity under the heading "Continuing pressure in Europe's natural and cultural heritage". It underlines that specific local factors should be taken into account when implementing policies with a spatial impact to avoid further losses of biodiversity.

23.- In general, in the context of regional aid, a comprehensive and integrated approach is the best way to ensure the long term conservation and sustainable use of biodiversity. In eligible regions, in particular those characterised by high biodiversity, the promotion of sustainable development could be included in regional development strategies and Structural Funds programmes.

24.- In this context, a particular attention should be given to the rural areas where, in many cases, the continuation of agricultural activities is necessary to avoid losses of biodiversity and habitat degradation. A rural development policy has the potential to protect and enhance these environmental assets. By encouraging land conservation and higher environmental standards of land use, the agri-environmental measures are an essential instrument for the sustainable development of land use, enabling conservation and sustainable use of biodiversity.

25.- OBJECTIVES

• To promote the policy options identified in the spatial planning initiatives which can assist in conserving and enhancing biodiversity throughout the European territory. Particular attention should be paid to:

- Ecological corridors and buffer zones
- Unprotected sensitive areas with high levels of biodiversity such as mountains, coastal areas and islands.
- Rural areas in order to ensure a better synergy between the objectives of economic development and conservation of biodiversity needs.

• In coastal zones, to develop integrated management and planning of both land and sea, inclining fisheries, shipping, coastal infrastructure and impacts from agricultural and forestry activities in the hinterland.
• To promote sustainable development based on an integrated spatial planning approach.
• To encourage sustainable regional development within the Operational Programmes as well as transnational co-operation programmes including measures to conserve and make sustainable use of biodiversity. These could be supported under the Structural Funds to preserve environmental quality particularly in eligible areas with high biodiversity.
• To ensure that interventions co-financed under the Structural Funds and the Cohesion Fund, which are mainly aimed at economic and social cohesion, do not infringe upon Community legislation of relevance for biodiversity.

5) Forests

26.- Globally, forests contain the greatest proportion of biological diversity in terms of species, genetic material and ecological processes and have an intrinsic value for biodiversity conservation and sustainable usage. Furthermore, forests are important to combat climate change and minimise its impact on the conservation of other ecosystems. The livelihoods of many rural communities are based in the conservation and sustainable use of forests and they represent essential national resources for present and future generations. While recognising the importance of re-

forestation schemes to increase the forest cover, measures should be taken in relation to the afforestation or reforestation of areas to avoid endangering important and/or valuable ecosystems (e.g. wetlands, steppes, heathlands, etc.) or the use of inappropriate tree species. It is therefore important to take into account in a balanced way, the need for ensuring the conservation and appropriate enhancement of biodiversity in forests, the need for the maintenance of forest health and ecological balance, the sustainable production of raw material for forest industries as well as of goods and services sought by society.

27.- Conservation and sustainable use of biodiversity in forests can be considered at three different levels:

a) On the global scale, tropical as well as certain boreal forests are currently facing greater threats than at any time in history, with many areas undergoing rapid deforestation, degradation or loss of quality as a result of human activity. The Community has recognised the critical importance of halting and reversing this cycle of destruction, making sustainable forest management one of its focal points in development co-operation policies (see the chapter on development co-operation below). In particular, the implementation of the recommendations of the Intergovernmental Panel on Forests (IF) are important for the objectives of the CBD. Also, the Community has promoted in the IPF and continues to support the development of a legally binding instrument on Forests, among other things to integrate biodiversity conservation objectives with sustainable management of forests at national, regional and global levels.

b) At the pan-European level the Community is a signatory party to the resolutions adopted at the ministerial conferences on the protection of forests in Europe. In this context general guidelines for the conservation of the biodiversity of European forests are defined in Resolution H2 of the Helsinki Conference for the protection of forests in Europe. Reference to conservation and appropriate enhancement of biodiversity is also made in Resolution H 1 in which general guidelines for the sustainable management of forests in Europe are set out.

In this context the participation of the European Community in the Third Ministerial Conference Environment for Europe which was held in Sofia in October 1995 is also especially relevant. It endorsed the Pan-European Biological and Landscape Diversity Strategy. Close co-ordination was subsequently established between both processes. A Common Work-Programme on the Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems has been proposed for the period from 1997 to 2000.

c) Within the Community, forest policies are basically developed at national level. The Community has, however, taken a number of initiatives to promote forest conservation, in particular initiatives to protect forests against air pollution and fire, afforestation, the improvement of woodlands, the protection of forests, the development of forest infrastructure and the initial transformation of forests products, the conservation of genetic resources of forests collection and, where necessary, making comparable or complete forestry information from the Member States and forestry related research supported through specific European Community research programmes on agriculture, environment, biotechnology and energy.

28.- The European Union Forestry Strategy called for by the European Parliament in its Resolution of 30 January 1997 should include actions to promote the conservation and enhancement of biodiversity in forests.

29.- OBJECTIVES

• To promote the conservation and appropriate enhancement of biodiversity as an essential element of sustainable forest management at the national, regional and global levels

• To further develop the Council Regulation 20W92 to enhance its benefits to biodiversity.
• To ensure that, while promoting a net increase m forest extension is a means of maximising their carbon sink function to combat climate change, afforestation is conduced in a manner that dons not negativity effect ecologically interesting or noteworthy sites and ecosystems.
• To promote sustainable management of forests which respects the ecological characteristics of the areas affected and to promote the restoration and regeneration of areas that have suffered deforestation. Native species and local provenances should be preferred where appropriate. Wherever introduced species are used to replace local ecosystems, sufficient action should be taken at the same time to conserve native flora and fauna.
• To promote the development of specific, practical, cost-effective and efficient biodiversity appraisal systems and methods for evaluating the impact on biodiversity of chosen forest development and management techniques.
• To promote international research into the impact of possible climate chance on forest ecosystems, the possible adaptation of forest ecosystems to climate change and the mitigation of adverse effects of climate change by forest ecosystems as detailed in Resolution n°4 of the Helsinki Ministerial Conference on the Protection of Forests in Europe.
• To promote the implementation of the general guidelines for the conservation of the biodiversity of European forests (Resolution H2 of the Helsinki Conference) and the recommendations of the IPF in relation to the conservation of biodiversity.

6) Energy and Transport

30.- The energy and transport sectors have a global and regional impact on biodiversity through climate change and acidification. Additionally, the development of infrastructures for transport and for energy production may have a more local impact on biodiversity.

a) Emissions from fossil fuels have led globally to an increase in atmospheric concentrations of greenhouse gases. These changes are expected to lead to regional and global changes in climate. This will add further stress to ecological systems already affected by pollution, increasing demand on resources and unsustainable management practices. The composition and geographical distribution of ecosystems will shift more rapidly than previously in natural processes. Subsequently, the limited capacity of certain species for adaptation to these changes will pave the way for increased losses in biodiversity.

b) Regional effects of fossil fuel usage are acidification of inland waters and soils (with effects also on vegetation and forest health) and degradation of forests. Acidification of lakes and watercourses make them unsuitable for the survival of certain species. Additionally, acidification of soils leads to changes in their chemical composition and structure and affects the ecosystems of which they form part.

c) There may also be local effects due to the spatial impact of the development of infrastructure for energy production and distribution not only from conventional fuels. Any potential side effect from the use of renewable energy sources (e.g. hydropower plants, unsustainable use of biomass or large-scale energy plantations) should also be taken into account. In this context, attention should be paid to the links with water management policy because of increasing water demands for energy production. Transport, road and airport infrastructures may have a direct impact on spatial occupation of ecosystems and habitat fragmentation and have indirect impacts -including genetic isolation- and disturbances -including the presence of people, changes in light, wind, temperature, humidity and soil nutrients- on wild species. In addition, transformation of rivers into channels to allow fluvial transportation may increase the pressures on aquatic and

fluvial ecosystems by spatial occupation and disturbance, habitat transformations and pollution. Sea transport and infrastructure also has an impact on marine pollution.

31.- OBJECTIVES

• To implement acidification and climate change strategies with a view to minimising negative impacts on biodiversity.
• To minimise the impact on biodiversity of (he development of infrastructures for energy from conventional and renewable sources.
• To assess the best options for biodiversity when deciding which energy sources are used to match demands at regional level.
• To minimise the impacts on biodiversity of transport infrastructure by optimising the capacity and efficiency of the existing infrastructure and, for new infrastructure, giving full consideration to environmental concerns.

*7) **Tourism***

32.- Tourism is closely linked to the preservation of a healthy environment, which in turn is an essential element of tourism development and helps to raise public awareness of biodiversity issues. Tourism policies are developed at national and regional level and may have an important impact on biodiversity and sustainability. On the one hand, tourism places direct and indirect pressures on, and threats to, the conservation of species and habitats, may cause disturbances on wildlife and increase pollution caused by transportation. On the other hand, sustainable tourism, in many areas, is providing extra resources and employment to local communities giving them additional motivation for the conservation of nature and protection of the environment.

33.- Sustainable development in tourist areas needs to reconcile the interests of the tourism industry, tourism satisfaction and biodiversity conservation and sustainable usage.

34.- In this context it is important to identity to what extent certain sensitive areas should be protected from additional human interference caused by tourism and the tourism carrying capacity of certain habitats and ecosystems. It is also important to understand the limitations of a system of transfer of resources based on few tourists providing additional income to many members of local communities.

35.- Tourism activities which directly or indirectly contribute to biodiversity conservation and sustainable usage should be promoted. The public and the private sector have also much to gain by the exchange of best practice in this field. The private sector should be encouraged to apply guidelines and codes of conduct for sustainable tourism.

36. While policies on tourism are Member States' responsibilities, particular attention should be paid to the impact of tourism on potential NATURA 2000 areas. Tourism also has important interrelation with the development of regional and spatial planning policies and some of these concerns could be reflected in the development of Action Plans for different sectors. On a global scale, the Berlin Declaration sets out the basis for the development of global guidelines for the sustainable development of tourism within the framework of the CBD.

37.- The Community should in particular pursue the following objectives:

• To encourage the assessment of the carrying capacity of different ecosystems and habitats for tourism.

• To encourage the exchange of best practices amongst public and private tourism interests.

• To promote the development of international guidelines for sustainable tourism.

8) Development and economic co-operation

38.- Developing countries and economies in transition offer a wide spectrum of habitats and ecosystems, of which forests, grasslands and marine/coastal ecosystems are generally the most significant. Various kinds of human activities are harming biodiversity in terms of habitat loss and degradation. The underlying causes are numerous, and include poverty. Biodiversity in small island developing states is a particular problem because of the extremely small area of certain local habitats, the high incidence of endemism throughout the islands, and the high vulnerability to natural disasters and habitat destruction.

39.- Article 20 of the CBD recognises the principle of common but differentiated responsibilities of the Convention parties and the role of development co-operation. Furthermore, Article 3 of the CBD recognises the national sovereign right to exploit natural resources pursuant to their own environmental policies. In this context the Community development aid co-operation is an important instrument to support third countries in their efforts to achieve conservation and sustainable development of biodiversity. In particular, capacity building schemes are important to enable third countries to develop expertise for the development and use of technologies, including indigenous and traditional technologies, for biodiversity conservation and sustainable usage. It will be equally important to explore ways to repatriate taxonomic information housed in collections in the Community.

40.- Moreover, activities funded under the PHARE programme should pay attention to maintain areas of high value for biodiversity, in particular by stimulation of the adoption of the acquis communitaire in that area by the candidate countries.

41. OBJECTIVES

• To mainstream biodiversity objectives into Community development and economic co-operation strategies and policy dialogue with developing countries and economies in transition. Biodiversity objectives should be integrated in development projects across different sectors of the economy of the recipient countries ensuring greater coherence between Community development co-operation policy and other Community policies, such as international trade, agriculture and fisheries.
• To support sustainable use of natural resources, particularly in relation to forests, grasslands and marine/coastal ecosystems.
• To strengthen capacity of relevant agencies involved in conservation and sustainable use of biodiversity'.
• To further integrate EIA practices into development and economic co-operation.
• To co-ordinate the implementation of this strategy and the Action Plans emerging from it, with third countries strategies ensuring coherence between Community support to third countries and the objectives of those countries' own biodiversity strategies.
• To ensure complementarity and co-ordination of policies and approaches in Community and Member Slates' aid programmes, as well as with other donors and international institutions, particularly the Global Environmental Facility, for a coherent implementation of the CBD.
• To provide sufficient funding for biodiversity on bilateral aid programmes as well as for international mechanisms (e.g. CBD)
• To promote schemes for the integration of biodiversity objectives into agriculture in accession countries.

IV. DEVELOPMENT AND IMPLEMENTATION OF ACTION PLANS AND OTHER MEASURES

1.- Within the framework of this strategy set out in this document, Action Plans of a sector and a cross-sector nature will have to be elaborated to ensure the implementation of the objectives set out in Sections II and III.

2.- Specific Action Plans are envisaged for conservation of natural resources, agriculture, fisheries, regional policies and spatial planning and development and economic co-operation. For the other policy areas, the objectives formulated under III will be taken directly into account for their further development and implementation. In the case of regional policies and spatial planning, the specific Action Plan will have to ensure that the objectives pursued by the biodiversity strategy are directly incorporated in the future programming guidelines as well as relevant Community initiatives and this will not imply the development of specific new instruments. Proposals for action on forestry will be part of the proposal for an EU Forestry strategy. Energy and transport do not require new specific action plans as the development and implementation of the Community strategies on climate change and acidification, which have a focus on ecosystems, together with the implementation of adequate environmental assessment procedures, should be adequate to achieve the biodiversity objectives in these policy areas. For tourism, the implementation of environmental assessments and initiatives to be taken in the field of regional policies and spatial planning should help achieving the biodiversity objectives.

3.- These Action Plans should be practical tools to achieve the integration of biodiversity into sector and cross-sector policy areas and instruments relevant to biodiversity conservation and sustainable usage within the Community. Taking into account Article 3 of the CBD, the Action Plans should also ensure that Community policies and instruments do not harm the environment of third countries or areas beyond the limits of national jurisdiction and help third countries in their efforts to achieve biodiversity conservation and sustainable usage.

4.- Taking into account the biodiversity heritage of some of the Community's associated countries in Central and Eastern Europe, it should be ensured that Action Plans and other measures include a specific focus on enlargement issues.

5.- Action Plans and other measures will pursue the respect, preservation and maintenance of knowledge, innovations and practices of indigenous and local communities with traditional lifestyles relevant to biodiversity conservation and sustainable usage, and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices.

6.- To implement this strategy, the relevant actors in the policy areas mentioned above will have to develop the Action Plans and other measures in view of the specific goals they are pursuing and with the specific mechanisms and procedures to which they are subject. The agents asked to draft or contribute to the elaboration of Action Plans and other measures are in the first instance the relevant Commission services responsible for the policy area concerned, working in close co-ordination with each other as well as in co-operation with other European institutions and bodies (such as the European Environmental Agency, the European Investment Bank, etc.), along with the national authorities where the responsibility for the definition and implementation of measures is shared. The Action Plans will take the form of Commission Communications to the Council and the Parliament and, where appropriate, comprise proposals for legal instruments.

7.- Action plans should be an integral part of the existing sector policy agendas and should make use of the existing agreements and international undertakings. Action Plans and instruments should implement the objectives indicated for the policy sectors in question and the objectives in-

dicated under the different Themes of this strategy. Biodiversity must therefore be taken into account in many areas including:

- The current review of the Structural Fund arrangements.
- The CAP reform process announced in Agenda 2000.
- The new arrangements for development aid to be decided in the current year, especially through the new framework agreement between the EU and the ACP beyond the year 2000.

8.- Action Plans should enhance collaboration and partnerships while encouraging a more efficient use of available resources. Interest groups such as industry associations and NGOs will be involved in the development and implementation of the Action Plans.

9.- The development of the Action Plans normally will require a review of existing policies and instruments to determine how they affect species and ecosystems. They should identify the extent to which the aims and objectives indicated in this strategy are already incorporated and any gaps and additional initiatives that may be necessary. They should also set priorities for action. In the development and implementation of the Action Plans a precautionary approach should be taken in cases where incomplete knowledge exists. Socio-economic aspects of the implementation of the measures contained in the Action Plans should be evaluated. In order to set priorities and to justify chosen options when different alternatives are available. Action Plans should incorporate the necessary cost-effectiveness information.

10.- As a general rule, each Action Plan should define clear tasks, targets and mechanisms to assess their performance and to evaluate progress in the implementation of the strategy. The Commission will, in co-operation with relevant bodies, identify indicators to facilitate the ex ante and ex post evaluation of the implementation of the Action Plans. Species and ecosystems likely to be affected by each policy area mentioned in section III, and for which action is needed to ensure their conservation and sustainable use, will be the basis for the establishment of indicators. Economic indicators will also be considered.

11.- Following the adoption of the Action Plans, the relevant actors will be responsible for ensuring their implementation. The different sets of indicators will help the focal points to be established to follow the development, implementation and review of the strategy and Action Plans and ensure co-ordination and consistency on cross-sector issues.

12.- Assessments on the implementation of the strategy and the effectiveness and appropriateness of the Action Plans will normally be made on a three year basis or in accordance with the planning cycles of the relevant policy. The Commission will present a report to the Council and the Parliament on the basis of these assessments.

13.- The development of Action Plans should be completed within two years following the adoption of this Communication by the Commission.

The Strategic Plan was drafted as a Sector Action Plan under the Spanish Strategy for the Conservation and Sustainable Use of Biodiversity.

This sector plan responds to the obligation under the Ramsar Convention to 'ensure that national wetlands policies are established, either independently or as clearly identifiable items of other national conservation planning initiatives, e.g., national environment action plans, national biodiversity strategies or national conservation strategies' (Resolution of Contracting Parties).

The National Nature Protection Commission's Wetlands Committee, which co-ordinates action between national and regional governmental bodies, including the Directorate-General for Water Infrastructure chose to include it in the Spanish Strategy for the Conservation and Sustainable Use of Biological Diversity despite the fact that wetlands are an ecosystem while biodiversity, as defined in Art. 2 of the Convention on Biological Diversity, is nothing but the 'variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part..'. The recent White Paper on Water also accepts this Sector Plan as an integral part of Spain's water policy.

Art. 9.3 of the Natural Areas and Wild Fauna and Flora Conservation Act 4/1989 of 27 March links water resource planning to the conservation and rational usage of wetlands: 'Water resource planning must envisage for every river basin the needs and requirements for the conservation and restoration of the natural areas they encompass.'

One on the main problems posed by this text is its scope, as it contains two totally different definitions of wetlands.

Article 1 of the Ramsar Convention contemplates a notion of wetlands which in practice goes beyond the traditional concept to include all river and many coastal ecosystems, and even wholly marine ecosystems such as coral reefs or islands less than 6 metres deep. The Ramsar Convention defines wetlands 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 areas of marine water the depth of which at low tide does not exceed six metres'.

Under Spanish law, however, wetlands include ecosystem units that do not include rivers or reservoirs, and even the inclusion of lakes is doubtful.

Article 103 of the Water Act of 1985 and Article 275.2 of Royal Decree 849/1986, which enacts the Regulation on the public domain of water, defines wetlands as 'a) marshes, peatland or flat water, whether permanent or seasonal, which are formed by still or running water, either fresh, brackish or salt, natural or artificial. b) The edges of such waters and the surrounding land in cases where, following the respective administrative procedure, they are correspondingly declared so as to prevent serious harm to their fauna and flora.'

The same concept is also found in a more restrictive interpretation in the Coasts Act, certain regional Forest Acts and in all laws passed by regional governments with specific legislation on wetlands. The Madrid Autonomous Region is an exceptional case, as it contrasts wetlands with reservoirs.

This contradiction between legislation deriving from the Ramsar Convention and national laws makes it necessary firstly to determine the scope of the Strategic Plan's application. The Wetlands Committee has decided by consensus that while the Plan's main goal should be to establish a conservation and sustainable usage strategy for wetlands in the traditional or restricted sense, its scope should not exclude strategic planning of wetlands in the broad Ramsar Convention

sense, although in the latter case it should be made quite clear which functions of rivers and reservoirs are covered and which should be covered by the planning framework for water resources.

It is also obvious that wetlands sensu strictu, which are physically connected to rivers and/or aquifers (groundwater), either on the surface or underground, and thus form part of the river basins, are subject to planning from the perspective of both the Strategic Wetlands Plan and any other water resource plans.

The first case, i.e. the planning and management items for all water ecosystems regulated by the Wetlands Action Plan, is restricted to aspects with particular impact on the hydrological functions of rivers, reservoirs, coastal areas and large lakes or lagoons. The Ramsar Convention clearly specifies the protection of bird species when these ecosystems are their nesting/resting habitats. Almost all European, national and regional legislation uses the Ramsar Convention primarily to establish rules governing the use and management of these habitats with a view to bird protection.

The Action Plan will also set the guidelines for the management systems of all river systems, especially those which have been declared SPAs under European law (Birds Directive), or will be included in the NATURA 2000 network (Habitats Directive). Moreover, the purely local application of the Ramsar Convention undertaken to date under supplementary regional legislation, generally supervised by the Wetlands Committee, is being applied systematically to wetlands in the broad sense, i.e. all aquatic ecosystems.

The second aspect, the interconnection between wetlands sensu strictu and the broader aquatic ecosystems on which they depend, has a further aspect of particular ecological impact: flow rates and co-ordination with water resource planning, both for surface and groundwater, for the purpose of balancing and predicting the effect that the regulation of the volume and quality of water has on wetlands sensu strictu that are directly linked to river systems.

Another aspect is the seasonal impact of water resource planning on the creation or destruction of wetlands sensu strictu (e.g., silted reservoirs that lose their original functions but gain as bird habitats or reservoirs for biodiversity). The third aspect is the merger of hydrological with sensu strictu wetland planning when the water resource plans are predominated by a similar function or use to that of the wetlands (e.g. river systems that are planned along almost their entire courses for the purpose of flood prevention).

Finally, it is quite feasible that the Action Plan could be tackled in a much more co-ordinated fashion with water resource planning, the promotion and maintenance of rivers in their natural state due to their scenic features or because as a whole they are habitats of exceptional importance, while not overlooking the application of Directive 78/659/CEE on water quality for fishlife. France, for example, is contemplating the entire Loire River valley as a Ramsar zone, which will involve planning all water functions in direct relation to the uses of the valley as a biodiversity reservoir, a tourist destination, etc.

The Wetlands Committee has yet to define the basic management framework for river ecosystems: it has not decided which ecological uses or functions of water will become part of the Strategic Plan. There is thus still no definitive position on which part of the plans for broad-sense river ecosystems should become part of the Plan in order to distinguish which parts of the Plan will be applicable to river ecosystems and which will be applicable to wetlands sensu strictu.

The approach of the draft Wetlands Action Plan to the latter is based on the fulfilment of nine objectives:

• Increase awareness of wetlands at all levels. Absolute priority is given to the wetlands inventory based on the variables used by the Directorate-General for Water Infrastructure, as well as the variables for wetlands found in the National Biodiversity Strategy and the Natural Areas and Wild Fauna and Flora Conservation Act 4/1989.

• This inventory will be digitised to facilitate access to information by all national, regional and local planners about the exact location of wetlands and the factors that influence them. It will also enable managers of wetlands as protected areas to have access to data on the wetland such as the ownership, fauna, flora, water cycles and physical/chemical variables of the body of water and the surrounding land.

• Make society aware of the values and functions of wetlands. The Strategic Plan will aim to influence the new plan for secondary education and tertiary courses with close links to these physical spaces (engineering, architecture, economics), as well as an awareness-raising process in the population as a whole in such a way that all citizens whose behaviour is likely to affect a wetland will understand the socio-economic and environmental costs of its destruction or degradation.

• Provide all wetlands with legal protection through a review of both legislation aimed specifically at their protection and laws used as a code of conduct for agents who are most likely to affect them (e.g., changes to laws that define the quality and conditions of public works and construction in general; changes to laws regulating the processes of farmland concentration.

• Ensure that all wetlands are managed in an effective and integrated manner, in particular, those with legal protection due to their special ecological importance. This task will be undertaken by means of a multidisciplinary approach that prevents wetlands from being managed as islands that are isolated from the outside world with functions solely linked to the maintenance of biodiversity.

• Strengthen the capacity of public institutions, organisations and bodies to guarantee wetland conservation and rational usage. These actions will influence the training process of technicians and experts at all levels, ensuring that the basic technology, which all wetlands managers should be familiar with, is fully available to them (GIS, water cycle monitoring models, characteristic wetland flora and fauna species, monitoring the main water quality parameters that may cause their degradation, visitor capacity, maximum nutrient levels that the wetlands can clean).

• Due to the tendency for NGOs to establish microreserves under their own management in not excessively large wetlands, training for NGO technicians should also be included.

• Strengthen co-operation amongst governmental and non-governmental institutions and bodies, local bodies and private industry. The Plan will try to ensure that the values of the wetlands are fully recognised by those responsible for planning other infrastructure, works and projects that may affect the wetlands to ensure that they contact those responsible for protecting and managing the wetlands during the initial planning stages. The Plan will also merge the small private wetlands with those linked to aquifers/river systems in order to study and preserve their interactions in the network throughout the territory (similar to the micro-reserve network technique used in the Valencia Autonomous Region).

• Set aside financial assistance for the conservation and rational usage of wetlands, provided that the objectives of the actions coincide with those designed under the Strategic Plan it-

self. Funding will not only come from the public sector, but also from highlighting the value-added elements involved in the correct design of wetland management plans for local economies (e.g., for tourism or potential biotechnological use).

• Ensure effective compliance by the Government with international commitments to Conventions, Directives, European and international policy related to wetlands, and encourage international co-operation.

Spain has recently joined the Mediterranean Regional System of Ramsar, known as the MedCom process. The Spanish Strategy envisages a headquarters in Valencia which, together with La Camargue (France) and the Biotopes Centre in Greece, will be used as a centre of excellence for the development of policies and techniques for Mediterranean wetlands management.

The niche covered by Spain at this Centre is linked to the design of wetlands for visitors (tourism and value-adding for wetlands in public or private town planning operations), the development of biotechnology in heavily saline wetlands, and the creation of legal and administrative frameworks for wetland management.

In a broader context, Spain played a very active role at the International Ramsar Convention Conference in May, 1999 in Costa Rica. This was the first time that the contracting parties had met in Latin America, a continent that only began to design public wetlands management policies quite recently. The Ramsar Bureau asked Spain (represented by the State Secretariat for Water and the General Secretariat for the Environment, both under the Conservation Directorate-General) to present the keynote speech on co-ordination between water resource planning and wetlands management. Spain used the Ramsar forum to explain the country's wetlands management and restoration technology.

Spain offered to host the next meeting of contracting parties in 2002.

• Defend and ensure the acceptance of the Strategic Plan by the largest possible number of bodies and institutions, both public and private, related in any way to this field.

The participatory process used to draft this Strategy document has brought to light a basic level of consensus on the fact that the application of the Strategy does not need an ad hoc or specific financial package, particularly from public budgets, in order to achieve its objectives or put into practice the measures it recommends.

The basic financial principle of all sectors invited to implement the Strategy is the need to reorient all public and private budgets towards the ends and objectives of the Strategy. This reorientation must take place immediately, if possible in the next budget. The nation should in fact be the first body to change its focus so that its activities linked to biodiversity conservation and sustainable usage have specific budgetary programmes that replace the types drafted in the past without any overall planning or programming. This commitment, in which the Subdirectorates-General for both Biodiversity Conservation and Forest Policy should take the lead, began to take shape in the draft budget for 1999.

Spain's Autonomous Regions may logically be expected to undertake this reorientation when they begin to apply their own biodiversity strategies. It seems inevitable, however, that they will reorient at least part of their budgets towards the goals of this Strategy, which will ultimately form part of the compulsory framework for the regional strategies. The same may be said for local governments, other public institutions and areas of civil society called on to implement them, particularly the Directorate-General for Research and Development, the State Secretariat for Universities, Research and Development, the main promoter of basic and applied research that can be focused on biodiversity conservation and sustainable usage.

The document clearly suggests the idea that the private sector must join the effort to conserve the nation's biodiversity. In theory, this is one, if not the main, component that environmental management and auditing systems should consider when reviewing the environmental policies of companies that wish to receive environmental certification. However, the fact that this is the parameter regulated by standardisation regulations (e.g., EMAS and ISO 14,000) does not necessarily imply that it receives its deserved attention from auditors and certifiers. For these sectors, the Strategy should become a clear incentive for the leaders of these business processes to shift from a pure payroll approach to the design of effective, operative models for biodiversity conservation in the everyday activities of all companies.

This reorientation of budgets and activities, the basic principle for the financial guarantee of the Strategy's application should not, however, stand alone. Annex XIII highlights the way that the Rural Development Regulation, one of the pillars of the EU Agenda 2000, should be largely aimed at funding public policies and private activities in the rural world which encourage the conservation and sustainable usage of biological diversity.

Initially, beneficiaries of activities that are eligible for funding under the Regulation cannot be subjects who currently benefit from Common Agricultural Policy funds, unless the biodiversity conservation parameter is added to their activity along with other parameters which reform their farming structure with the aim of avoiding constant dependency on the price subsidy policy. The Rural Development Regulation should therefore be one of the basic funding items for the measures envisaged for the agricultural and forestry sectors, as well as any other economic activities that generate a new type of income in the rural world.

Naturally, the present Strategy must be taken as a minimum level of commitment, not only for the maintenance of funds currently earmarked for biodiversity conservation and sustainable usage, but also with a view to a substantial increment under both the Environment Ministry and other state bodies as they gradually adapt their policies to the inevitable requirements of a conservation-oriented approach.

The State must therefore ensure that these budget resources are maintained and increased as required, in step with budget growth and freezes or curbs on public debt when demanded by the overall European fiscal policy. Similarly, it is reasonable to expect the same effort from regional governments and the rest of the decentralised public administration bodies when the economic basis for the application of regional strategies and local action on biodiversity conservation is being designed.

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BIOTRADE	UNCTAD initiative to establish exchanges of resources deriving from biodiversity.
CAP	Common Agricultural Policy
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CODA	Co-ordinator for Environmental Defence Organisations
CSIC	Council for Scientific Research
DNA	Deoxyribonucleic Acid
EAGGF	European Agricultural Guidance and Guarantee Fund
EEC	European Economic Community
EIONET	European Environment Information and Observation Network
EMAS	Ecomanagement and Environmental Auditing System
EU	European Union
FAO	United Nations Food and Agriculture Organisation
GILGES	List of Sites of Geological Importance
IRPF	Personal Income Tax
ISO	International Standards Organisation
IUCN	International Union for the Conservation of Nature
MaB	Man and Biosphere Programme
MAPA	Ministry for Agriculture, Fisheries and Food
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-operation and Development
OSPAR	North Atlantic Protection Organisation
PCR	Polymerase Chain Reaction
SAC	Special Conservation Area
SCI	Sites of Community Interest
SEHUMED	Site for the Study of Mediterranean Wetlands
SPA	Special Protection Area
SPAMI	Zones Specially Protected for their Importance in the Mediterranean
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations for the Environment Programme
UNESCO	United Nations Organisation for Education, Science and Culture
UNICEF	United Nations Children's Fund

Technical Assistance: TRAGSA
Cover Photograph: José Manuel Cornejo
Translation: Lesley Ashcroft and Jaime Benyei
Printing: V.A. Impresores, S.A.
Legal Deposit: M-21566-2000