TERRA

GUIDE TO THE FINANCING OF THE NATURA 2000 NETWORK IN THE MACARONESIAN BIOGEOGRAPHIC REGION (AZORES, MADEIRA AND CANARIES)

Carlos Sunyer (Ed.)

SERIE TECNICA 1

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GUIDE TO THE FINANCING OF THE NATURA 2000 NETWORK IN THE MACARONESIAN BIOGEOGRAPHIC REGION (AZORES, MADEIRA AND CANARIES)

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TERRA environmental policy centre, is an independent Spanish organisation whose main objective is to contribuye to the development of an environmental policy based on the racional and efficient use of natural resources and environmentallly sustainable economic and social.

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INDEX

1. INTRODUCTION

The Habitats Directive has the fundamental aim of promoting the maintenance of biodiversity in the European Union. To this end, one of the tools that it establishes is the creation of a network of Special Areas of Conservation, formed by sites which are representative of a series of habitats and known as the Natura 2000 network.

In these areas Member States will be obliged to maintain the corresponding habitats in a good state of conservation, which implies the need to develop financing sources and schemes. Funding is therefore an important concern for the future development of the Natura 2000 network, particularly in those regions where it will occupy a high percentage of the territory, as is the case in the Macaronesian region.

Though the Directive does not article the development of a specific funding source for the Natura network, it does foresee the establishment of an action framework of measures for possible co-financing between the Member State and the Commission. Furthermore, a range of financial instruments already exist which can potentially be used for the Natura network.

The development of the Natura 2000 network can obviously be considered from many different viewpoints. Many people continue to see nature conservation as an impediment to development which brings only costs and limitations, while others may interpret the Natura network as yet another obligation imposed by the European Union. However, it can also be considered a source of opportunities for the regions involved, with great potential for the development of new activities compatible with nature conservation. This vision reflects the true spirit of the Directive, whose articles emphasise the need to integrate the Natura network with other sectors. This means developing the grounds for sustainable development, in which the measures that are established address not only environmental demands but also respond to other economic, social and cultural demands.

The territorial scope of this manual corresponds to the Macaronesian region of the European Union, which includes the Portuguese regions of the Azores and Madeira and the Spanish region of the Canary Isles. This is the first biogeographic region of the European Union to have an agreed list of Sites of Community Interest, which is a fundamental step towards the constitution of the Natura network.

With the aim of contributing to this process, the project “Funding opportunities for the Natura 2000 network in the Macaronesian region” has been carried out, one of whose objectives has been to contribute to disseminating the possible sources of funding for the Natura 2000 network, fundamentally with regard to existing Community financial instruments. To assist in the attainment of this objective, this manual has been prepared and information seminars have been organized in the three regions. The first took place in April 2000 in Funchal (Madeira), the second in May in Angra do Heroismo (Azores) and the third in July in Tenerife (Canaries).

The purpose of this manual is to contribute to the development of new ways of co-financing the Natura 2000 network, fundamentally with Community financial instruments. Nevertheless, given the great weight of the tourist industry in the region,

especially in the Canaries and Madeira, the possibilities offered by tourism have also been explored.

As a preliminary step in the preparation of this work, a study was made of the use of the different financial instruments available in the period 94-99 for nature conservation in the three regions. The results were disappointing for structural funds, though some interesting examples were found which have been noted in the text. With regard to the Life financial instrument the panorama is completely different, and the three regions all possess very good experience. For this reason, it has been considered appropriate to focus this manual on the potential offered by structural funds.

In the analysis of the possible role of structural funds for financing the Natura network, attention has been paid to two of the basic principles of Community environmental policy: integration and shared responsibility. The first of these principles, which is reflected in the spirit of the Directive, implies the need to consider local and regional economic, social and cultural demands in the development of the Natura network. At the same time, other policies must take the Natura network into account in their design and development. The second principle makes reference to the need to imply all actors in the conservation of the Natura network. Without this the correct development of the network will be impossible. The application of these concepts is not easy and requires great efforts. Nevertheless, they are fundamental for the Natura network, including for its co-financing.

Given that this guide refers to regions of Spain and Portugal, it has been published in both Spanish and Portuguese and distributed among the main actors involved in the conservation of the Natura 2000 network: municipal councils, Leader local action groups, farm workers' unions, fishermen's associations, regional development officials, agriculture officials, non-governmental organizations and authorities with responsibility for the Natura network, among others.

The manual starts with an introduction to the Macaronesian region and, while seeking to provide a complete overview of the area, introduces each of the regions separately.

The second chapter makes a presentation of the Natura 2000 network in general and in greater detail for each of the three regions.

Following this introduction, which is necessary to give the panoramic overview required by the Natura 2000 network, the third chapter forms the essential body of the manual. It consists of a review of the possibilities offered by the main Community financial instruments available in the region. In each case it provides a short introduction followed by an analysis of its potential. In order to avoid a purely theoretical approach, which many might consider utopian, all the possibilities that are mentioned are based on real situations that have occurred in different regions of the European Union. Several examples are included; preferentially from the Macaronesian region itself, or from other regions when this has not been possible.

The fourth chapter presents a number of recommendations which are considered to be important if the most is to be made of these financial instruments.

Finally, the fifth chapter presents a brief analysis of the possibilities offered by tourism in the region for financing the Natura network. It identifies and analyses the different ways in which tourism can contribute to financing protected sites.

To help readers to acquire a more in-depth knowledge of the different instruments, the text is accompanied by a list of web sites where further information can be obtained about each one. There is also an annex that includes a directory of useful contacts, which, in an effort to contribute to transregional cooperation, is the same for the Portuguese and Spanish editions.

Some difficulties will obviously be encountered when attempting to access certain Community funding sources in order to co-finance the Natura 2000 network. However, other persons and institutions have managed to overcome no fewer hurdles than the reader may imagine, and this is borne out by the examples that are given. In this respect, the need is underlined to follow the two guiding principles mentioned above: shared responsibility and integration.

2. THE MACARONESIAN REGION

The Macaronesian region is comprised exclusively by a set of Atlantic islands, from north to south: the archipelagos of the Azores, Madeira, Selvagens, Canaries and Cape Verde, as well as a small enclave on the African coast facing the Canaries. Nevertheless, it is still under discussion whether the latter two belong to this region[1].

All of the islands have three important common characteristics: they are oceanic islands of volcanic origin which have never been joined to the continent; they are under the influence of the NE trade winds that blow towards the equator; and they share the remains of the subtropical flora that inhabited the south of Europe during the Tertiary period: lauriphyllous forests (Box 1).

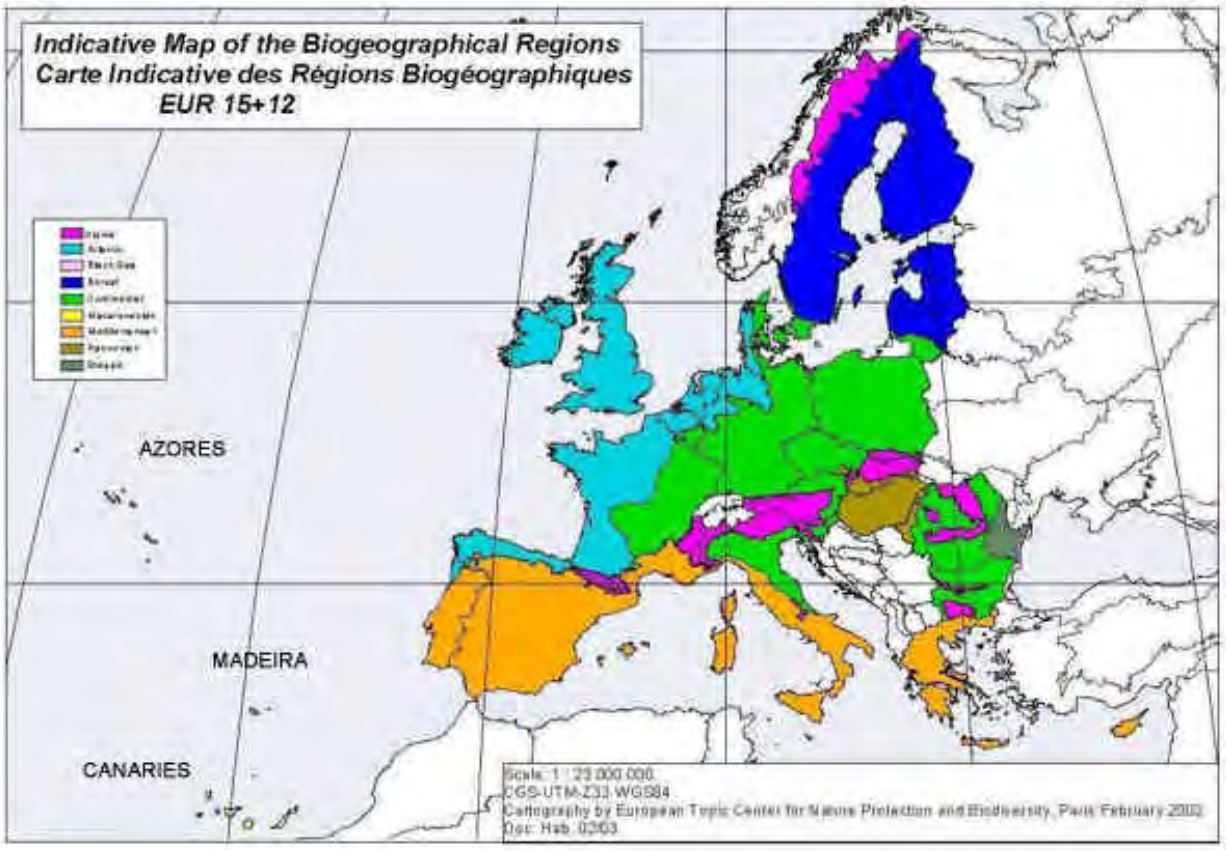
Nevertheless, there are notable differences between the different islands. The climate of the region is marked by a north-south rainfall gradient, with much more abundant precipitation in the Azores than in the rest of the region. There are also differences regarding the origin of the respective species, since this is related with the distance from the closest continental landmass and the action of the winds and ocean currents. Thus the species in the Azores are greatly influenced by northern European species, those in Madeira and the Canaries by Mediterranean species, and those in Cape Verde by the species of the closest African coastline. Of the different archipelagos, those most similar to each other are Madeira, the Selvagens and the Canaries, which in part may be due to the existence in the past of a belt of small islands between them which served as stepping-stones, but which with the rise in the sea level have become submerged and converted into submarine ridges[2].

As a result of their insular character and peculiar natural history, these archipelagos possess an interesting biological wealth, with a great richness of autochthonous species. This is particularly the case of the Canaries, where of the 6,893 fauna species present, 44% are endemic[3], while close to 25% of the plant species are autochthonous. The next in line is Madeira, which, together with the Canaries, constitutes one of the planet's most important focal points of biodiversity[4] (Table 1).

Table 1. Endemicity of the vascular flora of some islands[5,6]

	Endemisms
Azores	55
Madeira	145
Galapagos	231
Canaries	670
Hawaii	1334

Since this manual concerns the financing of the Natura 2000 network, it will concentrate on the archipelagos of the Azores, Madeira and the Canaries.



Box 1. Macaronesian lauriphyllous forest.

Lauriphyllous forests populated the Mediterranean regions during the Tertiary period. As a consequence of the progressive cooling of temperatures during the glacial periods, this subtropical vegetation gradually migrated southwards in search of milder climates, more in accordance with their ecological requirements, at which point they may have reached the Macaronesian islands as a result of the action of ocean currents and birds.

The subsequent generalized warming of the climate allowed vegetation to ascend latitudinally, though the climate conditions of the Tertiary period were never fully restored and at the same time new barriers were created, such as the deserts of North Africa. Thus the distribution of lauriphyllous forests remained limited to their current range, where the temperate climate and appropriate air humidity of the islands has enabled this vegetation to survive to the present day. In Europe only a few traces of these communities remain, above all in the Mediterranean basin, and for this reason they are often considered to be living fossils.

Lauriphyllous forest formations are predominated by trees with laurel-type leaves and host a wide diversity of species, up to more than 20, which are mostly endemic to Macaronesia (*Laurus azorica, Persea indica, Ocotea foetens, Apollonias barbujana*, etc.). In the best representations the trees form a continuous canopy of up to 30 metres in height.

Today this vegetation is restricted to 15,000 ha on the island of Madeira –the largest patch in the world–, several hundred hectares distributed across the Azores and more than 18,000 ha in the Canary Isles, of which only 6,000 ha correspond to mature forests.

2.1 Introduction to the Azores

Description

The archipelago of the Azores is comprised by a chain of 9 islands (Table 2), spanning a total distance of some 600 km. The Azores are situated halfway between the coast of the Iberian Peninsula, 1,200 km to the E, and Newfoundland in Canada, 1,800 km to the NW.

The archipelago possesses a total land area of 2,333 km^2 and enjoys an oceanic climate characterized by mild winters, with average temperatures of 14ºC in the coldest month, and cool summers. These are the wettest islands in the Macaronesian region, with average rainfall of between 762 and 1,525 mm/year, which on some islands can reach up to 2,700 mm, permitting the existence of an abundance of streams, lakes and peat bogs. In general their relief is gentle. The highest peak (2,381 m) is found on the island of Pico.

Socio-economic setting

Though discovered at an earlier date, the islands remained uninhabited until they were settled in the early 15th century. They experienced a boom between the 16th and 18th centuries, as a support point for transoceanic shipping. Subsequently, with the development of steam ships, they gradually lost importance, though this would later be recovered during the second half of the 20th century as a stopping point for transatlantic flights.

The islands have also been important exporters of wheat, dye plants, alcohol, and more recently dairy products, which nowadays represent 30% of Portugal's total production.

The primary sector is currently the most important economic sector, employing 19% of the active population, and on some islands more than 30%. Within this, the dairy sector is by far the most important. Tourism is an emerging sector, particularly on some islands.

Table 2. Area and population of the Azores region.

	Area (km^2)	Inhabitants (no.)	Density (inhab/km^2)
Santa María	97.2	5,914	61
Sao Miguel	746.8	125,826	168.6
Terceira	402.2	55,626	139.3
Graciosa	61.2	5,184	85.2
Sao Jorge	245.8	10,222	41.6
Pico	447.7	15,186	33.7
Faial	173.1	14,906	87.8
Flores	141.7	4,323	31.0
Corvo	17.1	393	22.0
Total	2,333	237,580	102.1

Administrative structure

The Azores is an autonomous region of the Portuguese republic, with its own political-administrative statutes. In a simplified way the region can be said to have the competencies of the State with the exception of defence, international relations, security and justice.

The region's governing bodies are the Regional Assembly, whose responsibilities are comparable to those of the national government, and the Regional Government, which can be compared to the national ministries. The seat of the Regional Government is located in Ponta Delgada (São Miguel), with the Regional Secretariats distributed between the cities of Ponta Delgada, Angra do Heroismo (Terceira) and Horta (Faial).

The sovereignty of the republic is represented by a Ministry of the Republic, installed in Angra do Heroismo. It has the right to veto regional legislation proposals and is responsible for appointing the Regional Government, bearing in mind the composition of the Regional Assembly.

At present, the environment is the competency of the Regional Environment Secretariat, which has competencies relating to the environment, land planning and water resources. This Secretariat is divided into the Directorate of Nature Conservation Services (DSCN) and the Directorate of Land and Water Resource Planning Services (DSOTRH). The former is responsible for the development of the Natura network in the region.

Biodiversity

Due to its greater distance from the continent and smaller diversity of environments, this is the Macaronesian archipelago with the least biodiversity. Nevertheless, 900 species of vascular plants and 450 bryophytes have been identified, many of which are alien species. Around 5% of the vascular flora is autochthonous.

The gentle relief of the islands and the suitability of their pastures for milk production has led to intensive deforestation, and this is the Macaronesian archipelago that has been most transformed by human intervention; only 2% of the total surface area is occupied by lauriphyllous forests. Furthermore, the few patches that have been conserved are highly fragmented and threatened by the proliferation of alien vegetation.

A highly significant species for Azorians is the Azores Bullfinch (*Pyrrhula pyrrhula murina*), a species that is intimately associated with the lauriphyllous forests and is only found in a single enclave on the island of São Miguel.

The Azores host large colonies of sea birds (Table 3). There is also a diversity and abundance of cetaceans, with at least 24 species frequenting the waters around the islands.

Table 3. Sea bird populations in the Azores[7]

	Nesting pairs
Bulweria bulwerii	500-1,000
Calonectris diomedea	50,000-100,000
Puffinus assimilis	500-1,000
Puffinus puffinus	+
Oceanodroma castro	1,000-2,000
Sterna dougallii	1,000
Sterna hirundo	1,200

Nature conservation

This is the archipelago with the least developed protected site policy, there being only a handful of scientific and forest reserves. Nevertheless, the development of the Natura network has served as a shake-up, leading to the appearance in the last few years of a number of nature conservation initiatives.

Another highly important factor has been the stimulus provided by the Life programme, which has contributed to the inventorying and identification of the best sites for nature conservation in the islands and has funded important projects undertaken by a wide range of actors (university, Natura 2000 network authorities, forestry policy authorities, NGOs), thus promoting the integration of the Natura network in other sectors.

2.2 Introduction to Madeira

Description

The archipelago of Madeira is situated 740 km south of the Azores, 980 km from the coast of the Iberian Peninsula and 700 km from the coast of Africa. It is comprised by two main islands, Madeira and Porto Santo, and a set of smaller islands of great ecological interest, known as the Desertas (Table 4).

Madeira, the main island, is characterized by its highly rugged relief, with more than 65% of the land area having slopes in excess of 25%, and a maximum altitude of 1,861 m. The climate is typical of the Macaronesian region, with very mild average temperatures throughout the year, and rainfall which in some areas reaches 3,000 mm/year. Precipitation is much more abundant on the north-facing slopes than on the southern slopes, and gives rise to an abundance of streams and peat bogs.

The island of Porto Santo is the second in size and in number of inhabitants. It is situated 60 km NE of Madeira. Its relief is less rugged, which means that it escapes the cloud belt generated by the trade winds and consequently presents much lower rainfall than Madeira.

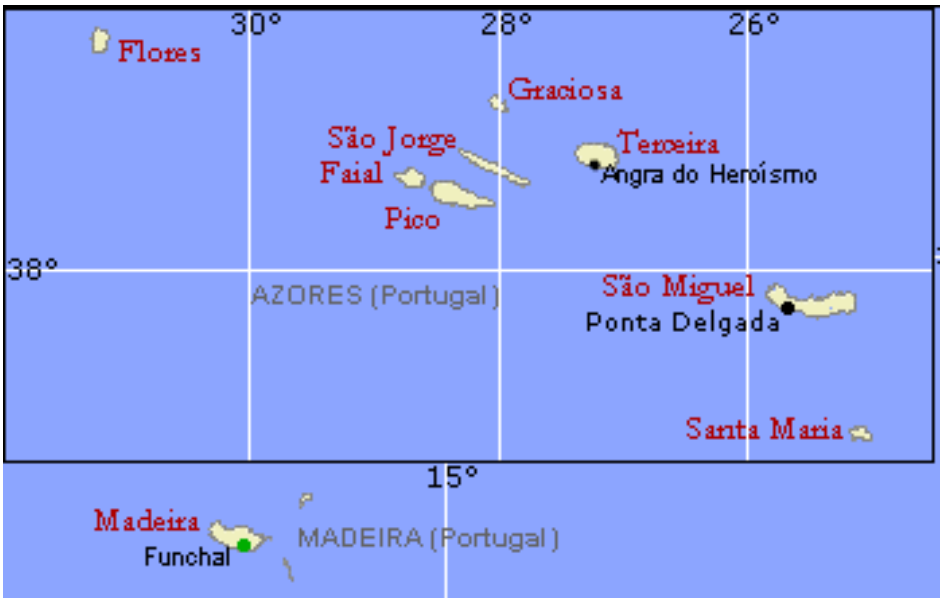
The Desertas are a group of uninhabited islands situated 40 km SE of Funchal. There are three main islands: Chão, Deserta Grande and Bugio, which possess a rugged

relief and arid climate. Though totalling an area of only 1,422 ha, they host an important biological heritage.

The archipelago of the Selvagens is situated 250 km south of Madeira and 160 km north of Tenerife. It is comprised by a series of small uninhabited islands with a total area of 265 ha. Their low altitude gives them a very arid climate. In consonance with their small size, the number of plant species is also small, amounting to some one hundred species, some of which are endemic. The invertebrates include several endemisms of these islands, as well as many other species endemic to the Macaronesian region. There islands also host very important sea bird colonies.

Table 4. Area and population of the Madeira region.

	Area (km^2)	Inhabitants (no.)	Density (inhab/km^2)
Madeira	736.7	252,874	343
Porto Santo	42.7	4,796	113
Desertas	14.5	0	0
Selvagens	3.2	0	0
Total	797.1	257,670	326



Socio-economic setting

Madeira was discovered in 1418 and its colonization began one year later. The island's economy (according to 1997 data) is based on agriculture, which employs 12.5% of the active population. However, this sector presents important deficiencies that make it little productive, such as the fact that 96% of land owners have properties of less than 1 ha and 63% of farmers are more than 55 years old. The secondary sector employs 28.1% of the active population, while the tertiary sector gives work to 59.4%.

Tourism represents an important alternative and is a growing sector. It currently accounts for 10% of the islands' GDP and 6% of all employment. Funchal is the only town with an important commercial sector, due especially to its strategic position and

the boom in the construction sector. Finally, fishing is a traditional sector with great potential for growth, and which is presently undergoing a restructuring process to make it more competitive.

With regard to the archipelago of the Selvagens, these islands were first mentioned in the 15th century, and though never permanently inhabited they have been used by fishermen as a support point.

Administrative structure

Like the Azores, Madeira is an autonomous region and has a similar administrative structure (see the Azores above). Competencies for the Natura network are held by the Regional Agriculture, Forests and Fisheries Secretariat, which has several Directorates, of which those corresponding to the Regional Nature Protection Service and the Madeira Natural Park Service have specific nature conservation competencies. The Regional Forests Directorate is also important in this respect.

Biodiversity

According to chroniclers, Madeira was a densely forested island (hence its name, madeira = wood). Its occupation marked the start of the destruction of the original forests, which have been reduced to 20% of the island. Nevertheless, the 15,000 ha of lauriphyllous forest on Madeira represents the largest patch of this habitat in the world and includes very well conserved zones.

Together with the Canaries this is the archipelago that presents the greatest biodiversity, with a great abundance of endemic species, above all of flora and molluscs. Of the 800 species of vascular flora, 113 are endemic. With regard to fauna, invertebrates are highly abundant in relation with the area of the islands. More than a thousand species of insects have been recognized, a large part of them endemic (Table 5).

On the island of Madeira there are several enclaves that possess a great wealth of species, such as certain sectors of the lauriphyllous forest, with up to 32 species of flora and 6 species of invertebrates identified in Annex II of the Habitats Directive.

There are also some endemic vertebrates, such as the Long-toed Pigeon *(Columba trocaz*), the Zino's Petrel (*Pterodroma madeira*), of which only 30 pairs are known to exist in all the world, and the Madeira Wall Lizard (*Lacerta dugesii*). The Fea's Petrel (*Pterodroma feae*) is exclusive to Madeira and Cape Verde, while the Madeira bat (*Pipistrellus madeirensis*) and two bird species, the Berthelots's Pipit (*Anthus berthelotii*) and the Plain Swift (*Apus unicolor*) are exclusive to Madeira and the Canaries.

The Madeira region also hosts highly important sea bird populations, in terms of both the rarity of the species present and their abundance, particularly in the Desertas and the Selvagens (Table 6).

The marine environment is also rich in cetaceans and is frequented by the Loggerhead Turtle (*Caretta caretta*). Furthermore there is a colony of Monk Seals *(Monachus monachus*) in the Desertas which is comprised by 22 individuals.

Table 5. Endemic species of Madeira

	number
Vascular flora	145
Molluscs	171
Reptiles	1
Birds	2

Table 6. Sea bird populations of the Madeira and Selvagens archipelagos[7]

	Nesting pairs
Bulweria bulwerii	6,000-8,000
Calonectris diomedea	16,500-25,000
Puffinus assimilis	3,200-3,700
Puffinus puffinus	+
Oceanodroma castro	1,500-2,500
Pelagodroma marina	4,000-20,000
Pterodroma feae	150-250
Pterodroma madeira	30
Sterna dougallii	5-15
Sterna hirundo	150-300

Nature consevation

Madeira Natural Park was created in 1982, and under different protective statuses embraces 56,700 ha; two thirds of the island. Its objectives include nature and landscape conservation and the economic and cultural promotion of the local population.

Several Life projects have made important contributions to the conservation of the archipelago, permitting the acquisition of some 628 ha of the best patches of lauriphyllous forest and the restoration of another 190 ha.

For their part, the Selvagens were declared a Natural Reserve by the Portuguese Government in 1971. Three other reserves have subsequently been created.

2.3 Introduction to the Canaries

Introduction

The archipelago of the Canaries is formed by seven large islands and seven smaller isles, with a total area of 7,242 km^2. The most easterly island is situated at only 115 km from the African coast (Table 7).

The western islands present an extremely rugged relief, with deep valleys and high mountain peaks that reach 3,718 m on Tenerife and 2,433 on La Palma. The subtropical latitude of the islands, whose climate is almost constantly modulated by a high pressure belt and dominated by the trade winds, gives rise to a temperate climate

with high air humidity. This phenomenon gives rise to a temperature inversion, especially on the most rugged islands, where the lowest areas are characterized by cool and humid air which is trapped below a layer of hot, dry air that prevents the former from rising, originating a band of clouds between 900 and 1,500 m. These clouds produce abundant humidity and exert a greenhouse effect.

These characteristics lead to strong climatic contrasts on the islands. For instance, on the island of Tenerife there are coastal zones that never reach 100 mm of annual rainfall, while just a few kilometres away more than 2000 mm/year are recorded, which is further increased by the effect of mist (horizontal precipitation). With regard to temperatures, in some areas these remain constant throughout the year, while in other places daily variations of up to 50ºC can occur. This makes it possible to pass, in just a few kilometres and on the same island, from desert to rain forest, and further up to high mountains.

The eastern islands, Lanzarote and Fuerteventura, are extremely arid, since their lower altitude means that they are not affected by the band of clouds.

Table 7. Area and population of the Canary Isles region.

	Area (km^2)	Inhabitants (no.)	Density ($inhab/km^2$)
Lanzarote	846	77,379	91
Fuerteventura	1,660	42,938	26
Gran Canaria	1,562	713,768	457
Tenerife	2,034	665,611	327
La Gomera	370	17,008	46
La Palma	708	81,507	115
Hierro	269	8,338	31
Canaries	7,242	1,606,549	222

Socio-economic setting

When Spain colonized the islands in the 14th century there was already an indigenous population, the Guanches, who according to some authors arrived in the 5th century BC. Nevertheless, the natural environment was well conserved. Following the conquest of the islands, colonization brought with it the introduction of new crops, such as sugar cane and grape vines. The population also increased, thus accelerating the consumption of resources to the point of substantially modifying the natural environment. For instance, it is estimated that only 1% of the potential lauriphyllous

vegetation persists on Gran Canaria, less than 20% on Tenerife and La Palma, and this formation is only well represented on La Gomera[1].

Since 1920 the Canaries have experienced spectacular demographic growth, which at the present time is above the national average. At the same time there have been migratory movements, which have resulted in increases in the population on the capital islands (Tenerife and Gran Canaria), on Fuerteventura and on Lanzarote. In addition to this there is a tendency towards the abandonment of inland rural areas and growth of the main urban areas and tourist attraction zones.

Agriculture is conditioned by important limiting factors, fundamentally the shortage of water and the steep slopes, causing its development to be restricted to the most suitable areas. In middle and high altitude areas the traditional dry land mixed farming is still maintained, though this is currently in severe decline. Elsewhere farming is characterized by the proliferation of tropical and forced crops intended mainly for the export market, which represent 75% of agricultural end production.

Tourism accounts for 80% of the gross added value of the services sector, making it the most important economic activity on the islands. This is a highly dynamic activity, which in recent years has been experiencing great growth. In 1998 more than 11 million tourists entered the Canary Isles, mostly from the United Kingdom (29%), Germany (25%), and Spain (17%)[8].

Administrative structure

The Canaries is a region with two provinces: Las Palmas, which includes the islands of Gran Canaria, Lanzarote and Fuerteventura; and Tenerife, which is comprised by the islands of Tenerife, La Palma, Gomera and Hierro.

Since 1982 the Canaries has been an autonomous region of Spain, with full competencies in relation nature conservation. These competencies lie with the Regional Ministry of Territorial Policy and the Environment. Coinciding with the transfer of competencies from the State to the Regional Government there has been a certain decentralization in the Canaries public administration, which has resulted in transfers and delegations of competencies from the Canaries Government to the Island Councils. The Island Councils are a combination of local corporations and bodies of the autonomous region, and their competencies include both those inherent of local corporations plus certain competencies and duties of the autonomous region. The latter include environmental protection services and the conservation of natural sites. Other competencies transferred to the Island Councils and of interest in relation with the Natura 2000 network are the agrarian extension, urban planning, hunting, tourism and forestry service agencies.

The development of the Natura 2000 network is the competency of the Environmental Planning Centre, belonging to the Regional Environment Vice-Ministry. It has head offices on the capital islands of Tenerife and Gran Canaria, from where it attends to each of the two provinces into which the region is divided. This is where the network is planned and where the protected site management plans are prepared. However, the management of these sites is the competency of the Island Councils.

Biodiversity

Like the rest of the Macaronesian region, the Canaries are characterized by their inherent insular conditions, but with a wider diversity of environments, a larger size and greater proximity to the continent, all of which has created a favourable setting for evolutionary processes. This has given rise to a great number of endemic species, unique to the Canaries, which make this archipelago one of the main focal points of biodiversity of all the planet (Table 1).

To date, some 14,000 species have been identified in the Canaries, of which around 25% are autochthonous. Of these, 8,500 are fauna species, with 45% endemicity. This percentage varies from one group to another, with the highest value corresponding to the genus Coleoptera, where 70% are species that are exclusive to these islands (Table 8). Among the vertebrates there are 11 reptiles, 4 birds and 3 mammals. Besides this there is all the cave fauna associated with volcanic caves. Even today the islands continue to yield new discoveries, not only in terms of invertebrates but even large sized vertebrates, such as the giant lizards found on Tenerife in 1996 (*Gallotia intermedia*) and on La Gomera in 1999 (*Gallotia gomerana*) which can reach a length of 50 cm[9].

Flora also shows a wide diversity (Table 1). In addition to the endemic species that are shared by several islands, each island in turn has its own endemic species. For instance, on La Gomera there are 75 endemic species[10] (Table 9).

The Canaries *monteverd*e is formed by Macaronesian laurel forests and their degraded form, endemic Macaronesian dry heaths. In total this occupies no more than 18,000 ha, of which only some 6,000 ha correspond to mature forests. The best patch of lauriphyllous forest, with an area of 3,000 ha, is protected by Garajonay National Park on La Gomera[10].

Table 8. Endemisms of the Canary Isles[11]

	Total	Endemisms
Fungi	1,779	101
Algae	468	30
Lichens	1,100	33
Bryophytes	500	7
Ferns	60	2
Vascular flora	1,932	520
Arthropods	7,098	2,836
Other invertebrates	4,337	232
Terrestrial vertebrates	117	18

Table 9. Sea bird populations in the Canaries[7].

	Nesting pairs
Bulweria bulwerii	1,000
Calonectris diomedea	30,000
Puffinus assimilis	<400
Puffinus puffinus	200-500
Oceanodroma castro	>300
Hydrobates pelagicus	1,000
Pterodroma marina	>20
Sterna dougallii	+
Sterna hirundo	>100

Nature conservation

The first protected site in the Canaries dates from 1954, when Teide National Park was created. Since then the protected area increased gradually until 1997, when the Law on Protected Sites in the Canaries was passed, suddenly declaring 104 protected sites. This law was complemented that same year by two others related with urban planning. More recently, in 1994, the Law on Natural Sites in the Canaries was passed, which unlike the 1987 law is of regulatory character.

Today there are 145 protected natural sites in the Canaries, covering 40% of the territory. There are also two marine reserves of fishery interest, created by the Spanish Ministry of Agriculture to protect marine reserves: the isle of Graciosa in Lanzarote, with 70,700 ha, and Punta de la Restinga-Mar de las Calmas in Hierro, with 750 ha.

With regard to the conservation of species, several initiatives are currently under way. In the Botanical Gardens of Las Palmas there is a seed bank of endemic flora species and several conservation programmes have been undertaken in relation with threatened flora species. With regard to fauna, different species recovery programmes have also been undertaken, for instance with the giant lizard of Hierro and several bird species as the Blue Chaffinch (*Fringilla teydea*), the Houbara Bustard (*Chlamydotis undulata*) and the Great Spotted Woodoeaker (*Dendrocupus major canariensis*). Some of these programmes have been co-financed by Life.

3 THE NATURA 2000 NETWORK

The Habitats Directive, approved in 1992, has the aim of promoting the maintenance of biodiversity in the European Union. One of the measures that it sets out to this end is the creation of the Natura 2000 network. This network, which will be comprised by a series of sites proposed by the Member States, must include a representative and sufficient sample of a series of natural habitats, as well as a series of species.

For the constitution of the Natura network, the Member States, taking into account the representation of these habitats in their territories, propose a list of Sites of Community Interest which is sent to the Commission. Subsequently the Commission, in agreement with the Member State, prepares a draft list which is submitted to a Committee for approval. The Natura network will also comprise the Special Areas of Conservation for birds, designated by the Birds Directive.

The list of Sites of Community Interest in the Macaronesian region was forwarded to the Commission in 1996-97. It was subsequently assessed and discussed in two technical seminars that took place in the Canaries (November 1996) and the Azores (June 1997). In all three regions the proposal was subjected to different public information processes before finally being approved by the respective regional parliaments.

Once this proposal is approved by the Commission, the three regions will have 6 years to designate these sites as Special Areas of Conservation, with which the Natura network in the Macaronesian region will finally be constituted.

3.1 Responsibility of the regions

Before considering what possibilities are available for co-financing the Natura network, it is first necessary to study the obligations of the Member States, which in the Azores, Madeira and Canaries regions, considering the degree of autonomy that they possess, are the competency of the regional administration.

What measures have to be established?

Article 6 of the Directive is entirely dedicated to the measures that must be established in relation with the Natura network, and is therefore fundamental for the application of the Directive. Accordingly, the Commission has prepared a specific document relating to its interpretation[12].

According to the provisions of the Directive, for the Special Areas of Conservation, Member States must establish the necessary conservation measures to maintain or restore habitats and species to a favourable state of conservation. These measures must be in accordance with the ecological requirements of each habitat and each site, and must take into account economic, social and cultural requirements as well as regional and local particularities. In short, they must be of an integrating character.

In addition to these conservation measures, Member States are obliged to establish the appropriate regulatory, administrative or contractual measures for each Special Area for Conservation.

Furthermore, Member States must establish preventive measures to address the deterioration of habitats, both in the Special Areas for Conservation and in the Sites of Community Interest.

Thus the Directive does not impose the establishment of specific conservation measures, since these need to be tailored to each type of habitat and site. Nevertheless, it does set out a series of obligations whose compliance requires the establishment of measures. These can vary greatly and can go from eminently conservationist actions (habitat management, wardening) to actions necessary for the integration and public use of the sites (information, dissemination).

Table 10. Relationship between obligations set out in the Directive and needs in order to fulfil them.

Obligations of the Directive	**Requirements and possible tools**
Maintain habitats and species in a favourable status (Art 2.2, Art 6.1)	Know their status, functioning and needs (Reseach) Establish adequate management measures (Intervention) Establish regulatory measures (Regulation)
Take into account social, cultural and economic aspects (Art 2.3)	Design of integration measures that contribute to sustainable development (Use and management plan, dissemination, sensitization).
Establish the necessary measures to prevent the deterioration of habitats (Art 6.2)	Know the potential risks (Research) Known the bearing capacity (Research) Establishment of measures (Use and management plan) Wardening
Maintain the integrity of SCIs and SACs in relation with plans and projects (Art 6.4)	Establishment of compensatory measures (Impact assessment, EIA, SEA) (Corrective measures)
Monitoring of conservation status (Art 11)	(Monitoring) (Research)
Possibilities of the Directive	**Requirements and possible tools**
Request co-financing (not obligatory) (Art 8)	Determine what conservation measures are indispensable and their costs (Management plan)

3.2 The Natura 2000 network in the Azores

The Azores autonomous region has proposed 23 areas as Sites of Community Interest, representing 10.7% of the regional territory. However, this percentage varies greatly between the different islands, and goes from 47% on Corvo to 0.8% on Graciosa. These sites also include 8,941 ha of marine areas (Table 11).

These sites include the few remaining patches of lauriphyllous forest, different enclaves of high botanical interest and the main sea bird colonies.

Unlike in Madeira and the Canaries, most of the Sites of Community Interest occupy land that does not currently have any conservation statute. With regard to land ownership, most is privately owned.

Table 11. Sites of Community Interest in the Azores

	Area (km^2)	SCIs (no.)	Land area (ha)	% of the island	Sea area (ha)	Total area of SCIs (ha)
Graciosa	61.2	2	51	0.8	270	321
São Miguel	746.8	3	1,471	1.9	1,530	3,001
Terceira	402.2	2	4,914	12.2	156	5,070
São Jorge	245.8	2	3,531	14.3	466	3,997
Faial	173.1	4	1,997	11.5	561	2,558
Flores	141.7	2	3,236	22.8	932	4,168
Pico	447.7	5	8,941	19.9	828	9,769
Sta. Maria	97.2	3	105	1.0	3,995	4,100
Corvo	17.1	1	805	47.0	176	981
Total	2,333	23	25,051	10.7	8,914	33,965

3.3 The Natura 2000 network in Madeira

27.5% of the Madeira region has been designated as Site of Community Interest, coinciding with the percentage proposed for the main island. The proposed area on Porto Santo is 8.6% while the archipelagos of the Selvagens and Desertas are included in their totality.

The proposed sites comprise almost all the patches of lauriphyllous forest, several enclaves of botanical interest, most of the sea bird colonies and the best areas for the monk seal. The proposal includes 20,601 ha of marine areas (Table 12).

Close to 90% of the area proposed as SCI is State-owned and most is already protected by the statutes already existing in the autonomous region.

Table 12. Sites of Community Interest in Madeira.

	Area (km^2)	SCIs (no.)	Land area (ha)	% of the island	Sea area (ha)	Total area of SCIs (ha)
Porto Santo	42.7	2	347	8.6		347
Madeira	736.7	7	19,798	26.8	3,245	23,043
Selvagens	3.2	1	320	100	9,135	9,455
Desertas	14.5	1	1,451	100	8,221	9,672
Total	797.1	11	21,916	27.5	20,601	42,517

3.4 The Natura 2000 network in the Canaries

In the Canaries 173 Sites of Community Interest have been listed, of which 149 are land sites, 21 marine sites and 3 mixed. The land areas occupy 280,469 ha and the marine areas 168,023 ha.

These figures represent 37.6% of the region's land area, varying between 20.7% on the island of Fuerteventura and 50.1% on La Palma. Most of these Sites of Community Interest (86%) coincide with sites that are already protected by existing statutes, and

more than 35% are publicly owned. With regard to the marine areas proposed as Sites of Community Interest, 1.3% coincides with marine reserves of fishery interest, which while not strictly a nature conservation measure effectively comprises a natural resource protection regime of great interest.

Table 13. Sites of Community Interest in the Canaries

	Area (km^2)	SCIs (no.)	Land area (ha)	% of the island	Sea area (ha)	Total area of SCIs (ha)
Fuerteventura	1,660	13	34,496	20.7	11,517	46,013
Lanzarote	846	11	27,505	32.5	2,614	30,119
Gran Canaria	1,562	37	62,452	40.0	48,122	110,574
Tenerife	2,034	47	91,254	44.8	42,309	133,563
Hierro	269	8	12,298	45.7	10,055	22,353
La Gomera	370	27	16,949	45.8	13,856	30,805
La Palma	708	32	35,512	50.1	10,352	45,864
Total	7,242	173	280,469	37.6	168,023	419,291

3.5 Main conservation problems of the Natura 2000 network in macaronesia

The insularity of the islands causes them to be highly fragile. Human activities have destroyed and significantly transformed this heritage, and a large number of species and habitats are threatened. The following points consider some of the main problems related with the conservation of habitats and species in the Macaronesian region (Table 14).

Fragmentation of patches of lauriphyllous forest

The original area covered by lauriphyllous forests has been severely depleted in all three regions. In Madeira it now occupies only 20% of the territory, in the Azores only 2% and in the Canaries no more than 15% on the best preserved islands. The few patches that survive are highly fragmented by farmland and forestry plantations.

Grazing

Grazing has a very important impact on Macaronesian flora, since herbivore and plant species have not evolved together, due to the absence of large native herbivores on the islands (rabbits, goats, etc.). Thus Macaronesian flora evolved without the pressure of herbivore mammals and did not develop defences against them. Consequently, on many islands it is not necessary to reach a situation of overgrazing for impacts on the flora to appear, since in many cases normal grazing is sufficient to cause severe damage.

For its part, overgrazing affects the three regions to a different extent. This is a major problem in the Azores, where the overgrazing of cattle eutrophizes areas of great interest. The overgrazing of goats is a problem in the mountain areas of Madeira,

where it prevents the recovery of the autochthonous vegetation. This is also a problem on Lanzarote and Fuerteventura in the Canaries.

Introduction of exotic species

The introduction of exotic species is one of the islands' main conservation problems. When the alien species are capable of becoming naturalized they come into competition with the indigenous species and can even become hybridized. There are numerous examples of this problem in all the regions. For instance, the predation of rats and cats on reptiles and ground-nesting birds (sea birds and laurel forest pigeons). Rabbits and goats also put the autochthonous flora at risk, as well as generating important erosion problems in some zones. With regard to alien flora the problem can reach great dimensions, as can be seen in the figures for Teide National Park in the Canaries, where there are more than 83 alien species above 2000 m, and more than 50% of the vascular flora of the Azores is exotic.

Urban development

Urban development, to a large extent fostered by tourism, is a problem in the Canaries and is starting to increase in Madeira. The predilection of this sector for coastal areas has already damaged many stretches of coastline. In Madeira the offer of accommodation grew by 41% between 1990 and 1998, while the Canaries has now surpassed the figure of 11 million tourists a year.

Whale-watching tourism

Marine tourism is a growing sector, and in the Canaries, for instance, more than 30 companies dedicated to this activity have been identified. The increase in this activity, which is focused on the observation of cetaceans, is an emerging concern in both the Azores and the Canaries.

Excess of visitors

Natural sites clearly draw the tourist's attention. The uncontrolled access of tourists, the use of all-terrain vehicles, and an excessive number of visitors leads to the degradation of natural sites. The Canaries is a region where many examples of this type can be found, which is not surprising given the great influx of visitors and the large number of natural sites.

Exploitation of water resources

In some highly arid areas surface water resources are exploited to the maximum for agriculture. This has modified some ecosystems and limits the distribution of some species. For instance, in the Canaries it has been necessary to provide artificial drinking places for birds, since surface resources no longer exist.

Modifications of the land

Some of the islands have steep slopes, making them highly sensitive to large engineering works involving considerable earth movements, such as roads and canals. Some of these works have negatively affected certain flora species.

Forest fires

Forest fires can reach great proportions and cause the disappearance of some autochthonous species.

Contamination of caves

The discharging of contaminated waters and the diffuse contamination produced by farming can contaminate the volcanic caves that are inhabited by an interesting invertebrate flora, including many autochthonous species. In the Canaries there are already examples of this process, such as the Viento de Sobrado cave, which is a complex of volcanic caves reaching a length of more than 17 km, one of the largest in the world, where to date 147 species of cave invertebrates have been identified, the vast majority autochthonous.

Table 14. Relative impact of the main conservation problems in the three regions. One tick indicates that the impact is localized, incipient or low-intensity. Two ticks indicate that the problem is important.

	Azores	**Madeira**	**Canaries**
Fragmentation of patches of lauriphyllous forest	++	++	++
Overgrazing	**++**	**+**	**+**
Introduction of exotic species	++	++	++
Urban development	+	+	++
Whale-watching tourism	**+**		**+**
Excess of visitors			**++**
Exploitation of water resources		**+**	**++**
Modifications of the land		**+**	**+**
Forest fires		+	++
Contamination of caves			**+**

INFORMATION ON THE INTERNET

Legislation
http://europa.eu.int/comm/environment/nature/legis.htm

The Natura 2000 network in Portugal
http://www.icn.pt/outros/natura/nat_fram.html

Natura 2000 network sites in Portugal
http://www.icn.pt/sipnat/sipnat4.html

The Natura 2000 network in Spain
http://www.mma.es/INTERNET/GENERAL/dgcn/biodiversidad/naturalia/naturalia_hispanica.htm

The Natura network in the Canaries
http://www.gobcan.es/medioambiente/biodiversidad/ceplam/areasprotegidas/rednatura.html

4 FINANCIAL INSTRUMENTS FOR THE NATURA 2000 NETWORK IN THE MACARONESIAN REGION

As has already been noted, the Habitats Directive does not foresee the setting up of a specific fund for the Natura 2000 network, though it does set out a framework of measures for co-financing. Nevertheless, apart from this future framework, there is already a wide range of financial instruments that can be used to finance the Natura 2000 network. The main instruments for the period 2000-2006 are:

- National initiative structural fund programming
- Community initiative structural fund programming, fundamentally Leader + and Interreg III
- Life III.

With regard to the Cohesion Fund, this has not been included in this guide due to its peculiarities (projects with a minimum budget of 10 million euros and non-eligibility of nature conservation projects). However, as also occurs with the structural funds, though to a lesser extent, there are notable exceptions. More information can be obtained at the Commission's web site and in the different publications that have considered this issue.

Of these instruments, the only one specifically for nature conservation is Life, which has a long experience and a popular reputation, and has been widely used in all of the Macaronesian region.

The others, which are the most important in terms of budgets, are designed to promote the economic and social cohesion of the European Union. Nevertheless, their use for financing nature conservation actions is possible, and they have been used for this purpose to greater or lesser degree in many Member States[13,14]. The studies that have been carried out within this project in the three regions show that these instruments have been very little used.

The following sections make a brief presentation of these instruments, illustrating with real examples the possibilities that they can offer for the future.

4.1 National Initiative Structural Funds

This heading comprises the structural programming that is designed and proposed to the Commission by Member States in order to promote regional development. It constitutes the most important programming in almost all respects, since it accounts for 95% of the total structural funding budget.

There are four structural funds (Box 2). Each one has its own regulations, which specify the actions that are fundable. In the case of the ERDF[15], ESF[16] and FIFG[17], the regulations provide guidance about fundable actions (Table 15). The EAGGF is another matter, and with the reform of the structural funds is now articled in the Rural

Development Regulations[18], which specify in greater detail the actions that may be financed (Table 16). These regulations include many actions that were previously considered in a series of different regulations, such as compensatory payments for underprivileged areas and agri-environmental subsidies.

To understand structural actions, as well as the four structural funds and the actions that each one can finance, it is necessary to take into account that the programming overall is focussed on the attainment of three main regionalized objectives[19] (Box 3). The regions of the Canaries, Madeira and the Azores are all objective 1 regions, and thus they have priority in the allocation of structural resources.

Box 2. The structural funds.

The European Regional Development Fund, ERDF. This is intended to correct the main regional imbalances and to participate in the development and restructuring of the regions. Within this context it must contribute to sustainable development. It participates in the financing of productive investments that create employment, investments in infrastructures and the development of endogenous potential, aiding local development initiatives and small and medium-sized enterprises. The regulations specify that it can support the protection of the natural heritage, provided that lasting employment is created, and the protection and improvement of the environment.

The European Agricultural Guidance and Guarantee Fund, EAGGF. This has two basic aspects: its "guarantee" side is fundamentally oriented at financing agricultural prices, while its "guidance" side finances farming activities and their restructuring in favour of sustainable rural development. Its initiatives can be highly varied, and some are of great interest for nature conservation, such as the agri-environmental and forestry schemes (Table 16).

The European Social Fund, ESF. This fund supports measures for the prevention and combating of unemployment, the development of human resources and integration in the job market. Fundable activities include training and the development of new sources of employment.

The Financial Instrument for Fisheries Guidance, FIFG. The main actions upon which initiatives are focused include promoting a lasting equilibrium between fishery resources and their exploitation, contributing to the revitalization of areas that depend on fisheries and aquaculture. This includes the protection of fishery resources in coastal waters.

Box 3. The objective regions.

Objective 1. Promotes the development and structural adjustment of the least developed regions. These are the regions with a per capita gross domestic product of less than 75% the Community average. It also includes the ultraperipheral regions, and among these the Azores, Madeira and the Canaries, which also fulfil the first criterion.

Objective 2. Supports the economic and social restructuring of zones with structural deficiencies. These are areas with structural problems in the industrial and services sectors, declining rural areas, certain urban areas and depressed areas dependent on the fishery sector. Its scope excludes objective 1 regions.

Objective 3. Promotes the adaptation and modernization of education, training and employment policies and systems. Its scope excludes objective 2 regions.

Interventions

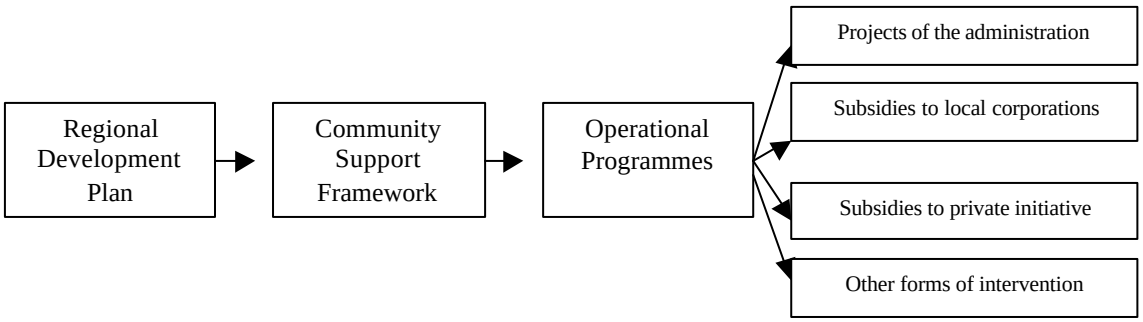
The new structural programming for the period 2000-2006 began in November 1999, when the Member States presented to the Commission their Regional Development Plans for objective 1 regions. Given that the Azores, Madeira and Canaries are autonomous regions with regional development competencies, it is the competent authorities of these regions who prepare and apply the corresponding structural programming.

The Regional Development Plans make an analysis of the main deficiencies and potentials for regional development, and on the basis of this propose a strategy for attaining a series of objectives that contribute to the socio-economic progress of the region, including a budget and a financing plan.

These Plans are presented to the Commission, where they are assessed for their coherence with the objectives of the corresponding regulations. This is then followed by a period of negotiations which culminates in the approval of a Community Support Framework. This document, which is of a contractual character, is that which sets out the subsequent development of the Regional Development Plan.

Once the Community Support Framework has been approved, its application on the ground generally takes place in the form of an Operational Programme (see Figure). These are more specific programming documents, which detail in with greater precision the objectives, budgets and the final form of intervention. Ultimately, this is where the application of the programming is defined, and thus where its use by the different interested actors becomes possible, as well as its use in favour of certain interests.

Figure 1. Scheme of structural intervention



Possibilities for co-financing the Natura 2000 network

At the time of preparation of this manual the new Operational Programmes have not yet been presented, and for this reason it has not been possible to provide a more detailed assessment of their possible impact in favour of the Natura 2000 network.

Nevertheless, the budget lines directly applicable by environmental authorities for the Natura 2000 network are expected to be small. Consequently it is vital to seek the integrated use of the different sources of funding, with the participation of the actors involved, both public and private. These actors include most especially the agriculture and livestock sector, the fisheries sector, the tourist industry and the local corporations,

each of which is involved in different ways in the conservation of the Natura 2000 network in the Macaronesian region.

It should be noted that the Operational Programmes define in greater detail how the operation will take place, which must subsequently be developed by the competent authorities in order to make the programming practical (Box 4). All of these details can have a great environmental impact on the territory and thus their modulation should constitute a challenge for the environmental authorities.

Thus it is seen that the final programming of the structural funds is of vital importance for attaining environmental objectives which go beyond, for instance, merely increasing the area occupied by trees.

These same arguments can be extended to the rest of the objectives of structural programming, making correct environmental integration necessary if the maximum potential benefit is to be had.

Box 4. Example of the application of different subsidies to attain the same objective.
One of the objectives of the Regional Development Plan may, for instance, be to counteract erosion. This objective can be approached in many ways:

- Reforestation of publicly owned land, for which the administration will call a public tender contest or contract a public company.
- Reforestation of barren land, for which an initiative addressed to land owners will be set up (forestry subsidies).
- Conversion of farmland into forest land, setting up an initiative addressed to farmers (reforestation of farmland).
- Give priority to reforestation with autochthonous species, offering larger subsidies for these species.
- Offering incentives for the reforestation of certain land, restricting subsidies to this land or paying higher subsidies.
- Reducing the livestock load, through initiatives to compensate loss of income (agri-environmental subsides) or eliminating certain subsidies (compensatory payments in underprivileged areas).

Though environmental authorities may only have executive competencies in relation with the first type of intervention, the fact is that all of the above have environmental repercussions, and their final effectiveness will depend on specific details. Accordingly it is important for environmental authorities to become integrated in this process.

A great diversity of activities can be financed by structural funds, and to a large extent the only limitation is the imagination. There follows an indication of some of the possibilities of the ERDF, ESF and FIFG (Boxes 8, 9). With regard to the activities that can be financed by the EAGGF, these are specified in greater detail in the Rural Development Regulations (Boxes 5, 6 and 7).

Table 15 Possibilities of interest for the Natura 2000 network that may be included in some of the main measures set out in structural programming.

MEASURES	POSSIBILITIES OF INTEREST
ERDF	
Transport	Corrective measures for infrastructures in Natura network sites.
Tourism	Public use infrastructures, signposting, information leaflets.
Environment	Nature conservation infrastructures (recovery centres, signposting, surveillance posts).
Telecommunications	Communications network to connect all the sites.
Water	Adaptation of water channels as drinking places.
Research	Infrastructures for Natura network research.
ESF	
Research	Applied research (bearing capacity, indicators for the monitoring of the Natura network, sustainable uses, etc.).
Training	Training courses for wardens, tourist guides, information centres. Training courses for tour operators, local administrations, fishermen, etc. in the sustainable exploitation of endogenous potential.
FIFG	
Marine reserves	Monitoring equipment, buoy marking, signposting, replacement of fishing tackle by more selective techniques.
Research	Impact of marine reserves on the ecosystem.

Table 16. Measures contemplated in the Rural Development Regulations of interest for the Natura 2000 network.

RURAL DEVELOPMENT MEASURES	POSSIBILITIES OF INTEREST
Training	Protected site guides. Sustainable tourism. Wardening. Habitat management. Environmentally compatible farming systems.
Early retirement	Dedicate farmland to nature conservation.
Underprivileged zones	Compensation to farmers in protected zones. Reduce overgrazing.
Agri-environmental measures	Habitat conservation. Species conservation. Landscape conservation. Reduction of erosion, overgrazing, consumption of resources, etc. Environmental planning of agricultural production.
Improvement of the transformation and commercialization of agricultural products	Application of new technologies. Improvement of quality. Environmental protection (agricultural contamination).
Forestry	Reforestation of non-farming land. Reforestation of farming land. Improvement of ecological and social value of forests. Sustainable use of forests. Fire prevention. Contracts for maintenance of the ecological function of forests. Nurseries.
Promotion of the adaptation and development of rural areas	Commercialization of quality agricultural products. Protection and conservation of the rural heritage (landscape). Diversification of activities (tourism). Tourism in protected sites. Environmental protection.
Research	Sustainable exploitation of resources. Reforestation techniques.

Box 5. Example of specific financing for nature conservation in the EAGGF operational programme.

During the previous programming period, 94-99, some autonomous regions of Spain set up a specific line of funding for nature conservation within the EAGGF operational programme. One of these regions was the Canaries, with the measure "Conservation of biodiversity: protected natural sites and wildlife", with a total budget of 9.77 Meuros. This measure has been used to finance certain infrastructures necessary for the development of some species recovery plans, such as the giant lizard of Hierro, the Blue Chaffinch and the Houbara Bustard. It has also been used to fence and to clean of wastes some protected sites.

Box 6. Example of the use of agri-environmental subsidies in the Azores.

One of the problems for some enclaves in the Azores is the overgrazing of cattle, which impoverishes pastures and eutrophizes waters. In order to address this problem, an agri-environmental programme was set up, with premiums of up to 170 euro/ha/year for livestock farmers who reduced the livestock unit load from 4 LU to 0.6-1.4 LU/ha, nitrogen loads in the soil, and forage cuts from two to one a year. A total of 1,394 farmers, with 21,874 ha, had joined the programme by the end of 1998[20].

Box 7. Example of the use of agri-environmental subsidies in Madeira.

The grazing of goats and sheep in the high altitude areas of Madeira is an ancient practice that has developed unchecked to our day. In some areas this type of exploitation represents a limitation on the recovery of autochthonous flora. To this end, from 1994 the Regional Forests Directorate applied a specific measure under the heading of agri-environmental subsidies, aimed at promoting the reduction of free grazing in these areas. The average premium of the subsidies offered to livestock owners taking on these commitments for five years is up to 38 euro per head per year.

Box 8. Example of the financing of marine reserves with the FIFG.

The FIFG 94-99 operational programme, administrated by the Spanish Ministry of Agriculture, contains a specific measure for the creation of marine reserves of fishery interest. Since it came into force in 1994, two marine reserves have been created in the Canaries: the isle of Graciosa reserve in Lanzarote, with 70,100 ha, and the Punta de la Restinga-Mar de las Calmas reserve in Hierro, with 750 ha.

These reserves include some marine zones included in the Natura network, and though their objective is the protection of marine resources, the fishery activities inside them are restricted to the most selective tackle and to fishermen with historic rights. Accordingly, in addition to achieving a spectacular recovery in the marine fauna, jobs are maintained and the income of the fishermen fishing inside the area has even increased.

The FIFG has financed the infrastructures necessary for the reserves, such as surveillance boats, information signs posted in 11 fishing ports and yacht marinas, etc.

Box 9. Example of the recovery of old trails for public use.

The Regis initiative, now defunct, and more specifically the part co-financed with the ERDF, financed the rehabilitation of old rural trails in the protected sites of the Canaries for the purposes of public use and environmental education. The measure included the publication of a guide to these paths for each island. In total 18 Meuros were invested in this action. Some of these paths have subsequently been the basis for Leader projects.

INFORMATION ON THE INTERNET
General regulations of the structural funds, ERDF, ESF, FIFG and rural development regulations
http://www.inforegio.cec.eu.int/wbdoc/docoffic/sf20002006/regul_en.htm

More information on the rural development regulations
http://europa.eu.int/comm/dg06/rur/index_en.htm

4.2 Community Initiatives

During the previous programming period, 1994-99, there were a total of 14 Community initiatives, some of which were applicable in the Macaronesian region (Leader, Regis, Pesca, Interreg II-C, etc.). However, with the development of the Agenda 2000 recommendations for the period 2000-2006 the Community initiatives have been reduced to four, each with well-defined objectives (Table 17). Though some of these previously existed, i.e. Leader and Interreg, they have undergone profound modifications which have even led to the incorporation of the Natura 2000 network among their priorities.

Table 17. Objectives of the new Community initiatives.

Objective	**Initiative**
Transboundary, transnational and interregional cooperation	Interreg-III
Rural development	Leader +
Transnational cooperation to combat discrimination and inequality in the job market	Equal
Urban districts in crisis	Urban

Of the new initiatives for the period 2000-2006, the most interesting for the Natura network are Leader + and Interreg III, whose regulations even mention the network as one of the areas of greatest interest. Nevertheless, the Equal initiative may also be of interest.

INTERREG III

The Interreg initiative was not applicable in the regions of the Azores, Madeira and the Canaries until the end of 1995, when a new strand of Interreg known as Interreg II-C was created. Until then, the ultraperipheral regions had their own specific initiative known as Regis.

The objectives of the new Interreg III initiative for the period 2000-2006 are: to avoid border areas being a barrier to balanced development, and to contribute to the integration of the EU territory[21]. To this end it considers three main strands of action:

A) Transboundary cooperation, by means of the fostering of integrated regional development in border regions. This is the strand with the highest budget; but the Macaronesian regions are not eligible zones.
B) Transnational cooperation, to contribute to harmonious territorial development in the Community.

C) Interregional cooperation, through the improvement of the policy and techniques for regional development and cohesion.

Application in the Macaronesian region

The regions of the Canaries, Madeira and the Azores can only participate under strands B and C of Interreg, of which B, relating to transnational cooperation, is that with the greater budget. In this sense, Interreg III will pay greater attention to fostering cooperation in the ultraperipheral regions, which is relevant for the Azores, Madeira and the Canaries.

To attain the objectives of Interreg, this initiative will be governed by a series of principles:

- The strategies and programmes must be developed together
- Bottom-up approach and development in association
- Complementariness with the line of the structural funds
- Integrated approach
- Coordination between Interreg and external aid instruments.

Strand B. Transnational cooperation
Its objective is to promote greater territorial integration in the Community by means of transnational cooperation between national, regional and local authorities.

A series of zones have been delimited for its application, for which one single programme must be drawn up. One of these zones encompasses exclusively the regions of the Azores, Madeira and the Canaries.

For the development of programmes within this strand, the priorities set out by the Commission are:
a) to draw up operational territorial development strategies, which may include cooperation between rural and urban zones
b) to promote sustainable transport systems and access to the information society
c) to foster the conservation of the environment and the sustainable management of natural resources
d) to promote integration between maritime and insular regions
e) to foster the integrated cooperation of the ultraperipheral regions.

The Commission's recommendations relating to the environmental priority include:
- contribute to the development of the Natura 2000 network, to join up protected areas
- recovery of cultural landscapes that have been degraded by human activity, including agricultural abandonment
- concerted management of coastal waters.

On the basis of the financial allocations of each Member State, the programme proposals will be prepared by joint transboundary or transnational committees, or by bodies constituted to that end.

To elaborate a programme for this strand, which takes into account the principles of Interreg III, common structures are necessary for its preparation, management and application.

Proposals may be presented for each strand separately or combined for all three, and will take the form of a single programming document (SPD).

Strand C. Interregional cooperation
The objective of this strand is to improve the efficiency of the policies and instruments for regional development and cohesion, by means of networking, above all in the least developed regions (objective 1).

All the territories of the Community are eligible for this strand, including the Macaronesian regions. Priority issues will be proposed by the Commission, and will include a chapter on the environment. This strand also intends to pay particular attention to the ultraperipheral regions.

On the basis of the cooperation zones, one of which corresponds to the Macaronesian region, Member States will jointly prepare an interregional cooperation programme by zones. These programmes may be developed for each zone or in relation with a specific issue within strand B programming.

Each programme will have a managing authority, in charge of making the calls for proposals and the selection of the proposals received.

Opportunities for the Natura 2000 network

The Natura 2000 sites of the Macaronesian region share many problems and potentials, and the experiences of one region may be of interest in another. For instance, the work carried out in relation with the elimination of exotic species in Madeira Natural Park (rabbits, rats and plants), the management of nature tourism in some sites in the Canaries, or the drawing up of management plans for marine and coastal sites in the Azores (See Box 10 for a good example).

Therefore, there is a good opportunity for developing joint projects, in which experiences will be exchanged and the potential of the Natura network in the region will be jointly developed.

Box 10. Example of an Interreg nature conservation programme.

Given that Interreg II-C, the only strand accessible by the regions of the Azores, Madeira and the Canaries, was developed after 1995, there are almost no examples of interest for the Natura 2000 network. Therefore, let us consider the example of the experience developed between two protected sites in Portugal and Spain, Peneda-Gêres National Park and Baixa Limia-Serra do Xurés Natural Park.

During the period 94-99 an Interreg project was developed, whose beneficiary was Baixa Limia Park, focused on nature conservation. This project incorporated an important rural development component, since the ecosystems of the zone are intimately related with traditional land uses.

The programme has been used to[13]:
- Consolidate the figure of the Park in the zone, to which end, among other initiatives, a headquarters was acquired for its services.
- Public use. On the lower floor of the Park headquarters an information and interpretation centre was opened. Border posts were also created between Spain and Portugal, as information centres, as well as some mountain refuges and trails. On the other hand information panels were also installed.
- Develop a programme for the reintroduction of wild goats, extinct in the area since the end of the 19th century. As well as releasing several specimens, 658 ha of land have also been acquired.
- Restore the autochthonous forests, for which forestry work has been carried out on 200 ha and another 100 ha have been reforested.
- Study the conservation and management of wolves. Studies of the populations of birds of prey have also been carried out.
- Publish a bulletin to promote coordinated management between the two sites.

INFORMATION ON THE INTERNET
Interreg-III
http://www.inforegio.cec.eu.int/wbdoc/docoffic/official/interreg3/index_en.htm

LEADER +

Previous experiences with Leader I and II have demonstrated their effectiveness in revitalizing rural zones through the local actors themselves. For this reason the objective of the new Leader + continues to be to encourage actors in rural areas to develop the potential of their territories, from a long term perspective[22]. It will also foster integrated and sustainable development strategies that influence the European Union's rural development policy, in order to:
- valorize the natural and cultural heritage
- improve the economic environment in order to contribute to job creation
- improve the organizational capacity of the respective communities.

The beneficiaries of the Leader initiative are organized in Local Action Groups. These act as the transmitters of a development strategy and are responsible for its application. These groups are formed by a balanced and representative set of representatives of the different socio-economic sectors in the territory and, must therefore be implemented at local level.

For the application of this initiative, each Member State must present to the Commission a proposed Community initiative programme, prepared by the competent authorities. Its content will be similar to that of the operational programmes or single programming documents, and must indicate the number of local action groups that it is intended to select. Subsequently, and by means of a tender process, the local action groups that have the opportunity to manage these programmes will be selected.

The new Leader initiative is organized in three strands, all of which are applicable in the Azores, Madeira and the Canaries. The first two strands are of great interest for the Natura network.

Support to integrated rural development strategies of a pilot type.

As in the previous Leader II initiative, this strand and the next will only be applicable in certain rural territories, comprised by small geographic areas that form homogeneous units from the physical, economic and social viewpoints. Nevertheless, the criteria for their selection will be the responsibility of each Member State.

The development strategy to be applied must be integrated and sustainable, and must consist of a pilot experience which has the capacity to bring together the different actors and projects under one specific uniting aspect of the region. One of the agglutinating aspects considered by the Commission to be most important is the valorization of natural and cultural resources, including those of the Sites of Community Interest in the Natura 2000 network.

The Commission also emphasizes the importance of the pilot nature of the strategy, in order to support original and ambitious rural development approaches. In this respect it considers the following aspects to be important:

- the appearance of new products and services with specific local characteristics, establishing new methods to combine the human, natural and financial resources of the territory for the more efficient exploitation of its endogenous potential.
- relating traditionally highly confronted sectors of the economy.
- creating new forms of organization and participation in decision-making processes.

In the field of innovation there is a great deal that can be done in relation with the Natura 2000 network, and thus it is expected that many of the strategies presented by Local Action Groups will be related with the network.

Finally, the strategy must demonstrate the possibility of transferring the proposed methods to other zones, and their complementariness with other interventions and programmes that are applied in the region.

Support to cooperation between rural territories.

The objective of this strand is to foster cooperation between different territories of one or several States, in order to achieve added value for the territory in question. This will be applicable in the rural territories selected in strand 1.

Actions must be related with the sharing of knowledge or human and financial resources, through the development of a common project.

Integration in the single network of all EU rural territories.

One of Leader's priorities is to promote the exchanging of experiences and knowledge. To this end all Leader beneficiaries are obliged to participate actively in a network that will be coordinated by the Leader Observatory.

Box 11. Examples of projects of interest for the Natura network financed by the Leader initiative.

Promotion of public use
A Leader project developed in Tenerife (Canary Isles) has financed a project destined to promote nature activities in Granadilla. The project, with a total budget of 300,506 euros, has been developed by the company Ecotour S.L. and has consisted of creating a rural interpretation centre and the organization of guided visits to a protected natural site. These visits make use of a network of old trails that had previously been restored under the Regis initiative. This project has created 16 new jobs.

The ADRAMA and ACAPORAMA local action groups in Madeira have developed several individual actions related with the Natura 2000 network and in coordination with the Natural Park. Thus, the restoration of a *levada* (very old water channelling system for irrigation and domestic supply), or the recovery and signposting of mountain trails for nature tourism, provide good examples of what can be done for the Natura network from local initiative.

Awareness-raising and education
In Sao Jorge (Azores), Leader has co-financed a sensitization action in relation with the conservation of the Cory's Shearwater. This project, developed by the Sao Jorge Natural, Historic and Cultural Heritage Defence Youth Association, consists of a travelling exhibition which will visit all the schools in the Azores, and will subsequently be transferred to Madeira.

INFORMATION ON THE INTERNET

General information on Leader +
http://europa.eu.int/comm/dg06/rur/leaderplus/index_en.htm

Leader European Observatory
http://www.rural-europe.aeidl.be/rural-en/index.html

Spanish Unit of the Leader European Observatory
http://redrural.tragsatec.es/redrural/java/inicio.htm

Portuguese Unit of the Leader European Observatory
http://www.inde.pt/

EQUAL

The new EQUAL initiative has the aim of promoting new methods to combat any kind of discrimination and inequality in relation with the job market[23]. To apply this initiative, Member States must prepare a Community Initiative Programme which will take the form of a Plan and will be approved as a Single Programming Document, i.e. with a similar procedure to that of national incentive structural programming. This Plan must include a strategy to develop actions in the context of the four cornerstones of the employment strategy.

Equal will act in these fields through projects that will be developed by strategic associations, known as Development Partnerships. These partnerships will be comprised by the interested actors, who will cooperate to develop a strategy with an

integrated approach. Like the local action groups of the Leader initiative, the partnerships will be responsible for developing the programme once it has been selected.

The partnerships may be geographic or sectorial. The first type will bring together the interested parties of a particular territory, with the aim of uniting their efforts and resources for the application of the strategy. Sectorial partnerships will act in relation with specific sectors.

Transnational cooperation with other partnerships in another Member State will be considered of great interest for the development of the initiative.

Opportunities for the Natura 2000 network

The interest of this Community initiative for the Natura network lies in its potential for promoting the training of the local population, with a view to establishing sustainable development models in these sites. In this respect it should be noted that protected sites generally tend to be located in the most depressed areas from a socio-economic point of view. Furthermore, the initiatives aimed at exploiting the added value offered by the designation of these areas as protected sites tend to taken by outsiders.

For this reason, the following actions envisaged in Equal may be of interest:

Professional insertion capacity
- Facilitate access to and reincorporation in the job market by persons with difficulties to become integrated or reintegrated in the job market.

Company spirit
- Open the process of business creation to all, providing the necessary instruments for the creation of companies and for the identification and exploitation of new job creation possibilities.

Adaptability
- Support the adaptability of companies and workers to structural economic changes and the use of information technologies and other technologies.

Box 12. Example of training and capacitation for sustainable development financed by the Adapt initiative.

The environment and nature conservation are fields of interest for job creation. In the Canaries, natural sites are an important tourist resource, and this is recognized in the different strategies for the development of the sector. However, the local population is not always prepared to take advantage of this opportunity.

To contribute to solving this problem, which is common to other protected sites, an interesting experience has been carried out in the Sierras de Cazorla y las Villas Natural Park, co-financed by the Adapt community initiative (94-99) and the Regional Government of Andalusia. The project, developed by the Andalusian Federation of Protected Natural Sites, had the aim of valorizing the natural and landscape resources of the Park, and contributing to the adaptation of local initiative for their exploitation. To this end a series of courses were organized, addressed to the local administrations, cooperatives, workers, businesspersons and

unemployed persons. To complement this some practical seminars were held in companies in each sector. The seminars, adapted to the needs of the locality, covered a range of issues; from matters related with the hotel and catering trade to quality in forestry management.

As a complement to this, the programme managers were able to set up 40 grants for practical work experience abroad, financed with the European Commission's Leonardo programme.

As a consequence of the programme, several local initiatives have appeared, in the form of cooperatives and small companies for the commercialization of aromatic plants, rural construction and nature tourism.

INFORMATION ON THE INTERNET

EQUAL
http://europa.eu.int/comm/employment_social/equal/com/com853_en.pdf

4.3 LIFE III

Without any doubt, the star funding source for financing nature conservation actions is Life[24], and most particularly Life-nature. Life is the only specific financial instrument for the environment, and is comprised by two strands which share almost equal portions of the budget: Life-nature and Life-environment.

LIFE NATURE

Its objective is to contribute to the application of the Birds and Habitats Directives. To this end it finances projects related with priority species and Sites of Community Interest or Special Protection Areas for birds.

Projects can be presented by any type of initiative, public or private, and must be prepared following a standard format provided by the Commission. The Commission has recently published a guide to assist applicants in the preparation of their projects. Interested parties can obtain further information at the web site indicated in the box below and from the national Life offices (see Annex).

Life-nature is the programme that offers the greatest flexibility for co-financing the Natura 2000 network. This is because it can finance integrated projects, which is easier to manage and finance. For instance, within one same project it can co-finance the management of habitat, public use infrastructures and research, while in general, and with the exception of Interreg, the other financing sources only cover these items separately. Furthermore, Life also covers certain expenses that the other financial instruments do not, or are very unlikely to cover, such as administrative personnel and project management.

To date 31 Life projects have been developed in Macaronesia, almost half of them in the Canaries (Table 18). However, each region shows its own peculiarities in the formulation of projects. For instance, projects in the Canaries are predominantly focused on species conservation (73%), those in the Azores on habitat conservation

and those in Madeira are evenly distributed between habitats and species. Altogether these projects have supposed a total investment of 24 Meuros between 1992 and 1999, of which Life has contributed 66.7%.

Though, from an analysis of the Life projects developed in Macaronesia, it can be said that all are of interest for the future of the Natura 2000 network, the most important overall are undoubtedly those developed in Madeira. The Madeira region may possibly be the region of the European Union where most projects have been developed per unit of area. Furthermore, the vast majority have been developed inside existing protected natural sites, and thus they have all shared the same orientation. For instance, some of the best areas of lauriphyllous forest have been acquired (630 ha) and others have been restored (190 ha). Tasks have also been carried out in relation with species conservation (monk seal, threatened flora, laurel forest pigeon), the elimination of alien species (goats, rabbits, rats), applied research in conservation (use of the site by rats, food of pigeons) along with intensive dissemination work.

Table 18. Life projects developed in Macaronesia.

Year	Title	Period	Beneficiary	Euro	Life contribution %
94	Conservation of “Priôlo”	94-96	Regional Govt.	467.000	75
94	Natural vegetation and flora of the Azores	94-96	Regional Govt.	266.667	75
95	Conservation of sea bird communities and habitats in the Azores	95-96	University	500.000	60
96	Bullfinches and laurels: continuing conservation of the Azores heritage	97-99	Regional Govt.	1.949.206	75
98	Management planning for sea and shores in the Azores	98-02	University	1.365.585	60
MADEIRA					
Year	Title	Period	Beneficiary	Euro	Life contribution %
92	Protection of the monk seal in Madeira	92-94	Natural Park	400,000	75
92	Conservation of Montado de Urzal (Madeira Natural Park)	93-93	Natural Park	207,000	75
94	Conservation and recuperation of species and habitats in Madeira	94-96	Natural Park	1,067,000	75
95	Terrestrial habitat restoration measures on the island of Deserta Grande	96-98	Natural Park	383,467	75
96	Logging loggerheads on the high sea	97-99	Natural Park	299,112	75
97	Management and conservation of the laurel forest in Madeira	98-00	Natural Park	323,034	60
98	Continuing conservation of Madeira's rarities	98-00	Natural Park	938,531	55
98	Slugs and snails on Madeira	98-00	Research Centre	158,598	50
99	Conservation of Madeira's priority and rare plant species	99-03	Forest Directorate	1,431,934	75
99	Cetacean conservation project in Madeira	00-03	Municipality	1,035,964	50
99	Restoration of laurel forest in Funduras	00-03	Forest Directorate	920,314	75
CANARIES					
Year	Title	Period	Beneficiary	Euro	Life contribution %
93	Restoration of Lajares for the conservation of the Houbara Bustard (Fuerteventura)	94-95	Regional Govt.	340,000	50
93	Reestablishment of lauriphyllous forest vegetation on Gran Canaria	94-96	Island Council	1,500,000	50
94	Conservation of the Blue Finch and laurel forest pigeons	94-96	Regional Govt.	1,467,000	75
94	Recovery plan for the giant lizard of Hierro	94-96	Regional Govt.	667,000	75
94	Measures to stabilize the Atlantic population of monk seals	94-96	Regional Govt. & Central Govt.	1,333,000	75
96	Boosting populations of the Canaries pigeons	97-00	Regional Govt.	645,677	75

96	Conservation of the Great Spotted Woodpeaker in Tenerife	97-99	Regional Govt.	492,623	75
96	Bringing monk seals back to the Canaries	97-98	Regional Govt.	1,363,175	75
97	A save haven for turtles and dolphins	97-99	Regional Govt.	917,220	75
97	Restoration of Playa del Matorral wetland	97-99	Municipality	605,426	50
97	Saving rare Canary plants	98-99	Regional Govt.	598,468	75
97	Reintroduction of the giant Lizard of Hierro in its former natural habitat	97-00	Regional Govt.	465,571	60
98	Conservation of chiropterans and invertebrates in volcanic caves	98-01	Regional Govt.	499,472	50
98	Conservation of the Blue Finch in the Canaries	99-02	Regional Govt.	329,398	60
99	Conservation and restoration of the islets and cliffs of Famara	99-01	Island Council	1,259,212	50

LIFE ENVIRONMENT

Life-environment is the other strand of the Life financial instrument. It co-finances the development of innovating techniques and methods that contribute to the development of Community environmental policy. Though in principle this may appear to be of little interest for the Natura network, this is not the case, since it offers interesting opportunities in relation with the development of sustainable development strategies.

Among the most interesting measures that can be financed are demonstration projects relating to the integration of environmental considerations in land planning in order to reduce the environmental impact of economic activities.

INFORMATION ON THE INTERNET
General information on Life: regulations, calls, guides, formats, database with projects undertaken, etc.
http://europa.eu.int/comm/life/home.htm

4.4 Co-financing the Natura 2000 network

The preceding chapters have given an introduction to the Community financial instruments of greatest interest for financing the Natura 2000 network in Macaronesia. As has already been noted, the best instrument for financing nature conservation actions is Life. Nevertheless, there are others of great interest and which have been little probed, of which some examples have also been given, many of them corresponding to the Macaronesian region.

Each instrument has its own scope for its application and functioning, and is applicable for certain functions but not for others. Each measure also has its own beneficiaries and form of intervention. This diversity of options can and should be exploited to finance the Natura network (Table 19).

Table 19. Potential use of the different Community financial instruments. Life is not included, since it can finance all of these measures.

Type of measure (*)	ERDF O.P.	EAGGF O.P.	FIFG O.P.	INTERREG III	LEADER +	EQUAL
A. Preparation of management plan						
B. Purchase/rental of land						
B.1 Purchase				+		
B.2 Rental		+				
B.4 Purchase of rights		+				
C One-off biotope management tasks						
C.1 Works commissioned to outside companies (hydraulic, landscape, reforestation, etc.)	+	+		+		
C.2 Infrastructures	+	+	+	+		
C.3 Equipment	+	+	+	+		
C.4 Personnel				+		
Other measures						
D. Periodic biotope management						
D.1 Infrastructures	+	+		+		
D.2 Equipment	+	+	+	+		
D.3 Wardening						
D.4 Personnel						
D.5 Management agreements and contracts		+				
D.6 Compensatory payments		+				
E. Sensitization and dissemination						
E.1, E.2 Seminars, workshops, fairs		+		+	+	+
E.3 Publications	+	+	+	+	+	
E.4 Infrastructures (information centres, accesses)	+	+	+	+		
E.5 Personnel (guides, educators, etc.)				+	+	
D. General functioning						
F.1 Personnel						
F.2 Scientific monitoring				+		
F.4 Equipment				+		
Other expenses						

(*) List of measures according to Life II formats.

With a view to the future, it is important to analyse why these possibilities have not been sufficiently used in the past, since the correction of these causes is a means for promoting their increased use.

Information and training

To date, few environmental authorities have had a clear knowledge of the functioning of the structural funds. Nevertheless, in the last two years a clear improvement has been seen in this respect, which has even led to greater participation of environmental authorities in the new structural programming.

A very important factor behind this evolution has been the efforts made to raise awareness of these issues by some independent organizations[13,14], as well as the

development of networks of environmental authorities[1]. Thus, though it is necessary to continue in this direction, the advances that have been made to date will permit better use of Community funding sources.
With a view to the future it is interesting to note the initiative of the Regional Environment Vice-Ministry of the Canary Isles, which has set up a specific department to deal with these issues.

Shared responsibility

One of the principles upon which the development of the 5th Environment Programme has been based is that of shared responsibility. This principle is based on the conviction that sustainable development can only be achieved by means of concerted action by all the actors involved, who must cooperate with each other. These actors include parties such as local authorities, companies, NGOs, trades unions and farmers.

Hitherto there has been a certain tendency on the part of environmental authorities to excessively patrimonialize nature conservation, which has led to a top-down approach to conservation policy. This situation distances local actors from the final objectives of these policies, when it is precisely them who to a large degree have to apply them.

In this field there is still a great amount to do to achieve the participation of all local actors in nature conservation. In this sense there is a need to achieve greater integration of Leader Local Action Groups with the conservation objectives of certain sites. This is vital if full use is to be made of the potential of well-directed local initiative in these zones.

Integration

Even today some people continue to consider environmental authorities and nature conservation as a barrier to socio-economic development. Though this view is changing little by little, it has led to a lack of integration of conservation policies with the rest of policies.

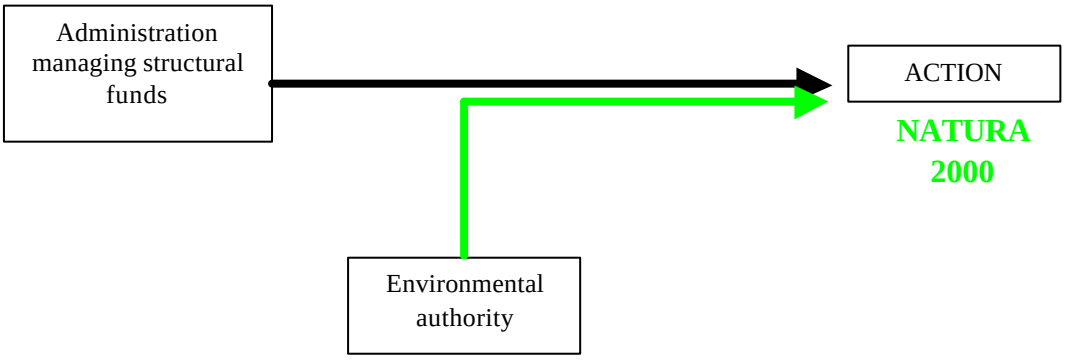
Here again it is necessary to underline that the objective of the structural funds is not nature conservation but the economic cohesion of these regions with the rest of the European Union, and one of the priorities for this is the creation of employment and of wealth. Thus, if the Natura 2000 network wishes to make good use of structural resources it must be linked to the creation of employment and wealth. For instance, in the Macaronesian region, which is one of the main tourist destinations in the European Union, the application of this principle implies the need to develop forms of sustainable tourism.

Accordingly, environmental authorities must make an effort to consider the approaches of other policies and to participate in them with suggestions that promote the

[1] Environmental authorities networks have the aim of promoting the greater integration of environmental considerations in the new Community structural programming, 2000-2006. Their constitution is voluntary. In Spain this network was constituted at the end of 1997. It is comprised by environmental representatives of all the autonomous regions and of the central administration, who meet with the officials responsible for the different structural funds. These meetings are usually also attended by representatives of the European Commission. This network has developed important initiatives, such as the adoption of common methodologies for the environmental assessment and monitoring of the programmes, seminars on the environmental problems of different sectors, dissemination of information, etc.

compatibility of development and conservation (See box 13). Only in this way can they adequately participate in the design of the different forms of intervention.

Figure: Scheme of the integration process

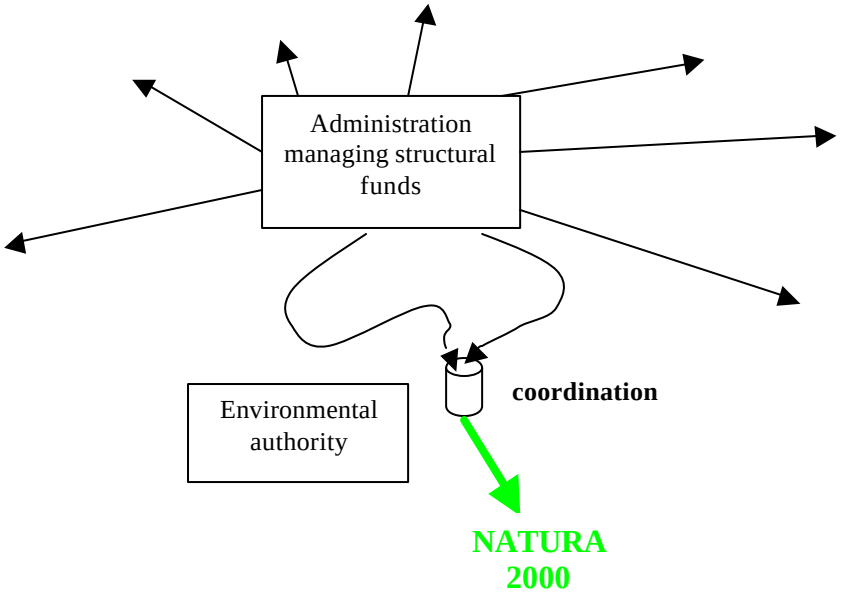


Coordination

Given the great diversity of financial instruments and beneficiary actors that can be involved in one same territory, as well as the aforementioned integration it is also necessary for there to be good coordination. Without this many opportunities can be missed (See box 13).

As a previous step towards coordination it is very important to know the needs of each site. To this end it is of great assistance if plans are drawn up for the use and management of protected sites. After this the coordination of the different funding sources permits greater efficiency and accessibility.

Figure: Scheme of the coordinated use of funds



Box 13. Example of financial availability for nature conservation.

The marine environment around the three archipelagos possesses a great wealth of cetacean populations and is an important transit area for the Loggerhead Tuttle (*Caretta caretta*). In order to protect these populations, certain marine sectors have been designated as SCI.

On the other hand, on some islands some tourism initiatives have started to appear in relation with whale-watching. This tourist activity can cause damage to the populations of these species, as has occurred in other areas. In addition to this risk, damage can at times be caused by maritime traffic and also by certain fishing activities.

In order for the protective measures adopted by the administration in this respect to be really effective it is necessary to involve all the interested sectors: fishermen's associations, tourism companies, NGOs, yacht marinas, maritime companies and local administrations, among others. All of these sectors can have the opportunity to see actions co-financed in this area.

How can actions to conserve marine Sites of Community Interest be financed? In the Azores, Madeira and the Canaries, Life is financing specific projects for the conservation of cetaceans, sea turtles and seals. The actions being developed include inventories, dissemination and sensitization work, replacement of fishing tackle, etc.

However, as has already been noted, there are other instruments that can also be used. For instance, in the Canaries, where there are 30 companies related with sea and coastal tourism, the Business School Foundation participates in a project financed by Interreg II-C which has the aim of studying the possibilities of coastal tourism to promote these regions in consonance with nature conservation. Also in the Canaries, the authorities responsible for fisheries are co-financing information and certain infrastructures with the FIFG for the development of marine reserves of fishery interest.

The first of these projects is related with tourism and the second with fisheries. This clearly shows the need to integrate and cooperate with other sectors, in order to make the maximum advantage of the scarce financial resources available.

5 TOURISM AS A FINANCIAL INSTRUMENT FOR NATURE CONSERVATION

Introduction

The areas of greatest environmental value in the Macaronesian region will form part of the Natura 2000 network. These sites, as is the case of many other protected sites, have very little or no public financing. Therefore, alternative financing sources are necessary for their maintenance.

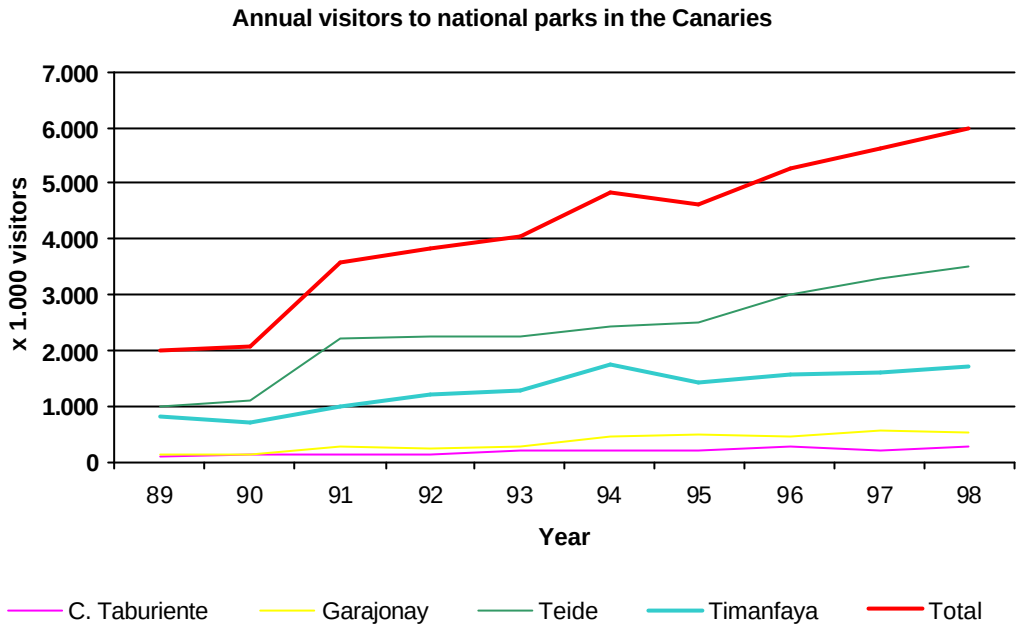
One possible alternative source of financing could come from tourism. Some categories of protected sites, especially National Parks, have great experience in receiving visitors. The opinions of conservationists about the recommendability of nature tourism are split, and while some consider it interesting for raising public awareness and increasing potential additional sources of income for protected sites, others fear the ecological damage caused by tourism. The tourist industry recognizes protected areas as an important attraction that can be offered in combination with others.

In this context reference is made to financing schemes as instruments used by the State or the tourist industry to achieve additional income, which can contribute to the financing of nature conservation measures in protected sites such as the sites of the Natura 2000 network.

This chapter does not deal with all the financing schemes related with tourism. It only focuses on those that have a direct relationship between tourism, as a source of income, and nature conservation, as an expenditure of this income. In other words it does not include general taxation (income taxes, VAT, property tax, etc.). The tourist sector is subject to these taxes and some small amounts of this income are used for nature conservation, but nature conservation does not automatically benefit from the increase in such income since there is no direct relationship between taxes and their expenditure. Following this argument, this chapter does not consider taxes related with tourism (tax on kerosene and on property) or on tourists, such as hotel taxes.

Importance of protected sites for tourism

There are many differences between the different categories of protected sites and their objectives from one country to another. For instance, there are National Parks, Natural parks, Biosphere Reserves, etc., but not all of these protected sites have the same value. Some are no more than small samples of natural habitats, while others rival with intensive agricultural or forestry uses.



Box 13. Influx of tourists to protected sites in the Canaries

The importance of protected sites for tourism in the Canaries rises relentlessly each year. In 1998 the number of visitors to national parks reached 6 million[25], not to mention the rest of the region's protected sites. During the month of May 2000 alone, 300,000 visitors were recorded in recreational areas in the natural environment of the island of Tenerife, most of which are located in protected sites (J. Bonnet, *com pers*).

Most of the protected sites are open to the public. The different modes of tourism use these sites in a more or less intensive way[26], generally in the least protected areas of these sites (buffer zones), while the central zones tend to be reserved for conservation, and sometimes for research.

Statistics are not available on the development of nature tourism in the world. In any case, the experts agree that nature-related tourism is undergoing constant growth. Annual growth rates of up to 20% are foreseen for some natural areas or some types of nature tourism, and these increase will be particularly important in protected sites and natural landscapes[27] (Box 13).

In general, nature experiences are of great importance for the tourist. Of the main groups of German tourists who visit protected sites, 18% seek nature experiences[28].

According to different studies, the conclusion is reached that tourism in protected sites needs to be more adventurous than educational, so that the visitor is able to create his or her own destination. Accordingly, from a commercial perspective of tourism, protected sites should be contemplated as just another part of the tourist package, which should also include many other activities outside the site.

Bearing in mind the relationship between tourists and protected sites, in general it may perhaps be considered that people are not looking for "protected nature" but just pretty landscapes. The providers of tourist services who work inside protected sites and the

persons responsible for the management of these sites, including financial resource managers, should remember that true nature lovers are relatively rare, while most visitors are holidaymakers or day trippers[29].

Nevertheless, tourists are conscious of the extraordinary value of protected sites. A recent study shows that 95.2% of Germans consider national parks to be extremely important, and 72% prefer to spend their holidays in regions where there is a national park. Thus, the existence of a national park constitutes an important factor when selecting a holiday destination[30]. Other studies show that between 15 and 20% of tourists travel to a region exclusively due to the presence of a national park there[29].

Thus the existence of a protected site can have a direct effect on the regional tourist economy, for instance on employment and on income, as well as effects on other economic sectors such as farming and construction. Furthermore, it can contribute to improving the image of the region as a whole, indirectly leading to greater demand.

The results of a survey on the preferences of visitors to Waddensee National Park in Germany are also revealing. 66% responded that they were looking for peace, recreation and the possibility of walking, fundamentally in areas with panoramic views. Others wanted to experience nature (59%), stroll along the beach (56%), watch birds (36%) or swim (35%). Only 2.1% said that they wanted to participate in a guided tour. In contrast with this result, around 80% of the visitors expected guided tours to be offered, as well as educational trails (68%) and bird-watching installations (57%)[29].

Many conservationists fear that excessive tourism causes ecological damage to protected sites, and that these costs are not compensated by the benefits derived from tourism. Tourists are reasonably aware of the conflicts between nature conservation and tourism. Though the objectives and tasks of national parks are often poorly known[2], 86-99% of tourists, especially older people, accept nature conservation demands and restrictions on the use of the area, such as staying on signposted paths. Approximately 94% of visitors are conscious that nature conservation takes preference over recreational uses in protected sites[29]. Consequently, 90.1% of the tourists accept that not all of the protected site is open to the public[30].

5.1 Willingness to pay

Considering the great importance of protected areas for tourism, this section shows to what extent tourists are prepared to pay to contribute to the financing of protected sites.

In most of Europe, protected sites of national importance are almost completely financed by the State. In the Azores, Madeira and Canaries regions, all the protected sites are financed by the regional administration, and in the case of the national parks in the Canaries by the State.

As a public institution, the management of protected sites does not permit the acceptance of private donations. Thus it is frequent to find associations and support groups that collect donations and other voluntary contributions, or sell books and

[2] Only 27% of the tourists in this study considered themselves to be well informed. Approximately 96% said they would like there to be wardens to inform and attend to tourists.

souvenirs to contribute to the financing of these sites. The administrations provide some funds for research and environmental education, which for instance is used for information centres and temporary contracts. In general, protected sites lack funding, especially for personnel costs, and are obliged to seek income of their own account.

In this context the following would be interesting questions: How much would tourists be prepared to pay for the management and maintenance of protected sites? Is there a relationship between the willingness to pay and the category of the protected site?

Tourism and leisure are considered to be non-transportable goods. Thus tourists have to travel to the places that they wish to visit and stay overnight, except in the case of day trippers from nearby areas. Consequently, there is an increase in local income, especially for the hotel and catering industry and the transport sector. These services are consumed in conjunction with the nature experience, and therefore are in a position to support nature conservation measures[31].

Different methods are used to assess the economic benefits of tourism on a region, such as travel costs and the contingent valuation technique. The estimation of travel costs is an indirect assessment method that uses market data to estimate individual leisure demand. Since this data reflects only the consumption of a resource, this methodology is restricted to considering commercial value, while the real value remains unquantified.

Contingent assessment is a direct method, which uses surveys to evaluate public assets, especially environmental assets. It is mainly used to assess the changes resulting from offering environmental products. For instance, citizens are asked about the number of visits they make to protected sites, how much they consume and how much they would be prepared to pay to avoid these visits being reduced[32].

A study carried out in Südharz (Germany) showed a leisure value of 2.33-4.49 euros per person per day for this zone. Interpretation of these results indicates that the tourists interviewed would be prepared to pay at least 2.33 euros a day[32]. Other studies carried out in Germany during the nineties reveal the willingness of citizens to pay between 1.14 and 12.79 euros a month, depending on the zone and the nature conservation programme in question[33].

Studies undertaken in German national parks show that 81% of visitors would be prepared to contribute to the financing of the protected sites, for instance by paying a tax on nature (henceforth referred to as an eco-tax). The youngest generations were those who showed the greatest willingness to pay. In any case, 94% of interviewees declared that they expected a greater involvement of the State in the financing of the protected sites and an increase in financial resources for this purpose[30 and 3].

Approximately half of German tourists, the most important nationality group of visitors to the Macaronesian region, consider the possibility of contributing to the financing of protected sites[4]. 56% would be prepared to pay a tax on nature of an average of 0.82 euros a day. 46% would agree to pay to enter information centres or for guided visits, and 47% are willing to make voluntary donations (See Box 14 for information from

[3] When asked who should pay for protected sites, the visitors responded as follows: 83% Bundesland, 75% the State, 62% visitors (81% if they are asked for personal contributions), 53% companies and other patrons.
[4] The tourists who are not prepared to pay often distrust whether adequate use will be made of the resources, or consider that it is the State who shlould finance these sites [33].

Spain). According to this research, the entry fee to a protected site could range between 1.02 and 2.56 euros. In general, tourists are prepared to pay more than the local population. Other possibilities suggested by tourists as an alternative would be to become a member or support associations such as the National Trust, which contributes to the financing of protected sites.

Box 14. Willingness of visitors to pay for their visits to protected sites in Spain, according to different studies.

Site	Type	Region	Date	Average price euros/day	% willing to pay	Reference
Dehesa del Moncayo	Natural P.	Aragon	1994	3.6	73.3	34
Pallars Sobirá		Catalonia	1994	6.5	72	35
Montfragüe	Natural P.	Extremadura	1993	7.9	83	36
L'Albufera	Natural P.	Valencia	1995	3.5	84	37
Señorio de Bértiz	Natural P.	Navarre	1995	4.4	92.8	38
Tablas de Daimiel	National P.	Castile-La Mancha	1996	5.6		39
Posests-Maladeta	Natural P.	Aragon	1996	4.9	58.6	40
Aigües Tortes	National P.	Catalonia	1997	5.0	84	41
Ordesa	National P.	Aragon	1996	6.8	59-72	42
Baleares	Region	Balearic Isles	2000	1	54.1	43

A number of studies have been carried out in relation with the effectiveness of the costs, income and expenses of protected sites[44]. Most of the costs are related with the wardens that control visitors, personnel dedicated to environmental education, and infrastructures for public use. Thus, there is a close relationship between the attraction of a protected site for tourism, and consequently its income-generating potential, and the increase in the costs of the site.

Accordingly the projects that combine nature conservation and the adaptation of the site for recreational use are those with the greatest possibilities of co-financing at local level[33].

In practice, the benefits of the tourist sector due to the existence of protected sites in the region are rarely shared with the protected site itself (Tscherniak, *com pers* 31.03.2000). Due to the competition with other tourist destinations, travel agencies, etc., regional tourism promoters often doubt about whether to charge visitors an extra for nature conservation. Thus an eco-tax may only be applied by a regional tourism association that fosters cooperation between tourism promoters and the protected site[33].

Due to the structural differences existing in Europe, the results of local or regional studies are not easily transferable to other countries. Furthermore, at the present time there is no representative or comparative study in Europe which analyses the costs and benefits of protected sites, and the contributions made by tourism ([33], Gray, *com pers*). There is also a lack of a scientific comparison between tourists' willingness to pay and the different types of sites. Thus it is not possible to assess the impact of the inclusion of a certain site in the Natura 2000 network on the willingness of tourists to pay.

5.2 Financing schemes

Areas of value for nature conservation, such as those included in the lists of Sites of Community Importance for the Natura 2000 network, need a management team: field workers and wardens, environmental education monitors, etc. The budgets for these items are often very low[45] and differ greatly from one European country to another, with some investing up to thirty times more than others[46].

Due to the cutbacks in public budgets, many protected sites are now investigating alternative financing sources. For instance, in some countries, such as Germany and France, where protected sites are not allowed to accept donations or money from advertising, associations have been set up to receive voluntary contributions[45].

A potential source of additional financing is tourism (Box 15). Tourism generally originates a series of costs and benefits for the regions where it is developed. On the one hand there are advantages, such as the creation of employment and an increase in income. In addition to this, it also supposes environmental and social costs, such as those resulting from the changes in land use for tourist infrastructures.

Box 15. The tourist tax in the Balearic Isles

In June 2000, the Regional Government of the Balearic Isles presented a draft law in relation with a tourist tax. This will consist of one euro a day for each night of stay on the islands, which will be entirely destined to a fund for the restoration of tourist sites, which will be used to:

- Refurbish and rehabilitate tourist areas
- Restore rural and natural resources and sites
- Revalorize heritage resources of social, cultural and tourist importance
- Revitalize agriculture as an economically competitive activity.

The chapter most specifically earmarked for the natural environment will be used for:

- Conservation of natural parks and areas of ecological and landscape interest
- Restoration of paths and trails for ramblers
- Creation of environmental interpretation infrastructures
- Restoration of the natural heritage (wetlands, dunes, marine reserves, etc.)
- Maintenance of traditional farming practices and local crafts.

A survey carried out in May revealed that 54% of tourists were in favour of this eco-tax, while this percentage rose to 77% when the local population was consulted. With regard to its amount, 60% of tourists considered this to be reasonable, and 73% would channel it preferentially to improving natural sites.

The Regional Government estimates that the eco-tax will collect 60 million euros a year.

To prevent or reduce the negative impacts of tourism there is the concept of “visitors pay back”. This means that the tourists directly maintain the area visited through certain taxes. This contribution can also come indirectly from taxation on tourist activities and services. For the protected site and its inhabitants to participate in the benefits of tourism, this income should be used to finance environmental and social projects.

Table 20 summarizes some of the different financing schemes in which tourism can contribute to funding nature conservation. The first column refers to the different schemes, which are described in the second column. The third provides some examples, and finally the fourth analyses their advantages and disadvantages.

For the analysis of the different financing schemes, the following questions have been used as a guide:
• Does it provide a constant and sure source of financial resources?
• How complicated is it to set up?
• Is it accepted by tourists?
• How much income can it generate?
• Is there any possibility of tourists avoiding paying it?
• Does it have undesired side effects?
• Does it have other advantages or disadvantages?

For the analysis of each scheme it has been considered that the protected site can offer its services to each type of tourism, that the facilities for this can be rented, that licenses can be requested for the provision of these services, and that taxes can be charged on the services.

For each of these financing schemes there are also other possible sources of income. For instance, the ways of collecting voluntary contributions. Another example, which has not yet been mentioned, is that of administration taxes. These can be collected by the local and regional administration of the tourist zone. For instance, in the Federal State of Hessia in Germany, taxes of this type are applied for the authorization of water use, and are related more with a benefit for the user than with the financing of the administration's costs. In this way surpluses can be used to finance environmental measures.

Another important field for relating tourism with nature conservation is through the Community financial instruments, such as the structural funds and Life[13]. These programmes often offer the possibility of financing measures that benefit both tourism and nature conservation. Even when tourism is not necessarily a source of income for nature conservation, such schemes may be the way of achieving this.

Tourism in protected sites must be economically and environmentally sustainable. Thus for the application of any of the aforementioned financial instruments, consideration must be made of a series of conditions[44,47]:

• Inventory of the protected site. This must demonstrate the tourist attraction of the site. Accordingly, an inventory must firstly be made of existing tourist attractions and activities, as well as those related with nature conservation.

• Tourist setting. It is necessary to carry out market research focused on the appropriate tourist segments and types of tourists. Furthermore, tourist infrastructures must be constructed in consonance with the above, and tourist packages must be promoted and developed considering a network of tourist attractions.

• Cost efficiency. The income derived from tourism should be balanced between the infrastructure costs and management costs of the protected site. In this respect it

should be noted that protected sites often lack adequate financial and budgetary planning.

• Education and training. Both aspects are necessary to raise the environmental awareness of tourists, of tour operators and of the local population. In any case, it is known that education has a limited influence on the behaviour of tourists.

• Political and institutional framework. It is necessary to initiate political and institutional reforms. For instance, protected sites should have the possibility of managing the income derived from tourism. This would allow them to use the money directly for their management and to implement suitable maintenance and development measures.

5.3 Application in the Macaronesian region

The financing of sites in the Natura 2000 network requires a combination of public contributions, from the Community and the Member State, and private contributions, for instance from tourism. To develop an environmentally and economically sustainable type of tourism it is necessary to consider the inventory of the site, the tourist setting, financial effectiveness, and the political and institutional framework. Only a detailed analysis of these factors will provide the information needed to develop a suitable financing scheme, by means of which tourism can contribute to the protection of nature in the Macaronesian region.

Though this information is not currently available, attention is drawn to some matters which may serve as a pointer in the right direction.

Nature is an important element in the decision-making process of tourists. The number of tourists who seek nature experiences is constantly increasing. Consequently, the conflicts between nature conservation and tourism will become more and more frequent. The tourism-related costs of protected sites will also rise (wardening, monitors, infrastructures). At the same time, tourism is increasingly important as a potential source of financing for nature conservation.

Though many tourists expect nature experiences during their vacations, they do not differentiate between the areas with the greatest environmental conservation values and others whose value is lower due to the modification of their ecological functions and the original biotopes. Tourists accept nature conservation as a necessity, but during their vacations they will make do with “natural” landscapes. However, tourists seek the “label” of these zones when deciding to travel to a certain destination. Thus the “national park label”, for instance, can be a good promoter for a region. For this reason it is in the interest of the tourist industry to guarantee a certain level of nature conservation.

It has been demonstrated that when tourists are asked, they state their willingness to contribute economically to nature conservation. The amounts that the different studies say they are prepared to pay would be sufficient to guarantee a large part of the management budgets of natural sites. However, in practice it may be assumed that willingness to pay will depend to a large extent on particular circumstances.

There are many financing schemes by which tourism can contribute to nature conservation. Each one has its advantages and disadvantages. There is no optimum solution. Furthermore, these schemes tend to be complementary rather than contradictory. Thus, for the planning of tourism as a source of financing for nature conservation, consideration should be made of a system of interrelated measures.

Even in the best conditions, tourism should not be expected to cover all the costs of conservation measures for protected sites. However, it can certainly make an important contribution. For instance, bearing in mind that 11 million tourists visited the Canaries in 1999[48], 704,336 Madeira and 160.155 the Azores in 1997[49], if these tourists contributed a small amount during their visit, less than what they initially declare they would be prepared to pay, say 1.5 euros per visit, it would be possible to generate more than 16,5 million euros in the Canaries, 1 million in Madeira and 0.2 in the Azores every year. These figures would rise considerably in the case of applying the Balearic model, which consists of charging a tax of 1 euro per night of stay. For instance, in the Canaries, where more than 44 million overnight stays were recorded in 1999[48], this sum would amount to 44 million euros a year.

Financial instruments continue to be underestimated as a direct means for financing nature conservation. For instance, a higher charge to enter the most vulnerable zones, higher charges during the high season in order to reduce the flow of visitors during this period, or higher charges at the times of year when the ecosystem is most vulnerable. In addition to benefiting the budgets of the protected sites, greater use of the aforementioned financing schemes could also have other positive repercussions on nature conservation.

Sustainable tourism in the Macaronesian region should form part of a coherent regional development strategy. In the protected sites it is important to foster the environmental sensitization of visitors, combining leisure and environmental education. This implies a large number of wardens and environmental monitors. The cost of this personnel should be financed in cooperation with the tourist industry, especially with tour operators.

This set of suggestions could be useful for establishing new systems for financing the Natura 2000 network in the Macaronesian region. The development of a coherent financing system in this region, based to a large degree on income from tourism, would be of great relevance since it would set an example for other countries in the European Union.

Table: Financial schemes (overview)

Financial scheme	Description	Examples	Evaluation	
			Advantages	**Disadvantages**
Local, regional and national taxes				
Nature taxes / Ecological or social charges	At a regional or local level, extra charges can be collected from the tourist to support nature conservation projects.	▪ Gold Card Initiative (planned), Seychelles • Eco-tax at Baleareic Islands (Box 15) • ATEC (Talamanca Association for Ecotourism and Conservation), Puerto Viejo de Talamanca / Costa Rica • Santa Elena High School Cloud Forest Reserve, Monte Verde / Costa Rica • Sua Bali - Pilot project on sustainable tourism, Bali / Indonesia	• Nature taxes can deliver a constant and secure revenue at the regional or local level. In certain projects, such charges amount to about 15-20% of the total cost of a tourist package and this money goes directly to ecological and social projects. • Tourists get more aware of the fact that they cause environmental damages.	• The acceptance of a nature tax is quite low (compared health resort tax), but the tourists are willing to pay if they know about the exceptional quality of the area and if they receive qualitative benefits. • Especially in times of deflation, tourists tend to book other destinations or packages which have not implemented a nature tax. • A high grade of communication with the tourists is needed in order to explain the objectives and benefits of such a tax. • The implementation of nature taxes is relatively difficult, since a number of legal and administrative steps are required.

FEES PAID BY THE TOURISM INDUSTRY				
Fees for renting or leasing	In order to build tourism infrastructure, the land must be rented or leased by the tourism providers.	• This scheme is already implemented and used in many areas.	• A direct and constant income can be received from tourism providers. • The provision of tourism services can be limited and thus the environmental impact of tourism.	• Tourists are usually not aware of this type of tax because it only directly affects the tourism providers. • Tourism industry tends to invest in "cheaper" destinations, especially in times of deflation.
Charges on ecological damages (effects from tourism operations)	If tourism activities are responsible for ecological damage, e.g. water pollution, charges to address the consequences can be raised (polluter pays principle).	• Systems to charge for ecological damages exist in most countries in Europe, however seldom specifically designed for the tourism industry. • "Clean the beach" campaign supported by hotels etc., Bali / Indonesia (e.g. 1996)	• The charges might reduce the environmental impact of the tourism industry. • This scheme can be implemented in combination with fines. • The scheme reflects clearly the polluter-pays-principle.	• In practice, the charges are often too low to balance out the costs of repairing the damages. • This scheme does not create an regular income. • The revenue is relatively low. • The revenue increases with increasing damages.
Measures for area compensation (for effects from construction)	Tourism infrastructure often requires huge areas. In order to compensate for the destruction of landscape and ecological functions, "in kind" compensation might be requested, i.e. compensation measures like creating new biotopes or enlarging existing ones.	• Provisions to require measures for area compensation exist in most countries in Europe. However they are seldom specifically designed for the tourism industry. • Landscaping at Centre Park Bispingen, Lüneburger Heide / Germany	• The area of compensatory measures is saved from more intensive land-use for the long-term. • This scheme has already been introduced and is often combined with the construction approval. • The scheme reflects clearly the polluter-pays-principle.	• This scheme is not useful for creating a regular additional revenue which can be used for nature conservation projects. • In practice, the investing companies try to avoid the expenses for compensatory measures or keep them as low as possible.

FEES PAID BY THE TOURISTS				
Entrance fees	The tourist pays to enter the protected area.	▪ The US national park service collects $150 million in entrance fees annually. 80% of this income benefits directly the area which is visited, while 20% goes into the nation-wide National Park Service fund[5]. ▪ The total amount of entrance fees in the national parks of Tanzania is $ 5,7 million (Müller 1998). The total amount of entrance fees in the Galapagos islands is $ 50 million (Niekisch 1998). ▪ Entrance fees vary greatly. In Costa Rica only $ 1,50 was charged in 1993, whereas the Galapogos Islands have doubled their fees in the last years from $ 40 to $ 80. The highest amount has been $ 170 in Ruanda before the civil war (Müller 1998).	• This financial scheme offers a constant and secure revenue to the protected areas and can be easily raised by the management of every protected area. • Such a fee can increase the tourist's awareness of the value of nature and the objectives of and necessary measures for nature conservation. • Entrance fees for attractive landscapes are accepted by the tourists. • Implementation is relatively easy, even though in some states legal obstacles do exist. • Entrance fees limit the number of tourists and therefore reduce the environmental impact of tourism.	• Entrance fees can exclude social groups which belong to the main target groups for environmental education, e.g. families with children. Therefore the prices have to be sensitive to this situation. • The revenue increases with the number of tourists. Increasing numbers of tourists led in turn to higher environmental impacts and higher costs for the management of nature areas.
Extra charges for specific attractions	The management of natural areas can raise charges for specific attractions like	▪ Bayerischer Wald National Park / Germany: information centre[6]. ▪ Yosemite National Park / USA:	• There is the general possibility to receive extra revenue by charging for specific attractions at the protected areas.	• Often the revenue only suffices for the costs for the additional tourism infrastructure needed.

[5] Communication, Chris Anderss, 31.03.2000 (National Park Service)
[6] communication, Mr Pödelmann, 30.03.2000 (Bayerischer Wald National Park)

	exhibitions areas with special plants or scenery etc.	sequoia trees at Mariposa Grove.	• Acceptance is generally high. • The implementation poses normally no major obstacles. • The fees limit the number of tourists and therefore reduce the environmental impact.	• In particular, personnel costs are often not compensated.
Permits	The tourist pays for a permit for special activities in the protected area, e.g. climbing or wild water rafting.	▪ Gunung Halimun National Park / Indonesia: Permits from the park management for wild water rafting. ▪ Staatsbosbeheer Netherlands: Camping in the forest protection areas[7].	▪ This scheme enables the tourist to use the area for sports and other activities and is therefore accepted by the tourists. ▪ The fees limit the activities and therefore reduce the overall environmental impact. ▪ Tourists get more aware of the potential damages which they cause.	• If the amount is too high, the tourists conduct these activities outside protected areas. Thus the fee is usually too low to support projects of nature conservation. • The acceptance by conservationists is low because they fear ecological damages, e.g. destruction of vegetation, disturbance of the fauna etc. ▪ The implementation of such measures requires some additional administrative work, infrastructure and control mechanisms

[7] communication, Mr Koenders, 03.04.2000 (Staatsbosbeheer Netherlands)

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