

FIRST PORTUGUESE NATIONAL REPORT

TO BE SUBMITTED TO THE
CONFERENCE OF THE PARTIES TO THE

**CONVENTION ON
BIOLOGICAL DIVERSITY**

Ministry of the Environment
The Nature Conservation Institute
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EXECUTIVE SUMMARY

- The Convention on Biological Diversity (CBD) was signed on 5th June 1992, during the United Nations Conference on the Environment and Development (UNCED), which took place in Rio de Janeiro. This Convention is the international legal instrument governing the conservation and sustainable use of biological diversity. Portugal approved its ratification via Decree Law n^o 21/93 (dated 29th June 1993) and it came into force on 21st March 1994.

The CBD has three objectives: (i) the conservation of biological diversity, (ii) the sustainable use of the component elements of that diversity, and (iii) the fair and equitable sharing of the benefits which derive from the use of genetic resources.

Portugal actively participated in drawing up the CBD and held the Presidency of the European Union at the time when the final text was approved and signed (Eco 92).;

- Article 26 of the CBD states that each Contracting Party must present reports to the Conference of the Parties (COP) on the measures which it has taken for the implementation of the Convention's provisions and on their effectiveness in terms of meeting the Convention's objectives.

According to Decision II/17 of the 2nd COP, which refers to the format and periodicity of the national reports that the Contracting Parties are expected to submit, the first such report should address the measures taken to implement Article 6 of the Convention (General Measures for Conservation and Sustainable Use), and present an overall diagnosis of the state of and trends affecting the biodiversity in the Party's territory. Paragraph a) of this Article states that each Contracting Party shall, in accordance with its particular conditions and capacities, either develop national strategies, plans and programmes for the conservation and sustainable use of its biological diversity or adapt those which already exist to this end. Paragraph b) of the same Article says that each Party must also incorporate, as far as possible and wherever appropriate, the principles of the conservation and

sustainable use of its biological diversity in its sectoral and cross-sectoral plans, programmes and policies.

- This report reflects the work which Portugal has done until 1998, and as far as possible was drawn up in accordance with the guidelines which appear in the Annex to Decision II/17 of the 2nd COP. The following Ministries / Directorates-General contributed to it: the Ministry of Foreign Affairs – the Portuguese Co-operation Institute; the Ministry of Finance – the Directorate-General of the Treasury; the Ministry of Territorial Equipment, Planning and Administration – the Office of the Environmental Auditor; the Ministry of the Economy – the Directorate-General of Industry, the Directorate-General of Tourism and the National Institute of Engineering and Industrial Technology; the Ministry of Agriculture, Rural Development and Fisheries – the Directorate-General of Forestry, the Agro-Foodstuffs Planning and Policy Office, the Directorate-General of Crop Protection, the National Agrarian Research Institute, the Institute of Hydraulics, Rural Engineering and the Environment, the Directorate-General of Rural Development, the Fisheries and Marine Research Institute; the Ministry of Education – the Office of European Affairs and International Relations; the Ministry of the Environment – the Directorate-General of the Environment, the Meteorological Institute, the Nature Conservation Institute, the Institute for the Promotion of the Environment, and the Alentejo Regional Directorate for the Environment; the Ministry of Science and Technology – the International Scientific and Technological Co-operation Institute; the Azores Autonomous Region – the Regional Directorate for the Environment; and the Madeira Autonomous Region – the Regional Directorate for the European Communities and External Co-operation.

The structure and content of the report are as follows:

Chapter 1 – Introduces the CBD and mentions the mandate under which this report has been drawn up, together with its structure and content; it describes the country's

characteristics which influence its existing biodiversity and assesses their importance at national level; and it identifies a number of other international commitments that contribute to achieving the CBD's objectives;

Chapter 2 – With a view to describing the background context, this chapter describes the national legal framework which permits the CBD's application in Portugal, provides a summary of the country's biodiversity and its state of conservation, and summarises the main factors that threaten that biodiversity;

Chapter 3 – Refers to the actions which have been taken with a view to drawing up a national strategy to conserve biodiversity and mentions the partners involved in it (NGO's, the private sector, government bodies, etc.);

Chapter 4 – Identifies the multiple initiatives which have already been undertaken or are currently in the course of being implemented by the various sectors and which are relevant to the application of the Convention at national level. For the purposes of this report these measures have been grouped into 6 Sectors (Agriculture, Forestry, Hunting and Fishing, Industry and Energy, Tourism, and the Environment) which correspond to different political areas of government and come under the authority of different ministries, which in turn fulfil their responsibilities via a number of Directorates-General; and into 4 Areas, which are considered to be horizontal in nature: Education, Training and Public Awareness; Development Co-operation; Territorial Planning; and Scientific Research and Development;

Chapter 5 – In particular describes Portugal's involvement in financing international projects via the Global Environmental Facility (GEF);

Chapter 6 – Lists the various sources of information used in drawing up this report.

- Due to its geographical location and geophysical conditions, when compared to some other European countries Portugal can still be said to possess a very diverse natural heritage and above all a large number of endemic features and species that are veritable relics from a biogeographical and/or genetic point of view. Its island territory situated in the Atlantic Ocean and located within the Macaronesian region also makes a major contribution to this diversity. We are thus faced with an

extremely diverse situation that is further affected by the omnipresence of the “Human” factor. Man has been present in Portugal since time immemorial, albeit with various degrees of intensity and varying consequences during different eras and in different regions. This continual interaction between Man and nature has resulted in the variety of genes, species, ecosystems and landscapes which makes up the everyday reality of the current situation in Portugal.

- Conserving biodiversity and making use of and attributing value to the Portuguese natural heritage are concerns which are at the forefront of national environmental policy and are reflected in the various actions taken under it. Evidence of this can be found in the National Environmental Policy Plan, which was published in 1994. This attitude is not only due to considerations of an ecological nature, but also to the value which all these resources hold in economic, social, cultural, recreational, aesthetic, scientific and ethical terms.

Indeed, the biodiversity which comprises natural heritage is an extremely important factor in proclaiming our own special identity within the context of European and world diversity. It ranks alongside our historic and cultural heritage – to which it is indissociably linked.

- The reduction in biodiversity which has been taking place at an ever-increasing rate over the last few hundred years (and above all in this century) is due to various different causes of which Man has directly or indirectly been the protagonist.

Thus in Portugal, where sustainable development is concerned, special attention needs to be paid to the effects of a number of factors including the over-exploitation of maritime resources, urban expansion, the intensification of transport and travel, the growth of industry and the energy sector, the promotion of tourism and the use of the latest agricultural and forestry methods.

- Many of the environmental problems faced by contemporary societies are global in nature and can only be solved on a world scale. Far from isolating itself from the measures that have been undertaken in this context, Portugal has been an active

party in the environmental and development effort which is being made world-wide.

Within the international context, Portugal is an active member of almost all the international bodies and *fora* dedicated to environmental and development issues. The aim of this membership is to ensure that integrated and sustainable development models are adopted and that Portugal takes an active part in global efforts towards the resolution of those problems which extend beyond individual national boundaries. Portugal is contributing to an increase in Public Development Aid (PDA) and shoulders special responsibilities in terms of the provision of development aid to countries with which it has very special historical ties, such as the Portuguese-speaking African countries. These ties, and indeed all the initiatives in the co-operation field, must be progressively strengthened and oriented towards the contribution they can make to sustainable development.

Portugal has also subscribed to and is an active member of practically all the international conventions concerning environmental problems.

- As far as the legal context is concerned, a growing effort to complete the legal framework related to environmental issues has contributed to the ever more certain conclusion that, as it stands at the moment, the Portuguese Law embracing environmental issues is already adequate to enable the essence of most of the principles embodied in the Convention to be applied here.
- At national level the Government is committed to optimised and integrated use of all the instruments at its disposal in order to properly apply the Convention. It has been initiating actions and adopting measures in a variety of fields with a view to ensuring that the Convention's objectives are included in its various sectoral and cross-sectoral plans, programmes and policies.

The National Environmental Policy Plan, which was drawn up in 1994, is in itself a contribution to the sustainable development of Portuguese society, inasmuch as it has brought environmental concerns to the forefront of national policy. It was intended to be the first step – to which major improvements can no doubt be made –

towards the inclusion of environmental concerns, and especially the conservation of nature and biodiversity, into every area of government.

The horizontal nature of the measures taken to ensure that we conserve biodiversity and follow the sustainable development route has implied the creation of a number of indispensable inter-departmental links. Amongst them, those which have already been implemented in the Fisheries and Tourism Sectors are especially worthy of note and are considered to be essential to the sustainable management of their respective resources.

- However, as it was recognised that existing measures to invert the current tendency towards a reduction in biological diversity were inadequate, it was considered essential to draw up a national strategy for the conservation of biodiversity in such a way as to make it possible to achieve the Convention's objectives (as set out above) in a strategic way. This strategy, which so far has not been fully defined or put into practice, will comply with the provisions of paragraph a) of Article 6 of the CBD.

With a view to drawing up this strategy, there was a proposal to create an inter-ministerial co-ordinating structure aimed not only at the elaboration of the strategy itself (which is expected to provide the framework for Action Plans to be implemented by the various Sectors of the Civil Service), but also to foster the inclusion of the strategy's component elements in all the different sectoral and cross-sectoral policies.

The involvement of other interests, be they institutional or those that emanate from society as a whole, is also provided for via the existence of a national consultative body – the National Council for the Environment and Sustainable Development – which is a forum for reflection on the matter.

- As far as the financial resources to be involved in the application of the CBD at national level are concerned, given the many sectors involved, only when the national biodiversity conservation strategy has been established will it be possible to determine the extent of this key aspect of the issue.

When it comes to the financing of international projects, the Global Environmental Facility (GEF) is the interim financial mechanism which will be used to apply the Convention on Biological Diversity.

Portugal joined the pilot phase of the GEF in 1992 with a contribution in escudos worth the equivalent of 4.5 million Special Drawing Rights (SDR's). This contribution took the form of three promissory notes, the redemption of which took place over the period up to August 1997. Portugal has contributed around 892,268,800 escudos – which is to say 4 million SDR's – to GEF-I, to which end it has already issued four promissory notes in the amount of 223,067,200 escudos each. These promissory notes will be redeemed over the period up to the year 2006.

During the course of 1997 negotiations took place amongst all the donor members with the intention of setting up new resources for GEF. These negotiations included the definition of each member's level of "burden-sharing".

- By providing a summary of the measures which have already been implemented or are under way in the various relevant sectors in order to ensure the CBD's application, this report reflects the way in which the principles of the conservation and sustainable use of Portugal's biological diversity have been incorporated into the country's various sectoral and cross-sectoral plans, programmes and policies, and is a document which will provide the basis for drawing up the national strategy for the conservation of biodiversity.

1 – INTRODUCTION

1.1 – The Convention On Biological Diversity

The Convention on Biological Diversity (CBD) was signed on 5th June 1992, during the United Nations Conference on the Environment and Development (UNCED), which took place in Rio de Janeiro. This Convention is the international legal instrument governing the conservation and sustainable use of biological diversity. Portugal approved its ratification via Decree Law n^o 21/93, dated 29th June 1993, and it came into force on 21st March 1994.

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Chapter 2 – With a view to describing the background context, this chapter describes the national legal framework for application of the CBD in Portugal, provides a summary of the country's biodiversity and its state of conservation, and summarises the main factors that constitute a threat to that biodiversity;

Chapter 3 – Refers to the actions which have been taken with a view to drawing up a national strategy to conserve biodiversity and mentions the partners involved in it (NGO's, the private sector, government bodies, etc.);

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1.3 – The Portuguese National Context

Portugal's mainland territory covers a total area of 9,189,892 ha. and includes a coastline which is about 800 kms. long. It is located at the extreme south-western tip of Europe at the western edge of the transition boundary between two distinct biogeographical zones: the Atlantic sub-region of the Euro-Siberian region, and the Mediterranean region. Its considerable biophysical diversity results from the interaction of the determining climatic features of these two regions, which is made possible by the fact that the country extends over fairly a wide latitude range. Additional elements in the Portuguese picture are the country's decisive orography and the diversity of its prevailing pedological characteristics, which have been modelled by the intervention of the succession of peoples who have depended on the country's diversity over the millennia.

Mainland Portugal is relatively mountainous and a substantial percentage of its territory lies above the 300-metre altitude level, especially in the north and centre of the country. Pride of place in this context goes to the Serra da Estrela, which reaches a height of 2,000 metres. The mainland area contains and is essentially crossed by four major river basins: the Mondego, the Douro, the Tagus (Tejo) and the Guadiana, the last three of which have their source in Spain.

The mainland climate is temperate, with annual average temperatures ranging from 7° C in the highlands of the central interior to 18° C along the south coast, and an average precipitation which varies between 3,100 mm. in the mountainous regions of the northern interior and 450 mm. on the south coast.

By European standards, Portugal possesses a rich and diverse flora and fauna, to which its island territories (the Madeira Archipelago and the Azores Archipelago) also make a considerable contribution. The latter are located in the Atlantic Ocean and form part of the Macaronesian region: the Madeira Archipelago, which covers a total area of 77,892 ha., is situated around 1,000 kms. to the south-west of mainland Portugal; the Azores Archipelago, which is to be found more than 1,200 kms. west of the mainland, covers a total area of 232,967 ha.

The variety of the factors which determine the Archipelagos' climates, ranging from the temperate Atlantic to the subtropical, result in a rich range of autochthonous flora and fauna associated with a great diversity of exotic species. Some of the latter are cultivated and some not, depending on the considerable differences in the way they have adapted themselves to the local conditions – differences that sometimes occur even within the territory of a single island.

In Portugal we are thus faced with an extremely diverse situation that is further affected by the omnipresence of the “Human” factor. Man has been present in Portugal since time immemorial, albeit with various degrees of intensity and varying consequences during different eras and in different regions.

In demographic terms the Portuguese population stabilised during the period between 1981 and 1991. In December 1993 the resident population was estimated at around 9,887,560 inhabitants on the mainland, 253,000 in Madeira and 237,000 in the Azores.

According to 1993 data supplied by the National Statistical Institute, the pattern of land occupation on the mainland is as follows: 40% of the territory is devoted to agriculture and 34% to forestry, while 10% of the territory is occupied by existing or planned construction and the remaining 16% is used in other ways.

When it comes to the Azores and Madeira Archipelagos, 46% of land in the Azores is occupied by agriculture, 25% by forestry, 15% by construction (both existing and planned) and 14% by other uses; while 9% of the surface area of Madeira is devoted to agriculture, 30% to forestry, 23% to existing or planned construction and the remaining 38% to other forms of occupation.

Conserving biodiversity and attributing a greater value to and improving the natural heritage are concerns which are at the forefront of Portuguese national environmental policy and are reflected in the various actions taken under it. This attitude is due to the value which all these resources hold in ecological, economic, social, cultural, recreational, aesthetic, scientific and ethical terms.

Indeed, the biodiversity which comprises the natural heritage is an extremely important factor in proclaiming our own special identity within the context of European and world diversity. It ranks alongside our historic and cultural heritage – to which it is indissociably linked.

Biological diversity (or biodiversity) manifests itself at every level of the biological hierarchy from genes to ecosystems and is the result of millions of years of evolution. As is well known, the growing and unprecedented loss of biological diversity at both global and national level is having serious consequences for humanity, particularly as regards reductions in the opportunities available to us in terms of diet, health and economic and social development and in those which enable us to find alternative answers to environmental change.

This reduction, which has been taking place at an ever increasing rate over the last few hundred years (and above all in this century), is due to various different causes of which Man has directly or indirectly been the protagonist.

Thus in Portugal, where sustainable development is concerned, special attention needs to be paid to the effects of a number of factors including the over-exploitation of maritime resources, urban expansion, the intensification of transport and travel, the growth of industry and the energy sector, the promotion of tourism and the use of the latest agricultural and forestry methods.

1.4 – Portugal's International Commitments

Many of the environmental problems faced by contemporary societies are global in nature and can only be solved on a world scale. Far from isolating itself from the measures that have been undertaken in this context, Portugal has also been an active party in the environmental and development effort which is being made world-wide.

The implementation of a development model based on the concept of sustainable development must be reflected at two different levels: that of national or regional economies, and on a global or world scale.

Within the Portuguese national context, as is stated in the National Environmental policy Plan, the integration of the environmental issue – and especially that of the conservation of biodiversity – into all sectoral policies is fully recognised as being the touchstone of sustainable development.

On a world level, support for the less developed regions to enable them to adopt integrated and sustainable development models, and participation in the global efforts to solve the problems which extend beyond national boundaries are the essential elements of a strategy for sustainable development on a planetary scale. Increasing Public Development Aid (PDA) and enhancing a spirit of partnership with the developing countries are the way to pursue this strategy – a strategy in which the involvement of the private sector in co-operation activities is also an essential element.

Within the international context, Portugal is an active member of almost all the international bodies and *fora* dedicated to environmental and development issues, and shoulders special responsibilities in terms of the provision of development aid to countries with which it has very special historical ties, such as Portuguese-speaking African countries. These ties and indeed all the initiatives in the co-operation field must be progressively strengthened and guided within the perspective of the contribution they can make to sustainable development.

Portugal has also subscribed to and is an active member of practically all the international conventions concerning environmental problems, especially the Conventions on Climate Change and Desertification. This represents a way in which we can participate in the global efforts to preserve ecosystems and the genetic diversity of the organisms which are a part of them.

As an example, there follows a list of the international commitments which Portugal has made and which contribute to objectives similar to those of the CBD.

As far as the European Union (EU) is concerned, highlights in the nature conservation sector include the work done with a view to achieving full compliance with Community Directives, such as the one on the conservation of wild birds (79/409/EEC) and the one on the preservation of natural habitats and wild flora and fauna (92/43/EEC), as well as the CITES regulations applicable at Community level.

On a more global level, key examples include the work done to implement the commitments resulting from the application of the following Conventions: the Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), especially the commitment deriving from implementation of the resolutions of the Conferences of the Parties in which Portugal actively participated; the Ramsar Convention on Wetlands of International Importance, in relation to which highlights include the work done in Portugal as a result of the declaration of wetland areas as Ramsar sites in accordance with the criteria set by the Convention; the Bern Convention on the Conservation of European Wildlife and Natural Habitats, in relation to which it is worth noting the work done to follow up the recommendations issued by the groups of experts and subsequently approved by the standing committee (Portugal actively participates in both fora); the Bonn Convention on the Conservation of Migratory Species, as regards which highlights include the agreements concerning the conservation of cetaceans in the Black Sea, the Mediterranean and the contiguous Atlantic area, the conservation of the waterfowl of the Paleo-Arctic – African system, and the agreement on the conservation of bats in Europe, in which Portugal has played a leading role.

Portugal's participation within the ambit of the Pan-European Strategy for biological and landscape diversity also deserves to be mentioned.

When it comes to the Portuguese commitment to international actions designed to implement the provisions of the CBD, as far as agriculture is concerned the work done within the ambit of the EU includes that carried out in the Committee on the Conservation, Characterization, Collection and Utilization of Genetic Resources in Agriculture. On a more global level, Portugal's technical and financial commitment to the implementation of a number of programmes is worthy of mention. Examples

include the work done for: the European Co-operative Programme for Crop Genetic Resources Networks (ECP/GR), within the ambit of the International Plant Genetic Resources Institute (IPGRI); the European Programme for Forest Genetic Resources (EUFORGEN); and co-operation with the FAO on the committee for Genetic Resources for Agriculture. In the last of these *fora* Portugal has participated in the negotiations about the Global Plan of Action for the Conservation and Sustainable Use of Plant Genetic Resources and in the revision of the International Undertaking on Plant Genetic Resources.

As far as animal species which are of interest to agriculture are concerned, Portugal has also maintained a close co-operation with the FAO within the context of the Information System on Domestic Animals Diversity. In addition, we have actively taken part in the same organisation's implementation of a Global Strategy for the Management of Animal Genetic Resources for Agriculture.

Within the context of the forestry sector, Portugal, like the great majority of European countries and the European Union itself, was one of the states which signed a set of resolutions adopted in the Ministerial Conferences on the Protection of Forests in Europe. Key Resolutions include H1 – “General Guidelines for the Sustainable Management of Forests in Europe” and H2 – “General Guidelines for the Conservation of the Biodiversity of European Forests”.

In addition to this, Portugal and Finland are the Signatory States which are responsible for the supervision of the four Helsinki Resolutions, and Portugal has also taken direct responsibility for co-ordinating the networks of national representatives to the European database on forest fires and to the sustainable management of mountain forest ecosystems, which were created as a result of the two resolutions approved during the 1st Strasbourg Ministerial Conference.

Within the ambit of the 2nd Ministerial Conference on the Protection of Forests in Europe (1st Technical Meeting of the Helsinki Ministerial Conference, held in Geneva in June 1994), six criteria and twenty-seven indicators for Sustainable Forest Management were defined and adopted. These criteria and indicators are

considered to be the most suitable in the European context and are tools with which to assess the way in which the various countries, including Portugal, make progress in their efforts to apply the principles of sustainable forest management and to conserve the biodiversity associated with forests.

The set of objectives which have been achieved within the ambit of the process involved in the Pan-European Ministerial Conferences on the Protection of Forests includes some important elements concerning the sustainability of forest management. They are supported by co-operation between the European States and the European Union and specifically recognise that the conservation of biodiversity is an essential element in the sustainable management of forests.

Portugal actively participated in the work of the Intergovernmental Panel on Forests (IPF), and along with Senegal and Cape Verde was the co-organiser of an international meeting of specialists on the rehabilitation of degraded forest ecosystems – a theme which is especially relevant to Portugal.

When it comes to international actions designed to implement those of the Convention's provisions that affect the fisheries sector, Portugal is a member of various International Committees and Bodies, including the International Council for the Exploration of the Sea / Consultative Council for Fishery Management (ICES/ACFM); the Scientific, Technical and Economic Committee on European Union Fisheries (EU/STECF); the Northwest Atlantic Fisheries Organisation (NAFO); and the International Commission for the Conservation of Atlantic Tuna (ICCAT).

Some of these items will be addressed in more detail in Chapter 4 of this report.

2 – BACKGROUND

2.1 – The Legal Framework

The great majority of Portuguese laws concerning the environment have been published over the course of the last decade. The most systematic and coherent of them is the Constitutional Law on the Environment, which was published in April 1987.

The Constitutional Law on the Environment establishes the principles of the environmental policy to be followed by the government. According to its general principle, environmental policy is the instrument intended to “optimise and ensure the continuity of use of natural resources in both qualitative and quantitative terms as the basic precondition for self-sustained development”.

The group of statutes which we might term the first generation of laws in the environmental field are characterised by the fact that they either promoted approaches which were sealed off from the overall reality of a situation and limited themselves to regulating an effect by addressing its most immediate or obvious cause, or those which fitted into a sometimes artificial vision of the area involved.

As ideas matured and above all as lessons were learnt from the practical implementation of these rules and standards, a new generation of legal instruments of a horizontal nature arose. Experience shows that the most effective policies for the protection of the environment are those that use cross-sectoral approaches; and the evidence of this is equally clear when it comes to the legal solutions to environmental problems.

The development and growth which have taken place over the last few decades have led to the country’s modernisation and the economy has become more diversified. This in turn has given rise to new areas of production as well as to more elaborate forms of territorial planning and classification, which, inasmuch as they have resulted in the creation of new environmental interfaces – and some additional

potential ones – have stimulated the extension of a wider range of environmental rules and standards to these sectors.

At the same time as statutes specifically related to the environmental field have been published – especially those leading to the conservation of biological diversity – we have also witnessed the growing incorporation of environmental rules and standards in the legal texts that establish the regulations governing the various sectors of activity.

There has been intense legislative output in the environmental field, partly as a result of the need to keep step with existing Community and international rules and standards – which are prolific. Indeed the environment is a perfect example of an area which poses problems and demands solutions which extend beyond national borders.

The combination of these circumstances with a growing effort by the Ministry of the Environment (MA) to complete the legal framework related to environmental matters leads us to conclude that the Law embracing environmental issues is already adequate to enable the environmental policy which has been defined to be put into practice.

Table 1 shows the general legislation relevant to the application of the Convention in Portugal which is currently in effect.

Table 1 – *General legislation relevant to the application of the Convention*

| | |
|---|--|
| V | The Constitutional Law on the Environment: Law nº 11/87, dated 7 th April 1987. |
| V | The Water Law: Decree Laws nos 45/94, 46/94 and 47/94, dated 22 nd February 1994. |
| V | The Constitutional Law on Forestry Policy: Law nº 33/96, dated 17 th August 1996. |
| V | The Constitutional Law on Agrarian Development: Law nº 86/95, dated 1 st September 1995. |
| V | The Hunting Law: Law nº 30/86, dated 27 th August 1986, and its regulations – Decree Law nº 136/96, dated 14 th August 1996. |
| V | The Fishing Law: Law nº 2,097, dated 6 th June 1959, as regulated by Decree Law nº 44,623, dated 10 th October 1962 and updated by Decree Law nº 312/70, dated 6 th July 1970. |

In addition to these laws, there is a vast list of statutes which provide a framework for all sorts of activities, reference to which may be found in the various sections of chapter 4.

2.2 – The Current State Of Biological Diversity In Portugal

Ecosystems and habitats

By European standards Portugal still possesses a very diverse natural heritage thanks to its geographical location and geophysical (climatic, orographic and pedological) conditions, which have been modelled by human intervention over the ages. This continuous interaction between human beings and nature has resulted in a variety of more or less humanised genes, species, habitats, ecosystems and landscapes, which taken together represent the real state of the situation in Portugal.

Mainland Portugal is essentially integrated within the Mediterranean region, although the frontier between the latter and the Atlantic region crosses the country's extreme north-eastern tip. This biogeographical border and the interpenetration of the characteristics of each of the two regions give rise to the existence of multiple nuances and the occurrence of peculiar and unique situations, while many of the types of habitats are at the border of their natural distribution area.

The Azores and Madeira Archipelagos are situated within the Macaronesian region and thanks to their location, the climatic influences to which they are subject and a substratum of volcanic origin, are home to habitats of quite unique nature and undeniable importance.

Portugal also possesses a coastline which is in a reasonable state of conservation and enjoys a relatively low level of pollution. In this context the coastal and marine ecosystem is worthy of special note. The coastal zones are particularly attractive for urban expansion and this makes them quite vulnerable in the face of a planning system which does not take the requirements of the conservation of biodiversity into account.

On the mainland, the dune habitats, the rocky cliffs, the marshes in estuary and lagoon systems, and the estuaries with typical biocoenoses, a high level of primary productivity and sheltered zones which are suitable for the reproduction and nursery phase of many fish species, are all very important as well. The importance of the estuaries can also be seen from the numerous bird populations which shelter there and use them as migratory stations, wintering areas or breeding grounds. These vast wetlands also function as filtering and decontamination areas in which the vegetation plays a crucial role by using up many of the polluting substances in the environment.

The nesting areas of seabirds in the Madeira Archipelago deserve a special mention. Thanks to their location and the absence of human occupation they host some of the most important colonies in the North Atlantic. When it comes to the Azores Archipelago we should mention the large and deep hydrothermal vents, the underwater hills and the offshore reefs which are both characteristic of and unique to the Northeast Atlantic subtropical region.

The fresh-water ecosystem is another important feature, the significance of which is heightened by the growing desertification of the area surrounding the Mediterranean. This system includes marshland areas making up an ecosystem that forms the border between land and water environments. They are few and far between in global terms (c. 3%) and have suffered from an accelerated decline over the last few decades, but are vitally important habitats in the context of the maintenance of biodiversity and also play a significant role in regulating water.

Another ecosystem which deserves to be highlighted is the woodland system. The contact between woodland of Atlantic and Mediterranean types and the occurrence of the peculiar Macaronesian woodlands (Laurissilva – a subtropical formation with hygrophilous characteristics found only in the Macaronesian region, the largest area of which - 15,000 ha. – is located on the Island of Madeira) make this ecosystem, which is in a good state of conservation, one of the most important in Portugal.

The Mediterranean maquis is one of the most characteristic of the southern European habitats, possesses a large biological diversity and is extremely important as a genetic reserve.

However, occupation by single crops of exotic species has contributed to a reduction in the percentage of the surface area of a number of types of forest occupied by resinous species; the area covered by autochthonous leafy species has nonetheless remained stable in overall terms.

The agricultural ecosystem continues to possess some unique characteristics. In Portugal nature has been used and altered by Man for a very long time, but this use has mostly occurred in a traditional and extensive way, thereby making it possible to retain a high percentage of the area's biodiversity and even an increase in it in some cases. The "*lameiros*" (hillside land irrigated by means of an ingenious and centuries-old system) represent a notable example of sustainable agriculture and constitute artificial habitats with a high level of biological diversity.

Species

In Portugal we find a large number of Mediterranean and Macaronesian species alongside the typically Atlantic ones, including a considerable percentage of endemic features and species which are veritable relics from a biogeographical point of view.

Flora

The predominant condition governing the natural vegetation on the Portuguese mainland is the interplay of the Atlantic and Mediterranean climatic influences which cross the country and result in the coexistence of species from both central-western Europe and the south of the continent. In fact mainland Portugal constitutes the northernmost or southernmost limit of the territory of some of these species. This group forms the majority (around 2/3) of the species of flora found on the

Portuguese mainland, where they grow alongside others which are characteristic of the Iberian Peninsula or North Africa. 86 specifically Portuguese species and a significant number of Iberian endemic species stand out among the total of approximately 3,000 *taxa* of vascular flora encountered on the Portuguese mainland (around 2,500 spontaneous species and 500 naturalised ones).

Urgent conservation measures are considered necessary for approximately 10% of this range of flora (293 species). Of these, 18 are probably already extinct, 100 are in danger of extinction, 155 are vulnerable and 20 are rare (according to Ramos Lopes & Carvalho, 1990). The zones preferred by these species are the rocky and sandy coastal areas, especially the south-east coast, the north-eastern Trás-os-Montes area (where the specific characteristics of the serpentine substratum have resulted in the concentration of a large number of endemic species), and the central plateau of the Serra da Estrela, whose rocky outcrops are home to various *taxa*.

The higher altitude areas of north-eastern mainland Portugal host a number of species which constitute vestiges of the post-glacial period and are accompanied by yews (*Taxus baccata*) and small woods composed of birch or white birch-trees (*Betula alba*). The slopes, which are subject to Atlantic influence, are covered with pyrenean oak (*Quercus pyrenaica*), common oak (*Quercus robur*) and holly (*Ilex aquifolium*). Typically Mediterranean vegetation appears on/in the warmer and more sheltered slopes and valleys in the shape of the cork oak (*Quercus suber*), the strawberry tree (*Arbutus unedo*) and the Portuguese laurel (*Laurus nobilis*).

The pyrenean oak (*Quercus pyrenaica*) is the predominant species in the north-east at altitudes above 500 m., while the holm oak (*Quercus rotundifolia*) dominates the lower levels. There are some outcrops of ultrabasic rocks on the outskirts of Bragança which are home to a flora composed of relict plants living alongside various endemic *taxa*.

The highest areas in mainland Portugal are to be found in the mountainous massif formed by the Serra da Estrela. A flora with its own special characteristics has arisen there and is both adapted and restricted to altitudes above 1,600 m.

When it comes to the centre of the country, the limestone massif in the Estremoz area deserves a special mention for its very singular basophilic flora; while further south, the Serra da Arrábida is covered with quaternary relict vegetation which is of extraordinary importance in evolutionary and biogeographical terms.

The cork oak (*Quercus suber*) predominates in the western area of the southern region of the country, which is more Atlantic in nature, while in the more continental eastern part the holm oak (*Quercus rotundifolia*) is the dominant species. The groves of cork and holm oaks constitute plant formations which are limited to regions with a Mediterranean climate and are present in Portugal in significant numbers. They are of major ecological importance inasmuch as they sustain a diverse range of flora and fauna, and possess great economic importance as well, due to their association with the practice of woodland pasturage and the use of other natural resources (hunting, bee-keeping and the harvesting of cork).

In the south-east we find the Serra de São Mamede, where the pyrenean oak (*Quercus pyrenaica*) is the predominant species. Inland from the south-east coast and the Vicentine promontory (itself a very important area in terms of its flora and one which possesses a considerable number of endemic species) rise the Serra de Monchique and the Fóia peak. Due to their altitude they contain locations with a high level of humidity, which favours the appearance of a flora with similarities to that which exists in the northern part of mainland Portugal. A limestone plateau called the Barrocal Algarvio develops as we move inland from the Algarve coast. Its flora is dominated by the Mediterranean influence, which plays a determining role in the distribution of the more xerophilous species.

In terms of the threat they pose, fires constitute a serious problem throughout the south of Europe, and Portugal is no exception. They have an obvious ecological, social and economic impact and can even result in an obvious intrusion into the rural landscape, whose physiographical shape has undergone significant alteration in some regions as a consequence.

The extent to which the fires affect the country is based on a set of phenomena in which climatic and sylvan (linked to the structure, type and layout of the dominant forest, especially in the north and centre of the country) factors, the depopulation of the interior of the country, the deep alterations in the economy of the rural world and issues related to both societal and individual behaviour all play a part.

The absolute need to conserve genetic plant resources, to maintain their biodiversity and to use them in a sustainable way has led to action being taken with a view to reducing the damaging effects of the fires. Increasing public awareness and both the prevention and fighting of fires are areas which have been the focus of action.

Due to their special pedological and climatic characteristics, the Madeira and Azores Archipelagos host a flora of unrivalled value, which includes bryophytes. According to the Council of Europe (1991) we should particularly note that amongst the species which are endemic to the Macaronesian biogeographical region and are found in the two archipelagos, 14 of those found in Madeira are in danger of extinction and 1 is vulnerable, while in the Azores 14 are in danger of extinction and 5 are vulnerable.

In the Madeira Autonomous Region, interesting flora occurs in the central mountainous massif and the coastal cliff areas with xerophytic characteristics, including a variety of endemic species which are currently being monitored. 190 of these species are the object of special conservation measures, 47 of them are legally protected and 31 are also subject to ex situ conservation. In addition to these plants, an aromatic and medicinal flora also exists in the same area. Its harvesting in the wild is discouraged, but incentives are provided to the local population in order to foster its cultivation.

The flora of the Azores contains more than 1,000 species, about half of which are autochthonous and 55 are endemic to the archipelago. 31 of these are protected by law and 7 are considered to be priority species. There are also numerous lesser plants (more than 450 species) and many of them are also endemic.

If we add up all the species which comprise the plant cover of the mainland, the Azores and Madeira we discover that about 3,600 species of plants occur in Portugal (Table 2).

Portugal's natural vegetation includes a vast genetic storehouse which is of interest to agriculture both for direct use as crops and for employment in achieving phylogenetic improvements. Noteworthy examples include the numerous ornamental species divided up among roughly 44 families of dicotyledons and 8 families of monocotyledons which form part of Portuguese spontaneous and sub-spontaneous flora and possess potential economic value. In addition there are many others spread among something like 60 families, which may well be of interest for use in achieving improvements.

Table 2 – *Wild vascular plants in Portugal*

| Total | endemic | rare | vulnerable | endangered | extinct | the object of special conservation measures |
|----------|---------|------|------------|------------|---------|---|
| Mainland | 3,000 | 86 | 20 | 155 | 100 | 18 91 |
| Madeira | 1,200 | 140 | | 1 | 14 | 190 |
| Azores | +1,000 | 55 | | 5 | 14 | 1 31 |

Portugal also possesses great potential in terms of those of its wild and cultivated plants that are of interest for use as pasture or fodder, most of which are gramineous or leguminous. Some of them continue to be harvested in their wild state while many others are employed for the contribution they can make to improving other species. There are genera that have a large number of wild relatives, some of which are in danger of extinction (e.g. *Festuca*) or at least in the vulnerable category.

The following are some of the most important species in economic terms: the genus *Lupinus* (which contains 6 species and numerous well-differentiated ecotypes within autochthonous flora, and includes two Iberian endemic species and various threatened species); the genera *Trifolium* and *Medicago* (with a large number of ecotypes that require study and conservation); and the genera *Dactylis*, *Lolium* and *Festuca*, which play a very major role in the composition of the country's pastures and deserve special attention when it comes to ecological differentiation.

Something in the region of 500 species are to be found in the group of plants with aromatic or medicinal potential. Some of them may constitute a cultural alternative for use in sustainable agricultural systems or for the upgrading of marginal land for agricultural use. They are mainly distributed among the Labiatae, Compositae, Umbelliferae, Myrtaceae, Oleaceae, Liliaceae, Rosaceae, Leguminosae, Rutaceae, Hypericaceae, Iridaceae, Pinaceae, Cupressaceae, Lauraceae and Malvaceae families.

Mainland Portugal is located within the "Mediterranean Region's Centre of Agricultural Diversity" and is close to the so-called "cradle of agriculture". This has resulted in the fact that cultivated plants have been introduced into the territory since very early times. Many crops were first domesticated in this region, which is recognised to be the centre of diversity for 246 species belonging to 56 families, which represent 9.9% of all domesticated species.

A significant number of the cultivated species in Portugal originated in regions which are not part of the Mediterranean basin and arrived as a result of successive contacts with the exterior. This situation has led to the existence of a great range of cultivated species, which, when associated with the differentiated cultural habits and the pedological and climatic variety observed in Portugal, possess a high level of genotypical diversity. Some traditional agricultural systems continue to exist and a number of regional varieties of cereals are still to be found among the tilled and horticultural species cultivated today.

Contrary to what has happened in terms of agricultural species, it is still rare to see domesticated forest or woodland species in Portugal.

The cork oak (*Quercus suber*) and holm oak (*Quercus rotundifolia*) have taken on great importance around the country due to the added ecological, social and economic value they bring with them. It may be that it will be possible to mitigate the degradation which is currently being witnessed in some areas where groves of cork and/or holm oaks are to be found by employing improved practices in their management and use. Some other quercineae also occur in Portugal, although they are less widespread.

The pyrenean oak (*Quercus pyrenaica*), the common or “spontaneous” oak (*Quercus robur*) and the kermes oak (*Quercus coccifera*) occur quite often and may be said to extend over a fairly wide area. The “carvalhiça” (*Quercus lusitana*) and the lusitanian oak (*Quercus faginea*) are the least common species and it is probable that part of their genetic variation has been lost.

The wild pine (*Pinus pinaster*) is the species which occupies the greatest area in Portugal, but it is decreasing in numbers due above all to its replacement with eucalyptus trees (*Eucalyptus globulus*) and to some extent to urban pressure as well. However, its genetic resources may be considered to be well preserved. The area covered by the stone pine (*Pinus pinea*) and the chestnut tree (*Castanea sativa*), both of which retain a degree of importance in some rural economies, is stable. The elm (*Ulmus procera*) is in danger of extinction due to Dutch Elm Disease (DED), and other species belonging to the same genus are in a similar state, with few remaining nuclei.

Other less representative species are encountering a variable number of problems related to man-made problems which are leading to a reduction in their numbers in Portugal. The fragility of the populations of marshland species deserves special attention in this context.

Fauna

In general terms the wild animal heritage that exists in Portugal is well known and has already been described in detail, whether it occurs on land or in marine or transitional geographical areas.

However, the shortcomings in relation to some zoological groups when it comes to more detailed biological studies capable of being used to draw up complete and up-to-date inventories of all the taxonomic groups are equally well known. This is especially true of invertebrates.

Mammals

The 69 *taxa* of terrestrial mammals present in Portugal include 2 cases of specifically Portuguese species, both of which involve bats (*Nyctalus azoreum* and *Nyctalus leisleri verrucosus*), 2 Iberian endemic species which are classified as threatened (*Lynx pardina* and *Microtus cabreræ*) and 1 species which is only found in Portugal, Spain and the French Pyrenees (*Galemys pyrenaicus*).

Just as there are mechanisms which led to the rarity and even the disappearance of a large number of species in Central Europe, especially from the middle of this century onwards, it is also possible to list a variety of types of threat factors which have resulted in disturbances to the habitats and populations of some *taxa* in Portugal. Thus, as a consequence of the abusive use of renewable natural resources and the systematic destruction of habitats, some autochthonous species – the most demanding and sensitive – have gradually seen their ability to expand limited and both the area in which they occur and their numbers reduced.

Particularly obvious threat factors include environmental pollution from industry or the towns and cities, the intensification of agriculture (in the sense that it involves the abandonment of traditional agricultural practices), the replacement of mixed forests and woodland by single crops extending over large areas, and the construction of dams and other significant alterations to fresh-water environments (irrigation, drainage and the correction of torrential water flows), as well as actions resulting from unstructured tourism.

These factors are made worse by clandestine activities, the introduction of exotic species, the use of pesticides and the illicit trade in various species – all things which also constitute serious threats.

The presence of species which are severely threatened in the rest of Europe but whose status in Portugal is less worrying, such as the otter for example, imposes added obligations and responsibilities upon us in terms of the conservation of our irreplaceable genetic heritage.

When it comes to the conservation statuses allocated to terrestrial *taxa*, we find that around 50% of cases involve non-threatened species. The remaining 50% refer to species which are the object of varying levels of threat and require very special, priority attention in terms of the implementation or reinforcement of conservation measures. They include the wolf (*Canis lupus*) and the lynx (*Lynx pardina*) – both predators which are very scarce in their respective distribution areas – a few species of bats and the water mole (*Galemys pyrenaicus*).

If we carry out a simple numerical analysis of the marine mammals included in the Portuguese fauna – Pinipediae and Cetaceans – we discover that among the six species of the former, only the sea-wolf (*Monachus monachus*), which is to be found in the Madeira Autonomous Region, is considered to be threatened and is the object of a certain degree of concern in terms of its future survival as a species. In addition, the westernmost colony of the species, which is one of the ten most threatened in the world according to UICN, is the only place within Portuguese territory where it has breeding pairs.

As far as Cetaceans are concerned, the panorama is quite varied. Of the twenty-four species involved, more than half of those which are habitually to be found within Portugal's Exclusive Economic Zone (EEZ) have not yet been properly studied from a scientific point of view. This undoubtedly represents a serious shortcoming which it is important to redress as soon as possible. Based on the experience that has been accumulated so far, especially over the last few decades, it is possible to suggest that a number of threat factors are affecting these animals. Amongst the most significant are their accidental death by drowning in fishing nets and the dangers associated with the accumulation of a diverse range of environmentally contaminating substances, including mercury, organochloric compounds and PCB – a danger which is heightened by the position which the

predatory Cetaceans and Pinipediae occupy at the top of the food chain in the marine environment.

As regards the species of mammals which are of interest to agriculture, Portugal is home to a notable range of genetic diversity and possesses a variety of domestic breeds with unique characteristics. This places the country in a privileged position and imposes an added responsibility on us when it comes to their conservation.

Over the centuries differentiated animal populations developed as a result of the diversity of the pedological, climatic and social conditions prevailing in Portugal. These populations were well adapted to local conditioning factors and gave rise to the autochthonous breeds that exist here today.

Portugal possesses a noteworthy heritage in this regard. 12 breeds of cattle, 14 of sheep, 5 of goat, 3 of horse and 2 of swine are currently recognised as autochthonous breeds with unique characteristics. The trends which have been observed over the last few decades and especially the intensification of production systems and the desertification of the rural environments have meant that we have seen a marked reduction in the numbers of practically all the autochthonous breeds. As a result of this most of them are currently in danger, and in a few cases the numbers left indicate the imminent danger of their extinction.

The cases that are considered to be the most critical in terms of the possibility of extinction are the Cachena and Ramo Grande breeds of cattle, the Churro do Campo goat, the Sorraia horse and the Bísaro pig. The number of females capable of breeding has fallen below 200 in each of these cases and the additional risk factors which are affecting them (their state of health, demography, the age of the breeding animals, etc.) are giving rise to fears for their survival.

Birds

When it comes to bird life, it is possible to say that out of a total of 313 species and/or distinct geographic forms of birds listed as occurring on Portuguese territory as a whole (the mainland and the Autonomous Regions combined), around 35% are

threatened in some way (The Red Data Book of Portuguese Vertebrates, Vol. 1, 1990). This includes the cases in which a species is presumed to have become extinct in the recent past.

If we look at the situation of the species which nest on the mainland and in each of the Autonomous Regions, we can clearly detect the occurrence of two distinct phenomena resulting from island situations or increased geographic isolation. In this way we immediately see that the number of taxa which actually nest in each of the ocean archipelagos is much smaller than that of the ones which nest on the mainland; and moreover that this number progressively diminishes as the geographical distance from Continental Europe increases. Thus the birds that nest in the Azores comprise less *taxa* than that of Madeira (32 and 42 respectively), and both of them fall far short of the figures relating to the mainland (195 nesting species).

Without going into taxonomic minutiae, we can also see that the percentage of nesting birds under threat in the two Autonomous Regions taken as a whole is basically analogous to that witnessed on the mainland (42% and 40% respectively), although it is substantially higher in the Azores (47%) than in Madeira (38%). This data reinforces the notion of biological fragility that characterises the island ecosystems and clearly indicates the need for an increased conservation effort in the Autonomous Regions. The threats to the biological diversity of the Azores are mainly caused by man and result from over-use of resources, particularly an increase in the area used as pasture and the introduction of exotic species. This has led to a reduction in the natural areas which exist on most of the islands and to their virtual elimination on some.

Given the evolution which has taken place in the agricultural and woodland-pasturage production systems, both in Portugal and around Europe, together with the generalised expansion of the mechanisms of industrial production and the growing and not always orderly proliferation of the various forms of humanisation of our natural systems, it is a fact that a large number of species of birds are now the object of an unfavourable conservation rating. The situation experienced by the populations of many of these species has significantly worsened over the course of

the last few decades, despite the efforts which have been made to conserve them in the meantime.

Reptiles and Amphibians

Portuguese herpetological fauna (the mainland, Azores and Madeira combined) includes 51 species (17 amphibians and 34 reptiles). 5 of the amphibian species and 5 of the reptiles are endemic to the Iberian peninsula, while there are 2 species endemic to Madeira. The great majority of the species which comprise existing herpetology in Portugal are autochthonous, although the marine turtles, which are all migratory animals, and the chameleon (*Chamaleo chamaleon*), which was introduced to the Algarve, are exceptions to this rule. The Madeira wall-lizard (*Lacerta dugesii*), which is an autochthonous resident of that Autonomous Region, has also been introduced into the Azores.

In general terms the conservation status of herpetological fauna in Portugal is not an alarming one, although it should be noted that the reptiles are proportionately more threatened than the amphibians. This situation is partially due to the fact that the marine reptiles which are to be found on Portuguese territory are generally threatened in the countries where they normally reproduce, inasmuch as they are extremely vulnerable during the period in which their eggs are laid and hatched. The growing human occupation of the shoreline and the resulting reduction in the suitable areas available for these vertebrates to breed is making this situation worse.

Given that both the amphibians and the reptiles are very closely connected to particular biotopes and are characterised by their low level of mobility, they find it very difficult to colonise new areas in the event that their natural habitats are destroyed or altered. This makes them very vulnerable to any kind of human intervention. From this point of view it is possible to consider that they constitute potentially threatened groups.

According to The Red Data Book of Portuguese Vertebrates, Vol. 1 (1990), only two of our autochthons unequivocally possess the status of threatened species (*Lacerta monticolae* and *Vipera seoanei*).

Although they are naturally different as a result of their distinct biological characteristics, particularly in terms of the fact that most amphibians reproduce and pass their juvenile period in an aquatic environment, it is nonetheless true that both groups suffer from the impact of a certain number of common threats. It is obvious that the decline of a given group is generally not due to a single cause, but rather to the conjunction of various factors, which may often vary from region to region.

In overall terms it is, however, possible to consider that the main factors threatening Portuguese herpetological populations are (in decreasing order of importance) the following:

- The alteration and destruction of their natural habitats;
- The action of toxic substances (biocides: insecticides, herbicides and fungicides) and environmental pollution (industrial and human waste);
- Extermination due to ignorance and popular myth;
- Capture (for inclusion in collections, sale or consumption as foodstuffs);
- Death due to road traffic;
- The introduction of exotic species.

Fish

The fresh water fish of the Portuguese mainland include a large number of specifically local breeds. Two species are found only on Portuguese territory (*Rutilus macrolepidotus* and *Chondrostoma lusitanicum*), while one is limited to the area around the Mediterranean and nine to the Iberian Peninsula. All are classed as threatened in The Red Data Book of Portuguese Vertebrates, Vol. 2. In addition to these species, the eight migratory ones which are to be found in Portuguese watercourses are also threatened, as are two others which occur naturally in Portugal. In short, twenty-

two of the twenty-eight autochthonous species in Portugal are considered to be threatened.

In summary we can consider that Portugal possesses very varied fresh-water fish species, which is a valuable natural resource from an economic, social and cultural point of view. However, profound socio-economic transformations have taken place over the last four decades and have led to a range of uses of the hydric domain of types which had previously been uncommon. These innovations have led to significant changes in the aquatic environment and have caused a reduction in the wealth and an increase in the fragility of the communities that live there. Amongst the main alterations are hydraulic construction projects such as dams, the domestication and dredging of Portuguese watercourses, the abusive exploitation of inert matter in reproductive and egg-laying zones, the levelling of riverbeds and banks, the drawing off of water and industrial, agricultural and domestic pollution – and we should not forget to mention fishing activities, which have exceeded sustainable levels.

The introduction of an exotic element similarly represents a permanent source of threat inasmuch as it may well involve a species which competes with the indigenous ones and in some cases may constitute a predator in relation to a given phase in the lives of our own fish.

The construction of dams without special weirs to allow fish (especially anadromous species) to swim up-river, and the destruction of biotypes which are suitable for their reproductive and nursery phases constitute especially serious threats inasmuch as they prevent the fish from gaining access to their breeding grounds. These factors are often associated with over-fishing and even illegal fishing due to the increased commercial value of the species in question. These are some of the reasons for the disappearance of the sturgeon from Portugal, and may lead to the elimination of the salmon, the allis shad, the twaite shad and the lamprey from every river in Portugal.

Portugal's EEZ (and especially that part of it which lies off the mainland) is located in a transitional area between the masses of temperate Atlantic waters and those which are subject to a Mediterranean influence, and this gives it some special characteristics in terms of the diversity of its marine fauna.

Portuguese waters possess a great wealth of fauna, particularly in terms of marine and estuary fish (821 species, 34 of which are classified by UICN as threatened and 45 as commercially threatened).

Although some marine species are currently threatened as a result of the over-exploitation of stocks, over-fishing is not the only danger to them. Coastal species, such as those which occur in the estuaries and coastal lagoons and along the rocky shorelines, are in particular very vulnerable to a wide range of disturbances caused by the most diverse forms of human activity. Urban and industrial pollution, oil and other hydrocarbon spills, the removal of sand, the harvesting of algae and invertebrates, the alteration of segments of the coastline for construction purposes and the involuntary disturbance caused by the presence of massive numbers of tourists in vulnerable areas all affect the coastal communities in many different ways.

The level of intensity of the threat factors in the Madeira Autonomous Region is generally lower, and to a large extent they are similar to those experienced in the north-east Atlantic – clandestine international fishing and pollution – although the threats may become more intense in the coastal strips around the islands themselves. In most cases fishing is still carried on in traditional ways because of the area's bathymetric characteristics and especially the absence of a continental shelf. These circumstances result in the fact that some species which are classed as commercially threatened in mainland waters are not in the same danger off Madeira.

Despite the geomorphological similarities between Madeira and the Azores, the bottom fishing in the latter area has taken on industrial characteristics in recent years due to the considerable expansion of the fleet and the substantial increase in

fishing activities. This has contributed to a worrying decrease in the stocks of some species.

3 – STRATEGY

The nature of the issues involved in the conservation of biological diversity and its sustainable use is a horizontal one and determines the existence of a network of complex interactions which are sometimes the object of controversy in relation to other areas of government and society as a whole. This interaction took on a special relevance following the Rio Conference, where it became clear that there is a need to bring the different opinions and interests involved together around the concept of sustainable development, which the Conference considered on the world scale. To this end, and guided by the Convention's objectives, in Portugal we have been taking actions and adopting measures and laws (which will be described in more detail in the next chapter) in various fields.

However, given that we recognise the inadequacy of these measures when it comes to inverting the current trend towards a reduction in biological diversity, it was considered essential to draw up a national strategy aimed at conserving that diversity which would make it possible to achieve the Convention's objectives in a strategic way. This strategy, which has not yet been fully defined or put into practice, is intended to comply with the provisions of paragraph a) of Article 6 of the CBD.

With a view to drawing up this strategy, a proposal has been made for the creation of an interministerial co-ordinating group which will provide a framework for the various Action Plans to be developed and implemented by the different sectors of the government and the civil service, and will also foster the incorporation of the strategy's contents into the various sectoral and cross-sectoral policies.

The involvement of other interests – both those of institutions and those originating in society as a whole – is also provided for by means of the creation of a national consultative body – the National Council for the Environment and Sustainable Development. This Council will be an independent forum for useful reflection on the formulation and implementation of the environmental policy,

particularly in relation to those aspects concerning the conservation of nature and biodiversity.

By summarising the measures which have already been taken or are in the process of being implemented in the various sectors which are relevant to the application of the CBD, this report reflects the way in which the various sectoral and cross-sectoral plans, programmes and policies have been progressing. It is thus considered that the information contained in this document constitutes an important basis for drawing up a Portuguese strategy for the conservation of biodiversity.

4 – ACTIONS WHICH HAVE ALREADY BEEN TAKEN OR ARE CURRENTLY IN THE PROCESS OF BEING IMPLEMENTED

As has already been mentioned, as far as the national plan is concerned the incorporation of environmental issues into all sectoral policies is a precondition for ensuring sustainable development. To this end Portugal is committed to the optimised and integrated use of all the instruments at its disposal and has been commencing actions and taking initiatives in various domains with a view to ensuring that the objectives of the CBD are incorporated into the various sectoral and cross-sectoral plans, programmes and policies. The National Environmental Policy Plan (mentioned above), which was drawn up in 1994, represented the first contribution to the sustainable development of Portuguese society inasmuch as it allocated a leading place to environmental concerns in Portuguese national policy. It was also intended to be the first step towards the inclusion of those concerns – and especially those related to the conservation of nature and biodiversity – in every area of government.

This chapter contains a summary of the principle measures that are considered to be relevant to the application of the CBD and have already been taken or are currently in the process of being implemented. As has already been said, these measures have been grouped together in 6 Sectors (Agriculture, Forestry, Hunting and Fishing, Industry and Energy, Tourism, and the Environment) which correspond to different political areas of government and come under the authority of different ministries, which in turn fulfil their responsibilities via a number of Directorates-General; and into 4 Areas which are considered to be horizontal in nature: Education, Training and Raising Awareness; Development Co-operation; Territorial Planning; and Scientific Research and Development.

4.1 – Agriculture

4.1.1 – Introduction

Agriculture is an economic activity which, while not immune from concerns about its financial viability, seems to be set to expand during this final period of the century, while at the same time searching for a sustainable balance between rural development and available natural resources.

Over the generations, farmers have contributed to maintaining essential environmental relationships and to adding value to and conserving natural resources as production factors. It is important to ensure the long-term existence of the latter inasmuch as they constitute a significant part of the individual and collective heritage that we must pass on to future generations.

However, as a result of the profound structural changes that have taken place over the last few decades, we have witnessed an exodus of rural dwellers to the cities. The countryside has consequently become deserted, particularly in those areas where individual income from agriculture is lowest. Amongst other things, this fact has contributed to the disappearance of species and habitats which had adapted to the traditional production systems, an increase in forest fires and a reduction in the infiltration of water into the soil and the phreatic layers.

The centres of intensive agriculture – which employ limited numbers of species cultivated in a rapid rotation regime requiring the use of irrigation, mechanisation and chemical and phyto-pharmaceutical fertilisers in order to improve harvests, and which above all imply a less extensive genetic base – also cause significant breakdowns in natural systems when they are created in unsuitable places and when special care is not taken. Moreover, they are subject to accidents of a phytopathological nature which sometimes reach catastrophic levels.

4.1.2 – Initiatives Taken And Under Way In The Sector

Within the overall line which the Government has programmed for the agricultural sector and within the ambit of the organic restructuring of the Ministry of Agriculture, Rural Development and Fisheries (MADRP), Decree Law nº 74/96 (dated 18th July 1996) created the position of Environmental Auditor. This officer's principal mission is to supervise and assess the relationships between agriculture, fishing and the environment. As set out in Regulatory Decree nº 52/97 (dated 28th November 1997), the Environmental Auditor is especially responsible for assisting the Minister in the co-ordination of the Ministry's activities in relation to these matters, fostering the inclusion of environmental concerns in the various policies defined for each field of action, and monitoring the implementation of the programmes, measures and actions which put those policies into practice.

The initiatives which have been taken in the agricultural sector and have contributed to the conservation of biological diversity include actions that cannot be dissociated from the sustainable use of that diversity, which is itself the principal guarantor that local populations will remain in their traditional habitats. This is the only hope of countering the current tendency towards a worsening in one of the most serious phenomena currently affecting the Portuguese mainland – desertification. These initiatives may essentially be classified within the following areas:

4.1.2.1 – The *In Situ* And *Ex Situ* Conservation Of The Germ Plasm Of Autochthonous Breeds And Plant Species

Although in many ways Portugal's involvement in the identification and conservation of genetic resources has been in the forefront of the process, so far activities in this field have been of a dispersed nature and have been implemented by institutions which belong to different ministries. This is due to the absence of mechanisms designed to ensure their co-ordination at national level and to permit

the optimisation of the effort to ensure the conservation of the germ plasm and an increase in its potential for use.

Following the initiatives which were taken during the first half of this century, particularly as regards the creation of *ex situ* field collections of cereals and fruit-producing plants, from the 1970's onwards we witnessed a new growth in the effort dedicated to the collection and conservation of germ plasm.

Various collection missions have taken place since then and have led to the creation of a depository of several thousands of specimens. In addition to other institutional germ plasm collections, the Portuguese Plant Germ Plasm Bank has been established in Braga.

There are currently some 70 institutions with programmes and structures designed to conserve the germ plasm of autochthonous breeds and of cultivated plant species and their sylvan relations. They collect the germ plasm of cereals, types of fodder, horticultural and forest species, fruit-producing species and aromatic and medicinal plants. Their programmes embrace both *in situ* and *ex situ* forms of conservation and include the conservation of semen, the conservation of seeds at low temperatures, conservation in field collections and conservation in *in vitro* collections (as is the case with the grape vine and a number of cereal and ornamental species which propagate themselves in a vegetative manner.

In order to co-ordinate all these activities in such a way as to ensure continuity and security, a number of initiatives have begun to be taken with the aim of co-ordinating and stimulating the sector in harmony with the national agricultural policy and the commitments Portugal has made in the international forum.

Following on from this basis, a National Co-ordinator of Genetic Resources for Agriculture and four Co-ordinators for the "Agricultural Plant", "Animal", "Forest" and "Microbial" sectors have been appointed, and a National Plant Genetic Resources Information Service has been created. So have seven sectoral committees which are responsible for co-ordinating activities in sectors linked to genetic resources, documentation and information. With a view to ensuring as broad a

participation as possible, representatives from all the sectors which may potentially be linked to this theme have been involved in the process at the level of the various relevant ministries and public institutions, the private sector and non-governmental organisations.

A large part of the activities in this field have been financed at both national level, within the ambit of research and development (R&D) projects, and at Community level, within the ambit of EU Programme n° 1467/94 and on the basis of the Structural Funds.

It is also worth noting Portugal's involvement in the international negotiations which have taken place in this context, especially in relation to the EU committee for genetic resources for agriculture and the FAO Committee for the same sector, as well as its active participation in the negotiations held within the ambit of the Permanent Committee on the Seeds and Propaguli of Agricultural, Horticultural and Forest Species.

National legislative measures have been taken with the intention of safeguarding our vast national genetic heritage, especially as regards the marketing of seeds in such a way as to enable species which are threatened with extinction to be conserved by their use *in situ*, granting exceptions to the criteria governing admission to the National Catalogue of Agricultural and Horticultural Species with a view to conserving the genetic diversity of traditional species, the creation of special conditions to address the changes which have occurred in relation to the conditions under which seeds that are suitable for ecological agriculture are marketed and sold, and the *in situ* conservation and the sustainable use of genetic plant resources by means of the cultivation and marketing of local varieties and other varieties which are naturally adapted to local and regional conditions but are threatened with genetic erosion, together with the definition of as detailed a description of these varieties and their respective denominations as possible with a view to their inclusion in a joint catalogue of "varieties for preservation".

Within the ambit of the defence of the Portuguese genetic resources that are of interest to agriculture, it is also worth highlighting the existence of national legislation which is relevant to the sector and which transfers the main Community Directives into Portuguese Law. These include: the phyto-sanitary protection of all the plant material imported for the purposes of scientific research; the production and marketing of agricultural and horticultural seeds included in the Community Catalogue; and the production and marketing of material connected with vegetative propagation, grape vines, fruit trees and ornamental plants.

As far as the plant breeders' rights are concerned, the legislation in Portugal since 1990 is according to the Convention for the Protection of New Varieties of Plants (UPOV), dated 1961 and revised in 1978, which Portugal joined in 1996.

When it comes to genetic animal resources, the main legislative basis designed to assist in the conservation, description and use of autochthonous breeds has been composed of the government's agro-environmental measures and the Support Programme for the Modernisation of Agriculture and Forestry (PAMAF), particularly the component element of the Programme which provides support to help Breeders' Associations function.

Besides this, the legislation which makes it possible to certify products from given breeds has made an important contribution to their more widespread presence on the market – and thus to their survival.

4.1.2.2 – Agro-Livestock Production Systems

Since the Common Agricultural Policy (CAP) was instituted, and more especially since its first reform and the entry into effect of Community Support Framework 1 (CSF1), the subsidies channelled to Portuguese agro-livestock production systems via MADRP have taken the principles of the conservation and sustainable use of biological diversity into account.

Under the current CSF2, the measures intended to directly support production systems can be classified in two groups: actions which are incorporated into

measures of a structural nature; and actions related to a particular conjuncture which are intended to provide incentives for practices that respect the principles referred to above but which taken alone lead to lower income from the aforementioned productive systems.

The action taken in the first group can be divided into two types: support for agricultural infrastructures and assistance to agricultural farms.

The second group of actions essentially consists of the application in Portugal of the agro-environmental measures that fall within the ambit of EEC Regulation n^o 2078/92, which seeks to achieve 4 major objectives: (1) a reduction in the polluting effects of agriculture; (2) the expansion and/or retention of traditional extensive forms of agriculture; (3) the conservation of rural resources and the rural landscape; and (4) vocational training. Assistance is currently being provided for various actions and/or measures designed to pursue these objectives.

A group of initiatives are incorporated within the ambit of the first objective – a reduction in the polluting effects of agriculture. They are intended to provide incentives which will lead farmers to use agro-chemical products in a more rational way and to adopt alternative methods to combat plagues and diseases, and include actions and/or measures in the following fields: suggested chemical treatments; integrated protection; and integrated production and biological agriculture.

The initiatives aimed at the expansion and/or retention of traditional extensive agricultural systems include measures which are embraced within the more general objective of conserving nature, and are intended to avoid the desertification of rural areas by providing support for:

- the traditional multiple crop systems of the north and centre of Portugal;
- non-irrigated cereal systems;
- “*lameiros*”;
- extensive pasture systems;
- traditional olive groves;

- the Torres Novas fig groves;
- terraced vineyards within the Douro delimited region;
- fruit orchards which grow regional varieties;
- traditional non-irrigated apple orchards in the Algarve;
- traditional non-irrigated almond groves;
- holm-oak groves;
- the continued existence of autochthonous breeds which are threatened with extinction.

Measures which are particularly aimed at the forestry sector have been implemented within the ambit of the conservation of rural resources and the rural landscape, and they will be described in the next chapter.

The promotion of vocational training by means of the organisation of training activities, public awareness campaigns and demonstration projects is intended to make it possible to create material incentives for the training and increased awareness of both specialists and farmers in relation to environmental issues.

Within the agro-livestock field other actions have been taken in relation to the phyto-sanitary inspection of vegetables and plant products. EEC Directive n^o 77/93 (issued by the Council when it met on 21st December 1993) and its respective alterations were transferred into Portuguese legislation by Decree Law n^o 154/94, (dated 28th May 1994), and by Administrative Rule n^o 344/94 (dated 1st June 1994). They establish measures designed to provide protection against the introduction of organisms that are prejudicial to vegetables and plant products into the Member States. The importation and circulation of such matter was therefore made subject to conditions of a phyto-sanitary nature in order to avoid the introduction and propagation of damaging organisms onto Portuguese and Community territory, and are thus contributing to the maintenance and conservation of biodiversity.

4.2 – Forestry

4.2.1 – Introduction

The conservation of forests and their sustainable use constitute fundamental concerns on which the success of the continued existence of forest ecosystems depends. These principles are included in the current Constitutional Law on Forestry Policy (Law nº 33/96, dated 17th August 1996).

Given Portugal's incorporation within a Mediterranean framework, this issue is extremely important here because of the extent to which the country is covered in forests, these areas' economic importance and the problems involved in maintaining them.

In European terms Portugal has one of the highest ratios of forest area per 1,000 inhabitants and is one of the countries with the highest proportions of privately owned forest areas. This fact makes it very difficult for the public authorities to intervene in the management of the greater part of Portuguese woodland.

The most significant elements in terms of the changes which have been occurring in the areas of Portugal covered in forests are:

- Portuguese forests have grown regularly and significantly in area since the middle of the last century;
- Pine trees and oak groves are the dominant forest formations around the country;
- Over the last decade the area covered by forest in Portugal has grown by 15,000 ha/year (14,000 ha/year in the previous decade), which is in line with the prevailing trend in the other European countries, albeit with the following more significant special characteristics:
 - a decrease in the area covered with wild pines (-18%);
 - an increase in the area covered with eucalyptus (+80%);

- the continued importance of cork and holm oaks;
 - an increase in absolute terms in the area occupied by the remaining species, although their relative weight in terms of total forest acreage has remained stable;
- The earlier growth in forest has not been reflected in an adequate degree of division of the forested areas into separate sections;
 - Over the last few decades there has been a significant growth in the activities related to the exploitation of forestry resources;
 - During the last decade forest fires have been responsible for quite significant annual losses in forest populations.

4.2.2 – Initiatives Taken And Under Way In The Sector

Nation-wide initiatives are currently being taken in the area of forestry-related activities. They are contained within a framework of specific legislation and are intended to achieve the conservation and sustainable use of forest biodiversity. Some of the more important measures are:

The Forestry Development Programme (PDF)

The PDF forms part of the Forestry Measures implemented as part of PAMAF and is the main instrument for providing support for the expansion and improvement of the country's forest areas.

Within the context of the PDF actions have been organised with the specific objectives of reforesting areas which have suffered from forest fires, improving existing forest areas, planting new areas with trees, creating and improving tree nurseries, carrying out general improvements to the forest, maintaining and building infrastructures and putting forest areas to multiple uses.

A favourable financial assistance regime provides incentives for planting autochthonous forest species.

Measures to complement the reform of the Common Agricultural Policy (CAP)

Within the ambit of the reform of the CAP, a regime governing subsidies for planting trees on agricultural land has been created under the terms of EEC Regulation n° 2080/92.

These agriculture-related forestry measures are intended to foster alternative uses for agricultural land via the grant of subsidies for planting trees on it, for improving existing forest on agricultural farms, and for the construction of infrastructures which complement these activities.

This measure is intended to provide compensation for losses in income due to the planting of trees on agricultural land, and therefore also provides for the grant of an annual bonus to the farmer. With the objective of avoiding forest fires, forest areas are also contemplated within the ambit of the agro-environmental measures (EEC Regulation n° 2078/92) with a view to recovering populations of trees that have been abandoned (most of which belong to absentee forestry producers). The maintenance of tree populations is extremely important for the conservation of forest heritage and adds to their influence on the environment. This is especially true in terms of the protection of water resources, the restraint of erosive phenomena and the safeguarding of biodiversity.

With this in view these measures contribute to a more balanced management of the rural area and provide incentives for the conservation of holm-oak groves, the continued existence of forest acreage which complements agricultural farms, and the preservation of clumps or areas of autochthonous tree or shrub species which are incorporated into forest ecosystems of high biological interest, all with the aim of conserving genetic heritage and biodiversity.

Under the terms of the Community PDF and 2080 programmes Portugal has approved tree-planting projects at an average rate of 40,000 ha/year. The most frequently planted species are the wild pine, the cork oak and the stone pine.

The protection of cork and holm-oak groves

The need to initiate actions designed to protect cork and holm-oak groves – considered a priority objective under the terms of the Constitutional Law on Forestry Policy – has resulted in the fact that the issue of the regulations to implement that Law began with the publication of Decree Law nº 11/97 (dated 14th January 1997). This Law also prohibits all land uses which affect the groves and the natural regeneration of the trees in them, as well as those which contribute to the deterioration of the natural resource constituted by the soil. As we have already mentioned, EEC Regulation nº 2078/92 also contains a measure intended to provide assistance for the retention of holm-oak groves.

The regime governing the protection of wild holly

With a view to the preservation of this species (*Ilex aquifolium L.*) and given that it can be and has been successfully cultivated for commercial ends, Decree Law nº 423/89 (dated 4th December 1989), prohibits the uprooting, total or partial cutting down, transport and sale of wild holly anywhere in mainland Portugal.

The production and certification of forest seeds

The Amarante National Forest Seed Centre (CENASEF) is currently functioning in the forestry sector. It is responsible for the variety and quality of the seeds which are made available to nurserymen. To this end a selection of populations has been

carried out in order to draw up a National Catalogue of Base Materials with a view to establishing a series of populations located around the whole country that enjoy the characteristics required to ensure the harvesting of quality seeds. Once the selection of the populations has been finished the certification process will also be completed.

A periodic inventory of the damage suffered by forests

With the objective of analysing the evolution of the vitality of Portuguese forests and in accordance with the directives laid down by EEC Regulation n° 1696/87 (10th June 1987), which established the rules and standards governing the implementation of EEC Regulation n° 3528/86 (issued by the Council on 17th November 1986, concerning the Protection of the Community's Forests Against Atmospheric Pollution), in 1987 a periodical inventory of the damage suffered by Portuguese forests began to be carried out and the resulting Periodical Balance Sheet of Forest Health began to be drawn up.

The network of plots of land forming part of the United Nations' and European Union's Economic Commission for Europe's Forestry Vigilance Programme has been established each year. In Portugal this network covers an area of around 3,300,000 ha. of forest, about 34% of which is composed of resinous species and 66% of leafy ones. The defoliation assessments carried out since 1988 have permitted an overall analysis of the evolution of the trees' vitality. This analysis takes the percentage of damaged trees (suffering from more than 25% defoliation) into account.

The number of parameters to be observed in drawing up the National Forest Inventory is growing, and this reflects the need for other types of monitoring, particularly those related to biodiversity. Various studies have been carried out with a view to perfecting the methods employed in monitoring the biodiversity of forest ecosystems and to assessing the results of forest management techniques on biodiversity.

Field collections for the *in situ* and *ex situ* conservation of genetic forest resources

As far as plant genetic resources are concerned, a number of field collections intended to ensure *in situ* and *ex situ* conservation have been created, especially in relation to the cork oak.

When it comes to this sector's international context, we can highlight the Portuguese role in monitoring the implementation of the resolutions of the Helsinki Ministerial Conference. A proposal for "Pan-European Guidelines for the Implementation of Sustainable Forest Management at an Operational Level" has been drawn up and is currently under discussion.

This proposal is a common and harmonised framework of recommendations to guide the formulation, planning and implementation of forest management. These recommendations are directly based on the "General Guidelines for the Sustainable Management of Forests in Europe" and the "General Guidelines for the Conservation of the Biodiversity of European Forests" (as defined in resolutions H1 and H2). They follow the structure of the Pan-European Criteria for sustainable forest management.

The most important of the Pan-European Criteria in the context of this report is Criterion 4, which concerns the "Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems".

In concrete terms the Guidelines related to this Criterion explicitly and specifically lay down guidance to be taken into account in the Planning of Forest Management and the Practices Involved Therein.

Portugal is currently in the process of planning and programming the launch of eight pilot projects in various regions around the country. They correspond to different forest ecosystems and are intended to make it possible to carry out tests and assessments of the practical suitability of the Guidelines in the field.

Portugal's response to the exercise that has already been carried out in order to test the aforementioned criteria and indicators – particularly as far as Criterion 4 is concerned – contains the elements relating to the specific indicator which shows the changes that have taken place in the old natural and semi-natural woodland areas (natural parks), the integral woodland reserves and the protected landscape areas. In summary they reveal that the following increases occurred during the period between 1980 and 1990:

- 39,200 ha. in old natural and semi-natural woodland areas;
- 22,500 ha. in integral woodland reserves; and
- 86,500 ha. in woodland areas protected by special planning regimes.

4.3 – Hunting And Fishing

4.3.1 – Hunting

This particular activity began to incorporate the principles of sustainability and the concerns about safeguarding biodiversity long ago. In this context it is worth noting the pioneering protectionism of Portuguese legislation on hunting, which is revealed in its positive concept of game species, the creation of a national network of reserves that are strategically important for the conservation of migratory birds, the launch of the first national measures related to especially threatened species and habitats, the recovery of a number of incipient populations of some game species, and the efforts to increase the awareness of and train the people involved in hunting, including a compulsory examination in order to obtain a hunting licence.

95% of the country's land possesses hunting potential and can be divided up into 3.3 million hectares of forests and woodland, 3 million hectares of agricultural land,

2.1 million hectares of uncultivated land and 0.2 million hectares of wetlands. Each of these areas displays particular characteristics.

Within the Portuguese fauna, 39 species are considered to be game. 8 of these are terrestrial mammals, 4 of which are classified as large game. 25 of the 31 species of game birds are migratory.

The most hunted species (in descending order) are the rabbit, the various thrushes, the turtledove, the various pigeons and the red partridge, the hare, and finally the various ducks. Other species only possess a vestigial presence in the overall tally.

This picture reveals a major dependence on 11 species. Of these, the rabbit – which also plays a key role in the food chain of the Mediterranean ecosystems – is showing signs of extremely depleted populations due to epizootic diseases. 9 of the remaining species are migratory birds, and the management rules which need to be applied to them cannot be limited to Portugal.

When it comes to larger game, the wild boar is the species which bears the brunt of hunting, while the remaining species continue to enjoy a merely vestigial importance in the overall hunting picture. With a very large number of people directly participating in hunting activities – 240,000 to 260,000 hunters each year, or 3% of the national population – the hunting sector has revealed some significant changes over the last decade in terms of hunter organisation and the management of Portugal's renewable natural resources.

Around 30% of the country is subject to specific hunting management plans. Most of the organisations which manage them are hunting associations (61% of the area subject to concession and 64% of the total number of concessions) and tourist companies (34% of both the area subject to concession and the total number of concessions).

The good organisational capacity of the hunting associations is worthy of note, both when it comes to the hunters themselves and to the game producers. There are currently more than two thousand hunting associations organised into 13

federations and one confederation. 56% of these associations manage hunting zones. At the same time there are 537 companies (or sole traders) which (or who) manage tourist-related hunting zones. Lastly there are 11 state or local authority institutions which manage national, social or military hunting zones.

Given that hunting is an activity that also involves the raising of species of game livestock, it has been necessary to carry out strict inspections of the animals' production, transport and sale as regards the protection of their genetic heritage. This has been achieved by the establishment of protocols with various research institutions.

Another of the main guidelines governing this activity lies in the creation of a national network of hunting reserves designed in such a way as to prohibit hunting in the locations where the largest concentrations of migratory game birds are to be found, those of the migration corridors which are considered vulnerable, and in locations containing the core of populations of the game species which should not be hunted.

In addition to all this, hunting activities generate other jobs at both local and regional level, contribute to the sustainable presence of rural populations and make it possible for a very diverse range of economic sectors to exist. These activities are capable of generating short-term, annual and permanent income. They also help to bring the urban population into contact with the rural world.

Hunting in Portugal is regulated by a specific legal framework which promotes the sustained use of the resources involved and contributes to sharing them out in a fair and equitable way. The decision mechanisms contained within this framework provide for the participation of all the agents involved and of society as a whole at various levels. In particular it defines which species may be hunted during a given hunting season together with the specific rules governing their capture, thereby enabling the different hunting periods to be adapted to the biological cycles of the game species and to safeguard the latter in the event of especially adverse climatic conditions.

There is currently a draft Law which will contribute to filling the gaps in the legal framework regulating this activity at the moment, in particular by:

- promoting planned hunting throughout the country;
- establishing a chapter in the law to regulate the conservation of game species. This chapter will provide for the implementation of measures aimed at ensuring the preservation of these species' biological potential and maintaining the biodiversity and biological balances in this field;
- establishing principles to govern the rational use of the game species from an ecological point of view;
- taking measures intended to ensure respect for the different reproductive and dependent stages of the game species; and especially where the migratory game species are concerned, measures designed to ensure respect for the period during which they breed and migrate.

4.3.2 – Fishing

Fishing warrants a special interest within the context of the application of the Convention due to the importance and magnitude of the impacts they have on aquatic environments. Fishing may have significant direct effects on the condition of the stocks of exploitable living resources as well as on the various ecological processes which constitute the basis for the adequate functioning of aquatic ecosystems.

As a result, one of the key objectives of the fishing sector is naturally to implement measures which ensure the maintenance of existing population levels of fish species. This can be done by controlling the amount of fishing and implementing a range of technical measures related to the state of conservation of those resources. In addition, the recovery of the coastal and marine ecosystems (by creating reef systems) ensures maximum benefit from fishing both for the

community as a whole and for the people directly involved in the activity itself. This is why these measures incorporate the principles of the sustainable use of the resources in question and thus play a part in putting the Convention's objectives into practice.

4.3.2.1 – Inland Waters

The aquatic resources of Portugal's inland waters possess a high level of socio-economic and cultural interest. In addition to their immediate economic value (e.g. their value when sold by professional fishermen), the resources available in inland waters also constitute an indirect factor in the process of achieving added value, inasmuch as they are a pretext for the development of a variety of economic sectors. Within this context it is also important to mention the cultural value attached to fishing and to the consumption of given species of fish, such as the lamprey and the shad for example – a value which also translates into economic importance at regional level.

As far as the fishing resources themselves are concerned, the species with the greatest economic value are the amphibiotic ones, i.e., those which need to migrate in order to complete their biological cycles. However, they are also the most threatened species because they are the object of both over- and illegal fishing due to their high commercial value. These threats are further added to by the factors which affect all fish species in a general manner (e.g. the destruction of the habitats where they reproduce, grow and find shelter, and the construction of dams without adequate facilities to enable the fish to get past them).

The legal framework regulating fishing in inland water dates from 1959 (Law n^o 2097, dated 6th June 1959, as regulated by Decree n^o 44623, dated 10th October 1962, and updated by Decree Law n^o 312/70, dated 6th July 1970). It incorporates the concepts of sustainable management and the maintenance of biodiversity, which are embodied in the form of regulatory rules and standards governing the capture of the various species, the planning and management of aquatic resources, the

existence of a network of areas reserved for shelter and the laying of eggs, and the maintenance of the fluvial continuum by means of the incorporation of passages for fish in hydraulic construction projects. Today, 40 years after its publication and despite its limitations, this legislation still represents an important tool for the protection and conservation of the fish communities in Portuguese inland waters.

However, a more comprehensive draft legal statute is in the process of being drawn up. It aims to ensure a greater degree of compatibility between the various uses of the hydric domain (e.g. the extraction of inert matter, the discharge of effluents and changes to river plants) and the sustained exploitation of aquatic resources.

4.3.2.2 – Coastal And Oceanic Waters

The management of fishing resources has progressively been adopting strategies designed to ensure their sustained use and the conservation of marine and coastal biodiversity.

The communities of plankton and the benthic macrofauna are at the bottom of the food chain in marine ecosystems and form biological links which are sensitive to adverse environmental impacts. For this reason special attention must be paid to them in terms of the integrated management and sustainable development of coastal areas.

The precautionary principle has been adopted by the great majority of European countries and is part of the European Union's Common Fishing Policy. There is also a set of principles and measures which generically aim to ensure the sustainability of fishing resources by means of an increasingly responsible exploitation and by ensuring respect for the balance of the respective marine, estuary and lagoon ecosystems.

In Portugal several management tools have been adopted which have had a positive impact in terms of the conservation and sustainable use of biological diversity. Examples of this are the use of more selective fishing nets and the creation

of artificial reefs designed with both conservation and exploration in mind in some offshore zones along the Portuguese coast. The implementation of a strategy of imposing planning and classification rules on offshore fishing and managing coastal resources in an integrated way (again resorting to artificial reefs) has made an effective contribution to the maintenance and/or increase of biodiversity, especially in those zones where the fishing activity is having a lot of impact.

One of the fishing authorities' objectives is to reduce the amount of fishing of those stocks which have already been over-exploited, with a view to adapting the level of exploitation to the current state of conservation of the resources in question. Within this context, the measures which have been adopted in relation to the fishing of sardines and of permanently submerged bivalves constitute two good examples of this strategy.

It is also worth noting the existence of a set of conservation and management measures intended to ensure the rational use of halieutic resources, including:

- the establishment of "Total Allowable Catches", and of individual and regional quotas;
- the imposition of minimum mesh sizes;
- the imposition of minimum landing sizes and weights for the fish caught;
- the creation of limitations on by-catches;
- the prohibition of trawling within 6 miles from the coast;
- the prohibition of the use of large drift gill-nets in the continental shelf;
- the definition of restricted/closed areas and seasons designed to ensure the protection of juvenile and spawning fish;
- the co-ordination of fishing activities with the safeguarding of the ecological conditions in production zones (re-stocking activities, integrated planning and management, the environmental impacts of fish-farming, the zoo-sanitary classification of bivalve production zones, etc.).

The establishment of limitations and controls on the breeding and farming of non-indigenous species or organisms which have been genetically altered also constitute measures which are intended to maintain the genetic “identity” of the wild populations which live in Portuguese territory.

Various national legislative items related to this matter have been published in order to provide a framework for the above measures. One of the most important is the adoption of a legal framework regulating sea fishing, which includes: measures designed to ensure the conservation of resources; the definition of operational areas and the requirements and characteristics of the vessels involved; the creation of a regime governing the issue of permits and licences; the definition of the characteristics of authorised fishing-gear; complementary statutes governing nets; the definition of fishing and other techniques; and the implementation of Community regulations governing the management of fish resources.

4.4 – Industry And Energy

4.4.1 – Objectives And Portuguese Industrial Policy

Portuguese industrial policy has been evolving and moving towards the incorporation of environmental issues, including those concerning the conservation of biological diversity. This has involved ensuring a greater degree of compatibility between industry and the environment and the search for an environmentally less aggressive posture with the aim of preventing, reducing and as far as possible eliminating pollution at its source and ensuring the good management of both natural resources and energy. In most cases – and with some very specific exceptions – this policy has taken a horizontal form and has been directed at businesses. The environment has clearly been established as one of the policy’s priorities and aims to maintain an adequate level of convergence with the “best industrial practices” in the European Union.

Using the instruments at its disposal and within the limits of the government's capacity to act, Portuguese industrial policy thus aims to take actions which are in harmony with the principles of the 5th Environment Action Programme and with the guidelines resulting from the European Community Council of Ministers' Resolution on "Industrial Competitiveness and the Environment". In this way the policy's environmental aspect follows a strategy which is intended to overcome shortcomings in infrastructures, reduce the negative impacts caused by productive activities and solve serious environmentally dysfunctional situations.

4.4.1.1 – General Measures

The measures which are in the process of being implemented in the industrial sector and which are playing a part in the pursuit of objectives related to the defence of the environment, particularly in terms of the conservation of biological diversity and the sustainable use of its component elements, include actions that can basically be classified within the following areas:

- Measures involving infrastructures and the industrial framework, such as the creation of technological infrastructures or laboratories related to the environmental field and of infrastructures designed to protect the environment and which benefit more than one industrial business by providing for the treatment of their effluents, gas emissions and waste products;
- Economic and financial measures, into which the PEDIP II, PRODIBETA, RETEX and SIMIT programmes are incorporated;
- Measures (with assistance from PEDIP II) designed to inform people or increase their awareness, amongst which the "environmental awareness missions" deserve special mention;

- Measures of a legislative nature and/or derived from the application of Community and international legislation, including industrial licensing legislation and legislation governing gas and liquid emissions, as well as actions which result from the implementation of Community Directives and International Conventions;
- Measures related to the alteration of patterns of consumption, amongst which one example that is relevant to the industrial area is the implementation of the Community Ecological Label System;
- Measures concerning the fostering of voluntary improvements in the environmental behaviour of industrial companies; these measures are providing the framework for the Government's progressive implementation of the Community eco-management and auditing system in such a way as to permit the voluntary participation of businesses in the industrial sector.

4.4.1.2 – Some Of The Instruments Employed In Portuguese Industrial Policy

The principal and most significant measures implemented as part of Portuguese industrial policy have resulted in the creation of instruments which have been applied horizontally. This is the case of the main instrument designed to support the strengthening of Portuguese industry's competitive capacity between 1994 and 1999 – PEDIP II – the “Strategic Programme for the Stimulation and Modernisation of Portuguese Industry”.

Given the need to adapt the desiderata of industrial and environmental policies to one another, which is reflected in the need to co-ordinate business competitiveness with the inclusion of sustainable development criteria, industrial projects may be considered for PEDIP II only if their plans include analysis of the environmental issues involved.

In all its various sub-programmes and in accordance with the terms of the protocol between the Ministries of the Environment and Natural Resources and the Ministry of Industry and Energy (PEDIP / Environment Programme), the segment of PEDIP II devoted to environmental protection provides support for initiatives aimed at things like:

- The installation of cleaner technologies;
- The introduction of technological processes which minimise noise, waste products and the polluting content of liquid and gaseous effluents;
- Resort to technologies designed to make valuable use of the waste products generated by businesses;
- The consolidation and creation of technological infrastructures in the environmental field;
- The carrying out of environmental audits and the provision of assistance for the recovery of degraded industrial areas.

3,754 projects had been submitted to PEDIP II by the end of 1995, representing a total investment of 1.3 billion escudos. Approximately one third of this amount involved projects which addressed environmental issues.

Another programme which deserves mention where the Environment / Industry interface is concerned is PRODIBETA – “The Programme to Stimulate Environmental Equipment and Technologies”. This Programme was approved in 1995 and aims to promote the sustainable development of Portuguese industry via measures designed to stimulate the development of Portuguese capacity in the environmental equipment field and the environmental technology domain by providing assistance to businesses. It thus supports (among other things):

- industrial companies which manufacture equipment or have projects involving the design and manufacture of equipment or installations designed to protect the environment or save energy;
- service companies which provide support for industry in the environmental protection technology domain.

Given the scope of the available cross-sectoral instruments and the diversity of interests involved in the matter, attempts to make the two policies compatible with one another have been included within an action strategy based on agreement and dialogue. To this end a Global Agreement on the Environment and Development was signed in 1994 between the then Ministries of the Environment and Natural Resources, Industry and Energy, and Agriculture, and the Confederations of Agriculture and Portuguese Industry. This Agreement envisages a global effort on the part of society as a whole to comply with the environmental objectives set for the productive activities.

Notwithstanding the fact that, as was explained earlier, Portuguese industrial policy is horizontal in nature, a few instruments of a sectoral type also exist due to a number of issues of a specific nature which concern each sector. Thus, and as an example, we will now mention a few of the measures which have been implemented in some sectors of Portuguese industry.

In the textile sector, which is very important in Portugal and can even be said to be significant on a European scale, two specific instruments exist in the economic and financial area: RETEX and SIMIT. The objective of RETEX – the “Programme for Regions which are heavily dependent on the Textile Industry” – is the modernisation of the industry’s business fabric. Amongst other things it provides assistance for investment projects designed to update technology and control pollution. Via its various regimes, SIMIT – the “Incentive System for the Modernisation of the Textile Industry” – provides for the grant of subsidies for investments concerning the environment and the rationalisation of energy use or

such things as equipment intended to make use of the waste products which result from transformation processes.

At the beginning of 1997 the chemical, paper pulp and steel industry sectors signed a National Programme for the Reduction of the emission of polluting substances into the atmosphere. This Programme results from the application of EEC Directive 88/609 – Large Combustion Installations – and determines reductions in emissions of nitrogen and sulphur oxides.

Lastly we should not forget to mention the attribution of Community Ecological Labels, not only because of their more direct impact, but above all because of the multiple effects they generate in terms of changes to patterns of consumption. These in turn lead to an increase in the design and production of products based on life cycle analyses which are increasingly drawn up from the perspective of sustainable development. During the course of 1996 three Community Ecological Labels were attributed in Portugal to paints manufactured in here.

4.4.2 – A Description Of The Energy Sector

Portugal does not possess large-scale energy resources and this makes it vulnerable and dependent on the exterior, especially in relation to fossil fuels – coal, oil and natural gas. At the same time one characteristic of the hydric resources which provide for a small part of energy needs in the electricity production field, is that they are temporally irregular.

As far as the demand for energy is concerned, the weight of the industrial and transport sectors should be emphasised. Industry is characterised by a structure in which a few energy-devouring units play a major role. This is the case of the cement, ceramics, glass, steel, chemical and paper pulp industries. The transport sector, in which total energy use overtook that of industry in 1992, is characterised by its total dependency on oil-based fuels. The consumption of energy in the service and domestic sectors has grown substantially over the last few years. This growth is

centred on the use of electrical energy and reflects the country's economic development and an increase in social well being.

4.4.2.1 – Objectives And Energy Policy

Portuguese national energy policy has been oriented towards satisfying the overall objective of ensuring the country's supply of energy and its availability in the required quantities at prices which contribute to the competitiveness of the national economy, while respecting environmental conditioning factors.

In the environmental protection field the Government believes that the strategic objective of limiting the effects on the environment which result from the production, transformation and use of energy must be pursued.

The various aspects of the energy policy designed to satisfy this objective may be classified as follows:

- Alternative Energy Resources, including the introduction of natural gas and the intensification of the use of the nation's renewable resources;
- The Rational Use of Energy;
- Technological Development;
- Limiting Emissions.

4.4.2.2 – Intervention Areas

A variety of measures are being implemented with a view to making a reality of the various guidelines listed above, amongst which the following are among the most important:

The introduction of natural gas

The diversification of the supply of primary energy by means of the use of natural gas began during the first quarter of 1997.

During the first few years in which this fuel is used, around 40% of it will be consumed by the production of electricity. The first gas-fired power station is planned to come on line in 1998, following which the existing power plants will be adapted in order to be able to burn mixed fuels. In this way natural gas will basically satisfy the forecast increase in demand for electricity up until the year 2010.

Existing provisions indicate that natural gas will fulfil 10% of industry's needs and 11% of the domestic / service sectors' requirements in 2010, having been adopted as a substitute for other more polluting forms of energy.

The introduction of natural gas has enjoyed assistance from the Energy Programme, both in relation to the construction of transport and distribution infrastructures and in terms of actions designed to ensure gas's market penetration (especially as regards the conversion of consumer equipment to natural gas).

The intensification of the use of renewable endogenous resources

The most important component elements of Portugal's renewable resources and those which are capable of making a substantial contribution to containing global CO₂ emissions are water and wind power.

The propagation and use of incentives for investment in installations designed to produce electricity derived from these two sources, and the sectoral legislation that provides for a special status for independent producers by granting them preferential terms for the sale of the electricity they produce, are both effective instruments in the implementation of the environmental aspect of the Portuguese energy policy.

The Energy Programme has also contributed with investment subsidies, in addition to which there are fiscal incentives for the acquisition of equipment that

makes use of renewable energy sources (a reduction in the VAT rate and the right to deduct the cost of the investment from personal taxable income).

The rational use of energy

This aspect of the overall policy, which is aimed at increasing efficiency in the use of energy, is gradually being implemented by means of a system of incentives designed to promote the rational use of energy which are available to the industrial, transport and residential sectors (essentially via the Energy and PEDIP II Programmes), and by the implementation of legislation in the form of a variety of regulations, amongst which we can highlight the following examples of measures which:

- govern the thermal behavioural characteristics of buildings;
- govern the labelling of domestic electrical appliances;
- promote the efficient use of electricity by making differentiated rates available;
- establish an action plan covering both local authority energy management (including the demand for energy in both the public and the private domain) and the valuable use of local energy resources (including urban waste);
- launch information and training actions in rational use of energy, aimed particularly at domestic and road-using consumers.

Technological development

We have been witnessing the use of more highly developed technologies in this domain. They are not necessarily innovative, but are resulting in the modernisation of existing equipment and facilities in the refinery sector, the production of electricity, and the energy conservation area (via the recovery of thermal losses or the extraction of energy from industrial or agro-food waste and sub-products).

These actions enjoy the support of the Energy Programme and operate with the support of the various economic agents involved (government and the civil service, the universities and private entities).

Limitations on emissions

When it comes to limiting emissions, various alterations of a regulatory nature have been introduced in relation to the specifications governing the characteristics of combustible fuels with a view to progressively reducing their sulphur content.

4.5 – Tourism

4.5.1 – Introduction

Portugal is one of the most sought-after destinations in terms of both world and European tourism. This is especially due to the truly privileged conditions and situations offered by the country's climate, history, environment and landscape.

It is worth recalling the fact that Portugal contains three meg tourist regions: the Lisbon Region, the Algarve Region and the Madeira and Azores Autonomous Regions.

The Portuguese coastline is one of the most varied and attractive in Europe. On the mainland the following areas are of unequalled importance: the Algarve and Vicentine Coasts and the south-east Alentejo; the remaining area from Santo André to the Costa Verde via the Ria de Aveiro and the São Jacinto dunes; and the mountainous zones in the interior of the country. Various islands in the Madeira and Azores Archipelagos are also exceptional sites and include the "*Laurissilva*" woodland areas, which are of unequalled value as a support for green tourism.

With an overall total of more than twenty-three million foreign visitors a year (around ten million of whom are tourists),* this sector is of decisive importance to the national economy, both in terms of the foreign currency income it earns and as regards the employment it generates.

The strongly dependent relationship between tourist activities and natural resources is recognised, and respect for the limits on the use of those resources is seen as a fundamental condition for the maintenance of the conditions required to develop both in a high quality way.

It is clear that the nature and significance of the impacts caused to the environment by tourist and leisure activities are extremely dependent on the type of activities in question, the strategy employed to distribute them, the behaviour of the people involved and the quality of the services offered. These impacts can and should be classified in accordance with the various types of environments or tourist areas in which they take place.

The number of tourists is one of the few quantitative indicators we possess on the pressure these activities put on the environment. In the case of Portugal this indicator already reveals a significant intensity of tourist activities, which in some cases have already reached their limit in terms of sustainability and capacity due to both the spatial and temporal concentration which characterises the tourist sector. As a result of demographic growth and the progressively greater degree of access to well being and the natural right to leisure which the resident population is enjoying, these days travel to natural areas is tending to become a mass movement.

Water quality is another indicator of tourist pressure. It is still very satisfactory in the coastal regions of the country, as is shown by the fact that Portugal is one of the European Union states with the largest number of blue flags on its beaches. The same is not true of the aquifers in some tourist areas, particularly the Algarve,

* In 1970 Portugal was host to three million three hundred thousand foreign visitors a year, which gives us some idea of the exponential growth which tourism has experienced over the last few decades. Tourists are defined as visitors who stay in Portugal for more than one day at a time.

where the quality and quantity of underground water has deteriorated over the years as real estate developments have been created.

Given the environmental disfunctions that are coming to be obvious pretty much all over the country, any further expansion of tourism must be preceded by a thorough assessment of the technical and logistical infrastructures involved, by using efficient programmes involving tourist equipment and its sustainable use, and by assessing the maximum tourist capacity of the locations in question.

Attention must also be paid to ensuring more balanced regional growth by means of the decentralisation of tourism and the parallel stimulation of the creation and use of tourist routes and classifications in the interior of the country, particularly in the mountainous zones and the inland lakes and other extensive aquatic areas.

The quality of the environment and the landscape will thus become one of the main arguments – perhaps the decisive one – used in selling the Portuguese tourist product. Given this perspective we are sure that conserving biodiversity by means of its sustainable use represents a key investment in the stimulation of the tourist sector.

4.5.2 – General Objectives And The Main Initiatives Taken Or Currently Under Way In The Sector

Portugal has been preparing and adopting a set of laws and measures intended to ensure the orderly growth of tourism and to minimise the effects it has on the environment and the landscape.

The current objectives of the tourist policy as far as the environment is concerned are intended to achieve the following:

- To encourage and stimulate a sustainable growth in tourism;
- To co-ordinate the tourist development policy with the policies governing regional development, territorial planning and the environment;

- To extend tourism as far as possible in both time and space in order to attenuate the pressures which it is putting on the environment and our natural resources, as well as to improve the use of Portugal's tourist potential and reduce seasonal unemployment;
- To protect Portugal's natural, architectural and cultural heritage along with the traditional knowledge and practices which are relevant to the conservation and sustainable use of biodiversity in such a way as to preserve our identity, which should constitute the brand image which the country possesses on the international tourist market;
- To increase the productivity of the tourist industry, particularly by means of the improved use of natural and human resources;
- To make local authorities aware of the need to improve, make use of and protect the natural and cultural heritage which exists in their areas as a tourist and leisure product.

Since it has proved difficult to co-ordinate and incorporate the principles of natural resources management and continuity of a balanced environmental system into decisions on tourism policy, the process is being implemented gradually.

Controlling the development of tourism in Portugal in the light of the objectives described earlier is being ensured by the implementation of concrete measures and actions, amongst which three distinct groups stand out:

- The intensification of research in the form of studies to assess the tourism-environment couplet, above all as regards tourist-related planning;
- The introduction of rules, criteria, measures and actions intended to minimise the environmental impacts caused by the growth in tourism;
- Keeping abreast of Community programmes in the environment and tourist fields.

One example of the various types of action which are being taken is the application of environmental impact studies to the tourist sector. Another element of the greatest pertinence is the National Tourism Plan, which makes it possible to equip the tourist sector with new institutional intervention structures and specific instruments designed both to allow actions to be taken and to provide foundations for decisions. This Plan was drawn up within the context of the need for a sustainable development which is integrated with the remaining sectors of the economy. In this context a wide-ranging inventory of tourist resources has been made. It constitutes a valuable element in the programming of new actions with a medium and long-term outlook to be taken in the tourist sector and by all levels of government. This inventory makes it possible to analyse the environmental impacts of a given situation at local level and in a detailed manner, inasmuch as it includes the resources which comprise our natural and historical heritage. The elaboration of a technically justified conceptual and strategic framework for territorial planning and classification takes on a primordial importance in this context. We should note the importance of both the Regional Land Classification Plans (PROT's) and the Municipal Land Classification Plans (PMOT's), which make it possible to build up a good use of tourist resources on solid and rational foundations. In the specific case of the tourist-related planning and classification of the shoreline zones, it is essential to adopt a model or tourist system based on the creation of adequately sized tourist units in such a way as to avoid the continuous urban development of the coast, as well as on the establishment of properly planned buffer or intermediate zones.

The importance of the shoreline zone in economic and landscape terms has basically been recognised by the government, which has therefore classified around 25% of the coastal strip as protected areas which include a number of wetlands of rare importance. It has also launched financial assistance programmes which are aimed at upgrading beaches and tourist areas, particularly by the restoration and reorganisation of seafronts and the recovery of urban zones.

A major “Coastal Zone Planning and Management” project has recently been launched by the Ministry of the Environment in collaboration with other sectors, especially the Ministry of Tourism. This project will make it possible to carry out an assessment of the coastal zones around the country and to create descriptive files on the various activities and pollution levels there, sector by sector. This project is essentially intended to provide a technical and scientific framework for the so-called Coastal Strip Classification Plans (POOC’s), some of which are either already under way or in the process of being approved.

A greater degree of efficiency in the co-operation between the Ministry of the Environment and the services belonging to the other entities involved, particularly in the form of jointly drawn up tourist classification plans, has led to improved results in this area.

One concrete experiment, which was co-ordinated by the Ministry of Tourism and enjoyed the participation of various public and private entities as well as the collaboration of a number of local and regional authorities and economic and social agents, was the drawing up of the Algarve Regional Tourist Plan. It was the first multi-sectoral plan implemented in this sector and has been considered to be a prime example of broad participation and efficient co-ordination. It contained a set of measures designed to reconcile tourist activity with the efficient and sustainable management of the region’s natural resources and urban structures, while safeguarding the most important aspects of the area’s potential.

Within the ambit of Council of Ministers Resolution nº 102/96, dated 8th July 1996, which grants privileges to the Protected Areas as priority areas for public investments intended to promote the quality of life of the local populations and the areas’ sustainable development, a measure was created to support recreational and leisure-related tourist practices which are not damaging to the natural environment. This support has taken the form of technical and financial assistance granted by the Tourism Fund to a number of programmes (e.g. the Programme for Intervention in the Central Massif of the Serra da Estrela, the Mértola Integrated Project and the Programme for the Restoration and Improvement of the Historic Centre of Sintra).

Means of assisting the development of types of tourism which are less aggressive towards the environment have been created within the context of the activities aimed at improving and making valuable use of the environment as a factor in attracting tourists. These formats include eco-tourism, agro-tourism and rural tourism amongst others, and they have been supported by the granting of financial incentives, for example.

As far as research into the tourism / environment couplet and the endogenic incorporation of the environmental issue within the national tourist policy is concerned, a research programme into the “Development of Sustainable Tourism” has been sponsored via the creation of a technical and scientific co-operation agreement with the Environmental Sciences and Engineering Department of the Science and Technology Faculty of Universidade Nova de Lisboa. Projects undertaken within the ambit of this programme have made it possible to assist the public authorities in the planning and management of tourism in Portugal. It is planned to continue this study programme in order to develop some other key aspects, such as:

- occupation density standards and the assessment of maximum tourist capacity;
- the definition of indicators which require data that is relatively simple to collect and easy to interpret, such as tourist density, water quality and sound or noise pollution levels; one of the advantages of this measure will be the possibility of establishing a comparative table at both national and European Union levels (this methodology has already been divulged and implemented elsewhere in the Union).

As regards the Community programmes in the environmental field in which tourism has been considered a relevant element, it is worth noting the monitoring activity undertaken within the ambit of ENVIREG, which provided incentives for actions in the coastal zone designed to protect and improve the quality of the

environment, particularly by reinforcing those infrastructures and basic equipment that provide support for the whole coastal strip.

4.6 – The Environment

4.6.1 – Introduction

In this report the Environment is considered – just as it is in the National Environmental Policy Plan – as an autonomous administrative area with its own scope of action and a specific objective which justifies its existence. However, it is obvious that in order to achieve that objective it is necessary that all the other areas – and especially those that are linked to productive activities – also shoulder their responsibilities in relation to this matter. The very horizontal nature of environmental issues cannot and should not mean that they take absolute precedence over the whole of the country's economic and social life. It is, however, essential that every sector of activity should consider environmental issues and incorporate them into its own strategies, and that sustainable development models should be found both for each individual sector and for society as a whole. As an example we should note the interdepartmental co-ordination which is already in place with the Fishing and Tourism sectors and which is considered to be of fundamental importance to sustainable resource management, as well as that achieved with the Industrial Sector via the signature of environmental adaptation contracts intended to grant a set period within which the approximately 3,000 businesses that have adhered to the system must adapt to the current environmental legislation.

At this point it is important to highlight a number of principles which drive environmental policy and were behind the drawing up of the National Environmental Policy Plan in 1995:

- the environment and development are inseparable sides of the same coin;
- the environment is more than just a duty – it is a fundamental right of every human being;
- an environmental policy is only possible and will only be effective if it is not just limited to being a task for the State to accomplish, but is rather seen as being the responsibility of the whole of society;
- some of the valuable aspects of natural heritage include an intangible aspect which goes beyond a question of cost or economic value;
- environmental issues possess an increasingly global nature.

4.6.2 – Initiatives Taken And Under Way In The Sector

It should be pointed out that in the presentation which follows, we place special emphasis on initiatives which have been taken in the biodiversity conservation area. We describe in general terms those which have already been implemented or are in the process of being carried out and which are considered essential and of the greatest relevance in achieving the Convention's objectives. These initiatives can basically be classified within the following areas:

4.6.2.1 – The Conservation Of Biological Diversity

***In situ* conservation**

References to measures and initiatives concerning the *in situ* conservation of species and habitats are also made elsewhere in this report. In this section we mention the ones which are the most important to the sector, within the context of the aspects which are considered to be of priority interest in achieving that conservation:

The National Network of Protected Areas

The establishment of a National Network of Protected Areas is without a doubt considered to be of the greatest importance from the point of view of the conservation of biodiversity, inasmuch as it consists of areas which have been chosen for their ecological and/or landscape value and their scientific, cultural or social importance, as well as because the rarity, representative nature or vulnerability of their natural components make them stand out in comparison to other areas of the country and require specific conservation and management measures.

A National Network of Protected Areas already exists in Portugal. It was created under the terms of Decree Law nº 19/93, dated 23rd January 1993. This Law defines the rules and standards governing the classification, regulation and management of the Protected Areas on the mainland. To date the National Network includes 38 Areas, comprising one National Park, eleven Natural Parks, eight Natural Reserves, three Protected Landscape Areas, ten Classified Sites and five Natural Monuments, which taken together cover approximately 7% of the country.

In Madeira the situation as regards protected areas is as follows:

- The Madeira Natural Park, which was created in 1982, embraces around two thirds of the island (56,700 ha.) and includes the whole of the *Laurissilva* woodland, the central mountainous massif, zones which include the basal level of the indigenous flora, some humanised traditional landscapes and some recreational areas for the local population;
- The Ilhas Desertas Natural Reserve, which was created in 1990 and covers a total area of 9,672 ha. including the surrounding sea to a 100 m depth contour;
- The Ilhas Selvagens Natural Reserve, which was created in 1971 includes the surrounding sea to a of 200 m depth contour (c. 9,455 ha).

- The Sítio da Rocha do Navio Natural Reserve, which was created in 1997, includes the surrounding sea to a 100 m depth contour, and a small islet, comprising an area of 1710 ha.

Since 1986 Madeira has also benefited from the existence of another protected area – the Garajau Natural Reserve – a marine reserve which includes a shoreline area of 390 ha.

There are 32 legally constituted protected areas in the Azores Autonomous region, comprising eleven Natural reserves, five Protected Landscape Areas and sixteen Partial Natural Woodland Reserves spread among the various islands which make up the archipelago.

All these classifications have permitted a more effective management of sensitive areas, a more adequate level of inspection and the resort to international sources of finance.

The Natura 2000 Network

Within the ambit of the “Birds” Directive, which was transferred into Portuguese Law by Decree Law nº 75/91, dated 14th February 1991, and of the “Habitats” Directive, which was incorporated into Portuguese law by Decree Law nº 226/97, dated 27th August 1997, an ecologically coherent network of areas called the Natura 2000 Network is in the process of being created. This Network incorporates both Special Conservation Zones (SCZ’s) and Special Protection Areas (SPA’s).

Portugal had already declared the constitution of eighteen SPA’s on the mainland, three in the Madeira Autonomous Region and fifteen in the Azores Autonomous Region in 1988. Given that this process had not yet been completed, in 1997 a proposal was put forward for the creation of eleven new SPA’s and the extension of two of the existing ones, all on the mainland.

As far as the SCZ's are concerned, as part of a first phase a Resolution of the Council of Ministers (5th June 1997) approved the creation of a group of 31 Sites in the Atlantic and Mediterranean biogeographical regions (on the mainland) and 34 Sites in the Macaronesian region (11 in the Madeira Autonomous Region and 23 in the Azores Autonomous Region). These Sites were considered to be crucial for the conservation of natural habitats and particularly the habitats of the species of wild flora and fauna with a particularly unfavourable status at European Union level.

The Decree Law n° 226/97 ordered that the management of the sites which form part of the Natura 2000 Network should be co-ordinated with the remaining territorial planning instruments which are currently in effect.

The National Ecological Reserve

Following the identification of those ecosystems outside the protected areas that are also considered imperative to preserve and given the complementary need to create ecological corridors, the National Ecological Reserve (REN) (created by Decree Law n° 321/83, dated 5th July 1983, and currently governed by the terms of Decree Law n° 93/90, dated 19th March 1990, which was subsequently repealed and given a new text by Decree Law n° 213/92, dated 12th October 1992) has come to play a crucial role in the *in situ* conservation of nature throughout the country.

The REN includes areas which possess special ecological characteristics and are located in coastal and river areas, inland waters and steeply sloping terrain which experience maximum infiltration or serve as catchment areas, thereby leading to the creation of a basic and diverse biophysical structure. The conditions imposed on the use of these areas ensure the protection of their ecosystems and both the continued existence and the intensification of the biological processes which are indispensable to the balanced incorporation of human activities. This Network covers approximately 40 to 50% of mainland Portugal.

Other classified areas

At international level Portugal is also integrated into other networks of interest to the conservation of biodiversity, namely:

- The European Network of Bio-genetic Reserves, which is composed of a group of areas intended to “ensure the biological balance and consequently the conservation, potential, genetic diversity and representative nature of the various types of habitats, biocoenoses and ecosystems”. This international instrument was created by the Council of Europe in 1976 via Council of Ministers Resolution (76)17;
- There are ten areas in Portugal designated as Bio-genetic Reserves;
- Areas issued with a Diploma from the Council of Europe, which include the Ilhas Selvagens.
- The Biosphere Reserves created under the terms of the UNESCO “Man and Biosphere” Programme, which include the Paúl do Boquilobo.
- A number of Ramsar wetlands as classified under the terms of the Ramsar Convention, which was approved for ratification by Decree nº 101/80, dated 9th October 1980. The Convention defined the criteria and categories which permit the designation of areas as Ramsar wetlands, and the signatory countries committed themselves to promoting their conservation and sustainable use. There are currently ten areas which have been designated as Ramsar sites by the Portuguese State.

Red Data Books

It is worth noting the publication of the Red Data Books on Vertebrates and Bryophytes. In addition the Red Data Book on Vascular Flora is currently in the final stages of preparation. The lists which have already been published will be revised in accordance with the new criteria issued by UICN.

The Red Data Books are instruments that are essential to the identification of the priority species which form the object of strategies and action plans such as the National Plans for the conservation of cave-dwelling bats, the wolf and the lynx.

Conservation Studies and Actions

When it comes to inventorying and identifying the areas which are a priority at national level in terms of the conservation of the natural habitats and the species listed under the terms of the “Birds” and “Habitat” Directives, we can note a number of initiatives which have been taken. Examples include the work done within the ambit of the Community LIFE Programme, which includes the “Programme for the acquisition of knowledge about and the management of the natural heritage”, and the “Natural Habitats and the Habitats of the Species of Flora of Mainland Portugal” and the “Vegetation and Natural Flora of the Azores” projects.

As regards inventories of species it is worth mentioning the work which resulted from the publication of the Red Data Books. Despite the efforts which have recently been made, it is still well known that there is a shortage of more in-depth biological studies on certain taxonomic groups, especially the invertebrates, which would enable to draw up complete and up-to-date inventories of every group.

As far as the agricultural and forestry sectors are concerned, the aspects involved in the inventorying and identification of the natural resources directly related to them are mentioned in chapters 4.1 and 4.2 of this report.

A number of initiatives have been taken in relation to monitoring on a national scale. They are aimed at the following species and habitats: bats and their cave habitats; the otter and its habitats; the water mole; the wolf; migratory waterfowl; and the winter population of cranes, among others.

In addition to these monitoring activities conducted on a national scale, others have also been implemented on a more limited level (e.g. in relation to birds of prey in protected areas; and *Narcissus sp.* in the Serra da Estrela Natural Park).

Actions related to the recovery and reconstitution of the natural vegetation covering have been undertaken first and foremost in protected areas, with the intention of recovering areas which have been burnt, those which are the object of intense erosive processes and degraded areas, particularly oak and holm-oak groves, marshland and coastal dunes. In this context it is also worth mentioning the recovery of the *Laurissilva* woodland in the Azores and Madeira Archipelagos; we have already been able to record a considerable degree of success in some of these locations.

Actions have also been taken to eradicate some invasive exotic species of an invasive nature, such as forest species like the *Acacia* and *Ailanthus* plants, and replace them with autochthonous species. A nucleus of *Acer pseudoplatanus* in the Madeira Autonomous Region was eliminated when it showed clear signs of spreading, and a number of individual *Eucalyptus globulus* have been destroyed in areas containing indigenous vegetation. The eucalyptus trees which were infesting the edges of the Madeira *Laurissilva* were eliminated with assistance from the Community LIFE Programme.

Another initiative worthy of mention has been the adoption of legislation especially aimed at species which are considered to be threatened, such as the Wolf (*Canis lupus*) – Law n° 90/80, dated 13th August 1980 and regulated by Decree Law n° 139/90, dated 27th April 1990; the marine mammals in the territorial waters and Exclusive Economic Zone (EEZ) off the Azores and Madeira – Regional Legislative Statute n° 2/83, dated 2nd March 1983 and the Regional Legislative Statute n°6/86/M, dated 20 May, respectively; and the sea turtles in the territorial waters and Exclusive Economic Zone (EEZ) off Madeira – Regional Legislative Statute n° 18/85, dated 7th September 1985; in addition to the legislation which has already been mentioned in chapter 4.2.

As has already been mentioned, legislation has also been adopted to transfer the “Birds” Directive (Decree Law n° 75/91, dated 14th February 1991) and the “Habitats” Directive (Decree Law n° 226/97, dated 27th August 1997) into Portuguese Law. Specific actions concerning the protection of both animal and plant

species have been taken within the ambit of these Directives as well as that of the Bern Convention (approved for ratification by Decree n° 95/81, dated 23rd July 1981 and regulated by Decree Law n° 316/89, dated 22nd September 1989, with the text given to it by Decree Law n° 196/90, dated 18th June 1990), the Washington Convention – CITES – (approved for ratification by Decree n° 50/80, dated 23rd July 1980 and applied by Decree Law n° 114/90, dated 5th April 1990, along with Administrative Rules nos 236/91, dated 22nd March 1991 and 359/92, dated 19th November 1992, which set out the provisions regulating its application) and the Bonn Convention (approved for ratification by Decree n° 103/80, dated 11th October 1980).

As far as genetically modified organisms are concerned, specific measures concerning the risks associated with their use and release have been adopted as a result of the transfer into Portuguese Law of two European Community Directives regarding the protection of the environment and human health against the possible dangers resulting from the confined use of genetically modified micro-organisms (GMM's) or the deliberate release of genetically modified organisms (GMO's) into the environment. These two Directives were transferred by a single Decree Law (n° 126/93, dated 20th April 1993), which requires that any genetic modification to micro-organisms or organisms must be notified to the competent authority, which in these cases is the Directorate-General of the Environment.

***Ex situ* conservation**

The initiatives taken in this field are considered to be complementary to those involving *in situ* conservation. They are extremely relevant to the conservation of biodiversity, especially when it comes to the plant and animal genetic resources used in agriculture and forestry. The *ex situ* conservation of both wild species and domesticated breeds and cultivated species in both living collections and germ plasm banks is more specifically covered in chapters 4.1 and 4.2.

In addition to the aspects mentioned above, we should note the important role played by Zoos, Recovery Centres and Botanical Gardens, especially via their participation in species recovery plans or the implementation of their own conservation programmes, as well as in terms of the assistance they provide in complying with the provisions of international conventions such as CITES.

4.6.2.2 – The Sustainable Use Of Biological Diversity

The definition and implementation of a sustainable development policy must include the reconciliation of economic development with the nature conservation. It is necessary to pay a great deal of attention to the most sensitive ecosystems and to dispose of the very latest knowledge of the impact which both the productive processes and economic activities in general have on the biophysical environment in which they take place. The Assessment of Environmental Impact programme (AIA) is an essential element in the decision-making processes concerning the development of human activities which have a significant impact on the quality of the environment or on the use of component elements of biological diversity. It is based on the presupposition of guaranteed access to information, which will in turn lead to a broad level of public participation in decision-making processes.

In Portugal, Decree Law n^o 186/90 (6th June 1990) was approved within this context and transferred EEC Directive 85/337 on the assessment of environmental impacts into Portuguese Law. It was altered by Decree Law n^o 278/97 (dated 8th October 1997), which subjects plans and projects of a given size to environmental impact studies, as well as by Regulatory Order n^o 38/90 (dated 27th November 1990) and itself altered by Regulatory Order n^o 42/97 (dated 10th October 1997), which regulate the regime governing the assessment of environmental impacts.

The essential basic solutions for ensuring the existence of a sustainable development process also require the existence of a territorial planning and classification procedure which results in the suitable location of the various activities involved (an aspect which is addressed in chapter 4.9 of this report). Here we will

highlight the instruments which belong to special areas, amongst which we include the Coastal Strip Land-Use Plans (POOC's) – inasmuch as the shoreline constitutes an interface between land and sea ecosystems and a paradigm of a place which is especially attractive to investors because of the richness and diversity of its resources, it was urgent that rules be established to regulate its occupation. The Classified Lagoon Land-Use Plans (POAC's), the Protected Area Land-Use Plans (POAP's), the Forest Regional Land-Use Plans (PROF's), the Forest Land-Use Plans (PGF's) and the Hydric Resources Plans (PRH's) are also all determining elements in a policy designed to ensure the correct management of resources.

The PRH's are intended to reconcile the policies, programmes and projects involving water resources in such a way as to guarantee the availability of water in the quantity and with the quality and reliability required by the various sectors of activity over quite a long time-frame and within the context of uncertainty, while safeguarding the conservation of nature and natural resources and the protection of environmental and heritage-related values, which constitute preconditions for the sustainability of socio-economic development.

Both the applicable national and Community legislative framework (particularly Decree Law n° 45/94) and the proposal for a Framework Directive on the European Community's Water Policy implement the general rules established in the Constitutional Law on the Environment and establish the process whereby the use of water resources will be planned on the basis of the river basin as a territorial unit. The planning of the use of water resources is put into practice by the National Water Plan (PNA), which covers the whole of the country, and by the Hydrographic Basin Plans (PBH's), which, in spatial terms, are directed at each of the individual river basins.

In order to provide a framework for the directives on the management of the Protected Areas and in accordance with the provisions of Decree Law n° 19/93, the Natural Parks and Reserves must be equipped with classification plans which define the conservation policies they expect to institute. So far nine areas already possess

Classification Plans, while the remainder are currently either in the approval process or are being drawn up.

The main objectives of these Classification Plans are: (i) to ensure the protection and promotion of valuable natural, landscape and cultural features; (ii) to correct processes which may lead to the degradation of the valuable natural features in the area in question by creating the conditions for their maintenance, improvement and valuable use; (iii) to ensure the active participation of all public and private entities in close co-operation with the resident populations; and (iv) to provide a framework for human activities via the rational management of the natural resources in the area, with a view to simultaneously fostering the economic development and well being of the local populations.

The guiding principles of the forestry policy set out in Law n^o 33/96 (dated 17th August 1996) – the Constitutional Law on Forestry Policy – and particularly those concerning the conservation of the forests and their associated natural resources, imply, amongst other policy measures, the adoption of Forest Regional Land-Use Plans (PROF's) and Forest Land-Use Plans (PGF's) that lay down specific rules and standards governing intervention concerning the occupation and use of forest areas and provide for the sustainable production of the goods and services which those areas supply.

The adoption of these forest land-use planning instruments will also permit the regional application not only of national strategic directives (thereby in particular putting the objectives and programme of the Portuguese Forest Sustainable Development Plan into practice), but also the monitoring of sustainable forest management (including the monitoring of biodiversity) in accordance with the criteria approved in various national and international fora.

It is also important to bear in mind the fact that the innovative introduction of regional classification into Portuguese Law is intended to ensure the effective and productive co-operation between the State and the private forest owners (who are responsible for the management of most of forest heritage) within a planning

process which is intended to be continuous, to be decidedly operational in nature and to be effectively supported by a variety of technical and financial instruments which are either already available today or are provided for in the Constitutional Law on Forestry Policy.

The essential basic solutions for ensuring the existence of a sustainable development process also imply the alteration of patterns of consumption and production in such a way as to bring about a rational use of natural resources. To this end 23 foodstuffs have already received their certificates of protected denomination of origin, while 17 already enjoy protected geographical status. All of them come from protected areas. Consumers who are well informed can make consumer decisions which help to achieve the conservation and sustainable use of biological diversity. The creation of economic and social incentives (an aspect which has already been mentioned in chapter 4.1 of this report) such as agro-environmental measures also contribute to ensuring the existence of a sustainable development process.

Along the same lines the Portuguese Government decided (Council of Ministers nº 102/96) to order that all government departments should, in co-ordination with the Ministry of the Environment, establish concrete measures for the sustainable development of the protected areas. Among those which have already been put into practice, highlights include the measures involving the Fishing and Tourist sectors and those in the product certification area. Within the ambit of the programmes included in the II Community Support Framework, priority is thus given to the approval of economic development projects which lead to the creation of employment within the protected areas, while priority and the maximum rate of joint participation is allocated to those local authority projects which have an effect on the National Network of Protected Areas.

4.6.2.2 – Sharing The Benefits Derived From The Use Of Genetic Resources

This subject, which is currently at an early stage of development, particularly concerns access to genetic resources and the distribution of the benefits derived from the use of biotechnology, as well as to technology transfers.

The initiatives taken in this field have already been described in chapter 4.1 of this report.

4.7 – Education, Training And Public Awareness

In their dynamic relationship with society, the multiple forms of environmental education and training and public environmental awareness must be both the beginning and the final aim of any environmental policy. They are the foundation, because the State's actions in relation to the environment must come from within society itself and must translate that society's demands concerning the management of the shared heritage. They are its final purpose because citizens themselves are both the agents and the beneficiaries of the policy, and without their initiatives and their acceptance of it, no environmental objective – in this case the conservation of biodiversity – can be properly achieved.

4.7.1 – Education And The Environment

Support for environmental education projects in both kindergartens and basic (mandatory education) and secondary schools (up to the age of 18) is a concern which has been enjoying the committed collaboration of the various departments of the Ministry of Education (ME) and the Institute for the Promotion of the Environment (IPAMB), which comes under the authority of Ministry of the Environment (MA). This co-operation is intended to achieve the horizontal integration of environmental themes into the school syllabuses while simultaneously motivating the degree of involvement on the part of the community, Environmental Non-Governmental Organisations (ENGO's), local authorities and local businesses,

which is necessary to ensure that this education is wide-ranging enough to be considered “civic”.

Seen from this perspective, the issue of the conservation and sustainable use of biological diversity should not be treated as a separate question in primary and secondary education. Instead this matter should underlie the handling of environmental issues as a whole and the subjects of biology and natural sciences in particular. The existing curricular structure employed in basic and secondary schools envisages Environmental Education as a cross-curricular theme which is incorporated into the content of the programmes of every subject and subject area, into the Area-School projects (a curricular item of an interdisciplinary nature) and into Complementary Curricular Activities (attendance non-compulsory), such as the natural heritage defence groups and clubs, for example.

The issue of the conservation and sustainable use of biological diversity can thus either be addressed on a one-off basis within the content matter of subjects such as Natural Sciences (7th year), Biology (12th year) and Geography (basic and secondary education), or spread across the whole curriculum.

It is important to note that as a result of the intense co-operation between Departments and Ministries, especially the Ministries of Education and the Environment, in relation to the promotion of Environmental Education in schools:

- Every year since 1993/94 a national competition has been launched to provide support for Environmental Education projects developed in basic and secondary schools;
- In 1996 Environmental Education started to be considered a priority issue within the framework of the Education and Environment policies, and a technical / scientific / pedagogical financial and logistical co-operation protocol was established between the respective Ministries with a view to promoting the development of Environmental Education in schools and introducing an environmental dimension into continuous teacher-training activities;

- 1997 saw the launch of the National Eco-library Network, which is composed of infrastructures to be created in a co-operative venture between the ICN (Nature Conservation Institute) and local authorities. The strategic theme of this Network is the implementation of the Rio Declaration and Agenda 21. Each Eco-library will possess an area for reflection, display, documentation / multimedia information and workshop / laboratory activities, and will also organise external activities (nature trails, urban walks, etc.). With the support of the Environment Programme, the Network's dynamic structure will make it possible to unite the efforts of central and local government and the ENGO's.

It is also felt that the promotion and encouragement of environmentally suitable patterns of consumption constitutes a key factor in educating people to seek sustainable development and the conservation of biodiversity.

4.7.2 – Public Awareness And Training

The need to ensure awareness of the importance of the Environment in our lives today, of the global dimension of environmental problems and of the need for all of us to intervene in the issue at local level on a daily basis, continues to motivate the work involved in promoting the Environment.

When it comes to increasing awareness and environmental training, in addition to intervention in schools, educational work is also undertaken on a co-operative basis with various University Institutions. Examples of this are the Environmental Education Nucleus at the Lisbon University Science Faculty Botanical Garden; the "The Rural World and Nature Conservation" Project, which has been created in collaboration with Lisbon Technical University's Higher Institute of Agronomy and the Nature Conservation Institute; the project for Environmental Education directly related to our cultural heritage, which takes place at the Palace of the Marquis of Fronteira e Alorna, where the restoration of the gardens will make it possible to

schedule guided visits by groups of young people and school classes, following the training of the organisers / teachers concerned.

All these projects involve specific training programmes for the monitors / organisers.

The training activities provided to nature wardens and guards, forest guards and rural workers are particularly significant. They aim to help them learn how to use environmental technologies, particularly in the nature conservation, forest pasturage, hunting and fish-farming areas, with a view to improving trainees' action in the field.

Another vocational training programme has been organised with the intention of providing a number of socio-professional categories with qualifications in a wide variety of environmental areas, particularly the assessment of water and waste management and of environmental impacts, where the issue of biodiversity is taking on a special and growing importance.

This type of intervention, which was intentionally structured within a training plan covering 1995-99 and was based on studies on the training requirements in the environmental area carried out in 1994, involves a variety of entities which are well known for their work in this field and are capable of organising learning experiences and the acquisition of the skills considered to be the most important in each of the different sectors of activity.

Co-operation between the Ministry of Education and the Ministry of the Environment has also proved to be important, mainly in the form of the former's active participation on the World Forest Day Commemoration Co-ordinating Committee, which was co-ordinated by the Directorate-General of Forestry. Each year this Committee is responsible for organising and co-ordinating activities intended to increase public awareness (particularly school-age children) of how important forests and the biological diversity associated with them are to both the planet's balance and the socio-economic and cultural aspects of Man's life.

In addition, the actions related to the protection of forest against fires that are eligible within the ambit of EEC Regulation n° 2158/92 (dated 23rd July 1992) include information and awareness campaigns, as well as the promotion of and provision of support for actions related to the same subject which are carried out by entities other than the Directorate-General of Forestry and which address themes concerning the biological diversity of forest areas.

4.7.3 – Participation By The Citizen

Public awareness of the environmental threats and challenges which confront us is an essential condition in enabling society to play its part in dealing with them and in ensuring that participation in the decision-making process at every level is responsible and effective. The principle of participation is therefore included in environmental policy and can be seen in the intervention which society at large is in fact making at various institutional levels.

When it comes to promoting direct participation by the public – a constitutional obligation incumbent on the State under the terms of the Constitutional Law on the Environment (Law n° 11/87) – in addition to the efforts carried out in terms of education, training and public awareness, resources and systems have been created to enable the population as a whole to gain access to more and better information, while campaigns and programmes have been organised in the media to increase the extent to which the citizen is aware of the environmental issue and his/her ability to act in a more conscious manner. We should make a very special mention of two lines of action which are considered to be fundamental in this regard: the provision of technical and financial assistance to ENGO's, and the promotion of adequate mechanisms to enable the public to be consulted.

4.8 – Development Cooperation

4.8.1 – Introduction

Portuguese Development Co-operation Policy constitutes one of the main aspects of the country's foreign policy and addresses such fundamental values as the promotion of peace and solidarity, the consolidation of democracy, the law-abiding and human freedom-respecting State, and the defence and promotion of the use of the Portuguese language and culture.

As far as the “environment and development” aspect of this policy is concerned, it embraces two concepts which are unquestionably related and are ever-more present in Portugal's co-operation policy, both in terms of the preparation of projects and as regards the support for concrete actions in this particular area of development.

4.8.2 – Cooperation And Financial Assistance

The main aim of Public Development Aid (PDA) – taken to mean the total volume of aid flow (e.g. donations and/or the granting of loans on at least a 25% basis) intended for developing countries and multilateral institutions created by public bodies – is to promote the economic development and well-being of those countries. The total amount of Portuguese PDA in 1996 was 217.93 million USD, which represents 0.21% of the Gross National Product at market prices. 56% of this was specifically allocated to the environmental sector, which demonstrates the relative weight which this sector possesses in the overall context of Portugal's co-operation policy.

It should also be noted that Portuguese PDA is essentially aimed at the Least Developed Countries (LDC's), amongst which Portuguese-speaking African countries stand out as the main recipients, particularly as regards co-operative actions undertaken in the environmental field in a bilateral manner. There are a number of important projects concerning the creation of solid bases for sustainable development which are making a substantial contribution to achieving the objectives of the Convention on Biological Diversity, especially by means

strengthening institutional capacity and providing technical support and vocational training. As far as aspects related to the conservation of biological diversity are concerned, in concrete terms Guinea Bissau and Cape Verde have been the countries which have benefited most from Portuguese government aid in the environmental sector, via the implementation of some important projects, amongst which the following deserve a particular mention:

Guinea-Bissau

- The Flora of Guinea-Bissau
- The Phyto-ecological Diversity of the Mata do Cantanhez
- The creation of the Lagoa da Cufada Natural Park (co-financed by the European Union and Portugal).

In addition to these projects it is also worth specially noting the vocational training activities and the projects designed to promote the defence and rational use of forest resources, the institutional support provided to the Ministry of Agriculture's Forestry Services, and the "Forestry Industries" project, which is incorporated within the Tropical Forest Action Programme.

Portugal also collaborated in and financed an international meeting in Guinea Bissau on the Creation of the Bolama-Bijagós Biosphere Reserve.

Cape Verde

- A Taxonomic and Ecological Study of Endemic Species of Reptiles
- The Flora of Cape Verde
- The Vegetation and Flora of Santiago Island
- The Biodiversity and Zoo-geography of the Cape Verde Islands
- Bio-climatic Aspects of the Cape Verde Archipelago

- Charter of the Agro-Economic Zoning and Vegetation of Santo Antão Island

Other relevant actions were centred on the regulations drawn up under the Constitutional Law on the Environment, hazardous urban waste, the improvement of the quality of the environment, information, a documentation fund, and training.

Portugal's co-operation with and assistance to São Tomé and Príncipe involved the following areas: legislation, education, increasing environmental awareness, the quality of the environment, and staff training / conversion.

Highlights of Portugal's co-operation with Mozambique include its involvement in the "Coastal Strip Management and Protection Project", as well as its participation in the "Project to Reinforce the Capacity for Intervention of the National Directorate of Forests and Wild Fauna" by means of the provision of training in the forest resource management field to a group of specialists drawn from those of the Directorate's personnel who are stationed in parks and reserves.

While we are on the subject of Development Co-operation we also feel that it is appropriate to mention the holding of the 1st Lisbon Conference of the CPLP (Community of Portuguese-Speaking Countries) Environment Ministers in 1997, during the course of which the respective ministers accepted that training would henceforth constitute a strategic foundation for all future co-operation in the Portuguese-speaking area.

As a corollary to this subject, two examples of this line of action deserve special mention: the Mid-Level Environmental Management Course which was provided to 16 specialists from Mozambique, and the CITES Licensing Management Course for senior PALOP managers. The former was organised under the didactic and pedagogical guidance of the Professional Development Education School (EPED),

while responsibility for the latter was taken by the Nature Conservation Institute (ICN).

From the point of view of multilateral co-operation, Portugal continues to attend the international conferences organised within the ambit of the follow-up to the Rio Conference. A key element in this process is Portugal's participation in the meetings related to the Convention on Biological Diversity as well as in the other international programmes referred to throughout this report.

Table 1 below details Portugal's contributions to multilateral institutions within the Public Development Aid in 1996.

TABLE 1 – Portuguese contributions to Multilateral Institutions within the ambit of Public Development Aid (1996)

In millions of USD

| MULTILATERAL INSTITUTIONS | CONTRIBUTION IN 1996 |
|--|-----------------------------|
| A.1. United Nations bodies accounted for as a whole | |
| <i>UNDP</i> | 1.49 |
| <i>UNICEF</i> | 0.10 |
| <i>UNRWA</i> | 0.05 |
| <i>UNFP</i> | 0.02 |
| A.2. United Nations bodies accounted for separately | |
| <i>WHO (75.4%)</i> | 0.88 |
| <i>WIPO (30.0%)</i> | 0.02 |
| <i>FAO (52.8%)</i> | 0.50 |
| <i>ITO (15.4%)</i> | 0.11 |
| <i>UNESCO (25.0%)</i> | 0.26 |
| B. The Commission of the European Communities (CEC) | |
| <i>CEC</i> | 42.76 |
| <i>EDF</i> | 10.51 |
| C. Regional banks and specific funds | |
| <i>IDB – Special Fund</i> | 0.32 |
| <i>AMSCO</i> | 0.50 |
| D. Other agencies and funds | |
| <i>GEF</i> | 1.22 |
| <i>FIAS</i> | 0.10 |
| <i>MIF</i> | 0.77 |

Source: Portuguese Co-operation Institute (ICP), 1996

4.9 – Territorial Planning

Inasmuch as the goal of the territorial planning system is to ensure that activities are carried out in the correct location and that the various sectoral policies are compatible with one another, the vectors of the planning policy include the sustainable use of the component elements of biological diversity, and the defence of people's quality of life. These aspects are particularly addressed by the objectives of the various Plans (Regional, Municipal and Special Territorial Plans).

4.9.1 – The Planning System

The importance of incorporating environmental issues – including the conservation of biodiversity – into the planning system and especially into the specific plans which put that system into practice, is clearly recognised not only in the objectives of the Regional Plans and the Municipal Master Plans but also in the obligatory consideration (and inclusion in the map setting out conditioning factors) of various elements such as the National Agricultural and National Ecological Reserves (RAN and REN), the Protected Areas, areas subject to the forestry regime, areas designed to protect classified buildings and areas which form part of the public water domain. Unless this procedure is complied with, even if a Plan is approved by the local Municipal Assembly, it cannot be ratified and therefore cannot take effect.

Given that the territorial planning system aims to make the offer of natural and built resources compatible with the demand for them from public and private investors, it is the directives resulting from this balance which will make it possible, in an initial phase, to establish and consolidate nature conservation networks to maintain biodiversity.

The desire to ensure that environmental issues are considered by and integrated into the planning system is the reason why the Ministry of the Environment is included in the system designed to supervise and draw up the various plans.

Within the hierarchy governing the extent of the areas of intervention of these plans, the following are especially important: Regional Land Classification Plans (PROT's), which are supra-municipal in nature and are intended to “establish general rules and standards regulating land occupation and use which make it possible to create the foundations for and justify the correct zoning, use and management of the area in question, bearing in mind the need to safeguard valuable natural features” (Decree Law nº 176-A/88); and the Municipal Land Classification Plans (PMOT's) (Decree Law nº 69/90, dated 2nd March 1990).

These plans are not the only relevant instruments when it comes to the integration of environment policy into territorial issues. There are other territorial units which are of great importance in terms of their biodiversity and which should be the object of specific intervention plans, as has been described in chapter 4.6.

4.9.2 – The Implementation Of The Various Instruments Governing The Planning Of Land Use

Four PROT's have already been drawn up and are in use within a framework which is intended to cover the Portuguese mainland with the various types of planning mechanisms referred to above (Table 2). Only 19 of the 275 local council areas on the Portuguese mainland do not yet have fully functioning Municipal Master Plans. A land-use plan (approved on 16 May 1995, Regional Decree nº 12/95/M, dated 24 June) is currently in use in Madeira Autonomous Region (POTRAM), that includes the Local Council Areas of Funchal, Câmara de Lobos, Ribeira Brava, Ponta do Sol, Calheta, S. Vicente, Santana, Machico, Santa Cruz e Porto Santo.

TABLE 2 – The current status of the PROT's

| NAME | REGION | LOCAL COUNCIL AREAS | SITUATION |
|--|-----------------------------|--|--|
| PROTAM (Upper Minho) | NORTH | ARCOS DE VALDEVEZ, CAMINHA, MELGAÇO, MONÇÃO, PAREDES COURA, PONTE BARCA, PONTE LIMA, VALENÇA, VIANA CASTELO, V.N. CERVEIRA | CURRENTLY BEING DRAWN UP |
| PROZED (Zone around the Douro) | NORTH | ALIJO, ARMAMAR, BAIÃO, CASTELO PAIVA, CINFÃES, LAMEGO, MARCO CANAVESES, MESÃO FRIO, PENAFIEL, PESO DA RÉGUA, RESENDE, SABROSA, TABUAÇO | APPROVED ON 26-08-91 (REG. DECREE 60/91, 21-11-91) |
| PROTCL (Central coastal area) | CENTRE | ÁGUEDA, ALBERGARIA-A-VELHA, ANADIA, AVEIRO, BATALHA, CANTANHEDE, COIMBRA, CONDEIXA, ESTARREIA, FIGUEIRA FOZ, ÍLHAVO, LEIRIA, MARINHA GRANDE, MEALHADA, MIRA, MONTEMOR-O-VELHO, MURTOSA, OLIVEIRA BAIRRO, OVAR, PENACOVA, POMBAL, PORTO DE MÓS, SEVER VOUGA, SOURE, VAGOS | CURRENTLY BEING DRAWN UP |
| PROZAG (The Aguieira, Couço and Fronhas Lagoons) | CENTRE | ARGANIL, CARREGAL SAL, MORTÁGUA, PENACOVA, SANTA COMBA DÃO, TÁBUA | APPROVED ON 27-04-92 (REG. DECREE 22/92, 25-09-92) |
| PROTAML (The Lisbon Metropolitan Area) | LISBON AND THE TAGUS VALLEY | ALCOCHETE, ALMADA, AMADORA, BARREIRO, CASCAIS, LISBON, LOURES, MAFRA, MOITA, MONTIJO, OEIRAS, PALMELA, SEIXAL, SESIMBRA, SETÚBAL, SINTRA, VILA FRANCA XIRA | CURRENTLY BEING DRAWN UP |
| PROTALI (The Alentejo Coast) | ALENTEJO | ALCÁCER SAL, GRÂNDOLA, ODEMIRA, SANTIAGO CACÉM, SINES | APPROVED ON 03-05-93 (REG. DECREE 26/93, 27-08-93) |
| PROZOM (The Marble Zone) | ALENTEJO | ALANDROAL, BORBA, ESTREMOZ, VILA VIÇOSA | CURRENTLY BEING DRAWN UP |
| PROZEA (The Alqueva) | ALENTEJO | ALANDROAL, BARRANCOS, MOURA, MOURÃO, PORTEL, REGUENGOS MONSARAZ | CURRENTLY BEING DRAWN UP |
| PROTAL (The Algarve) | ALGARVE | ALBUFEIRA, ALCOUTIM, ALJEZUR, CASTRO MARIM, FARO, LAGOA, LAGOS, LOULÉ, MONCHIQUE, OLHÃO, PORTIMÃO, SÃO BRÁS ALPORTEL, SILVES, TAVIRA, VILA BISPO, VILA REAL DE SANTO ANTÓNIO | APPROVED ON 26-12-90 (REG. DECREE 11/91, 21-03-91) |

SOURCE : DGOTDU (February 1998)

4.10– Scientific Research And Development

Scientific research in the environmental field is of strategic importance to every country's development policy. It is by expanding research capabilities that we will be able to equip Portuguese society with the knowledge and the intervention capabilities it needs to be able to solve the specific problems encountered in any given location and contribute expeditiously to improving both the environment and the population's quality of life.

Allocating priority support to national research and development activities in the environmental field, particularly those linked to the conservation of biodiversity and the sustainable use of its component elements, is justified for a variety of reasons, amongst which the following are some of the most important:

- it is the best way to develop the environmental protection methodologies which are best adapted to the reality of the situation in Portugal;
- it makes an essential contribution to the development of Portuguese scientific knowledge in general and the development of the knowledge of the Portuguese natural heritage in particular;
- it assists in the development of new, technologically based economic activities in the environmental field;
- it assists in the internationalisation of the Portuguese scientific community in this leading-edge area, particularly by means of that community's participation in international projects.

Research into various areas of social and human sciences is also of great importance to the management of the environment. Indeed, both the social dimension of environmental impacts and the multiple sociological aspects of the environmental policy should be the object of research aimed at improving the

participatory and decision-making processes and thus society's receptivity towards the measures which need to be implemented.

It is also extremely important in this context to strengthen the ties between research and the applications or uses on the part of user sectors which result from it. This connection must be increased and improved in such a way as to establish appropriate flows of information between, and the co-ordination of, research, teaching, government and the civil service, industry and the service sector.

4.10.1 – Research And Development Activities

The end of 1994 saw the end of an important cycle of pioneering initiatives designed to foster and co-ordinate Portuguese research activities in a variety of areas related to the environment. They gave way to a new phase of achievements and still greater challenges to the national scientific community.

Following the launch of the first programmes intended to finance research activities (which involved a number of protocols between JNICT and the DGA – Directorate-General of the Environment), the implementation of the CIÊNCIA Programmes (designed to assist in the training of human resources and the reinforcement and modernisation of Portugal's scientific infrastructures) and the STRIDE Programme (which was the result of the Portuguese candidacy to a Community initiative aimed at achieving objectives of the greatest importance for the scientific and technological development of the less developed regions of Europe), three events marked the beginning of a new cycle:

- the launch of the 5th Specific Environment Programme under the auspices of a new JNICT-DGA Protocol (4.10.2.1);
- the start-up of the PRAXIS XXI Programme, which is intended to finance research projects and training grants (4.10.2.2); and
- the beginning of the 4th European Union Framework Programme (DG XII), especially including the “Environment and Climate” Programme (4.10.2.3).

In this context Portugal has been developing a series of concrete actions and measures, particularly including the financing of research programmes and projects, the advanced training of human resources and the reinforcement and modernisation of Portuguese scientific infrastructures.

The Specific Environmental Programmes have constituted a stimulus in Portugal – albeit perhaps still an insufficient one – for the development of environmental research, especially that related to the conservation of biodiversity and the sustainable use of its component elements. These programmes need to be complemented both by the specific initiatives that the various bodies with responsibilities in terms of environmental management ought to be developing in order to improve the research tools in their given areas, and by initiatives taken by companies which are linked to the environmental field or which need to improve their own performance in it.

However, it is possible to say that there has recently been progress in a number of areas, thanks particularly to the improved use or renewal of existing technologies and the development of new ones which can be considered less polluting. This has contributed to an increase in the competitiveness of the businesses involved and the creation of both new areas of activity and new jobs.

4.10.2 – Research Programmes In The Environmental Field

4.10.2.1 – The Specific Environment Programme (1995-1997)

The signature of a new Protocol between JNICT and the DGA in 1995 saw the beginning of a new Specific Environment Programme designed to stimulate interdisciplinary research and development activities associated with the analysis and solution of integrated problems contained within the framework envisaged by

the objectives and strategy of the national environmental policy. The themes which were considered to be of priority interest were:

- solid waste and liquid effluents;
- the analysis and management of hydric resources;
- the atmospheric environment;
- environmental impacts and their integration into graphic and geographical informational tools;
- information systems for the environment (the “Catalogue of Data Sources – CDS” – concerning the coastal environment and flows of industrial waste products);
- the development of new analytical methodologies within the attributions of the Environment Reference Laboratory.

Research, technological development and demonstration activities are instruments to ensure the scientific and technical sustainability of decisions that need to be taken and solutions which need to be adopted. At the same time they provide the innovation and progress required to ensure that promotion of environmental quality is compatible with economic and social development.

4.10.2.2 – The Praxis XXI Programme

The new programme designed to support Portuguese research during the period from 1994 to 1999 addresses various areas involved in the conservation of nature and biodiversity, especially in terms of those of its sections which are dedicated to biology, marine sciences, earth sciences and agrarian sciences. A large number of projects whose results are contributing to achieving the objectives of the Convention on Biological Diversity find a home within these sections.

4.10.2.3 – Environment And Climate Programme Of The European Commission

The specific programme aimed at the “Environment and Climate” field is focused on four themes: research into the natural environment, the quality of the environment and global changes; environmental technologies; spatial techniques applied to environmental monitoring and research; and the human dimension of environmental change.

A number of projects involving Portuguese participation were selected for inclusion within the ambit of this Community programme, amongst which the following deserve a special mention:

- “Annual to decadal variability in the climate Europe” – Lisbon, Évora and Oporto Universities;
- “Integrated management methods: monitoring environmental change in coastal dune ecosystems” – the University of the Algarve.

The activities which take place under the auspices of this programme will help to strengthen the scientific and technological base required to support the policies of the European Union and develop research which will be carried out prior to the adoption of legislation, rules and standards designed to help implement the 5th Community Policy and Action Programme on the Environment and Sustainable Development (1993-2000).

4.10.3 – Cooperation With Developing Countries In The Research Field

Given the important part Portugal’s co-operation with developing countries in the research field plays in Portugal’s relationships with other countries and international organisations in general, we cannot fail to mention it in this report.

In addition to the various initiatives organised either by JNICT or by other sectoral bodies within the government and mentioned elsewhere in this report, special mention should be made of Portugal's co-operation with developing countries in tropical regions via the work of the Tropical Scientific Research Institute (IICT). This Institute has been carrying out research work in conjunction with more than forty countries, although it gives preference to Portuguese-speaking Africa and Brazil.

We should also note the fact that Portugal has joined the Consultative Group on International Agricultural Research (CGIAR) (Council of Ministers Resolution n^o 202/97, dated 3rd December 1997), which, amongst other things, works on projects involving biodiversity.

5 – FINANCIAL RESOURCES

Given the large number of sectors involved in pursuing the objectives of the Convention on Biological Diversity in Portugal, it is not possible to describe all the financial resources involved in its application. It may be possible to carry out this essential work in the future, once the national strategy for the conservation of biodiversity has been drawn up.

Nonetheless, chapter 4 does refer to information in this regard whenever it is available.

When it comes to the financing of international projects, the Global Environmental Facility (GEF) is a permanent and definitive international co-operation mechanism which provides concessionary resources and donations to developing countries (DC's) for projects and other activities which protect the global environment in one or more of four major areas: climate change; biodiversity; the protection of international waters; and the protection of the ozone layer.

In the pursuit of its objectives, GEF is the interim financial mechanism for the application of the Convention on Biological Diversity and must function in accordance with the guidelines laid down by the Conference of the Parties, which decides the policies, priority programmes and eligibility criteria designed to achieve the Convention's aims. 2 billion USD was placed at GEF's disposal in the period between March 1994 and March 1997. During the course of a pilot phase, GEF financed 57 projects which fell within the ambit of the Convention on Biological Diversity (50% of all projects financed), to a total value of 331.65 million dollars. Around 305 projects were also financed during the pilot phase via the "Small Grants Programme", at a total cost of 5.4 million dollars. 30 CBD-related projects were approved during the course of GEF-I (30% of the total), to a total value of 88.21 million dollars.

Portugal joined the pilot phase of GEF in 1992 with a contribution in escudos worth the equivalent of 4.5 million Special Drawing Rights (SDR's). This

contribution took the form of three promissory notes, the redemption of which took place over the period up to August 1997.

Portugal has contributed around 892,268,800 escudos – which is to say 4 million SDR's – to GEF-I, to which end it has already issued four promissory notes in the amount of 223,067,200 escudos each. These promissory notes will be redeemed over the period up to the year 2006.

During the course of 1997 negotiations took place amongst all the donor members with the intention of constituting new resources for GEF. These negotiations included the definition of each member's level of "burden-sharing".

6 – SOURCES OF INFORMATION

In addition to the bibliographical references set out below, specific contributions from the following Ministries and their respective Directorates-General, coordinated by the Nature Conservation Institute, were used as sources of information in drawing up this report:

The Ministry of Foreign Affairs

The Directorate-General of Multilateral Affairs

The Portuguese Co-operation Institute

The Ministry of Finance

The Directorate-General of European Affairs and International Relations

The Ministry of Territorial Equipment, Planning and Administration

The Office of the Environmental Auditor

The Ministry of the Economy

The Directorate-General of Industry

The Directorate-General of Tourism

The National Institute of Engineering and Industrial Technology

The Ministry of Agriculture, Rural Development and Fisheries

The Agro-Foodstuffs Planning and Policy Office

The Directorate-General of Forestry

The Directorate-General of Crop Protection

The National Agrarian Research Institute

The Institute of Hydraulics, Rural Engineering and the Environment

The Directorate-General of Rural Development

The Fisheries and Marine Research Institute

The Ministry of Education

The Office of European Affairs and International Relations

The Ministry of the Environment

The Directorate-General of the Environment

The Meteorological Institute

The Nature Conservation Institute

The Institute for the Promotion of the Environment

The Alentejo Regional Directorate for the Environment

The Ministry of Science and Technology

The International Scientific and Technological Co-operation Institute

The Azores Autonomous Region

The Regional Directorate for the Environment

The Madeira Autonomous Region

The Regional Directorate for the European Communities and External Co-operation

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