European
Commission

Natura 2000 and forests 'Challenges and opportunities'

Interpretation guide

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Natura 2000 and forests
'Challenges and opportunities'

Interpretation guide

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European Commission
Directorate-General for the Environment
Nature and Biodiversity Unit
Forests and Agriculture Unit

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (http://europa.eu.int).

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FOREWORD

We depend on our forests for a lot. They have to provide timber and other products, but they are important for recreation too. They also play an essential environmental function in protecting biodiversity, enhancing the landscape, and regulating climate, water and soil.

So forests are perhaps the most important natural resource in Europe. That they protect biodiversity is evident from the fact that, compared to other ecosystems, they are home to the largest number of mammals, birds, reptiles and amphibians on our continent. But, sadly, our forests are increasingly under threat, and there is a risk that many species could disappear from some European countries, especially species at the top of the food chain such as the large carnivores and birds of prey.

But European public opinion has consistently demonstrated its interest in the long-term survival of Europe's most valuable and threatened species and habitats. For this reason, in the 1990s, the Community created Natura 2000, and then at the Göteborg summit in 2001 undertook to halt biodiversity decline by 2010. These decisions are crucial in maintaining the Community's commitment to conservation of its natural heritage.

As establishment of Natura 2000 is now virtually complete, with adoption of the lists of designated sites, the 'El Teide' ministerial declaration made clear commitments about involving stakeholders, managing the network and targeting resources. This is especially important for forests, as forest habitats and forest species will be included in over half of all sites. This means that more attention will have to be paid to integrating conservation objectives into forest management.

This document was developed with extensive stakeholder consultation and is designed to give Community citizens a better understanding of Community legislation on conservation of our forests. It makes it very clear that Natura 2000 is not opposed to economic activity in the forestry sector. It explains how sites are designated, and the practical consequences of designation. As another example of the European Commission's policy of openness and transparency, it recommends identifying the measures required to maintain biodiversity through discussion with stakeholders, and expressing the outcome of this process as formal management objectives. A separate section gives numerous examples of creative approaches to implementing Natura 2000 in forests and of the successful combination of forestry with nature conservation objectives. These examples were submitted by Member States and by stakeholders. They come not only from specific conservation programmes such as LIFE projects, but also from integrated projects where nature conservation is just one of several objectives, such as rural development programmes.

I trust you will find this publication informative and will rise to the challenges and opportunities it contains. We may depend on our forests — but they depend on us too!

Margot Wallström
Commissioner for the Environment

118-1873-IMG/K. Sundseth

1. Executive summary

This document aims to clarify the role of forests and forestry in the Natura 2000 ecological network, in order to facilitate the uptake of Natura 2000 among forestry operators.

The document provides an overview of the Natura 2000 concept, the legal framework for biodiversity conservation and the specific requirements of the habitats directive, and the importance of European forests in the global conservation context.

The document then provides indicative guidelines for forest management on Natura 2000 sites. These are based on existing interpretations of the European *acquis* for nature conservation, on initiatives to promote sustainable and multi-functional forest management (SFM — Ministerial Conference for the Protection of Forests in Europe) and on relevant literature.

The premise of this document is that Europe's natural heritage has been transformed by centuries of human use, and that the conservation and sustainable use of this heritage within Natura 2000 sites requires a spectrum of measures ranging from no or minimal human activity to various regimes of sustainable use. This assumes that stakeholders can reach a compromise between the objectives of nature conservation and of economic production. The Natura 2000 network is not intended to block all economic activity in designated sites, but requires that the management of each site is tailored to local circumstances and takes into account both the requirements of nature conservation and economic production.

This text recommends that appropriate site management objectives and measures be identified through meaningful stakeholder consultation, and that the outcomes of such consultation be laid down in transparent, long-term management plans.

In order to further facilitate take-up among forest operators, this document also provides:

- an overview of existing and potential Community funding mechanisms and information on their successful use for nature conservation and ecosystem management on forest sites in the Natura 2000 network;

- examples of the successful combination of economically viable forestry with nature conservation objectives on Natura 2000 sites from various Member States and elsewhere;
- a bibliography and useful Internet links.

Abbreviations and acronyms

AASCI	area of special conservation interest (in the emerald network)
BD	birds directive
CAP	common agricultural policy of the European Union
CBD	Convention on Biological Diversity (UNCED, Rio de Janeiro 1992)
CEEC	central and east European countries
CEPF	Confederation européenne des proprietaires forestiers
COP	Conference of the Parties
COPA	Comité des organisations professionnelles agricoles de l'Union européenne
DG	Directorate-General of the European Commission
EAGGF	European Agricultural Guidance and Guarantee Fund
EC	European Community
EEA	European Environment Agency
EEC	European Economic Community
EIA	environmental impact assessment
EFI	European Forest Institute
ESF	European Social Fund
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
HD	habitats directive
IFF	Intergovernmental Forum on Forests
IPF	Intergovernmental Panel on Forests
IUCN	International Union for the Conservation of Nature
MCPFE	Ministerial Conference on the Protection of Forests in Europe
MS	Member States (of the EU)
NFP	national forest programme
NGO	non-governmental organisation
pSCI	proposed site of Community importance (for Natura 2000)
ERDF	European Regional Development Fund
RDR	rural development regulation
SAC	special area of conservation (for Natura 2000)
SFM	sustainable forest management (as defined by the MCPFE)
SPA	special protected area (for Natura 2000, emanating from the birds directive)
UNCED	United Nations Conference on Environment and Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environmental Programme
WWF	World Wide Fund for Nature

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Nature and limitations of this document

This document has been drafted by the services of the Directorate-General for the Environment of the European Commission, following relevant informal discussions that led to constructive inputs from other Commission services, from stakeholders and from the authorities of the Member States. The document reflects only the views of the Environment DG and is not of a binding nature.

The interpretations provided by Commission services cannot go beyond the directives. This is particularly true for the habitats directive as it enshrines the subsidiarity principle and as such allows Member States a wide margin of manoeuvre for practical implementation of specific measures in relation to specific sites within the Natura 2000 network. In any case, Member States are free to choose how to implement practical measures provided these serve the general purpose of the directive.

This document is not intended to provide definitive answers to site-specific questions. Each site should be dealt with on a case-by-case basis, with reference to the guidelines.

Future revisions of this document are anticipated as further experience is accumulated on forestry and Natura 2000 in Member States and any relevant future case law. The Directorate-General for the Environment may also produce a simplified version of this text for wider distribution at a later stage.

The scope of this document is limited to the 15 current Member States and does not take into account specific situations in the candidate countries. This is because the Commission does not have any competence over nature-protection issues outside the EU, and because preparatory consultations did not include the candidate countries.

2. Introduction

2.1. Purpose of this document

This document aims to clarify the role of forests and forestry for the conservation of Europe's natural heritage within the Natura 2000 network. It is hoped that it will facilitate understanding of the mechanics of the habitats directive among various stakeholders, and that this document may be complemented by more country-specific guidance drawn up by Member States.

Taking into account the large variety of forest habitats throughout Europe and the widely differing socioeconomic situations at regional and local levels, this document proposes general guidelines and recommendations for dealing with forest areas within Natura 2000. This text was written with full awareness of Article 5 of the Treaty to establish the European Community, which institutes the principle of subsidiarity, one of the main pillars of the architecture of the European Union. Following this principle and the implementation procedures of the habitats directive, every decision taken in relation to a certain site should always be made at the most appropriate administrative level, taking into account the specific local circumstances.

Specific objectives of these guidelines are:

- to inform private and public forest owners, forestry operators, nature conservation authorities, NGOs and other stakeholders of existing experiences across Europe in the field of Natura 2000 and forestry;
- to initiate and facilitate communication between different stakeholders;
- to give a framework of non-mandatory guidelines for management of Natura 2000 forest sites and to present case studies on how to achieve the goals of the habitats directive;
- to inform stakeholders of existing and forthcoming funding opportunities for forests and forestry arising from the establishment of Natura 2000.

2.2. Why a comprehensive report on Natura 2000 and forests?

As over half of all proposed sites for the EU-wide ecological network Natura 2000 will include forest areas, specific guidance for forest sites is appropriate. The ongoing establishment of the Natura 2000 network, the most ambitious nature conservation initiative in European history, cannot be completed without the understanding and the contribution of the EU forest sector. This publication is a compilation of existing information regarding forests, protected area management and forest management within the context of Natura 2000. It is addressed at national administrations, forest owners, forestry operators, conservation NGOs and citizens working in or with forests. It forms part of a series of publications by the Directorate-General for the Environment on technical and legal issues concerning Natura 2000 ([1]).

During the establishment of Natura 2000, many misunderstandings arose across Europe (see Table 1). These are partly caused by the fact that different Member States have, very rightly, given different interpretations to what their contribution to Natura 2000 should be. The most widespread misconception is that Natura 2000 is intended to establish a system of strict nature reserves where no economic activities can take place. Although, undoubtedly, many of the most endangered species and habitats listed in the annexes of the habitats directive must be better conserved in future, the majority of sites of Community importance (SCIs) and special protection areas (SPAs — see 3.1) have been influenced by human culture for hundreds of years. In many cases, it is this very human influence that has contributed to development of an ecologically valuable habitat. Thus, Natura 2000 aims to permit appropriate economic activity to maintain or improve the conservation status of certain sites.

The general principle that the conservation of flora and fauna will receive priority when managing natural resources is the basis for management of Natura 2000 areas. As long as favourable conservation status can be maintained or restored in combination with the commercial management of forests expected on most forest sites, economic activities can continue without substantial change. In some cases these economic activities might have to be restricted or, on the contrary, more cost-efficient management may help to meet conservation needs. This can only be decided on a case-by-case basis, depending on the conservation status of each site and, if considered necessary, in the framework of site management plans or site-specific conservation objectives.

Natura 2000 offers opportunity for rural development and the reorientation of forest management, in particular through the possibility of compensation for restrictions of ownership rights. These issues must be addressed by Member States, possibly with the help of co-financing through the Community budget (see Chapter 7).

Council resolution of 15 December 1998 on a forestry strategy for the European Union ([2]) recognises the need for the conservation of areas representative of all types of forest ecosystems and of specific ecological interest. The resolution states that the establishment of Natura 2000 should take into account economic, social and cultural requirements, regional and local characteristics and the involvement of forest owners. Consequently, this report formulates recommendations for a participatory approach, involving all relevant stakeholders, to management measures or management plans for the Natura 2000 sites.

([1]) For further information on Natura 2000 as well as all legal texts of the habitats directive and other relevant information, the reader is referred to the nature conservation homepage on the Europa server: http://europa.eu.int/comm/environment/nature/home.htm

([2]) http://www.europa.eu.int/comm/agriculture/fore/index_en.htm

Table 1: Dispelling some of the myths about Natura 2000	
Popular 'myths' about Natura 2000	**Legal and administrative facts**
'The habitats directive is a Community initiative that was concocted in secret by Brussels technocrats'	Ministers of the Member States unanimously adopted the habitats directive in 1992 after five years of debate in the Council and the European Parliament. Many interest groups communicated their position to both the Member States and to Brussels during that period and their observations were taken into account.
'The European Commission decides the sites to be included in Natura 2000'	The responsibility for proposing sites within Natura 2000 lies first and foremost with the Member States. 1. Member States propose a list of sites for their territory. 2. From these national lists, the Commission establishes, in agreement with each Member State, a European list of sites of Community importance (SCI). 3. The Member States designate these sites as special areas of conservation (SACs). For the birds directive the Member States designate sites directly as special protection areas.
'Natura 2000 sites will all become nature reserves'	Member States have a choice of mechanisms to use to manage a site. These can be: ■ statutory (for example, making a nature reserve); ■ contractual (for example, signing a management agreement with the landowner); ■ administrative (providing the necessary means).
'Brussels will dictate to us what can or cannot be done in each site'	The habitats directive, and Natura 2000, are based on the principle of subsidiarity. It is up to the Member States to decide how best to conserve the sites, in compliance with the objectives of the directive. Although not an obligation, management plans are mentioned as a useful tool.
'We will have to stop all our activities within a site for the sake of preserving nature'	Conserving species or habitats can be quite compatible with well-managed human activities,such as tourism, hunting and forestry. Many natural areas are highly dependent upon human activities (such as agriculture). Nature conservation also provides additional opportunities for human activities (environmental tourism, pursuit of leisure activities, labelling of natural produce, etc). Any restricting or stopping of certain activities that are a significant threat to the species or habitat needs to be addressed on a case-by-case basis.
'It is the inhabitants of the Natura 2000 sites that will have to support the costs of this protection'	Member States and the European Commission ensure that the costs of Natura 2000 are shared by all. Member States are asked, at the time of submitting their national list of sites, to evaluate the cost of managing those areas hosting priority species or habitat types and to communicate this to the European Commission. The European Commission will then be required to set up a scheme to co-finance these costs. There are a number of existing Community funds that may be used for this process (such as, agri-environment measures, structural funds, LIFE, etc.).
'There is a general lack of transparency on Natura 2000'	Every effort is made to ensure that the European Commission's activities with regard to the establishment of Natura 2000 are as transparent as possible. A newsletter is produced three times a year and is made available to all those who are interested in following this process.
'Once a site is included in Natura 2000 it becomes untouchable as regards future developments'	The habitats directive does not a priori prevent any new activities or developments within a Natura 2000 site from taking place. Any new plans or programmes that are likely to have a significant effect on a designated site have to undergo an appropriate impact assessment before being implemented. If a proposed activity is likely to cause significant damage to a site and all possible alternatives have been exhausted, it may still go ahead only if it is of overriding public interest and if there is compensation foreseen.

2.3. The importance of stakeholder involvement

The public's right of access to information on environmental issues and legislation has improved over the last years, and the Commission is continuously striving to improve the transparency of its actions in all policy fields. The Commissioner for the Environment, Margot Wallström, expressed this view quite clearly in her foreword to the publication *Managing Natura 2000 sites: the provisions of Article 6 of the habitats directive* ([3]): 'To be successful [Natura 2000] requires, in the first instance, the active involvement of the people who live in and depend upon these areas.'

Widespread concern about the public right of access to information on environmental legislation led to the adoption of the UN/ECE Convention on access to information, public participation in decision-making and access to justice in environmental matters on 25 June 1998 in the Danish city of Aarhus. All EU Member States and the European Community have signed the Convention. After the adoption of three directives — on public access to information, participation in consultation exercises and on access to justice — the European Union will be a full party to the Convention.

The 'Aarhus Convention' ([4]) is a new kind of environmental agreement, with far-reaching consequences for European citizens. It links environmental rights and human rights and is based on the fact that sustainable development can be achieved only through the involvement of all stakeholders. It focuses on interactions between the public and the authorities in a democratic context and it forges a new process for public participation in the negotiation and implementation of international agreements.

Since the habitats directive came into force in 1992, all Member States have, to varying degrees, made efforts to inform stakeholders and the general public about the establishment of Natura 2000. Some Member States followed a very participatory and transparent approach in the designation process, whereby consultations took place and appeals before administrative courts were possible. Other Member States have favoured a more top-down approach. In many regions there has been, and still exists, a lack of information on Natura 2000 at operational level. This shows that further efforts are needed to effectively communicate to the public and each other the important role of Natura 2000 for the future of the European natural heritage. Although it is principally the task of the Member States to inform the stakeholders concerned and the public about Natura 2000, the Directorate-General for the Environment aims to assist these information campaigns where possible.

In the case of forestry, the participation of all concerned (including forest owners, rural communities and forestry operators such as contractors, forest industries and conservation NGOs) in managing Natura 2000 areas is particularly important, as the conservation of biodiversity often depends on the maintenance of human activities, especially if non-climax vegetation formations are to be maintained.

([3]) The publication can be downloaded from the Internet or requested from the European Commission, Directorate-General for the Environment, Unit B.2, Rue de la Loi 200, B-1049 Brussels. Information on the European nature conservation legislation can be found under http://europa.eu.int/comm/environment/nature/legis.htm

([4]) For further information see the Convention homepage at: http://www.unece.org/env/pp/

3. Natura 2000

3.1. The concept

Directive 92/43/EEC (the 'habitats directive') from 1992 sets the goal of establishing a European network for nature conservation, called Natura 2000, consisting of 'special protection areas' (SPAs) under the Birds Directive 79/409/EEC and the forthcoming 'special areas of conservation' (SACs) under the habitats directive. The underlying idea of Natura 2000 is simple: nature does not stop at administrative borders, so if we want to preserve the vitality and the diversity of our natural surroundings, we have to think and act on an international scale. A successful protection of natural resources and their variety on the European continent can therefore only be reached at European level. The approach of the habitats directive is an integrated one — as well as ensuring the conservation of biodiversity it also aims to promote sustainable activities supporting the conservation objectives for the Natura 2000 areas. It can thus be used as an opportunity for promoting new models of also rural development, in particular in some of the EU's most marginal regions. The habitats directive also has an important political significance because its provisions are legally binding for EU Member States.

It is expected that the network will eventually cover some 450 000 km², which means on average ([5]) 10–15 % of EU territory. Natura 2000 is an important joint effort of the EU Member States to comply with international conventions and agreements in the field of biodiversity protection, such as the Convention on Biological Diversity that was adopted at UNCED in 1992.

The European Parliament stated in its resolution ([6]) on the European Community biodiversity strategy COM(98)0042 that 'in contrast to a number of other environmental problems, it is impossible to make up for losses of diversity of species, ecosystems and natural gene banks.' According to information compiled by the European Environment Agency in Copenhagen, biodiversity in Europe is decreasing, many

([5]) This figure is not to be seen as an objective, as it is a mean value around which large deviations will occur because of specific situations in the Member States and differences between regions within Member States.

([6]) OJ C 341/12, 9.11.1998.

species face severe threats, or are nearing extinction (*Europe's environment: the second assessment'*, EEA, 1998 and *The environment at the turn of the century*, EEA, 1999). The declining species are mostly indigenous, associated with natural habitats, clean water and air and little human disturbance. Establishing Natura 2000 will be of great importance in halting the continuous loss of habitats and species and, if possible, reverse the trend of impoverishment of our natural heritage and countryside resources.

Therefore, a coherent network like Natura 2000 will be a step towards a successful protection of our indigenous habitats and species. Even with 15 % of EU territory expected to be ultimately part of Natura 2000, the remaining land area of the EU will still be important for the overall goal of sustainable development and management of biodiversity, in forestry too. This shows the need for much wider integration of biodiversity concerns in national forestry programmes and initiatives, and into general forestry practices for which Natura 2000 can have a pilot function.

3.2. The technical implementation

For the establishment of Natura 2000 it was necessary to elaborate a scientific basis for the site designation process. The habitats listed in Annex I to the habitats directive were originally grouped in five biogeographical regions, based on the Corine land cover identification system. These are the Alpine, Atlantic, Continental, Macaronesian and Mediterranean region. In 1995, when Austria, Finland and Sweden joined the EU, the boreal region was added to this list by a Council decision. The biogeographical regions allow for an assessment that is objective and is not based on national boundaries of the existing natural heritage and the habitats and species in the annexes of the habitats directive.

A total of 59 forest habitat types that are rare or residual and/or host species of Community interest are listed in Annex I to the habitats directive, grouped into the following six forest habitat categories of European conservation interest:

- western taiga
- oak and beech forests
- deciduous Mediterranean forests
- sclerophyllous Mediterranean forests
- temperate mountain conifer forests
- Mediterranean and macaronesian mountain forests.

Next to habitats, the habitats directive also identifies some 200 animal and over 500 plant species as being of Community interest. This implies that several types of measures have to be taken to assure their conservation status, such as designation of sites (Annex II), general protection measures (Annex IV) and regulation of use (Annex V).

The birds directive lists in its Annex I over 180 bird species for which special protection areas (SPAs) have to be designated by a procedure of direct notification from Member States to the Commission. Many of these species are associated with forest habitats, either directly (woodpeckers, grouse, finches and warblers) or

Table 2: The biogeographical regions (see map on p.14)

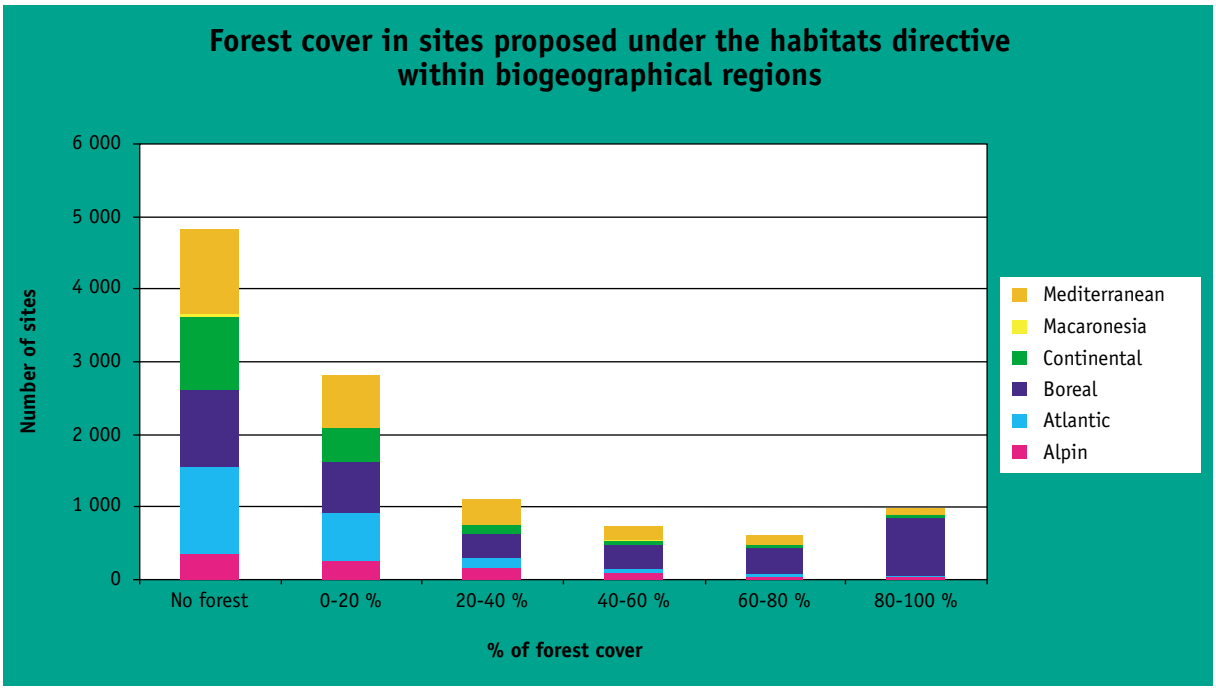
Biogeographical region	*Countries whose territory falls in this region*
Alpine region	Germany, Spain, France, Italy, Austria, Finland, Sweden
Atlantic region	Belgium, Denmark, Germany, Spain, France, Ireland, the Netherlands, Portugal, Sweden, UK
Boreal region	Finland, Sweden
Continental region	Belgium, Denmark, Germany, France, Italy, Luxembourg, Austria, Sweden
Macaronesian region	Spain, Portugal
Mediterranean region	Greece, Spain, France, Italy, Portugal

in connection with varying landscape features like small wetlands (waders, shorebirds) and forest edges (owls and other birds of prey).

According to Article 4 of the habitats directive, Member States are required to propose sites of Community importance related to these forest habitats for each of the six biogeographical regions. It is the explicit aim of the European Commission to ensure that Natura 2000 includes a coherent network of forest areas. The biodiversity action plan for the conservation of natural resources ([7]) sets the ambitious target of having all forest types from Annex I to the habitats directive assessed and sufficiently represented by 2002. This highlights the importance of forest habitats for Natura 2000 and for the overall protection of biodiversity.

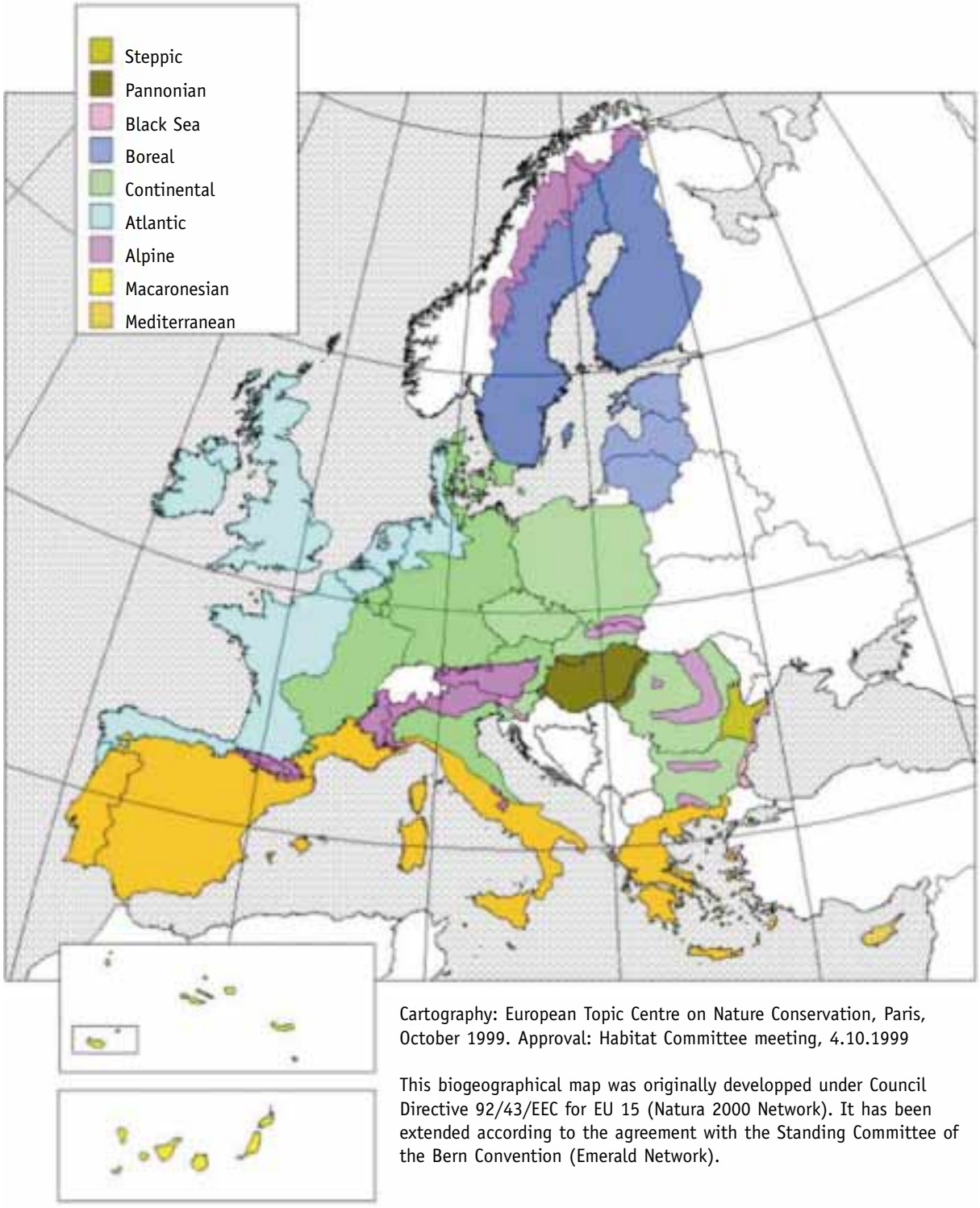
Since 1992, the establishment of Natura 2000 has progressed to varying degrees in all Member States. Some 14 000 sites in the six biogeographical regions in all 15 EU Member States have been listed as proposed sites (pSCI — proposed sites of Community importance) for the network. These proposed lists are then discussed between the Member States, the Directorate-General for the Environment, and observing NGOs such as landowner associations and nature conservation organisations. Revised lists of special areas of conservation (SACs) have then to be designated by Member States, at the latest in June 2004.

The figure above gives an overview of the importance of the forest cover (Annex I HD habitats) within Natura 2000 sites in the different biogeographical regions, according to the actual state of the pSCI designation ([8]).



([7]) The action plan (COM/2001/0162 f) is an instrument for the implementation of Article 8 of the CBD.
([8]) All figures mentioned in this report reflect the data that were available in February 2002.

Indicative map of biogeograpical region EU-15 + 12



Cartography: European Topic Centre on Nature Conservation, Paris, October 1999. Approval: Habitat Committee meeting, 4.10.1999

This biogeographical map was originally developped under Council Directive 92/43/EEC for EU 15 (Natura 2000 Network). It has been extended according to the agreement with the Standing Committee of the Bern Convention (Emerald Network).

4.

Facts about EU forests, forestry and the environment

EU forests cover approximately 113 million hectares (36 % of the Union territory), of which 87 million hectares are considered productive forests. Some 65 % of EU forests are privately owned.

With the accession of Austria, Finland and Sweden, the EU became the world's second largest paper and sawn-wood producer. It is the foremost importer and the third largest exporter of forest products. Forests are also of high importance in the Mediterranean area because of their protective functions and importance for biodiversity. Altogether, the EU forest-based industries' production value amounts to nearly EUR 300 billion, employing some 2.2 million people.

Differences in forest type, forest cover and ownership structure within the EU

- Austria, Finland and Sweden are heavily forested and have substantial forest products industries based predominantly on coniferous forest;
- Greece, Spain, France, Italy and Portugal have Mediterranean woodland, managed primarily for protection and where fire is potentially a serious threat. France and Italy, in particular, also have large areas of temperate forest and mountain forests, including coppice areas, farm woodlots and community forests;
- Belgium, Germany, France and Luxembourg have a mixed ownership structure and a range of forest types with production being significant but not always the primary aim in any forest;
- Denmark, Ireland, the Netherlands and the UK have predominantly artificial forest, based on plantations, although the objects of management have been widened in the last decade to encompass service values;
- south-west France, northern Spain and parts of Portugal have large areas of industrial wood plantations, mainly destined for pulping.

The environmental state of EU forests

(*Sources:* Europe's environment, the second assessment, EEA 1998 and *The environment in the EU at the turn of the century*, EEA, 1999.)

- Forest cover has fluctuated greatly during this millennium, with very low or poor coverage in many countries.
- Present forest cover is a result of a steady increase in recent decades, mainly by planned afforestation and regrowth in semi-natural areas after abandonment of cultivation or grazing. The forest area is still growing and will continue to do so as a result of the evolution of the CAP, which is expected to free more land.
- Forest habitats are changing through intensification of management, the increase in uniformity, fragmentation, the use of exotic tree species, the introduction or maintenance of animal species for hunting, drainage and air pollution.
- Productivity and total production are increasing in many areas, despite declining forest health and severe pest attacks. The increase is probably due to a combination of use of high-yield strains, management including fertilisation and pest control, high levels of airborne CO_2 and eutrophication.
- Only a very small proportion of the natural forest which once covered most of Europe remains untouched, mostly in isolated pockets, and the loss continues for old natural and semi-natural deciduous and coniferous woodlands. In western Europe, less than one third of total forest area is semi-natural and there are nearly no truly natural old forests left.
- Some new forest habitat types are being created, for instance the habitats associated with short rotation Christmas trees, energy woodlands or the use of exotic species such as eucalyptus; these generally have low biodiversity.

Summarising, one can say that, although the absolute area of EU forests is expanding, the environmental quality of the forest ecosystems is often in decline.

Biological importance of European forests

Forests can still be considered as the most important component of European nature. One indicator of the vitality of forests is that the forest biotope remains home to the largest number of vertebrates (mammals, birds, reptiles and amphibians) on the continent.

The distinctive nature of European ecosystems is often forgotten. Even the dominant species of the forests are virtually restricted to Europe. Trees like the European beech and holm oak are not found further east than the Black Sea or the Caucasus. The ordinary sessile oak does not survive further east than the Ural mountains, on the border of Europe. European hornbeams still thrive in the Caucasus but not in Asia proper. Thousands of species of insects and invertebrates are confined to forest habitats constituted by these trees.

Many habitats and plant associations are indeed exclusively European and thus it is solely the responsibility of European countries to safeguard their future. Moreover, Europe hosts a number of restricted-range endemic species.

The changes that forests have undergone over the last few centuries (see Annex I) have brought a great number of species to the verge of extinction. Many species are about to disappear from several European countries and perhaps from the whole continent. This is especially true for organisms at the top of the food chain such as large carnivores and birds of prey.

As part of a new UN/ECE/FAO assessment of the temperate and boreal forests of the world (TBFRA 2000), new data on forest dwelling species were gathered, showing that the number of threatened taxa is alarmingly high. Typically, 20 to 50 % of mammals, and 15 to 40 % of birds of the forest-dwelling species were categorised as threatened. A typical European country harbours several endangered mammals and bird species. In many countries, the proportion of endangered mammals and birds was over 40 %. The situation was almost as bad for lichens, mosses and vascular plants — in some countries, nearly half of the forest-associated lichen species are thought to be at risk.

Sustainable forest management — SFM

Article 10 of the Convention on Biological Diversity encourages the sustainable use of components of biological diversity. For forests, this use should be ensured in the form of sustainable forest management.

Box 1: The first Rio principle

'Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.'
(Principle 1 of the Rio Declaration, United Nations Conference on Environment and Development, 1992.)

The definition of 'sustainable forest management' has evolved over time according to the changing needs of society. Although comprehensive regulations to balance timber yields and harvests can be traced as far back as the 'ordonnance' of Colbert under Louis XIV in 1667, the first recorded mentioning of the word 'sustainability' actually appeared in connection with forestry in the early 18th century. In 1713, in the German mining town of Freiberg, the local mining authorities urged the foresters to observe the sustainable annual yield of the forest. This historic meaning of sustainability, as it was developed by the forest sector almost three hundred years ago, mainly considered the sustainable yield of woody biomass to cope with historic timber and energy shortages. However, the modern definition of sustainability also includes important social and ecological aspects.

The Brundtland Report ([9]), a key document for the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, defined sustainable development as follows:

'Sustainable development is development which meets the needs of the present without compromising the ability of future generations to meet their own needs.'

On the basis of this UNCED concept of sustainability, the Ministerial Conference on the Protection of Forests in Europe (MCPFE) ([10]) has developed a common definition of SFM that was adopted at the Helsinki Conference in 1993 ('Resolution H1'):

'The stewardship and use of forests and forest lands in a way, and at a rate, that maintains their biodiversity, productivity, regeneration capacity, vitality and their potential to fulfil, now and in the future, relevant ecological, economic and social functions, at local, national and global levels, and that does not cause damage to other ecosystems.'

This document uses the abovementioned definition of the MCPFE as it was agreed during discussions between experts from the more than 40 States participating in the Council of Europe, including the current 15 EU Member States and all CEECs currently negotiating EU accession.

The same definition was also endorsed by the EU Council in its resolution on the EU forestry strategy ([11]) that was proposed by the Commission in 1998 ([12]) (see below).

More specifically, criteria for sustainable forestry include (Helms, 1998):

(a) conservation of biodiversity;

(b) maintenance of productive capacity of forest ecosystems;

(c) conservation and maintenance of soil and water resources;

(d) maintenance of forest contributions to global carbon cycles;

(e) maintenance and enhancement of long-term benefits to meet the needs of societies;

(f) a legal, institutional and economic framework for forest conservation and sustainable management.

The application of this modern, multi-functional understanding of sustainability can lead to a higher biodiversity in forests. Certain forms of forest management can have positive effects on biodiversity, by creating a high diversity of habitats on a small area and by imitating natural processes of disturbance in the forest ecosystem, including certain forms of agroforestry such as cork production in southern Europe.

([9]) The report 'Our common future' was presented by the World Commission on Economic Development in 1987, and is often referred to by the name of the chairperson, former Norwegian Prime Minster Gro Harlem Brundtland.
([10]) Please refer to the information on the MCPFE in Chapter 5. Further information at: http://www.mcpfe.org
([11]) Council resolution of 15.12.1998, OJ C 56/1, 26.9.1999.
([12]) COM(1998) 649 final of 3.11.1998.

The changing role of forestry in Europe

From being feared as wild, uninviting frontiers that have to be conquered to yield their natural riches, forests are increasingly perceived as a valuable, limited resource that provide much more than timber. Many economic activities in the EU depend on forests as a source of raw material, but forests also provide conservation of the gene-pool and protect other natural resources such as air and water. They provide us with tranquillity, peace of mind, natural beauty and relaxation. These important 'forest services' are becoming increasingly valuable in a rapidly changing world where people tend to prioritise the creation of human living spaces over natural habitats.

Box 2: Framework for Community actions according to the EU forest strategy

- Promotion of forestry activities in rural development action, notably concerning the conservation and the enhancement of ecologicial values of forests.
- Conservation of forest biodiversity, both as an integrated component of forest management and in the establishment of protected forest areas , such as those falling under Natura 2000 designations.
- Enhancement of the role of forests in the mitigation of climate change, both by promoting of woody biomass as a source of energy and increasing the role of forests as a carbon sink.
- Analysis of the possibilities of supporting objectively verifiable, comparable and credible forest certification schemes.

The objectives of forest management are changing towards sustainable management for a variety of results in many Member States and other countries, focusing on new aims as well as the traditional objective of sustainable yield of timber. Different management concepts are becoming closely linked through initiatives such as forest management for sustainability, assessments of external benefits of forests and the introduction of certification schemes for timber extracted from forests where the management regime meets environmental criteria. More attention is being given to the environmental and social functions of forests, for example, for biodiversity, water resources, CO_2 sequestration and recreation. However, most European forest areas are still under the type of management that takes little account of general biodiversity concerns and gives priority to the traditional objective of sustainable timber yield (*Europe's environment, the second assessment*, EEA, 1998).

More detailed information on global forest issues, importance of EU forests, European forest history, naturalness of forests and the role of forestry can be found in Annex I 'General information on forests and forestry'.

The framework for biodiversity protection

Biological diversity is not only of ecological and economic benefit, but also an irreplaceable part of our cultural heritage and history, and a legitimate resource for future generations. At the same time, the rate at which biological diversity is decreasing shows no sign of easing up (*Europe's environment: the second assessment*, Chapter 8, EEA, 1998). The main reasons for this development in the EU are highly intensive forms of land use, pollution, and the break-up of natural habitats through infrastructure and urbanisation. Over the past decades, a series of international instruments have been developed with the objective of protecting our natural heritage.

At the European Council in Göteborg on 15 and 16 June 2001, the Heads of State or Government of the EU Member States agreed on the ambitious target of halting the loss of biodiversity in the EU by 2010 ([13]). This target has also been set in the sixth Community environmental action programme of the EU. The successful establishment of Natura 2000 will be one of the key requirements in reaching this goal.

Annex II summarises the instruments for the protection of natural heritage in Europe.

([13]) See Presidency conclusions at http://europa.eu.int/comm/gothenburg_council/index_en.htm

5. Integration of environmental policy into other EU policy fields

Although the Treaty establishing the European Community does not contain any reference to a comprehensive common forest policy, Community policies on nature conservation, as a part of overall environmental policy, have an effect on national forest policies. The birds and habitats directives are examples of Community legislation that is cutting across forest policy and other policy fields throughout the Member States.

5.1. The Treaty of Maastricht

With the Maastricht reform of the EC Treaty in 1992, the Member States of the European Community agreed on the integration of environmental issues into all fields of Community policy. The Treaty in its consolidated version, last amended by the Amsterdam Treaty, which was signed in 1997 and came into force in 1999, now has a number of articles that are relevant for policy integration at European level.

To further ensure the integration of environmental policy into other EU policy fields, the Treaty of Amsterdam added an explicit reference to sustainable development. In Article 2 of the Treaty, describing the tasks of the European Community, the importance of a 'high level of protection and improvement of the environment' is stressed. Article 6 of the Treaty now demands that environmental protection requirements must be integrated into all Community policy fields.

Article 10 of the Treaty requires that Member States abstain from any measures that might jeopardise the achievement of its objectives. This is important in the context of Natura 2000, as it effectively prevents the development or implementation of any plans or projects that could endanger the conservation status of habitats and species on sites not yet part of Natura 2000 but fulfilling the designation criteria.

5.2. Cross-compliance

According to the cross-compliance principle, projects in the Member States can only be (co-)funded by the Community budget if they comply not only with the

legislation for the operation of the specific budgets, but also with all other existing Community legislation. To stress the importance of an effective implementation of the habitats and birds directives, the Commission requested all Member States in June 1999 to screen measures proposed in their regional development plans for compliance with the nature protection directives. In practice, this means that Member States should not propose any actions to be funded by the EC budget which might have negative effects on Natura 2000 sites.

This support for Natura 2000 was reinforced by an agreement between the Directorates-General for Regional Policy and Environment, signed by Commissioners Wallström (Environment) and Barnier (Regional Policy) and resulting in clear instructions from Commissioner Barnier to avoid deterioration of Natura 2000 sites in connection with Structural Funds spending. The same principle was also applied by Commissioner Fischler to the rural development programmes.

Therefore:

- the rural and regional development plans of the Member States must contain clear and irrevocable commitments to ensure compliance with Community legislation on nature protection (habitats and birds directives);
- the implementation of EU co-financed plans or projects must not have any negative effects on proposed or potential Natura 2000 sites.

Failure to comply with these requirements may result in the loss or delay of the transfer of structural funds and rural development funds to Member States or regions.

5.3. The EU forestry strategy

To coordinate all activities related to forestry at EU level, the Commission communicated to the Council and the European Parliament a 'Forestry strategy for the European Union' in 1998 (see Section 4). This strategy contains a framework for Community action, in which a section on 'Conservation of forest biodiversity' addresses biodiversity concerns in three areas: conservation, sustainable use and equitable benefits arising from the use of forests' genetic resources, as demanded by the CBD. As there are only a few forest areas in Europe which are withheld from commercial use, the most important action for the protection of biodiversity is finding appropriate forest management systems that take biodiversity concerns sufficiently into account, thereby observing multi-functional management objectives throughout all forestry operations.

The EU forestry strategy therefore calls on forest managers to take into account the following guidelines for the conservation of biodiversity:

- appropriate ecological site adaptation measures through diverse silvicultural techniques combined with accessory measures (such as respecting dead wood and other key micro-habitats present in forests);
- maintenance of forest ecosystem health and vitality by enhancing regenerative capacity, resistance and adaptive capacity of forest ecosystems;
- restoration and rehabilitation of degraded areas, species, populations, habitats and ecosystems;
- maintenance of traditional management of those silvo-pastoral systems with high levels of biodiversity which may be lost if these areas are abandoned (for instance, in the Mediterranean regions);
- improving harvesting techniques to keep related damages as limited as possible;
- conducting afforestation measures in a manner that does not negatively affect ecologically interesting or noteworthy sites, habitats and ecosystems (for example, the chosen tree species should be well suited to local conditions and ecosystems; native species or local provenances should be preferred; whenever species are introduced, sufficient attention should be taken to ensure the conservation of native flora and fauna).

Moreover, the EU forestry strategy calls for the establishment of protected forest areas as a complement to sustainable management of forests, especially through Natura 2000. Such protected areas should contribute to enhance social, cultural, environmental and economic benefits of forests.

6. Management of Natura 2000 forest sites

As it is the responsibility of Member States to establish concrete conservation measures and possible restrictions on use of Natura 2000 sites, the local conditions will be the decisive factor for the management of each individual site. However, the habitats directive sets some principles for the management of Natura 2000 sites, based mainly on Articles 4 and 6. This chapter presents a set of non-mandatory guidelines, based on existing interpretations of the directive and on the widely recognised criteria for sustainable forest management adopted by the Ministerial Conference on the Protection of Forests in Europe (MCPFE). These guidelines should be understood as a broad framework within which the concrete negotiations for management plans or measures at site level will be conducted by the stakeholders and local authorities involved. They are not intended, however, to change regulations concerning those Natura 2000 sites that are under strict protection regimes.

During the consultations for this document, forest owners have repeatedly mentioned that many Natura 2000 sites will already comply with the main requirements which are to be listed in this chapter. On the one hand, it is true that there is no need to change existing forest management practice on Natura 2000 forest sites, provided the present management has helped to create or maintain a forest of high biodiversity with a structure and species composition which are in line with the conservation objectives for which it was designated. In this context, the merits of both private and public European forest owners, who stand as a worldwide role model for the sustainable use of forest resources, have to be acknowledged. On the other hand, it has been reported that some Natura 2000 sites are under management that is contrary to the conservation objectives compulsory after their designation.

6.1. Forestry and nature conservation

The concept of multi-functional forestry lies at the heart of the EU forestry strategy and is widely acknowledged in Europe. This concept integrates all the important benefits that forests can yield to society (ecological, economic, protective and social functions).

The nature conservation strategies which Member States have used to implement the nature protection directives vary widely across the European Union (Sunyer and Manteiga, 1998).

In some regions, predominantly in central and northern Europe, there is a tendency towards the designation of small and medium-sized Natura 2000 sites. These regions are characterised by intensive land use, and nature conservation competes strongly with other land-use practices, leaving little room for natural or semi-natural areas. In this strategy, which could be termed 'intensive', the protection of natural sites often involves the purchasing of land or the rights to its use and direct interventions in the dynamics of the ecosystem. This type of management is based on a more distinct environmental culture, greater budgetary provisions and the motivation to recover lost habitats by conserving them at a fixed stage of the natural succession over a reduced area ('reserve'-based approach).

In regions where extensive farming and forestry systems with a high ecological value continue to exist, generally in the south and east European regions, but also in some highlands and mountains in other European countries, the proposed sites of Community importance tend to be larger in size. Here, their conservation is closely related to the maintenance of specific farming systems or forestry practices. In these regions, conservation strategies are different and tend to seek the integration of nature conservation and rural development, in what could be termed an 'extensive' nature conservation strategy.

These two main nature conservation strategies have also been termed 'integrative', that is, integrating all functions into the — rather extensive — land use of large areas, and 'segregative', that is, setting aside areas exclusively for nature conservation purposes amidst intensifying land use on the remaining areas, sometimes beyond the sustainable limit. However, when looking exclusively at forest habitats, this distinction may be less clear, as forestry has always had a considerably lower ecological footprint than, for example, agriculture. Forestry in Europe has mainly followed an integrative strategy in the past. Many forest areas today can be called 'semi-natural', and the need for habitat restoration is not as apparent as it often is, for example, in wetlands and mires where economic use has totally altered landscape features and biodiversity levels.

Preservation of biodiversity in forests across Europe calls for a careful balance between the two conservation strategies previously described, depending on the local and regional situation. The continuation of economic activities under sustainable forest management might very often be part of a nature conservation strategy for forest ecosystems in regions with widely accepted historical traditions of forest use.

Another distinction between existing nature conservation strategies can be made between a static and a more dynamic approach. In most cases, especially in forests, natural dynamics and change must be understood as an integrative part of the nature conservation objective. The natural disturbance of the forest ecosystem through windfalls, lightning and death of old trees, which is often 'simulated' by harvesting operations in sustainable forestry, is an important factor in maintaining a variety of habitat structures, a mosaic-like distribution of different

Box 3: Multi-functional forestry in Europe, a promising model for the future?

A research project called EFISCEN (European forest information scenario model) recently examined the long-term development of European forests under alternative regimes until 2050. The project compared different scenarios by modelling a multi-functional scenario combining the objective of producing more wood (and thus more employment and more bioenergy possibilities) with ecological objectives (thus allowing more dead and decaying wood, forest reserves, more diversity in species, spatial and age structure).

The results showed that, apart from being able to provide society with sufficient renewable natural resources in the form of timber, active multi-functional forest management can also enhance the ecological and recreational quality of European forests (cf. Nabuurs et al., 2001).

age-groups and a high level of biodiversity. This dynamic understanding of nature conservation is needed on Natura 2000 forest sites if conservation strategy is to be integrative.

Yet, not all the objectives of nature conservation can be reached through sustainable forest management. The setting-aside of areas exclusively for nature conservation purposes has to be considered in the case of especially rare or valuable habitats whose conservation status would otherwise decline. Therefore, Natura 2000 will be a network of conservation areas, enjoying a varying degree of protection from absolute reserves to individual species-based restrictions.

In this context, the existence of forest areas undisturbed by economic activity is especially important from a scientific point of view, for example, as 'reference areas' for biodiversity monitoring, and from a nature conservation point of view, for example, as refuge areas for species that require dead or dying wood or large undisturbed habitats. Therefore, 'old growth' ([14]) or 'virgin' forest areas will deserve special attention among Natura 2000 forest sites. In the EU, such forests are now limited to small pockets in managed complexes or to certain regions with specific ecological and social conditions, such as northern Fennoscandia. The degree of human interference that can be reconciled with safeguarding the conservation value of such sites will depend on their regenerative capacity, which may mean that no intervention at all may be the rule in the case of very low growth rates.

Natura 2000 also has the task of consolidating existing systems of strictly protected zones as a scientific reference base and as a possibility of diversifying rural income, such as through tourism. Many of these strictly protected sites are already protected today, for example, as parts of national parks, others might have to be established, such as to safeguard remaining old-growth forests.

6.2. General requirements for forest management on Natura 2000 sites

The basic legal texts for the establishment of Natura 2000 are the Directives 79/409/EC ('birds directive') and 92/43/EEC ('habitats directive') ([15]). According to the habitats directive, the aim of Natura 2000 is to establish 'favourable conservation status' for the habitats and species that are listed as being of Community interest. The concept of 'favourable conservation status' is defined in Article 1 of the habitats directive by reference to species population dynamics, trends in the range of species and habitats and the remaining area of habitats.

The nature protection directives only indicate the result to be achieved through national implementation. They do not prescribe any concrete conservation measures. Therefore the Commission must assure that the objectives of the directives are reached, but it does not have any direct influence on the regional and local negotiation of the management measures on Natura 2000 sites. This also means that Member States may impose a stricter legal framework on their territory than what is required by the habitats directive, but should not fall back on Community legislation to justify this ([16]).

Therefore only a limited number of general forest management requirements can be derived from the directives and it is not possible to give specific indications on areas such as the restriction of harvesting levels, the dimensions of clearings, timing of interventions, etc. as these depend on management measures that have to be negotiated on a local level between the authorities in charge and the forestry operators/owners.

Article 4 of the habitats directive clearly states that as soon as an area is designated as a site of Community importance, it is to be treated according to the provisions of Article 6. First of all, it must be

([14]) Generally defined as not having had any human interference for over 100 years.
([15]) The text of the directives is available in all official Community languages on the nature conservation homepage of the Directorate-General for the Environment: http://www.europa.eu.int/comm/environment/nature/legis.htm
([16]) Environment DG letter of 19 September 2001 to the transport administrations of Belgium, Germany and the Netherlands in relation to the 'Iron Rhine' railway project.

ensured that land-use practices do not lead to a deterioration of the conservation value of the site. For forest sites, this could include, for example, not clearing large areas, not changing the form of land use or not replacing existing indigenous tree species by other, exotic tree species.

Article 6 of the habitats directive states that plans or projects which are not directly connected with or necessary for the management of Natura 2000 sites but which are likely to have a significant effect on them, either individually or in combination with other plans and projects, must undergo an appropriate assessment of the effects on the sites. For example, a forest management activity like logging, track construction or soil drainage falls under this provision, which means that it will have to form part of a management plan or be decided on a case-to-case basis.

Article 6 of the habitats directive also requires specific conservation measures of statutory, administrative or contractual nature to specify the management of the sites. These will be developed on a local basis. Contractual measures are, under certain conditions, generally more widely accepted amongst private forest owners than statutory or administrative measures and should therefore be preferred, where applicable.

The Directorate-General for the Environment has published an interpretation guide 'Managing Natura 2000 sites' ([17]) from which the following baselines for negotiations on site management with forest owners and operators can be derived ([18]).

- If the actual forestry practices do not lead to a decline in the conservation status of habitats or species and are not contradictory to the Member State's own conservation guidelines, then this form of economic use can be continued.
- If the actual forestry practices lead to a deterioration of the conservation status of the habitats or species for which a given site was designated or is contradictory to the Member State's own conservation objectives, then Article 6 of the habitats directive should be applied and forest management targets will have to be adapted.

The Directorate-General for the Environment has addressed the following guidelines and directions for forest management on Natura 2000 sites to Member State authorities ([19]).

- It is preferable to designate perimeters with a sufficient extension to allow conservation objectives to be integrated into existing management plans, rather than to designate small plots corresponding exactly to the descriptions in the habitats reference guide.
- Conservation of habitats and species at the level of an entire site should be the result of measures in favour of habitats and species for which the site was designated, leading to a stable 'biodiversity offer' for the site as a whole. It is self-evident that, in the case of cyclical interventions (in space and in time), such a situation is more easily attained on sites covering larger surfaces.
- Interventions leading to temporary disturbance of forest cover on a limited space (for example, group cuttings) or with a limited intensity (such as thinning) are legitimate, provided that they allow recovery of the initial situation by natural regeneration, even if several stages of natural succession have to follow one another.

These guidelines and orientations apply to habitats as well as species and sometimes a combination of the measures for habitats and species may be required to obtain the desired results.

An example of this is the conservation of the capercaillie (*Tetrao urugallus*), a species of Annex I to the birds directive. If this bird is living in a Natura 2000 forest site, the management should be able to demonstrate that silvicultural measures are adapted to maintain or improve the conservation value of the site for this species. As the capercaillie requires a mosaic of

([17]) Specific advice on the requirements for the management of sites can be found in the publication by the Directorate-General for the Environment 'Managing Natura 2000 sites — The provisions of Article 6 of the habitats directive' on http://www.europa.eu.int/comm/agriculture/fore/index_en.htm and http://www.europa.eu.int/comm/environment/nature

([18]) Letter of 22 September 2000 by Commissioner M. Wallstroem to Dr von Schorlemer, president of AG Deutscher Waldbesitzerverbaende e. V.

([19]) Letter of 23 April 2001 to Mr J. Happart, Minister for Forests and Nature Protection in the Wallonia region, Belgium.

Box 4: Main requirements for forest management resulting from the habitats directive

- Nature conservation measures have to be considered for each Natura 2000 site, in the form of appropriate statutory, administrative or contractual measures. The development of a management plan is recommended (Article 6(1) of Directive 92/43/EEC).
- Nature conservation objectives must have priority on Natura 2000 sites, while the economic and social function of the forest should also be taken into account.
- The conservation status of the site, in relation to the quality of the habitat and the conservation value for the species, must be maintained or improved.
- Projects or plans which might have a negative impact on a Natura 2000 site must undergo an appropriate assessment (Article 6(3) of Directive 92/4/EC).
- The quality of the site must be periodically monitored and reported on by the competent Member State authorities.

different structures in its forest habitats, it is one of many animal species whose populations can benefit from appropriate and carefully planned forest management, without having to put an end to economic exploitation. So far, in most European countries, the few remaining local populations of the capercaillie are declining, because the management is not sufficiently focused on reaching nature conservation objectives.

Another example of conservation-oriented forest management comes from the French Jura, where large sections of the forests are exploited in a manner which leaves a diverse structure of small clearings, underbrush, tall trees, etc. (*futaie jardinée*) as a good habitat for the capercaillie. A LIFE project in the Jura (LIFE/99/ENV/F/00477) developed guidelines for forestry which were agreed with the representatives of the public forest service and the private forest owners. About 20 000 hectares in the project area are now managed under these guidelines (see Chapter 8).

Effective multi-functional management approach also exists in the Hainich beech forest in Thuringia, Germany. A large part of this forest was managed traditionally yielding a great diversity of structure. When the Hainich was designated a Natura 2000 area and a management plan was developed for it, this selective felling system (*Plenterwaldwirtschaft*) was explicitly encouraged and maintained.

6.3. Operational-level guidelines for sustainable forest management on Natura 2000 sites

This section proposes to adopt elements that are relevant for nature protection from the resolutions of the Ministerial Conferences on the Protection of Forests in Europe (MCPFE- cfr. Annex II) at Helsinki (1993) and Lisbon (1998) as the basis for forest management guidelines on Natura 2000 sites.

Using these resolutions as guidelines for the management of sites has several advantages:

- the acceptance amongst stakeholders is high, as the resolutions were developed using a participatory approach involving national authorities and civil society;
- all EU Member States, as well as all candidate countries for EU accession, have been involved in the pan-European process on the protection of forests since its beginning;
- all resolutions and guidelines were prepared by working groups consisting of recognised forestry experts and drawing on national, regional and local experience in forest management from forest authorities, scientists, forest owners' associations and environmental NGOs across Europe;
- the findings of the working groups were endorsed at political level by the ministers responsible for forests
- the EU Council endorsed the results of the pan-European discussions on forests as one of the most important elements of the EU forestry strategy ([20]).

([20]) Council resolution of 15.12.1998, OJ C 56/1, 26.9.1999.

The 'Pan-European criteria and indicators for SFM' adopted at the MCPFE in Lisbon (1998, Resolution L2), have been developed on the basis of resolutions H1 and H2 of the Helsinki MCPFE which concern SFM and forest biodiversity.

The six pan-European criteria providing a basis for monitoring sustainable forest management are:

- **C1**: maintenance and appropriate enhancement of forest resources;
- **C2**: maintenance of forest ecosystem health and vitality;
- **C3**: maintenance and encouragement of productive functions of forests (wood and non-wood);
- **C4**: maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems;
- **C5**: maintenance and appropriate enhancement of protective functions in forest management (notably soil and water);
- **C6**: maintenance of other socioeconomic functions and conditions.

As a complement to these criteria, the MCPFE has defined a series of operational-level guidelines for sustainable forest management, from which many elements can be applied to verify the compatibility of forest management with Natura 2000 designation on a given site.

A selection from both the guidelines for forest management planning and the guidelines for forest management practices, based on nature conservation as a priority management objective for Natura 2000 sites, is given below:

C2: Maintenance of forest ecosystem health and vitality

- 'Forest management practices should make best use of natural structures and processes and use preventive biological measures wherever and as far as economically feasible to maintain and enhance the health and vitality of forests. Adequate genetic, species and structural diversity should be encouraged and improved to enhance stability, vitality and resistance capacity of the forests to adverse environmental factors and strengthen natural regulation mechanisms.'
- 'Appropriate forest management practices such as reforestation and afforestation with tree species and provenances that are suited to the site conditions or the use of tending, harvesting and transport techniques that minimise tree and/or soil damages should be applied. The spillage of oil through forest management operations or the indiscriminate disposal of waste on forest land should be strictly avoided.'
- 'The use of pesticides and herbicides should be minimised, taking into account appropriate silvicultural alternatives and other biological measures.'

C3: Maintenance and encouragement of productive functions of forests (wood and non-wood)

- 'Regeneration, tending and harvesting operations should be carried out in time, and in a way that does not reduce the productive capacity of the site, for example by avoiding damage to retained stands and trees as well as to the forest soil, and by using appropriate systems.'
- 'Harvesting levels of both wood and non-wood forest products should not exceed a rate that can be sustained in the long term, and optimum use should be made of the harvested forest products, with due regard to nutrient offtake.'
- 'Adequate infrastructure, such as roads, skid tracks or bridges should be carefully planned, established and maintained to ensure efficient delivery of goods and services while at the same time minimising negative impacts on the environment. '

C4: Maintenance, conservation and enhancement of biological diversity in forest ecosystems

- 'Forest management planning should aim to maintain, conserve and enhance biodiversity on

ecosystem, species and genetic level and diversity at landscape level.'

- 'Forest management planning and terrestrial inventory and mapping of forest resources should include ecologically important forest biotopes, taking into account protected, rare, sensitive or representative forest ecosystems such as riparian areas and wetland biotopes, areas containing endemic species and habitats of threatened species, as well as endangered or protected genetic *in situ* resources.'
- 'Natural regeneration should be preferred, provided that the conditions are adequate to ensure the quantity and quality of the forests resources and that the existing provenance is of sufficient quality for the site.'
- 'For reforestation and afforestation, origins of native species and local provenances that are well adapted to site conditions should be preferred. Only those introduced species, provenances or varieties should be used to supplement local provenances if their impacts on the ecosystem and on the genetic integrity of native species and local provenances has been evaluated, and if negative impacts can be avoided or minimised.'
- 'Forest management practices should, where appropriate, promote a diversity of both horizontal and vertical structures such as uneven-aged stands and the diversity of species such as mixed stands. Where applicable, the practices should also aim to maintain and restore landscape diversity.'
- 'Traditional management systems that have created valuable ecosystems, such as coppice, on appropriate sites should be supported when economically feasible. '
- 'Infrastructure should be planned and constructed in a way that minimises damage to ecosystems, especially to rare, sensitive or representative ecosystems and genetic reserves, and that takes threatened or other key species — in particular their migration patterns — into consideration.'
- 'Standing and fallen dead wood, hollow trees, old groves and special rare tree species should be left in quantities and distribution necessary to safeguard biological diversity, taking into account the potential effect on health and stability of forests and surrounding ecosystems.'
- 'Special key biotopes in the forest such as water sources, wetlands, rocky outcrops and ravines should be protected or, where appropriate, restored when damaged by forest practices.'

C5: Maintenance and appropriate enhancement of protective functions in forest management (notably soil and water)

- 'Areas that fulfil specific and recognised protective functions for society should be registered and mapped, and forest management plans or their equivalents should take full account of these areas.'
- 'Special care should be given to silvicultural operations on sensitive soils and erosion-prone areas as well as on areas where operations might lead to excessive erosion of soil into watercourses. Inappropriate techniques such as deep soil tillage and use of unsuitable machinery should be avoided on such areas. Special measures to minimise the pressure of animal population on forests should be taken.'
- 'Special care should be given to forest management practices on forest areas with a water protection function to avoid adverse effects on the quality and quantity of water resources. Inappropriate use of chemicals or other harmful substances or inappropriate silvicultural practices influencing water quality in a harmful way should be avoided.'

C6: Maintenance of other socioeconomic functions and conditions

- 'Forest management planning should aim to respect the multiple functions of forests to society, have due regard to the role of forestry in rural development, and especially consider new opportunities for employment in connection with the socioeconomic functions of forests.'

- 'Property rights and land tenure arrangements should be clearly defined, documented and established for the relevant forest area. Likewise, legal, customary and traditional rights related to the forest land should be clarified, recognised and respected.'
- 'Sites with recognised specific historical, cultural or spiritual significance should be protected or managed in a way that takes due regard of the significance of the site.'
- 'Forest management practices should make the best use of local forest-related experience and knowledge, such as of local communities, forest owners, NGOs and local people.'

6.4. The importance of formal adoption of management principles

The general requirements for management of Natura 2000 sites are given in Article 6 (1) and (2) of the habitats directive. These provisions have been dealt with in detail in the Commission's guidance document 'Managing Natura 2000 sites' ('The provisions of Article 6 of the Habitats Directive 92/43/EEC ') which was published in all Community languages in 2000 and is available on the Directorate-General for the Environment's website: *http://europa.eu.int/comm/environment/nature/*.

It should be recalled that Article 6 of the habitats directive does **not** prescribe any format, procedure or structure for the management measures concerning Natura 2000 sites. The directive only mentions 'the necessary conservation measures' and 'appropriate statutory, administrative or contractual measures' to be taken **by the Member States**. This means that the principle of subsidiarity is fully applicable to the way in which the management of Natura 2000 sites, including forests, is applied at field level. It is also clearly indicated that adopting management plans is not a mandatory but an optional step. Section 8.1 provides numerous examples of management measures taken and procedures followed by Member States' national, regional and local authorities.

In practice, the way in which management decisions or options are formalised will depend on different factors, such as ownership of the site, intensity of economic use, occurrence of priority species and habitats, the relative rarity and sensitivity of the habitats or species concerned and the existing traditional or customary rules on use of natural resources.

Given past experiences with pilot projects (see Section 8.2 — LIFE projects) and the existing practices in the EU forest sector (see Section 8.1 — examples from the Member States), the Directorate-General for the Environment recommends that management objectives for Natura 2000 forest sites be formalised in long-term management plans with legal value. Such management plans may be part of existing or general forest management plans but they may also be specifically designed for Natura 2000 sites or for certain habitats or species. It is clear that the management objective for a very small site, such as a core area of high conservation value, will be quite different from that for a whole national park in which there are obvious possibilities for continuing resource use without loss of conservation values. Management plans are particularly appropriate for establishing a coherent approach to interrelated sites or for cross-border sites. Along with management plans, other instruments, such as contract conservation and conditional compensation payments can also be considered (see Chapter 7).

The following is a non-limitative indicative overview of factors which can be taken into account when defining management principles for Natura 2000 forest sites:

- felling system: clear felling (size), strip felling, group felling, selection felling, absence of exploitation;
- regeneration technique: planting, vegetative multiplication, natural regeneration (with any additional measures to influence the species composition);
- use of exotic vs indigenous trees; use of site-specific indigenous species composition;
- origin of regeneration material (in compliance with the mandatory Community regulatory framework on movement of forest seeds, cuttings and plants, it should be borne in mind that use of indigenous species for reforestation can result in

failure and genetic pollution if the provenance of material is not verified);

- rotation length (by stand or by tree);
- ploughing or other soil disturbing activities;
- thinning regimes;
- game management and grazing;
- use of controlled fire;
- continuation of traditional practices (for example, coppice and standards, *taillis-sous-futaie/Mittelwald*).

These factors are of key importance to biodiversity, which is why they should be taken into account in relation to Natura 2000 implementation. In cases of designation based on existing natural resources use, it will mean these factors may not need to be changed, unless on a voluntary basis and/or with the help of financial incentives from outside. However, changing these factors in an environmentally negative way (for example, increasing clear felling size or shortening rotations) could come into conflict with the guidelines mentioned in Section 6.3. On the contrary, optimising these factors for environmental benefits on a voluntary basis and/or with the help of incentive measures, is to be welcomed as a positive contribution to the overall enhancement of Natura 2000.

6.5. Recommendations for biodiversity conscious forestry on protected areas and beyond

In addition to the points raised in the preceeding sections, a series of practical recommendations can be given for day-to-day management practices in Natura 2000 sites and beyond.

Indeed, as only 5 % of the land surface of the earth falls under some form of nature protection status, one should be aware that there will always be more net biodiversity in the countryside in general than in areas targeted especially for conservation — which are principally a refuge from where the recolonisation of cultural landscapes can take place after disturbance. Therefore, the ideal form of biodiversity management is an integrated approach that does not affect parts of a territory for one function exclusively. Just as Natura 2000 should not only be a system of strict reserves, the surrounding cultural landscape should not be a monofunctional production line where everything but a few cultivated plants or animals can be eradicated.

Forest managers and planners may consider the following recommendations for preserving biodiversity at the management unit level, that is, taking into account local circumstances:

- conserving individual, mature and dead or decaying trees, which offer suitable habitats for woodpeckers, birds of prey, insects and many lower-level plants (fungi, ferns, bryophytes, etc);
- conserving trees with cavities which could be used as nesting sites for small birds and mammals;
- conserving large trees and their immediate surroundings if they appear to be regularly occupied by nesting raptors;
- maintaining forest ponds, brooks, springs and other small water bodies such as mires and fens in a state that allows them to play their role in the reproductive cycle of fish, amphibians, insects, etc., by avoiding excessive fluctuation in water levels, damage to natural embankments and water pollution;
- appropriate zoning, both regarding forestry operations and tourism/recreation, of large forest areas according to different levels of management intervention, allowing to apply buffer zone measures around protected areas;
- using management decisions after natural disasters such as large-scale windfall and fires to take account of the possibilities for biodiversity enhancement by allowing natural succession processes to proceed in potentially interesting areas;
- adapting the timing of silvicultural and logging operations so as to avoid interference with the reproductive season of sensitive animal species, most notably the spring nesting and breeding of forest birds;

- maintaining adequate distances to avoid disturbance of rare or threatened species whose presence has been confirmed;
- allow a cyclical rotation of areas with different degrees of intervention in time and space;
- if not contradictory to existing forest laws and regulations, it is worth considering not filling up all the available space when replanting, so as to maintain small natural environments associated with forests, such as grassy patches, calcareous grasslands, heaths, mires, bogs, alluvial bottomlands and landslides. All these can enormously enrich the overall biodiversity offer of an estate, because of the increased occurrence of transitions ('ecotones') between different vegetation types;
- by the same logic, a decision not to replant the 'fallout' spots in recent economical plantations may provoke additional variation and scattered spontaneous recolonisation by pioneer species, which leads to an increase in biodiversity in the long term by providing adequate niches for a large variety of species; moreover, the added value of 100 % complete regeneration is usually low, as replanting operations are very expensive;
- assuring regular monitoring of the richness of natural species, so as to gauge the effects of certain measures and to assure awareness of the presence of rare or threatened fauna and flora elements.

This type of measure and the absence of certain interventions can easily be introduced in the management of public forest holdings, given the political will to do so. For private forests they may well be subject to grants, contractual agreements, tax breaks, technical assistance, etc. in order to compensate owners for income foregone, services rendered to society as a whole and, if applicable, capital depreciation.

Metsäpanoraama/J. Luhta

7. Financial instruments

An adequate approach to the financial and economic implications of Natura 2000 is one of the most important conditions for the acceptance of the network amongst the rural population, landowners and economic operators using natural resources on designated areas. Such an approach is required according to Article 2 of the habitats directive, which holds that measures related to Natura 2000 have to take account of social, economic and cultural circumstances. It must also be mentioned that this issue has to be seen in the light of Article 17 of the Charter of Fundamental Rights of the European Union ([21]), which sets the principle of compensation for income foregone. On 9 May 2002, the 'El Teide Declaration' ([22]) endorsed the prominent role of Natura 2000 in delivering the EU's biodiversity objectives. It also recognised that the delivery of the EU's biodiversity objectives 'requires targeted resources'.

Article 175(4) of the EC Treaty holds that environmental measures have to be paid for by the Member States. This implies that costs resulting from the operation of a network for the protection of the European natural heritage have to be settled by the Member States. This chapter gives more information on the possibilities for Member States to use financial support from the EC budget for managing Natura 2000 sites. Until now, not many of these possibilities have been used by national, regional or local authorities and the forestry sector has not been well informed about them.

Community financing of Natura 2000 is dealt with in Article 8 of the habitats directive. At the moment, the only Community funding dedicated exclusively to Natura 2000 is the LIFE-Nature fund, which is used to promote management planning and pilot/demonstration projects for habitats and species management. In several Member States, local compensation schemes or grant funds operate on a reduced scale.

([21]) Article 17: Right to property
1. Everyone has the right to own, use, dispose of and bequeath his or her lawfully acquired possessions. No one may be deprived of his or her possessions, except in the public interest and in the cases and under the conditions provided for by law, subject to fair compensation being paid in good time for their loss. The use of property may be regulated by law in so far as is necessary for the general interest.
2. Intellectual property shall be protected.
(OJ C 364/12, 18.12.2000).

([22]) The declaration was made by the Commissioner for the Environment, Margot Wallström, and the Spanish Minister for the Environment, Jaume Matas, on behalf of the Council.

Other policy measures, in particular elements of the rural development programmes, are already providing substantial support to the implementation of the network by way of payments for non-intensive agricultural management of land or for more ecologically oriented forestry. In some Member States, there has also been significant use of regional development funding to finance specific investments related to Natura 2000 sites ([23]). On the basis of these various elements, the Directorate-General for the Environment created a working group on Article 8 of the habitats directive in 2001 to formulate proposals for developing a structured approach to financing Natura 2000. An outline of the conclusions of this working group ('Final report on financing Natura 2000' — available to the public at the end of 2002 ([24])) is given hereafter.

7.1. Existing support systems

7.1.1. Contract conservation

Contract conservation consists of establishing management measures on privately owned land by specifying the measures in contractual agreements between conservation authorities and landowners. These agreements usually lead to financial benefits for those landowners whose income from land-use practices is affected by restrictions that result from conservation measures. The advantage can be in the form of direct payments, tax breaks, soft-lending conditions, other land-use rights, etc. The conservation measures can be carried out by the landowners or holders of user rights themselves (who are then paid for the work) or they can be carried out by others, such as contractors or volunteers of NGOs. Under specific circumstances, the measures can also be co-financed by the Community budget (rural development and regional development policies).

Contract conservation has been successfully applied in several Member States to meet the requirements laid down by the habitats directive under the national nature conservation legislation for privately owned Natura 2000 sites. To ensure the maximum acceptance of this instrument, a number of basic recommendations about the characteristics of such contracts can be made (based on Giesen, 2001).

- The most important aspect of a contract should be that it offers security, that is, that the contract should, as far as possible, be final in its requirements. The forest owner must be able to depend upon the negotiated agreement, and be free from further demands from the nature conservation authorities, insofar as this security is possible under national legislation. This means that contracts should be of long duration and their application should be adequately monitored.
- A conservation contract must be economically viable. Any form of compensation for measures must be proportional to the incurred costs or the loss of income. Compensation does not have to be limited to monetary remuneration: even the guarantee of fast and effective cooperation with the authorities can be a valuable form of compensation.
- Conservation contracts must be tailored to local circumstances, but at the same time they must be based on a certain national or regional standard. The owner must be able to rely on this basic standard contract, without having to carefully check each new contract agreement and without having to consult professional advice.
- Standards for assessment of compensation levels should be jointly agreed between competent authorities, forest owners' organisations and scientific experts.

Contract conservation should not, however, be seen as an alternative to designation of Natura 2000 sites.

7.1.2. Forestry measures under EU environmental policy: LIFE

General description

The LIFE programme is intended to fund pilot environmental actions, the results of which can be applied to the 'main' financial instruments of the EU,

([23]) The EC has already published a full study on this: 'Financial instruments for the Natura 2000 network', Sunyer & Manteiga, 1998.
([24]) See website http://europa.eu.int/comm/environment/nature/

such as the agricultural and Structural Funds budgets.

LIFE was created in 1992. The first phase was completed in 1992–95, the second phase ran from 1995 to 1999 and LIFE III is now continuing from 2000 to 2004 with a total budget of EUR 640 million. Before LIFE, other financial instruments, such as the ACE fund ([25]), provided Community support to actions in the field of the environment.

Actions eligible for LIFE funding belong to three fields:

- **LIFE Environment**: innovative and demonstration actions for industry; demonstration, promotion and technical assistance actions for local authorities; and preparatory actions to support Community legislation and policies ([26]).
- **LIFE Nature**: pilot actions aimed at the conservation of natural habitats and of wild fauna and flora of EU interest ([27]). This means that LIFE Nature is directly targeted at priming the operation of the Natura 2000 network.
- **LIFE Third countries**: technical assistance in the establishment of environment-related administrative structures, nature conservation actions and demonstration actions to promote sustainable development.

Maximum rates of support for LIFE projects are 50 % of the eligible costs (exceptions: 30 % of eligible costs for income-generating actions) and 75 % of eligible costs for actions concerning priority natural habitats or priority species as defined in Directive 92/43/EEC or species of birds in danger of extinction.

LIFE is open to 'all natural or legal persons'.

LIFE Nature and forestry

With an annual budget of approximately EUR 80 million completely devoted to nature conservation measures linked to Natura 2000, LIFE Nature is the most important financing mechanism for the establishment of the network. Since 1992, 237 projects with relevance to forests or forest management have been funded under LIFE Nature. These can be divided into three categories (Table 3). Table 4 shows the key activities of the funded projects, grouped in 18 categories. Here, only the projects of category I and II (*Key forestry project* resp. *Relevant forestry project*) are examined.

Many of the LIFE Nature projects focus on an extensification of forest management or on more ecologically friendly forms of forestry. Achieving a balance between nature conservation objectives and the economic aspects of land use and landowners rights is often the main focus of LIFE Nature projects.

LIFE Environment and forestry

The scope of LIFE Environment is much wider than that of LIFE Nature and is **not directly related to Natura 2000**. This part of the LIFE programme has financed projects for setting standards to integrate biodiversity concerns in forestry outside Natura 2000 areas. It has also supported projects for improving the environmental efficiency of forest industries. Some examples of relevant LIFE Environment projects are given in Section 8.2.

7.1.3. The new generation of Community funds, 2000–06

Once the common agricultural policy had guaranteed food security and modernised European agriculture, a need to develop more economically oriented and environmentally sustainable agriculture became apparent at the end of the 1980s. The 1992 CAP reform made the first changes towards decreasing market support, reduction of surpluses and agri-environmental and afforestation programmes. Forestry profited from rural development measures through the afforestation premiums within the framework of Regulation 2080/92. This regulation led to the afforestation of over 900 000 hectares of agricultural land between 1994 and 1999, and contributed to rural development by the

([25]) A brief history of the Community financing for nature conservation, environment and third countries projects is available at http://europa.eu.int/comm/environment/life/life/nature_history.htm
([26]) Further information is available on the LIFE-Environment homepage: http://www.europa.eu.int/comm/life/envir/index.htm
([27]) Further information is available on the LIFE-Nature homepage: http://www.europa.eu.int/comm/life/nature/index.htm

Table 3: Main categories of LIFE Nature projects with relevance for forestry

Category	*I* *Key forestry project*	*II* *Project with relevance for forestry*	*III* *Horizontal forestry project*
Relevance for forestry	The relation between forest management and biodiversity is the main focus of the project, for example, forest management is used to achieve nature conservation objectives.	Forest management is one of several aspects of the project, for example, as part of a management plan.	The project involves one or more forest areas without focusing on forest management.
Number of projects	43	105	88
Number of countries	10	15	14
EC contribution in EUR	37 042 454	67 049 095	60 961 844
Total budget in EUR	74 118 538	125 393 704	116 442 514

(In total, EUR 315 954 757 has been spent on forestry related projects since 1992 under LIFE Nature, with an EC contribution of EUR 165 053 394.)

Table 4: Main types of activities under LIFE Nature projects with relevance for forestry

Main type of activity *(Basic data about and brief descriptions of all LIFE Nature and environment projects is available online at http://www.europa.eu.int/comm/life/home.htm)*	*Number of projects with this type of activity* *(including 148 projects of categories I and II, several types of activities possible for each project)*
Habitat restoration, for example, afforestation or removal of trees	111
Public relations and environmental awareness raising (aimed at informing the general public)	92
Development or implementation of a management plan	78
Tourism/visitor management	70
Wildlife management, for example, hunting	67
Land purchase	65
Stakeholder participation/private public partnership (aimed at communication with stakeholders)	63
Biodiversity inventory and monitoring	59
Ecological forestry, such as sylvi-environmental measures	39
Compensation for income foregone	30
Contract conservation	29
Environmental disaster prevention	19
Traditional management, for example, extensive grazing	18
Rural development, for example, through support of local market structures	13
Extensification of landuse	12
Extension and training	12
Multilateral/ transboundary cooperation	3
Local Agenda 21 implementation	1

creation of a total of 150 000 jobs in forestry (IDF, 2001).

As the European public became increasingly aware that agriculture is not just about food production, but also about maintaining traditional landscapes and rural communities, the Commission submitted a communication on 27 January 1999 entitled 'Directions towards sustainable agriculture', which stressed the need for better integration of environmental requirements in agriculture. The ensuing 'Agenda 2000 reforms' of the CAP introduced links between support to farmers and compliance with environmental standards and gave a much higher profile to the objective of supporting a 'greener' agriculture. It is the explicit aim of the EU biodiversity action plans ([28]) to further promote the integration of biodiversity concerns into programming documents under the Rural, Structural and Cohesion Funds and other programmes relevant for EU and third countries.

Possibilities for supporting Natura 2000 under EU rural development policy and under EU regional policy have been explored by a working group on Article 8 of the habitats directive.

7.2. Working group on Article 8 of the habitats directive

Financing Natura 2000

Article 8 of the habitats directive foresees Community co-financing of measures required for the implementation and ongoing management of Natura 2000. The text of the article makes reference to the use of existing Community instruments, but until now the provisions of Article 8 have not been implemented. In addition, the nature of the legal interpretation of Article 8 may be of importance in deciding on what kind of financial support systems to establish in the future.

When considering the financing of Natura 2000 one has to be aware that in the near future the European Union will expand, resulting in an obligation to co-finance a network for 25 Member States. Rough estimates indicate that a higher percentage of land area in the candidate countries will be designated as Natura 2000 sites than in current Member States. At the moment no precise figures are available regarding numbers of sites or the area that will have to be added. Therefore the working group has concentrated on the current EU network of 15 Member States.

Composition and mandate of the working group on Article 8 of the habitats directive

In order to address the financing issue in a comprehensive and effective way the European Commission set up, in December 2001, a working group on Article 8, involving experts from Member States and stakeholders**.** Representatives from the Directorate-General for the Environment along with those for Agriculture, Regional Affairs and Budget supported this group. The Habitats Committee of 30 November 2001 agreed with the establishment of this working group.

The remit of the group includes the following main objectives:

- to develop a common understanding of the provisions of Article 8 of the habitats directive;
- to obtain estimates of the financial costs associated with the future management of the Natura 2000 network of sites across the Member States;
- to make recommendations on the necessary Community funds for the co-financing of these costs.

Proceedings of the Working Group on Article 8 of the habitats directive

Three meetings were held (on 17 December 2001, 28 February 2002 and 18 April 2002) to decide the approach of the group, to examine relevant publications, to develop a questionnaire to be sent to Member States and to discuss potential procedures, methods and results.

In April 2002, the questionnaire was sent to Member States, asking for information on the way in which financial aspects of Natura 2000 had been worked out at national or regional level. The response was

([28]) Available on the Europa server at http://europa.eu.int/scadplus/leg/en/lvb/l28023.htm

considered at a meeting of the group held on 11 and 12 September 2002, and the content and approach of this final report were also decided. The last meeting of the working group was held on 4 November 2002 to finalise the report.

The approach has been based on the need to explore solutions to the current absence of an agreed framework for funding Natura 2000. Without such agreement the objectives of the network will never be realised. This meant that the group did not confine itself to an examination of Article 8 alone. Instead, it set out to explore options which take into account the changes which have taken place since 1992 in the use and the purpose of EU funding instruments, in the Community budget, and in policy initiatives — such as the environmental action programmes and in the integration of biodiversity and sustainable development considerations.

7.3. Conclusions of the working group on Article 8 of the habitats directive

General aspects

Taking account of the opinion of the legal services and having regard to the original rationale behind Article 8, the working group came to the common understanding that Article 8 was drafted in recognition of the 'exceptional financial burden' that the habitats directive might place on Member States, and particularly on those countries rich in biodiversity. Since 1992, the habitats directive and Natura 2000 have assumed greater strategic importance than many people anticipated. They are now recognised as being the EU's principal tools for achieving the CBD commitments and the new global and EU objective of halting the decline in biodiversity by 2010. At the same time, there has been a continuous improvement in the level of integration of environmental aspects in the legislation that governs the use of the main EU financing instruments directed to the rural world, such as the Rural Development Regulation (1257/99) and the Structural Funds Regulation (1260/99).

The working group has made an estimation of the total cost that would arise for managing a completed Natura 2000 network, on the basis of different calculation techniques (extrapolation/addition), a literature review, the nature of activities to be considered and information submitted by Member States through a questionnaire. From this has resulted a best estimate for the total cost of managing Natura 2000 of between EUR 3.5 and 5.7 billion per annum.

The working group has identified the range of existing and potential Community funding mechanisms which can be used for managing Natura 2000 sites. An overview of these sources of financing is given in Table 5. During this work it was also concluded that there is a clear perception amongst the authorities responsible for Natura 2000 that current EU co-financing has been insufficient, too subject to chance, and too time-limited to form an adequate basis for providing support to Member States in meeting the requirements of the directive. Funding arrangements are very complex, potentially involving a large number of funds, each with separate application processes and each designed to deliver against their own objectives, rather than those of Natura 2000.

Analysis of future funding options

On the basis of existing funding possibilities, the working group concluded that current arrangements are inadequate to meet the needs of Natura 2000. Based on this analysis, the group agreed that three main options are available for securing future co-financing for Natura 2000. These three options are:

- **Option 1** — using existing EU funds, such as the RDR, Structural Funds, etc, but modify these as necessary in order to deliver against Natura 2000 needs;
- **Option 2** — enlarging and modifying the LIFE Nature instrument to become the principal delivery mechanism;
- **Option 3** — creating an entirely new funding instrument dedicated to Natura 2000 management.

The working group further examined the various strengths and weaknesses of these funding options, drawing on the experience of the group members and on the responses to the Member State questionnaire.

This led to the following final recommendations:

1. In the short term (actual budgetary period 1999–2006), the mid-term review of the CAP would be the most straightforward opportunity to increase funding for managing Natura 2000 sites. If the trend of shifting resources from direct support to farmers to rural development measures can be confirmed and even enhanced, important opportunities will emerge for the forest sector, and not least for more ecologically conscious forest management. At the same time, the conclusions of the group should be taken into account when deciding about a future fourth phase of the LIFE fund after 2004.

2. In the long term, the financing of managing Natura 2000 should be an intrgral part of the discussions about the use of Community financial instruments during the next budgetary period starting in 2007. Introducing a specific requirement in all major EU funding instruments, including EAGGF, ERDF and ESF, for them to support the achievement of EU environmental legislation and in particular, the proper management of the Natura 2000 network should certainly be among the options to be considered during the upcoming budget negotiations.

3.To aid the development of EU funding measures as well as promoting the provision of adequate funding by the Member States themselves, nature planners and land managers from across the EU should work together to prepare guidelines to improve the coherence and cohesion of the Natura 2000 network, and promote the development of multiannual management programmes to enable the proper planning and delivery of funding for site management. This work needs to be supported by further research to improve knowledge about site condition and management requirements, which is crucial for setting appropriate intervention levels for management of sites across the EU.

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Table 5: Overview of financing instruments of the EU, which could potentially be used for Natura 2000 and forestry

Financing mechanisms:	*Main objective of the funds*	*Responsible Directorate-General*	*Budget per year (in the financial year 2001):*	*Possibilities for the funding of sustainable forestry on Natura 2000 sites (examples):*
LIFE III (2000–04) (LIFE Nature and partly LIFE Environment)	Promote and support nature conservation, support the establishment of Natura 2000	Directorate-General for the Environment	EUR 0.08 billion	Pilot projects for Natura 2000: ■ Measures towards ecological forestry ■ Habitat restoration ■ Direct conservation measures ■ Land purchase ■ Development of management plans ■ Information campaigns ■ Stakeholder involvement ■ Inventory and monitoring of Natura 2000 sites
EAGGF (Guidance Section)	Afforestation, according to Article 31 of RD Regulation 1257/99	Agriculture DG		■ Afforestation
Structural Funds for rural development (Regulation 1257/99, for example Articles 30 and 32);	Improvement of the economic, social and ecological structures of rural areas, especially in the fields of agriculture and forestry	Agriculture DG	EUR 4 495 billion	■ Training of farmers and foresters ■ Agro-tourism ■ Measures towards ecological forestry ■ Fire-protection corridors ■ Innovative projects for rural development, for example regional tourism concepts
Community initiative Leader +	Development of rural areas through high quality and ambitious integrated strategies for local rural development	Agriculture DG	EUR 2 020 billion (financed by the EAGGF Guidance Section)	■ Strategic, innovative concepts for rural development, especially multi-stakeholder and intersectorial concepts ■ Visitor and information centres
Community initiative Interreg III	Support for transboundary, transnational and interregional cooperation in balanced rural development, especially in areas adjoining accession countries	Regional Policy DG	EUR 4 875 billion (total 2000–06)	■ Transboundary projects, for example, in the field of nature tourism ■ Transboundary management for protected areas

Table 5: Overview of financing instruments of the EU, which could potentially be used for Natura 2000 and forestry

Financing mechanisms:	*Main objective of the funds*	*Responsible Directorate-General*	*Budget per year (in the financial year 2001):*	*Possibilities for the funding of sustainable forestry on Natura 2000 sites (examples):*
European Regional Development Fund (ERDF)	Creation of jobs by fostering competitive and sustainable development	Regional Policy DG	EUR 30 billion	■ Diversification of farm income ■ Training and further education of land and forest hosts ■ Innovative rural development initiatives ■ Exchange of experience between regions and countries
ESF (European Social Fund)	Creation of jobs through further education	Employment and Social Affairs DG	EUR 60 billion (total 2000–06)	■ Training and further education for foresters and nature conservation staff
Cohesion Fund (minimum volume of projects: EUR 10 million	Strengthening the economic and social cohesion within the Union through projects in the fields of environment and trans-European traffic networks	Regional Policy DG	EUR 2 717 billion	■ Natura 2000 databases ■ Reafforestation ■ Development of management plans ■ Habitat restoration ■ Strategic territorial and spatial planning

Source: IEEP, 1999; European Commission, 2001–02.

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8. Best practices, examples and experiences

Examples and experiences about management of Natura 2000 forest sites can be drawn from various sources. Though far from complete, this section lists some examples and experiences throughout the EU that combine nature conservation and forest management objectives on Natura 2000 sites. It also gives indications of the kind of 'statutory and administrative measures' mentioned in Article 6(1) of the habitats directive that have already been taken by Member States.

These following examples have been selected from the LIFE Nature database ([29]), from various other Commission programmes and from information supplied by Member States after a request by the Directorate-General for the Environment to the Habitats and Standing Forestry Committees. They show the potential for finding practical solutions and the importance of communication and exchange of experiences between Member States.

8.1. Examples submitted by Member States

Forestry and nature protection authorities from 12 Member States have submitted information for this chapter. As expressly requested by several Member States, selected examples are reproduced here for the benefit of sharing and disseminating ideas for the implementation of the birds and habitats directives and for the management of Natura 2000 sites throughout the EU.

8.1.1. Belgium

Walloon Region

Fiscal measures:

In the Walloon Region of Belgium, all Natura 2000 sites are exempted from inheritance tax and from property tax. By this positive example of indirect financial support towards private owners of protected sites, the loss of property value that has been reported to be a possible effect of the designation as a Natura 2000 site can be compensated.

([29]) http://www.europa.eu.int/comm/life/nature/index.htm

Management measures:

- The 10 forest habitats of Annex I to the habitats directive that occur in the Walloon region would originally have covered 130 000 hectares of forest land. Of the total area of 160 000 hectares that has been designated as pSCI until present, more than 40 000 hectares lie in public forests which are administrated by the regional forest service according to legally binding management principles. These are based on a multi-functional approach to forestry which takes into account biodiversity concerns and protection of water resources. This is put into practice by providing management unit directors with guidelines on:
  - conservation *in situ* of old trees and deadwood;
  - maintaining clearings and forest edge vegetation;
  - regulation of forest exploitation activities with respect for nesting and breeding seasons of birds;
  - avoiding afforestation of peat soils;
  - limitation of the dimensions of clearcuts;
  - prohibition of drainage measures on certain soils.
- For private forest owners, the forestry chapter of the regional rural development plan for 2000–06 foresees possibilities of financial compensation for the following actions:
  - establishment of private forest reserves;
  - forest biodiversity conservation measures;
  - protection of soils and water;
  - establishment of ecological corridors between forest areas;
  - establishment of management plans.

It is expected that these measures will make designation under Natura 2000 more attractive to landowners.

Legislative measures

On 28 November 2001, the Regional Assembly adopted a specific 'Décret Natura 2000', which establishes the legal bases for designation of sites, establishment of constraints and associated management measures.

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Flemish Region

Specific conservation measures

The Decree on Nature Conservation of 1997 foresees the creation of a 'Flemish nature structure' consisting of the Flemish Ecological Network (VEN — 125 000 hectares of core conservation areas with other activities being allowed only under specified conditions) and the Integral Supporting and Interweaving Network (IVON — 150 000 hectares of multi-functional conservation area, linked by interconnecting areas.

The proposed VEN designation includes at least 90 % of the pSCI, of which almost half are in forests. Public consultations on the VEN/IVON designations started in September 2002 and will run into 2003. It is assumed that all pSCIs and SPAs will ultimately be taken up in the Flemish Nature Structure.

For all sites included in VEN, IVON and for all pSCI and SPAs, a nature objective plan has to be developed indicating the site-specific measures to be taken to implement the objectives developed for that site. A proposal for general measures and the site-specific measures that can be taken in VEN areas was accepted in principle by the Flemish government and is now scheduled for final approval. This decision includes financial support for private owners to carry out conservation measures on their land.

Nature and forest reserves

About 7 000 hectares of forests are included in both private and public nature reserves. Another 1 650 hectares are currently included in forest reserves. Both protection statutes have nature conservation as their primary goal: the biological value of the forests will be enhanced through specific management or non-intervention (spontaneous development: estimated area = 5 000 ha). A large majority of these areas are included in the pSCI (for example, 1 440 out of 1 650 hectares of forest reserve).

General measures

In Flanders, the Forest Decree of 1990 replaced the Forest Act of 1854, which is still valid in Wallonia. The new legislation defined the 'forest' concept, which applies to public as well as private property and explicitly states that all forests are multi-functional. Together with the Nature Conservation Decree of 1997, this has resulted in forest management being quite tightly regulated for all types of property status and a general principle of 'stand-still' being applied to most valuable biotopes by limits on afforestation and drainage.

Practically, this means that the actual extension of most habitat types — such as heaths, fens, bogs, wetlands, marshes, inland dunes and historic permanent grasslands — which have declined after the intensification of forest management, is 'frozen' and their management made subject to specific conservation measures. There is also a general ban on timber harvesting during the spring breeding season and an absolute ban on deforestation.

In 2001, management rules for public forests were adopted which address the objectives of biodiversity conservation and nature protection by permitting the natural succession of vegetation types in a spatial variation — this is achieved by cyclic interventions in forest complexes with a mosaic-like age–class distribution. The same guide sets out an official policy for replacing conifer plantations with forests with indigenous species by natural regeneration. As the larger part of Flemish public forests are designated under Natura 2000, these policy measures are an important step towards their adequate management.

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8.1.2. Denmark

As in other countries with reduced forest cover and highly anthropised rural areas, forest conservation discussions in Denmark are mainly about naturalness of existing forests and about the composition of 'pristine' forests that preceded them. The question of the 'openness' of primeval ecosystems and the role of herbivores in them has led to different models of primeval ecosystems (of north-west Europe) such as the 'high forest model' and the 'wood-pasture model'. This has increasing influence on the setting of management objectives for protected areas that are part of Natura 2000 sites.

Danish designation criteria for Natura 2000 and forests

The Danish pSCI series has been proposed on the basis that Annex I forest habitats are mainly semi-natural woodland and that such woodland in general is rare (structurally natural or near-natural stands) or residual (other stands — including coppice, wood pasture and other quite intensive management types). Certain cases, this can also include planted forests of native trees if they form high forest, have typical undergrowth (meaning that they can be referred to as a forest community/association) and host species of Community interest. For planted stands, Denmark has taken the view that such stands must have attained a fairly high age, implying that young, even-aged, planted monocultures do not qualify.

Several Danish SPAs comprise large forest districts. These are mostly planted forests including large spruce plantations managed to a wide extent with clearcuts and replanting. This has proven beneficial and seems to be a necessary feature for the continuous presence of *Lullula arborea, Lanius collurio* and *Caprimulgus europeaus* of Annex I to the birds directive. These species usually decline or disappear in Danish forests without clearcuts.

Denmark has about 163 000 hectares of broadleaved forest (status 2000), of which about 25 000 hectares or 15 % are in accordance with one of the Natura 2000 forest types. The rest are either other Corine forest types (not in Annex I to the habitats directive) or planted stands without sufficient semi-natural quality or without species of Community interest.

In order to develop and disseminate a better understanding in Denmark of the Natura 2000 habitat types including forests, the Danish Forest and Nature Agency has published a book with descriptions, key

and photographs of the Danish Natura 2000 habitat types (Buchwald and Søgård, 2000). A preliminary edition of the book (text only) was used in 1999 when mapping the Natura 2000 forest types in State forest pSCIs. The book represents the official Danish understanding of what is included under the definition of each Natura 2000 habitat type in Denmark.

Denmark made a preliminary proposal in the range of one third to three quarters of the area of each Natura 2000 forest type as pSCI, depending on their rarity, representativity and other qualities as described in Annex III to the directive. The figures are preliminary because field inventories and mapping/digitising of the Natura 2000 forest types have only been carried out in the pSCI of the forests of the Ministry of the Environment (State Forests), while other areas are estimated.

Thoughts about future management

Denmark is preparing/updating the scientific and legal framework for establishing the necessary conservation measures for SACs as stipulated in Article 6.1 of the directive. A very significant contribution to the conservation of forests has been the 'Strategy for natural forests and other forest types of high conservation value in Denmark' launched in 1992 and implemented mainly since 1994.

The natural forest strategy defines terms and objectives (overall aim is biodiversity protection) and sets targets for protecting large areas with a variety of conservation management schemes for which management principles are defined (untouched forest, grazing forest, coppice woods, selective felling and other special forest management systems). From 1992 to 2000, the area of protected forest in these categories greatly rose, partly financed by the LIFE project No B4-32000/95/513- 'Restoration of large areas of natural forest for the benefit of endangered birds, plants and biotopes'.

Conservation objectives

For each Natura 2000 habitat type and species found in Denmark, conservation objectives at national and SAC/SPA levels are being set — British publications have been used as inspiration for this (English Nature 1999). Guidelines will be further developed after the involvement of stakeholders.

In general, the guidelines must take into account that many pSCIs/SPAs consist of a mosaic of different Natura 2000 habitat types, and that each of these may be represented in each pSCI by several (sub)localities, which may have differing quality, management, species content, continuity, representativity, etc. and therefore should also in the future have differential management.

Flexibility concerning Natura 2000 forest habitats in SPAs/SACs

Requirements for Natura 2000 forest habitats may allow the following approach when setting conservation targets and associated management measures:

National/biogeographic level:

favourable conservation status as defined in Article 1 (e) of the directive.

pSCI/SAC level:

1. Management activities and prescriptions shall ensure that the natural qualities and features, structures, functions, species and variations of relevance to Natura 2000 are preserved or enhanced. The approach shall allow for dynamic evolutions and changes.

2. No 1 may be deferred by way of specific prioritisation in conservation objectives/management plan, for example, by allowing/planning for a priority type/species to be enhanced in area or population at the cost of population or area of a non-priority type/species.

3. No 1 may be deferred because of natural dynamics for example, natural vegetation evolution/succession or natural coastal/hydrological/aeolian sand movements, etc.

4. No 1 may be deferred because of economic, social and cultural requirements, pursuant to Article 2.3 and 6.4 of the habitats directive.

Examples of the application of this flexible approach to restoration projects:

1. In a SAC there is a raised bog (7110) surrounded by degraded bog (7120) and bog woodland (91D0). Both the last two types were type 7110 before human impact in the form of peat extraction and drainage. The management plan can (but

does not need to) prescribe that type 7120 and 91D0 wholly or partly be managed in a way which enhances restoration to type 7110. This can mean total clearcutting of the 91D0 forest, which in this case is acceptable. In other cases preservation of the woodland with or without forest management would be the case.

2. Several of the largest Danish forest districts are wholly or partly appointed pSCI and are SPAs already. The areas are typically a mixture of non-forest, non-native plantation forest, native planted forest, managed semi-natural forest and semi-natural forests. They may be under non-intervention or planned management (for example, selective cutting) from before their appointment as pSCIs. Several different Natura 2000 forest types usually occur, parts of which are native planted forest, while other parts are semi-natural with variable degrees of management from intensive to non-intervention, and with a variable age–class structure. In these cases, the *minimum* requirement must be to preserve the balance between management regimes (because different typical species like different regimes) or to change the balance in a way which is deemed beneficial (or unchanged) for the relevant biodiversity/typical species. As mentioned above, at least some Annex I BD birds in Denmark are known to thrive in the clearcuts of plantation forests (*Lullula arborea, Caprimulgus europeaus* and *Lanius collurio*), while they cannot live in forests without clearings. Therefore the minimum requirement must not include a ban on clearcuts or planting.

3. In 1996, the Danish Forest Act was changed. One of the changes was a paragraph stating that 'Oak scrubs shall be conserved…'. The State subsequently had to register oak scrubs in order to ensure their conservation. Almost all stands of Natura 2000 type 9190 'Old acidophilous oak woods with *Quercus robur* on sandy plains' fall under the definition of oak scrub in the Forest Act. Since 1996, all oak scrubs have been registered and most were deemed worthy of conservation. For a large number of them, agreements have been made on a specific management regime with the private owners, including economic compensations. As a principle, planting of tree species non-native to this habitat type is now prohibited, and any deliberate regeneration must use the local oaks by either coppicing, natural regeneration or planting/sowing offspring from the same stand. Use of pesticides and fertilisers is banned and the same goes for (deep) ploughing. Harrowing is permitted to enhance regeneration. The authorities have the right to remove non-native invasive trees/shrubs if it is deemed necessary and the owner does not do it.

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8.1.3. Germany

I. A working group set up between the federated states to deal with nature protection and recreation issues was indicated by the federal authorities as the best source of information about the state of implementation of Natura 2000. They submitted the following elements.

Since the implementation of Natura 2000 is still in full progress and the local coordination with the forest authorities for the necessary conservation measures has not yet been completed in many *Bundesländer*, there is still a lack of concrete experience of conservation-oriented forest management in Natura 2000 areas. A number of projects were initiated in the *Bundesländer* and the administrative background for the implementation of Natura 2000 in forests is progressing well. It appears that the individual *Bundesländer* use different means in order to achieve a lasting protection for the Natura 2000 areas. Indeed, adaptation of legislation, formats for management plans, relations with forest owners and with the public are all handled differently. On the whole, about half of the *Länder* (not counting the city states) have started statutory and/or administrative procedures related to forest management in Natura 2000 areas.

The following selection of projects was highlighted by the abovementioned working group:

1. **Implementation of conservation measures within the framework of large-scale-projects for nature protection (*Naturschutzgrossprojekte*)**

Large-scale projects for nature conservation are funded by the federal government, and are carried out in areas with important natural resources. In the

project areas, conservation measures are financially supported.

The federal government deals with 75 % of the costs, the *Bundesländer* with 20 % and a regional body with 5 %. The funds are spent principally in the so-called core zones, where the habitats or species to be conserved are concentrated. The regional body is a local NGO, with representatives of the local political groups, land users, regional planners and conservation authorities. Wooded areas are included in these projects and the required conservation measures are set out in a management plan. Such projects are run, for example, in Sachsen-Anhalt at the middle Elbe and in the nature park Uckermaerkische Seen in Brandenburg (lakes in the Uckermark).

2. Assurance of property rights by assignment of land to conservation foundations or nature conservation associations

In accordance with an agreement between the *Bundesländer* and an association or a foundation, land is given in custody without payment for conservation purposes. This is done by a public tender in which the basic management criteria are specified and to which conservation organisations can apply with detailed implementation proposals in order to be selected. The areas concerned are either already safeguarded as a protected area or their designation as a protected area is underway. The contractual partners have to comply with the provisions of the regulation on protected areas and/or obligations going beyond that which are specified in the agreement. In order to assure the durability of the conservation objectives, a written guarantee of custody for nature protection over the assigned land is recorded in the land register. The agreements furthermore include stipulations for ecologically sound forest management. Forest areas which are designated as pSCI must, beyond that, according to the agreements, be treated in compliance with formally stated conservation aims. This approach was used in Brandenburg on land which was assigned for nature conservation purposes from the federal government to the *Länder*.

3. Contractual conservation measures for the implementation of the habitat directive

For special conservation measures undertaken by the forestry owners, which go beyond traditional practice and natural forestry, forest owners can underwrite contracts, which honour the special expenditure required for nature protection measures to be carried out. In the *Bundesländer* Schleswig-Holstein, Bavaria, Nordrhein-Westphalia and Saxony the legal conditions for this type of 'contract conservation ' have been established.

In Schleswig-Holstein, for example, conservation contracts can be concluded for private forests which have special conservation functions. Thus, it is possible to implement conservation measures which otherwise could only be carried out by land purchase or formal legal procedures. Some of the contracts are co-funded by EU instruments, such as the rural development plans. For such measures, forests in Natura 2000 areas are given priority. Other contracts, which are concluded under a local programme 'The future of the rural area' (without EU co-funding), run for over 30 years.

4. Management plans for nature parks and national parks

For large protected areas, such as national parks or natural parks, specific conservation plans are prepared, which contain explicit articles about forestry practices. These plans are established after consultations with a specialised advisory body, consisting of local politicians, regional authorities, NGOs, representatives of land users and specialists. The plans are advertised in the region and are discussed. In order to make these plans accessible to the maximum number of people, executive summaries of the final versions are published. It has to be noted that German national and natural parks are not nature reserves. They mostly consist of areas in which legal restrictions of land use already exist (for example, on landscape protection) and in which the forest administration has made a commitment to taking a more ecological approach.

5. Cooperative agreement between forest and conservation authorities in Thuringia for the protection of bogs

With regard to the implementation of the habitat directive, the bogs situated in the Thüringer Wald and in the Westliches Schiefergebirge are of special importance. These bogs are not large areas of con-

tinuous habitat types listed by the directive, but they are outstanding and rare ecosystems.

Because most of these bogs are in a bad state of conservation, it was vital to act in order to conserve these valuable biotopes and/or to restore the damaged bogs. Since most of the bogs were already wooded to a certain degree, a close collaboration was necessary between conservation and forest administrations for the implementation of necessary conservation and restoration measures. A common operational framework was agreed, with the goal of ensuring favourable conservation conditions for the bog habitats. Important outcomes were a coordinated overall concept for the future development of the bog woodland as well as a priority list of measures to be taken.

6. The LÖWE programme in Lower Saxony

In the German forests of Lower Saxony, the forest administration is implementing a strategy for 'close-to-nature forestry' called 'LÖWE' (an acronym for long-term ecological forest development in the State forests of Lower Saxony: *Langfristige Ökologische Walderneuerung*). One of the effects of LÖWE since its introduction was that costs for harvesting per cubic metre were drastically reduced, as well as the costs for planting, as LÖWE uses the forces of nature wherever possible, such as for the natural regeneration of forests. LÖWE was supported by measures that are essential for the change to ecological forest management, in particular ensuring an adequately low number of deer per hectare to be able to naturally regenerate the forests without the use of expensive fencing (Janssen, 2000; www.forstnds.de/portrait/loewe.htm).

The realisation of the LÖWE programme has been carried out with great success until now. The LÖWE programme was drafted in 1991 as a comprehensive production and nature protection strategy. Economical considerations were originally not part of the 13 principles of the LÖWE programme, but they can be derived from them. The objectives of girth limit felling, for example, have resulted in a profit increase. After only eight years of realisation praxis, ecologically orientated forestry based on the principles of the LÖWE programme has already led to a considerable reduction in expenditure and a corresponding income increase in the Lower Saxon state forests.

This example shows that ecologically based forestry can also, under certain conditions, be the most economically viable form of management.

The working group also mentioned the kind of financing techniques that were used.

1. *Länder*-owned forest

The measures are an integral part of the management of the state forest by the state forest authority (*Landesforstverwaltung*). The implementation lies within the scope of the executive work by the local forestry authorities.

2. Corporate and private forest

The necessary measures are coordinated by mutual agreement between the forest administration and the forest owners. The measures can be implemented by state forest workers. The costs are shared by the forest and nature conservation administrations, with no costs arising for forest owners.

In this manner, spruce plantations have been cleared in the nature reserve Saukopfmoor on the Regenmoorkalotte over an area of more than 7 ha, which is the property of the private company Bodenverwertungs- und -verwaltungs GmbH. Similar measures can also be funded under the programme for the promotion of nature conservation and the preservation of the countryside in Thuringia.

3. Job-creation measures (ABM) and/or structural adjustment measures (SAM)

In the case of the implementation of nature protection measures forestry administrations have often been supported by employees of the secondary job market. The implementation of certain measures (for example, water engineering projects, cleaning clear cut areas) represent a meaningful opportunity to employ jobseekers, at little cost to the employer.

4. Compensation measures for impacts in nature and landscape

In the western slate mountains (Westliches Schiefergebirge) disturbed forest moors were restored in compensation for the impact the building of the power station *Goldisthal* had on nature and land-

scape in the area. These measures were planned together by forest and nature authorities and undertaken under the direction of the local forestry commissions.

II. In Nordrhein Westphalia (NRW), comprehensive legislation for Natura 2000 implementation with the following basic characteristics is currently being adopted.

- All pSCIs in NRW must receive the status of nature protection areas or form part of landscape planning regulations.
- Obligatory state-wide models for contracts between landscape authorities and forest owners were developed. Thus habitats directive-compliant management of designated forest complexes is ensured and forest owners have a long-term planning security. Furthermore, a decree of the *Land* (Nordrhein-Westfalen) regulates the involvement of the nature conservation associations.
- Regular monitoring of the state of conservation of habitats and species in pSCIs will take place in all forest areas, whereby forest structure, species inventories and outside influences will be taken into account. To carry out this work, NRW has developed specific guidance on cartography and assessment methodology.
- The designation of forest Natura 2000 sites has to focus on surfaces containing 'natural forest cells' that are able to function as core areas in which natural developments can take place with human intervention. Existing forest management in surrounding stands must strive towards a balance between the different succession stages that can exist in semi-natural forests.
- Characteristics of existing habitat types listed in Annex I of the habitats directive must be preserved by forest management measures if possible (for example, maintain more than 50 % oak in 'Old acidophilous oak woods with *Q. robur* on sandy plains' / 9190).
- General management prescriptions are as follows:
  - no replacement of broadleaves by conifers;
  - conifer percentage to be stabilised at actual occurrence;
  - up to 10 trees per hectare to be maintained to provide nesting space for bats, day raptors, owls, woodpeckers, black stork;
  - clearcuts larger than 0.3 hectares not allowed.
- Detailed guidelines and decrees regulate the degree to which these measures are obligatory or voluntary in relation to specific habitats and species.
- Compensations for economic losses are foreseen in relation to:
  - the maintenance of well-defined levels of decaying trees and deadwood;
  - transformation of conifer stands into indigenous broadleaved forest.
- A separate support facility has been created for the conservation of *Luzulo-Fagetum* beech forests (hab. type 9190) and 'Old acidophilous oak woods with *Q. robur* on sandy plains (hab. type No 9190)

III. Bavaria has introduced management planning measures for Natura 2000 forest sites with the following characteristics:

- Implementation of Natura 2000 should be completely transparent and should have the cooperation of stakeholders.
- Division of tasks between several public bodies who are involved:
  - the state Ministry of the Environment has overall steering competence;
  - the state Forest Service and nature conservation authorities work out the concrete conservation objectives;
  - the state Forest Service is completely responsible at site level (planning and carrying out of management plans, monitoring, controls, reporting) because it has long-standing experience with ecologically sound forestry, disposes of considerable administrative resources and enjoys a high level of confidence from private forest owners.
- Landowners are involved and informed at all stages of management planning: before starting the work, during field studies, by commenting on

draft plans and during completion of the work. They have full access to complete text versions and maps on the Internet.

- The knowledge of local experts and conservation NGOs is seen as a valuable source of information for management planning.
- All the above-listed procedures and principles were first tested in pilot projects.
- For state forests, a Natura 2000 management plan will be an obligatory component of the valid forest management plan.

IV. The Federal Nature Protection Authority (BfN) commissioned a study by the University of Freiburg with the objective of defining the concept of 'good forestry practice' on the basis of existing rules and regulations in the 15 federal states.

- This study, led by Professor G. Winkel, defined good forestry practice on the basis of a series of criteria for the integration of nature protection in forest management. Meeting these criteria would then be seen as a threshold that forest management must reach in order to become eligible for compensation of lost income resulting from specific ecological requirements.
- It has to be stressed that BfN has only presented this study as the basis for initiating a more intensive dialogue with the forest sector and not as a series of mandatory rules. Most of the quantitative figures that are needed to make the criteria operational will have to be established by intersectoral discussion.
- The criteria for 'good forestry practice' presented by Prof. Winkler are:
  - use of natural regeneration;
  - use of natural succession processes;
  - strictly regulated use of forest machinery;
  - minimising soil disturbance by tillage;
  - careful planning of forest road systems;
  - setting of minimal rotation lengths;
  - protection of specific biotope elements, such as individual trees;
  - integration of nature protection measures in commercial stands;
  - respecting the ecological functions of structurally diverse forest edges;
  - limitation of the use of pesticides, herbicides and chemical timber protection;
  - maintaining adequate game densities;
  - avoiding the use of genetically modified organisms;
  - limiting the establishment of large single-species stands;
  - limiting the use of exotic tree species;
  - avoiding the use of nitrogen fertilisers;
  - limiting clearcuts to a minimum size.

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8.1.4. Greece

Greece submitted experiences derived from several LIFE projects, where forestry should be viewed in an integrated way, taking into account biological diversity and landscape conservation. One of the first steps in the planning process is the drawing up of management plans. Up-to-date forest management plans should not just include sustainable logging practices, but should also reflect biodiversity conservation issues.

In the case of Natura 2000 forest sites, management plans have to prescribe actions targeted to habitat types and plant and animal species of Community interest. Monitoring the results of management actions in relation to the conservation status of the species listed is considered as essential feedback to management. A national project 'Conservation and management of sites of Community importance in Greece' was executed on 10 pSCIs of which five are forest sites where the following principles were applied.

1. The project began by setting the context, that is, the elaboration of guidelines and specifications that reflected the current scientific knowledge and the spirit and content of Directive 92/43/EEC and the Biodiversity Convention. The pilot element was that, for the first time since the adoption of Directive 92/43/EEC, specifications for management plans for forest areas were elaborated (addressing the abovementioned requirements) and a monitoring guide was produced, providing the framework for the design of monitoring programmes, at site, habitat type, and species level.
2. Existing forest management practices were reviewed and management actions were prescribed with special emphasis on logging, road network design and construction, and visitor management. Inherent to the management plans was a monitoring system which was proposed for each site, at site, habitat type and species level, based on the monitoring guide.

As an overall benefit, it can be concluded that these projects have re-oriented forest management to take into consideration the conservation objectives of Natura 2000 sites.

Another interesting example, in this case for the use of forest areas for tourism, comes from Crete, where the palm forest of Vai lies on the north-east coastal tip of the island, covering around 20 hectares, within a semi-arid ecosystem. Its significance is inversely related to its size, since it is the only natural palm forest in Europe, and possibly the only forest of *Phoenix theophrasti* in the world. It is one of Crete's main tourist attractions, with some 200 000 visitors every year. The project combined awareness raising, restoration and reforestation efforts to create a sustainably managed tourist destination.

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8.1.5. Finland

The Finnish Ministry of the Environment submitted the following examples of best practice concerning relations between forest management and management of the Natura 2000 network.

National forest programme 2010

At national level the Government of Finland has adopted the national forest programme 2010 as a tool for forest policy. The drafting process of this programme has been accessible both to experts and to a large number of interest groups and private citizens. According to this programme, the ecological sustainability of forestry will be secured by further development of the ecosystem management of commercial forests and by the establishment of nature conservation areas on the sites included in national conservation programmes. Most of these sites also belong to the Natura 2000 network.

Since the adoption of the national programme in 1999, regional forest programmes have been prepared for all provinces. In addition, the government has set up a special working group to prepare a forest protection programme covering the south of Finland, the western parts of the province of Oulu and the southwestern region of Lapland. The working group is expected to give its proposals by the end of June 2002.

Natura 2000 network in Finland

In accordance with the Finnish government decision on the designation of Natura 2000 sites, the network in Finland includes around 1 500 sites and covers roughly 4.77 million hectares. Most of these sites are existing nature conservation areas (30 %), wilderness areas (30 %) or belong to the national conservation programmes (30 %), which means that they will be protected as nature conservation areas in the near future. In general, commercial forestry is not allowed on these sites or is allowed only within certain limitations. On certain sites, however, more flexible implementation is possible because of the habitat types or species found on them.

Example from the public sector: Landscape ecological forest management planning by the forest and parks service Metsähallitus

This method is applied especially on those Natura 2000 sites which are mainly used as State-owned national hiking areas (about 28 000 hectares) but also on some other forested sites, which include, for example, habitat types such as 'Coniferous forests on eskers' (9060), 'Bog woodland' (91D0), 'Fennoscandian springs and springfens' (7160), 'Western Taiga' (9010).

Landscape ecological planning (LEP) is integrated with forest management planning. The idea is that ecological goals are aligned with different forms of forest use, while bearing in mind the objectives of forestry in the area. LEP views an extensive forest area as a whole including managed forests, nature conservation areas, game areas and special areas for recreational use.

The long-term objective of LEP is to assure the survival of the area's native species as viable populations. Among other things, this requires the conservation of valuable existing habitats and allows for new ones to evolve. In this way planning contributes to the continued existence of valuable habitats as defined in the Forest Act and the Nature Conservation Act in Finland. Planning can also be used to focus nature management activities including restoration operations on the sites that are the most crucial in ecological terms. The planning also attempts to assure the necessary conditions for the spread of various species. In this scheme, the valuable habitats and ecological processes in managed forests complement and enhance already existing nature conservation areas. Together these form an ecological network, which preserves biodiversity.

Another central goal of planning is to ensure that the conditions exist for multiple forest uses and for nature-based sources of livelihood. The procedure thus involves inventories of game habitats, scenic value and cultural, educational and research sites. In northern Finland, the demands of reindeer husbandry play an important role. The weight given in planning to recreational use depends on the characteristic features of the area and on the recreational needs of the region.

Landscape ecological plans are drawn up in an open, interactive and people-oriented way. The participatory management as applied in the LEP includes disseminating information, gathering value-based and geographic input, talking with the stakeholders and the public and giving them feedback. The aim is to improve the working relationship with all those stakeholder groups and citizens interested in the use of State lands and in the LEP process of Metsähallitus (Finnish Forest and Park Service). For this purpose, open forums and working groups of stakeholders are arranged during the planning process. All public input is documented, analysed and, if feasible, taken into account. It is envisaged that, through participatory management, Metsähallitus will take care of the common property in a broadly acceptable way.

More than 100 people, including more than 20 professional biologists, have participated in the fieldwork during the past five years. The costs of this work totalled EUR 7.5 million. The results, including the map material, are published as landscape ecological plans and they are available on request from Metsähallitus at a nominal price.

Currently, the completed LEP covers 6.4 million hectares. Some 3.3 million hectares of this is standard production forest by land use. Of the productive forestland, 129 400 hectares have been designated as key-biotopes and ecological corridors. Commercial forestry activities will no longer be carried out on these lands. These new areas increase the strictly protected forest area in Finland by 18 %. Furthermore, 205 000 hectares of productive forest land subject to conservative forestry activities has been designated as an area subject to limited forestry operations. The aim of forestry activities is to secure the special characteristics and functions of these areas. These areas consist mainly of valuable scenic areas such as riparian forests and important game areas such as Capercaillie leks.

It is obvious that the positive impact of the key biotopes and ecological corridors on biodiversity is higher than their proportion of the commercial forest land area, since they are based on a systematic analysis and field inventory of the natural resources of each individual LEP area. These areas are concentrated in older forest stands on more fertile sites than commercial forest land in general. These stands are the most valuable ones in economic terms as well. Subject to the extended rotation periods, the key biotopes, ecological corridors and stands reduce the annual cutting budget of Metsähallitus by 12 %. In other words, the investment in nature conservation, recreation, culture and other resources reduces the business profit of Metsähallitus annually by EUR 24 million.

Example from the private sector: LIFE project 'Protection of taiga and freshwater ecosystems in central Finland' (management plan preparation by the Forestry Centre of Central Finland)

This project concerned two Natura 2000 sites in central Finland owned by private landowners.

The Forestry Centre of Central Finland supervises the forestry legislation in central Finland. The aim of the LIFE project was to prepare forest management plans for two Natura 2000 sites, protected under the Forest Act, totalling 400 hectares. The management planning areas are owned by private landowners. The Forestry Centre prepared the management plans for the two Natura 2000 sites: 'Vaarunvuoret' (FI0900039) in Korpilahti and on 'Iilijärven alue' (FI0900083). The Forestry Centre was responsible for negotiations with private landowners and for the preparation of plans which included suggestions for the management of each forest compartment and the supervision of possible harvesting.

Thorough inventories were needed before the plans could be drawn up. Aerial photography was an important tool for this task. Inventories that targeted species and habitats under the habitats directive and the birds directive were carried out. Additionally, a Centre expert identified key habitats under the Forest Act and sites of endangered and rare birds, insects, fungi and vascular plants, which were taken into account in the management plans.

Inventories were essential to avoid the harmful effects of forest management on biodiversity. Some of the inventory work was carried out in collaboration with biologists from the Central Finland Regional Environment Centre. Several endangered and rare beetle species were observed in the planning areas. Detailed suggestions of management were prepared for each forest compartment by the Forestry Centre.

Landowner participation was essential for the success of the project. Therefore, the Forestry Centre contacted 27 landowners directly. Nine forest management plans were drawn up, covering 488 hectares of forest. Compensation was paid to some landowners because they agreed to preserve the most diverse sites of their forests by leaving them outside commercial management. Much effort was put on the personal guidance of landowners in order to increase understanding of the plan contents and targets. The forest management planning procedure was welcomed because most of the landowners held the view that the project would provide new choices and approaches for managing their forests. Earlier, before the project began, landowners were uncertain about the targets of the Natura 2000 network and in doubt as to how they would be allowed to manage their forests. The project was successful in adapting forestry activities to the conservation aims of the sites. The landowners will be able to use their property efficiently without causing the deterioration of habitats or the disappearance of the species for which these forested areas were designated as Natura 2000 sites.

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8.1.6. France

A. General presentation of Natura implementation in France

In 2001, France completed the transfer of the nature protection directives in its legislation by enacting separate legislation on site designation and on site management.

Three essential choices were made:

- acting in transparency and cooperation, at all the stages of the procedures, in particular through the steering committee set up for each site;
- development of contract management, based on the initiative and motiviation of the owners and managers of the territories concerned;
- incorporating environmental aspects into the management and development of rural areas.

Essential elements of the French approach to implementing Natura 2000 are the following:

The 'objectives document' (document d'objectifs — DOCOB)

The DOCOB defines the management guidelines and the contractual conservation measures and indicates, if necessary, the administrative and regulatory measures to be implemented on the site. It specifies methods of financing the contractual measures. It is established by a technical operator chosen by the State administration, in cooperation with the local actors concerned who meet on the steering committee for the site. On the basis of the objectives doc-

ument, approved by a prefect's decree, Natura 2000 contracts are drawn up.

To help with drawing up objectives documents, several tools are at the disposal of the public services and the operators:

- a methodological guide worked out following an experimental operation on 37 'pilot' sites, co-financed by the European Union;
- a training plan which has been functioning since 1999 for officials and operators, and which includes exchange of experiences between the regions;
- a series of habitat guides giving a synthesis of knowledge on the habitats and the species targeted by the habitats directive and their management.

The steering committee

The steering committee is the main instrument for the exchange of information and for cooperation on each site. It is set up and chaired by the local prefect and brings together partners concerned with the site such as elected representatives, owners, users, NGOs etc. It meets regularly and can set up specialised working parties.

This committee is associated with the drawing up of the objectives document. The technical operator reports to the commitee on the results of his work and takes account of its opinions. After approval of the DOCOB by the prefect, the committee is informed about its implementation and is asked to come to conclusions about the measures being applied and subsequently to evaluate them.

Natura 2000 contracts

Individual participation in the implementation of the DOCOB by the actors who are in charge of management and maintenance of the natural environments will be regulated by public service contracts called 'Natura 2000 contracts'. These contracts will enable the signatories (owners, farmers, foresters, hunters, associations and communes) to be remunerated for the work and the services rendered to the community and have to be passed directly between the State (via the prefect of the department) and the holders of land-use rights to the sites concerned. Their duration will be at least five years.

Natura 2000 contracts will define the tasks required to achieve preservation or restoration of the natural habitats and the species which justified the designation of the site. They will give the nature and the modalities for remuneration by the State (and the local authorities if necessary) in exchange for the conservation benefits to be provided. Partly financed by the European Union, under the rural development budget in particular, this public aid will be granted as investment subsidies or annual aid per hectare. The contracts will have to be in conformity with the regulations of the objectives document and will offer attractive conditions of financing in the case of Natura 2000 sites.

In this way, Natura 2000 will be endowed with substantial financial resources, and will be a genuine tool for territorial development, guaranteeing the conservation of flora, fauna and natural habitats.

B. Implementation of Natura 2000 in forestry environments in France

Scientific and technical tools

The French authorities have published guidance documents for biodiversity-oriented forest management which are of an exceptional quality because of the way in which they link scientific accuracy and practical recommendations.

1. With the support of a LIFE Environment project that was carried out together with the Walloon Region in Belgium and the Grand Duchy of Luxembourg, an excellent guide for identification and integrated management of forest habitats and species was published in 2000. This guide, called *Forest management and biological diversity,* consists of three volumes, relating to Wallonia and the Grand Duchy and to Atlantic and continental France respectively. It is a useful tool which allows forest owners to identify habitats and species found in their own forest and to draw management conclusions with the help of a vast range of descriptions of practical situations. The publications also contain a substantial chapter with basic information about biodiversity and nature protection. A most interesting aspect of the project is that forest owners' organisations cooperated in the compilation of the reference book,

making it a kind of bottom-up, participatory approach that aimed at increasing the acceptance of Natura 2000 amongst key stakeholders.

2. In 2001, the Ministry of the Environment and the Ministry of Agriculture, together with the national Museum for Natural History, started the publication of a series called *Natura 2000 habitats references*, with a comprehensive guidance document about forest habitats in France. This is the first publication of a series of detailed guides on the habitats and species listed in the annexes to the habitats directive, to be followed by editions about coastal, humid pastoral and rocky habitats and also by two volumes about species, one on fauna and one on flora.

This forest habitat guide has been conceived as a system of records, in which each habitat is listed under its French name with the Natura 2000 and Corine codes. Next follows information about diagnosis, phytosociological position, succession stages, associated habitats, floristic composition, conservation value, potential threats, production capacities and economic use, management practices and research needs.

The outstanding value of this guide lies in its integrating approach, which presents forest managers with a systematic linking of conservation-related data and economic use.

Specific measures under rural development for the contractual management of forest environments

The French national rural development plan envisages Community co-financing under the Guarantee Section of EAGGF for measures of contractual management of Natura 2000 sites (individual measures carried out in the perimeters of pSCIs and SPAs forwarded to the European Commission). As regards collective actions for Natura 2000, the RDP also comprises training and awareness-raising measures.

Aid for the contractual implementation of the management of the Natura 2000 sites in forests and associated environments is thus envisaged in measures I.2.7 and I.7.2 of the RDP (corresponding to Chapter VIII, Articles 30 and 32 of the rural development regulation). This concerns investment as well as management support (cfr. first indicative list of eligible forestry measures).

Indicative list of measures for contractual management of Natura 2000 sites in forests and associated environments eligible for measures I.2.7 and I.7.2 of the French RDP:

I. TYPOLOGY OF ELIGIBLE MEASURES UNDER MEASURE I.2.7 OF THE RDP (ARTICLE 30 OF THE RDR — operations not dealt with within the framework of forestry investment aid):

- creation and restoration of clearings in closed forest stands, in order to create environments favourable to maintenance and to the reproduction of habitats or of species habitats of Community interest;
- creation and restoration of forest ponds essential to maintenance and to the reproduction of habitats or of species habitats of Community interest;
- enrichment of plantations with non-productive objectives, with a view to restoring habitats or species habitats of Community interest;
- preparation and monitoring of natural regeneration in stands which are not very productive and where existing forest policy would have recommended artificial regeneration;
- clearing and thinning of stands with non-productive logic, with a view to restoring habitats or species habitats of Community interest that need significant increase in the light on the forest floor;
- creation and restoration of riverine forests, including the works for stabilisation of banks, with a view to restoring habitats or species habitats of Community interest;
- establishment of complex, multi-storey and gradual forest edges, with a view to restoring habitats or species habitats of Community interest;
- covering excess costs connected with manual clearing or undergrowth thinning, corresponding to the protection of habitats or of species habitats of Community interest on sites where the existing forestry policy would have resulted in resorting to mechanical or chemical interventions;
- creation of simple and sturdy crossings of small water-courses in forests that include aquatic habitats or fish species of Community interest, in order to prevent forest machinery from destroying these habitats;

- fencing and safeguarding small areas with natural regeneration, making it possible to reduce the surface of the basic unit of regeneration significantly when the maintenance of habitats or of particularly fragile species of Community interest habitats requires the creation of a mosaic-like horizontal forest structure.

II. TYPOLOGY OF ELIGIBLE MEASURES UNDER MEASURE I.7.2 OF THE RDP (Article 32 of the RDR):

- participation in the financial charges resulting from increased stand heterogeneity, with a view to restoring habitats or species of Community interest, when it leads to losses of expected value and reduced exploitability;
- maintenance of clearings and ponds in forests, in order to guarantee the conservation of habitats and reproduction species of Community interest;
- establishment of complex, multi-storey and gradual forest edges, with a view to restoring habitats or species habitats of Community interest.

Study for the development of a technical-economical reference framework for the management measures in forests and associated environments

To facilitate the drafting of the DOCOB and of the contractual measures following from them in forest environments, the Ministry for Ecology and Sustainable Development launched a study in June 2002 to define an initial technical and economic reference framework and to assemble the existing data in this field at regulatory level, especially in relation to technical matters and financing methods. This reference framework does not aim to draw up a limitative and exhaustive list of contractual measures eligible for financing Natura 2000. On the contrary, its design envisages simple updating methods to supplement it along with the advance of Natura 2000 implementation.

The study, carried out by a consultancy, is co-managed by the Ministry of the Environment and the Ministry of Agriculture. It will last 10.5 months and presents three phases:

National phase

The following will be worked out in parallel:

- a national practical guidebook on the general methods of implementation: administrative procedures, eligibility conditions, general principles of calculation of aid, organisation of the various sources of financing and definition of good forestry practices excluded from the field of financing;
- a national guidance book of technical measures (compensatory investments or payments) for forest habitats, forest species, habitats and micro-habitats associated with forests.

As a result of a national steering committee meeting which included the various Natura 2000 actors, and after joint validation of the choices by the Ministry of the Environment and the Ministry of Agriculture, final editions of these books will be produced in order to be able to start discussions at regional level.

Regional phase: 'sylvo- environmental meetings'

In order to further develop the national guidebook into 22 regional catalogues of measures and to refine the definition of tasks on the basis of field experience, 12 meetings will be organised in the various French regions. The technical and financial aspects of the measures will be approached during these meetings.

Final phase: final catalogue of measures and financial reference framework

On this basis, the national reference framework of measures (synthesis of the 22 regional catalogues) will be written with all the technical indications and their financial aspects. The production of the final documents and of the summary report will be based on the choices and proposals of the national steering committee and finally those of the Ministry of Agriculture and the Ministry of the Environment.

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8.1.7. Ireland

The Department of Marine and Natural Resources of the Irish Forest Service 'Coillte' has submitted the following elements on forest management in and around Natura 2000 sites in Ireland.

The ways in which Natura sites and forestry can interact in Ireland may be broken into the following three categories:

1. Natura forest sites that have been designated for their intrinsic forest values;
2. forests within (larger) Natura sites;
3. afforestation in or near Natura sites.

These are more fully described below.

1. Natura forest sites that have been designated for their intrinsic forest values.

These are semi-natural (usually referred to as semi-natural woodland) and are those that most resemble natural forests. Many now require management in order to ensure that their biodiversity potential is realised and protected — the Native Woodland Scheme (described below) will support this. The People's Millennium Forests project (also described below) has been very successful in raising the profile of Ireland's semi-natural woodlands.

Background.

While Ireland has approximately 9 % forest cover, semi-natural woodland is quite rare and occupies a fraction of 1 % of the land cover. The area of semi-natural woodland in Natura (forest) sites is approximately 6 000 hectares — the forest types represented are old oak woodland, alluvial woodland, bog woodland and yew woods.

The threats to these forests are (a) the introduction and proliferation of exotic species — Rhododendron ponticum is a major threat to semi-natural woodlands on acid soils, conifers were planted in them in the past — and (b) grazing by sheep or deer. It is a common feature of many of these woodlands that they (a) are not managed (they may have been managed in the past but management often ceased about a century ago) and (b) they are even aged. The result is often a canopy dominated by one species. It is necessary to bring these woodlands within a management regime. It is envisaged that this management will be supported to a very significant extent by the native woodland scheme.

Brief description of the native woodland scheme.

The scheme has been launched by the Forest Service in close cooperation with Dúchas, the Heritage Service, Department of the Environment and Local Government and with the Native Woodland Scheme Development Group (which includes statutory bodies, all sectors of the forest industry, researchers, landowners and non-governmental organisations).

The scheme consists of two elements — native woodland conservation and native woodland establishment. It provides for grants for work carried out to approved standards and for annual premium payments. It is a key feature of the scheme that the plan for each project is drawn up by a forester and an ecologist. The primary objective is to protect and expand Ireland's native woodland resource and associated biodiversity using appropriate 'close to nature' silviculture. Where compatible, the realisation of wood and non-wood potential is also encouraged. Conservation and biodiversity are prioritised, with wood production encouraged where appropriate.

The People's Millennium Forest Project.

The People's Millennium Forests consisted of tree planting and woodland restoration. Much of this occurred on Natura 2000 sites where exotic species (including rhododendron and conifers) were removed, the fencing of the sites was secured and appropriate native species of trees were planted. Awareness of the concept of native woodlands was raised through an outreach programme and by involving local people and the schools in planning the work. In addition trees were planted where appropriate — each family in the country was assigned a newly planted tree. A certificate describing the location of the relevant tree was issued to each family. The trees for each family are on a permanent register.

2. Forests within Natura sites

Forests in this category tend to be in Natura sites because of their place in the landscape. For example they may be within a protected riparian zone or

within a special protection area (SPA) — they form part of a greater landscape. These forests may range from semi-natural to older and new plantations of both indigenous and exotic tree species.

In these cases the management objectives vary depending on the environmental constraints. In the case of the managed plantations at least, timber production is a primary objective. The environmental and economic values of the forests and of the larger landscape are balanced through consultation. The management plan for the Natura site (the responsibility of Dúchas) follows widespread consultation. In addition to that, the issuing of felling licences (as required by the 1946 Forestry Act) to enable harvesting within these sites requires prior consultation with Dúchas.

3. Afforestation in or near Natura sites

There is consultation and regulatory procedures are in place to ensure that any afforestation that does occur does not diminish the Natura site in question.

Afforestation requires prior approval from the Forest Service, Department of Communications, Marine and Natural Resources. The following consultation is required before a decision is taken concerning approval in and near protected sites (including Natura 2000 sites):

- if the site proposed for afforestation is within a Natura site, the proposal is subject to public notification and consultation, including consultation with Dúchas as well as with An Taisce, the environment non-governmental organisation (eNGO);
- if the site is within 3 km upstream of a protected site, the Forest Service consults with Dúchas prior to making a decision on the issuing of afforestation approval.

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8.1.8. Italy

General management principles

The management of Natura 2000 forest sites in Italy intends to implement all necessary and reasonable conservation initiatives to maintain or improve the conservation status of the features (habitat or species) for which the site was notified (object-oriented conservation strategy).

The decision-making process requires an adequate knowledge of the following elements: the assessment, through appropriate indicators, of the condition of the features of interest in the given site; the detection of actual (or potential) local factors that (may) lead to a deterioration of those habitats or species; the application of the most appropriate management measures to preserve the site's features of interest.

Depending on the local situation, habitats may be maintained by continuing the economic activities traditionally carried out on the site and by undertaking appropriate remedial action (restoration measures) when the habitat is in unfavourable conservation status or when local influence may lead to decline of its conservation.

Forests in Italian Natura 2000 sites frequently represent areas where human intervention has complemented nature to produce an ecological equilibrium: in this way the management of semi-natural areas, a key component in maintaining the coherence of the Natura 2000 network, becomes an effective means of development for the rural areas and forests they contain. In this way, the state of conservation of forest habitats becomes a quality indicator of the environmental integration of human activities and, at the same time, a continual testing-ground for the effectiveness of management guidelines adopted.

Specific technical guidelines

I. Under the Life project 'Verification of the Natura 2000 network and management guidelines', the Italian Nature Conservation Direction has produced a primary framework of guidelines for managing Natura 2000 sites and a reference book with specific management indications. To demonstrate the network structure of Natura 2000 sites, these management indications are arranged according to the 24 categories into which the Italian Natura 2000 sites have been classified on the basis of their respective features of interest. In 10 categories the feature of interest is one or more forest habitat.

This project is specifically focused on the following.

- Information provided by the reference book on the management of forest categories: habitats of interest; habitat ecological requirements; parameters for a statistical description, at national level, of main deterioration factors (such as fire risk, grazing pressure, percentage of built areas in the site) acting upon the classified sites; indicators for the assessment of habitat conservation status; indication of the actual (or past) forestry practices that lead to a deterioration of the habitats of interest; sustainable forest management guidelines, that is, suggested forest management actions in relation to habitat conservation status.
- Guidelines for the development of conservation measures for three categories specifically related to Mediterranean forest habitats, as outlined in the table below:

II. Because a high number of forest sites are contained in nationally protected areas, another technical instrument was produced to promote and clarify the correct ways for managing Natura 2000 forest habitats: 'Guidelines for a sustainable management of the forest resources in protected areas'. This guidance document, a result of collaboration between Italian Nature Conservation Direction and the Italian Academy of Forest Sciences, is also aimed at designing measures to maintain or restore the favourable conservation status of natural and semi-natural forest habitats of Community interest, taking into account the economic, social and cultural requirements and the regional and local characteristics.

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	Habitat of interest	***Measures of prevention from deterioration factors***	***Sustainable forest management guidelines***
Mediterranean *Quercus* sp.forests	6310, *91H0, 9280, 9330, 9340	Fire control, suspension or regulation of grazing activities	Habitat in favourable conservation status: 1. continuation of coppice cultivation by application of less intensive management methods favouring retention trees and compositional diversity; 2. high stand conversion. Habitat in favourable conservation status: 1. high stand conversion, where ecologically and economically feasible; 2. extension of cultivation cycles, application of appropriate management practices for the restoration of coppices.
	9250, 9350	Contractual measures for the acquisition of nearby lands suitable for a (new) establishment of the *Q.trojana* and the *Q. macrolepis*	
Mediterranean and (oro) Mediterranean *Pinus* sp. Forests	9530, *9535, 9540	Fire and pests control	Active management oriented to in situ conservation of genetic diversity of endemic pines (P.nigra, P. leucodermis)
Mediterranean dune scrub	2260, *2270, 5211, 5212	Coastal erosion control, regulation of accessibility and circulation of visitors in sand dunes.	Habitat in unfavourable conservation status: restoration of vegetation cover on sand dunes by plantation of dune herbaceous and sclerophyllous species

* Priority habitats as defined in Article 1(d) and listed in Annex I of the habitats directive (92/43/EEC).

8.1.9. Netherlands

The Dutch Government submitted the following comment.

1. Management of Natura 2000 sites

Nearly all Natura 2000 sites are managed by either the State Forest Service, or by private nature conservation organisations (Vereniging Natuurmonumenten and Provinciale Landschappen), although up to now even these organisations have hardly been involved in the process of the selection of Natura 2000 sites. This means that, so far, no special projects or initiatives to involve NGOs or private forest owners have been carried out and that nearly all designated forest sites are already under a nature conservation-oriented management.

The existing experiences with forest management on Natura 2000 sites are mainly based on information from the State Forest Service (Staatsbosbeheer), which suggests that the concept of 'sustainable forest management' offers a useful and acceptable approach.

For the State Forest Service, sustainable forest management can have different objectives:

- in forests with emphasis on natural values: management activities are directed at increasing natural values, for example, stimulating structural diversity, removing introduced tree species, very limited harvest or no harvest, etc.;
- in multi-functional forests with normal forest management: management includes normal harvesting (but never more than 70 % of the annual increment), no clear fellings or clear felling of very small (< 0.5 hectare) size, avoidance of summer fellings, preference for natural regeneration and presence of dead wood and older trees with diameter > 40 cm.

An important prerequisite for sustainable (forest) management is the availability of a management plan with, among other things, a description of the actual situation, relevant processes (both internal and external), goals and management methods (including monitoring) and an evaluation of the management results. Such a management planning system is used by the State Forest Service and the private nature conservation organisations, Natuurmonumenten and Provinciale Landschappen, and it seems to work quite well for all habitats in the Natura 2000 network.

The State Forest Service has set up a sound and common set of indicators as an indispensable tool for the evaluation of management results. Experience so far suggests that further elaboration is needed on the basic characteristics (indicators) for the quality of the habitat types (including forest types).

For the near future, some aspects related to the national selection and delimitation of the Natura 2000 habitats seem to **need further clarification**; in a few years we hope to have more information on the following issues:

- the proper maintenance of small units of certain forest habitat types. (Often small areas only have one age class or development stage of a forest type);
- the status (and management) of non-target forest habitats, within the designated areas (such as the areas of oak and pine forest within 'de Sallandse Heuvelrug', where only the heathland communities are priority habitats);
- the impact of recent dramatic changes in abiotic conditions. The most obvious case here is De Biesbos — this is a floodplain forest where, after completion of the Deltaplan, the tidal regime has been replaced by a much more stable water level, but many other areas are affected by long-term changes in hydrology and nitrogen inputs.

2. Economic use and SFM in relation to Natura 2000

A special aspect of the management of Natura 2000 forest sites in the Netherlands is the role of recreation. Basically, all Dutch State forest land is open to the public and recreational use is incorporated in the management planning. So far there is no clear evidence that recreational use is in conflict with the Natura 2000 regulations. However, further analyses of the effects of recreational use on the quality of the designated habitat types might be necessary. Recreational use often offers opportunities for compromise between economic benefits and conservation measures.

The EU-funded research project 'Niche markets for recreational and environmental goods and services from multiple forest production systems' (RES-project / FAIR1 PL95-0743) developed market solutions and strategies for various forest outputs. These, however, were considered to be unmarketable or barely marketable.

A case-study-report of the RES-project describes several successful cases of multi-functional forest management on (or in the vicinity of) Natura-2000 sites in the Netherlands.

National Park Foundation — De Hoge Veluwe

The park area of about 5 500 hectares belongs to a private foundation (50 % of woodlands, the rest are dunes and fens). The park is well known for its game species (red deer, boars and does). Besides the beautiful natural resources, a variety of recreational and information facilities are offered. Another component of the park is a famous art museum.

The park is fenced and entrance fees vary according to the number of vehicles, the ages of visitors and the duration of their stay. The capacity of the park is approximately 700 000 visitors. In total, 42 permanent and 40 freelance staff are employed. At present the park covers its costs.

Fees for the recreational use of a national park — Province of Noord-Holland

The province of Noord-Holland lets a nature preservation area to a waterworks. The waterworks firstly uses the soil water, but the managers have also developed the area for recreational purposes and charge an entrance fee. The landscape in the area is very beautiful and attracts five million visitors annually. The visitors can choose between 30 different hiking paths, and the area has panoramic views and restaurants. The waterworks markets the area independently. Retailers are involved and they get commission on the sale of tickets. At present, a profit is made. An important legal framework condition was regulations concerning water preservation.

Tree crown path — State Forest Service

A national forest administration (3 000 hectares of woodlands) offers an information path visiting tree tops. Other RES products are paths for hiking and riding, educational nature paths, tours with a horse-driven tram and activities for children.

Nature preservation weekend — Vereniging Natuurmonumenten

The nature conservation organisation offers a package of a nature preservation weekend at the Loonse and Drunense Duinen (2 500 hectares), which consists of a stay at a luxurious hotel, a slideshow, a visit to an information centre, a bicycle tour, a bird-watching trek and an information package.

Environmental sponsoring foundation — Het Gelders Landschap

The nature preservation organisation, Het Gelders Landschap, maintains approximately 9 500 hectares of nature preservation areas, and for this purpose acquires sponsors for financing. The main sponsors are three waterworks which finance, for example, the transition from conifer plantations to hardwood forests to improve groundwater supply.

3. Other instruments to promote and support sustainable forest management

In a densely populated country like the Netherlands, the ecological and social forest functions have become more important than timber production. This situation is reflected in existing structures and regulations to support sustainable forest management which can play an important role in financing conservation-oriented management on Natura 2000 forest sites.

Nature management scheme

This scheme provides output-based financial incentives to private forest owners for the provision of social and ecological forest functions. The level of financial compensation is based on the type and level of services (biodiversity, landscape, recreational, environmental services) provided by the forest. A contract is signed between the forest owner and the government in which both parties agree upon a set of measures to be taken to achieve specified ecological and other goals.

Tax exemptions and dispensations

Three tax exemption rules, based on the Estate Act of 1928, are relevant for the forest sector:

- woodlands (and nature areas) with public access get dispensation from inheritance tax;
- legal bodies and private owners are exempted from property taxes for forests;
- income from forestry and nature management is free from income tax (but financial losses are not deductible).

According to the nature preservation law, landowners can benefit from a special tax advantage system on condition that they leave at least 30 % of their property under forest cover.

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8.1.10. Spain

The Spanish Ministry of the Environment has sent three examples of multi-functional forest management in large public and mixed property estates which are both SPAs and pSCIs. One example shows that the existing management can sometimes fit well under Natura 2000. In the other example, adequate management concepts were developed with support of the regional rural development plan.

As environmental and nature protection issues are a decentralised matter in Spain, regional governments have the responsablity of producing detailed guidelines for the management of Natura 2000 sites. Many regional governments have already enacted legislation on forest management plans that takes into account Natura 2000, and others are to follow ([30]).

1. The Valsaín forest in Segovia

The Valsaín forest complex covers almost 14 000 hectares on the northern slopes of the Sierra de la Guadarrama. An estate that formerly belonged to the crown, it has now passed into public hands and is managed by the autonomous Spanish National Parks Service. The forest is dominated by *P. sylvestris* with associated broadleave formations. It has been managed for the production of softwood timber of exceptional quality for centuries and current production is estimated at approximately 35 000 m³/yr.

As well as the historic and current importance of commercial timber production and sawmilling, the area has always offered an exceptional range of biodiversity, which is why it was designated under Natura 2000. Over 800 plant species have been recorded and over 100 species of nesting birds, among which 10 from Annex I to the birds directive have been observed. The continuous presence of *Aguila adalberti* and *Aegypus monachus* as well as several endemic bat species has been confirmed. There are 54 species of endemic invertebrates in the area and over 400 insect species have been recorded.

Nevertheless, it is a truly multi-functional forest, in which different types of use such as timber cutting, grazing, collection of non-wood products, nature conservation and recreation are all being maintained by a forest management system that is based on cyclic selective group cuttings and natural regeneration. For special conservation purposes, one of the 25 *cuarteles* (management units) has been set aside as a non-intervention area. **In the case of the Valsaín forest, designation under Natura 2000 has not brought many changes in the existing management**.

2. The Alduide area in Navarra

Two thirds of this complex of more than 9 000 hectares in the foothills of the western Pyrenees consists of semi-natural beech stands, with the remainder under different types of traditional pastoral use. More than half of the area under beech is considered to be of Community importance, and pastoral use is in decline. The site is nearly completely owned by local public entities. The area is known as a major woodpecker site and has some of the best populations of river trout.

In this case, the Natura 2000 designation has caused important changes in the management of the site because the previous forms of economic use had provoked a substantial decline in natural resources.

- Positive aspects of previous management were the use of natural regeneration, the very marginal use of exotic species, a balanced age–class distribution, very effective protection against erosion and good conservation status of forest fauna.

([30]) See http://www.larioja.org/ma/econoticias/indexgob.htm for an example from La Rioja

- Negative aspects of the former management (from a conservation point of view) were the concentration on one economic species (*Fagus sylvatica*), the lack of ecological links between different forest stands, the build-up of standing timber volume in homogenous stands with little clearings or understories.

Under the rural development plan (2000–06) for Navarra, a project to develop an adequate management plan for the area was carried out in consultation with all local stakeholders. The agreed management plan included not only specifications of exploitation levels and regeneration techniques, but also an obligation to reinvest a fixed percentage of revenue in activities related to forest use and nature protection. Specific guidelines have been agreed to move away from the monoculture of beech, to establish more gradual transitions between forest stands and other types of land use, to increase the amount of dead wood on the forest floor, to increase the structural variability of the forest stands by opening the canopy, to allow non-wooded clearings to subsist and to manage wetland areas and water courses for conservation purposes.

3. The 'Montes de Aralar' in the Basque Country

The Aralar Natura 2000 site in the Gipuzkoa province covers over 10 000 hectares of which two thirds are publicly owned. Multi-functional use in the past has produced a varied landscape dominated by beech forest ('Atlantic acidophilous beech forest' / Hab. No 9120) and extensive pastures ('Species-rich *Nardus* grasslands' / Hab. No 6230). One of the problems with the management of this site is that the natural beech stands are in a state of severe degradation because of a long history of exploitation under coppice and overgrazing. The regional Basque government has approved separate management plans for the wooded parts and the open landscapes with the aim of achieving a more balanced use of the natural resources. In the case of the beech forests, this is done by the implementation of a high forest restoration plan that is based on quite straightforward forest management: adoption of a rotation period of 140 years and subdivision of the existing stands in seven regeneration sectors. Timber production is an essential part of the scheme and occurs through group cutting, allowing the regeneration process to succeed according to the specific light requirements of *Fagus sylvatica*.

8.1.11. Sweden

The Conservation Section of the Swedish Environmental Protection Agency (SEPA) submitted the following best practice examples on Natura 2000 and forests. It is interesting to note that both of these examples relate to cooperation of the public and the private sector.

Example 1: *Project Snöberget*

This is an example of a cooperation project between the county administration, the Regional Forestry Board and a private forest company SCA. The Nature Conservation Association (NGO) was also involved. The scope of the project was to reach both conservation and production goals in the area through ecological landscape planning and to get the authorities to cooperate on this. The project has involved ecological landscape planning, the development of new methods and the establishment of a nature reserve. Geographical information systems (GIS) also played an important role.

In 1993, the Forestry Board was given new goals, equally important for production and environment. Previously there was a production goal, which included a consideration for nature conservation. The State authority, the county administration, has the main responsibility for the creation of nature reserves.

Snöberget is situated in the north of Sweden in the county of Norrbotten and the municipality of Luleå. The involved bodies have all participated financially with their normal funding.

The result of the project is a model, the Snöberget Model, which is a concrete example of how the planning process should proceed when important conservation interests conflict with strong forestry interests. It is also an example of how the economical responsibility for a landscape's biological resources can be shared between the State and the forestry companies.

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Example 2: *Project white-backed woodpecker landscapes and new nature reserves (Fjornshöjden)*

This is an example involving the same groups as above, the Swedish Conservation Association, the Forestry Board and the county administration. The Swedish EPA was also involved. The white-backed woodpecker *Dendrocopus leucotos* is endangered in western Europe. Its most important habitat is the 'western taiga'. The population of these birds has declined considerably, mainly because of loss of habitat. The scope was to preserve and develop natural boreal forests with aspen to improve the white backed woodpecker habitat and to ensure the landowners were interested, involved and positive to the necessary measures. Among the activities were nature reserves, biotope reserves, and conservation agreements as well as environmental measures. The work was based on landscape planning. An information campaign targeting the landowners was launched in order to raise awareness of the need to preserve these ecologically important natural forests. The project also involved practical habitat management such as forest fire.

The project concentrated on 10 areas in southern Sweden where 'western taiga' is the dominating habitat. The total area for these 'Woodpecker landscapes' was some 20 000 ha. Fjornshöjden for example is situated in the middle of Sweden in the county of Värmland and municipality of Årjäng. This was financed by LIFE Nature and the groups involved financed the Swedish part with their normal funding for nature reserves and conservation agreements. A total of SEK 30 million (EUR 3 million) were spent, of which half came from LIFE Nature.

Results

The total area protected as nature reserves (NR), biotope reserves (BR) and conservation agreements (CA) was 1 913 ha. Another 250 ha were managed to increase natural values (AF). This included conservation burning, increasing the abundance of dead wood by girdling, removal of spruce to increase the proportion of deciduous trees, etc. It was important to involve the landowners in all parts of the project. Voluntary conservation and environmentally adapted forestry (EMF) without economic compensation cover a large part of the area.

Habitat restoration is being followed by experimental introduction of new specimens to increase the population size. This is being coordinated by a group with representatives from the Swedish Society for the Conservation of Nature, the Swedish Environmental Protection Agency, the National Board of Forestry, Stora-Enso forest-company and the Swedish University of Agricultural Sciences. This activity is being continuously evaluated.

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8.1.12. United Kingdom

The UK Forestry Commission submitted information about the Sunart Oakwood Project as a good example of forest management in Natura 2000 areas. A characteristic element in this project is that it has managed to secure funding from different sources while continuously and patiently working towards the same objectives over a considerable period of time.

Location: Loch Sunart Atlantic Oakwoods, Ardnamurchan, Lochaber, Scotland.

The Sunart Oakwood Project

This project is a successful woodland restoration project covering almost 3 000 hectares which, from modest beginnings, has grown into a major woodland initiative. It is driven by efforts to conserve and restore the Atlantic oakwoods, but also to maximise rural development benefits provided by the woodlands to the fragile local rural communities of the area. The key to success has been the development of strong working partnerships, particularly with the community but also between agencies. These partnerships have helped to secure substantial funding, particularly from Europe, to implement restoration, community engagement, recreation and tourism work, to date in excess of GBP 1.5 million.

Sources of public funding

- **Domestic.** Forestry Commission (through the Woodland Grant Scheme and Forest Enterprise), The Highland Council, Scottish Natural Heritage,

Local Enterprise Company (Lochaber Enterprise), Millennium Forest for Scotland (Lottery), Crofters Commission and Rural Challenge Fund (Scottish Executive).

- **European**.
  - Leader 2: Initial survey of threats to oakwoods, chainsaw training, recreation and interpretation facilities and project manager.
  - LIFE Nature: Removal of threats on public and privately-owned SAC and adjacent catchment. Focus on control of grazing and rhododendron and removal of planted conifers, extended to access and interpretation with additional bid.
  - Objective 1 transitional fund administered by the Highlands & Islands Partnership Programme — Developing recreation, green tourism, community involvement and project staffing.

Best practice demonstrated by the project

Undertaking positive conservation work with the additional objective of maximising rural development opportunities has led to considerable local input to the project, a widening of its objectives and local economic and conservation benefits.

Community involvement:

- wide consultation using planning for real techniques;
- formation of steering group with strong community representation to coordinate the project;
- participation of local schools, for example, in developing the interpretation and establishing tree nurseries;
- employment of locally based project manager and community ranger;
- gaining local political support for restoration and expansion of the oakwoods;
- programme of meetings and events to demonstrate and discuss opportunities;
- greater awareness of the importance and potential of the area's woodlands and increased community capacity in woodland management;
- participation of local private woodland owners in positive forest management, in some cases as a diversification from agriculture.

Economic benefits:

- a locally run forestry and environment training programme resulting in an improved local skills base and a pool of locally based skilled contractors;
- employment of these local contractors to undertake most of the restoration work. Contractors have been employed on a flexible basis to fit in with other job commitments such as tourism, fishing and crofting. Some have invested in machinery capable of smaller-scale forestry work;
- improved access and interpretation of the woodlands and marketing through a local tourist association;
- support in the supply of timber to a locally based sawmill, and other small-scale wood users.

Conservation benefits:

- ongoing improvement in the condition of the woodlands through removal of threats (grazing, rhododendron, conifers and neglect), improving extent, age structure and species mix;
- ongoing refinement of restoration techniques in the light of experience;
- widespread monitoring of regeneration, butterfly and deer populations to inform management decisions;
- public education —'global' environmental issues such as biodiversity, sustainability, etc. addressed through local action.

Wider objectives:

- public sector owners acting as a catalyst for demonstrating restoration and the opportunities for rural development, and attracting public funding to private owners;
- formation of the Sunart Oakwoods Research Group to undertake community-based survey and recording of archaeological features including past woodland management systems;

- innovative partnership approach between public and private owners to collectively manage grazing including deer control, now extending to wider management issues;
- a study completed by Professor George Peterken and Dr Rick Worrell identified the optimum conservation management of the SAC oak woods. The potential for this management to support rural development has established a new and more widely applicable benchmark for the integration of best practice conservation management and local socioeconomic benefits;
- long-term development of a forest habitat network based on the SAC core but linking other native and non-native woodlands in the area.

The provision of substantial EU funding has been crucial not in realising the oak wood restoration but also to unlock the rural development benefits that are provided by both public and private woodlands. The link between the designation of sites and EU financing has led to growing awareness of the practical benefits for communities. Later, the designated area was extended to include some additional woodlots where conifers have been removed and conservation-oriented management is underway.

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8.2. Examples from selected LIFE Nature and LIFE Environment projects

LIFE project data	*Project description*
Country: Austria Title: Ramsar management for March-Thaya floodlands (LIFE95 NAT/A/000768) Beneficiary: Distelverein, Franz-Mair-Strasse 47, 2232 Deutsch-Wagram Österreich Contact: Mr Michael Kaplan Tel. 432 24 75 11 08 Fax 43 22 47 51 10 89 Duration: 1 April 1995 to 1 July 1998 Total budget: EUR 1 963 200 LIFE contribution: EUR 981 600 (50 %)	The March-Thaya floodplain landscape east of Vienna is unique in Austria. The lower March river, with its shallow gradient, is a typical meandering lowland river. Its peculiar hydrodynamic regime (slow currents, extensive spring flooding) and the effects of the continental climate combine with the traditional extensive farming practised here to generate a wide range of biotopes attractive to birds in particular. The aim is to preserve this wetland of European significance, which simultaneously has cultural heritage value as an example of traditional farmland. Ecologically sustainable forms of land use and resource exploitation are to be fostered or taken up again (for example, grazing of periodically inundated meadows) without formalising this too excessively and thereby alienating the community. Farmers, hunters, fish farmers and forest owners will be approached as potential partners in joint actions for sustainability, and intensive public relations work will be carried out to gain local support. Technical measures include initiating restoration of natural conditions in the rivers to improve the hydrological regime of the floodplains in collaboration with the river management authorities, as well as management actions for the meadows and alluvial forests. Trilateral cooperation with the Czech and Slovak Republics will be strengthened.
Country: Denmark Title: Restoration of large areas of natural forest for the benefit of endangered birds, plants and biotopes (LIFE95 NAT/DK/000216)	The Danish government launched, in 1992, an ambitious 50-year national strategy for Denmark's natural forests. This LIFE project is destined to help implement that part of the programme relating specifically to the conservation of the 14 most strategically located and important candidate SAC forest sites. Thus, approximately 65 hectares of priority natural forest will be purchased, management agreements will be negotiated on 400 hectares of private land and urgent management work undertaken on 700 hectares of land within two State forests.

LIFE project data	*Project description*
Beneficiary: Ministry of the Environment, National Forest and Nature Agency, Haraldsgade 53 2100 Copenhagen Ø Danmark Contact: Mr Mickeal Kirkebaek Tel. (45) 39 27 20 00 Fax (45) 39 27 98 99 Duration: 1 April 1995 to 1 October 1999 Total budget: EUR 2 430 800 LIFE contribution: EUR 1 215 400 (50 %)	Finally, if the national strategy is to succeed, there must also be a change in perception amongst the foresters themselves. Thus, an essential component of the project will be the running of a nationwide conservation training course for foresters as well as other public-awareness initiatives. As our knowledge of endangered fauna and flora improves, it is becoming increasingly clear that natural broad-leaved forests are tremendously important for safeguarding Europe's biological diversity. However, throughout Europe, and especially in Denmark, these natural forests have been disappearing at a constant and rapid rate over the centuries, originally, to make way for agricultural land but, more recently, to be replaced by highly productive commercial forest plantations. Today, only around 34 000 hectares of Denmark's natural forest remains, representing less than 1 % of its territory. Yet, despite their scattered and fragmented state, they are still of high conservation value. Amongst others, they hold eight priority habitat types under the habitats directive and numerous Annex I species under the birds directive. This importance is reflected in the number of candidate forest SAC sites put forward by Denmark. Their conservation is, however, far from easy, especially when they are in private ownership, as they are of considerable commercial value. Moreover, in State forests as well as in private forests, any change in management practices for conservation benefit, even with little or no economic impact, requires understanding and acceptance by the foresters themselves.
Country: Finland Title: Quark Archipelago (LIFE97 NAT/FIN/004110) Beneficiary: Länsi-suomen ympäristökeskus (West Finland Regional Environment Centre) Koulukatu 19a — PO Box 262 65101 Vaasa Finland Contact: Ms Susanna Ollqvist Tel. (358-61) 325 65 11 Fax (358-61) 325 65 96 Duration: 1 February 1997 to 1 January 2001 Total budget: EUR 2 323 480.89 LIFE contribution: EUR 1 161 740.45 (50 %)	The miracle is that Merenkurku is still so unspoilt. In order to properly integrate nature conservation, recreational use and local people's traditional use of land (hunting, berry-picking, firewood cutting, etc.), LIFE will complement other initiatives towards sustainability funded under the ERDF, Interreg and Regulation 2078/92, by drawing up a management plan in collaboration with landowners, tourism operators and other local interest groups for part of the archipelago. It will include land-use zoning and a tourism master plan so that recreational use and small-scale nature tourism dovetail with the aims of nature conservation. Meanwhile, LIFE will also quadruple the size of the protected core areas, by financing land purchase and compensation for giving up rights to build holiday homes or exploit forests. Planted forestry monocultures will be removed while grazing by sheep and hay-making will be started up again in grove and meadow habitats. Felling of forests, reforestation with pine, uncontrolled nature tourism and boating, building of holiday homes and the decline of traditional grazing are all looming over the internationally unique Merenkurku (also known as Kvarken or Quark) Archipelago. Geomorphologically unusual in being one of the best examples in the world of the long and narrow De Geer moraines, a rare formation shaped by the last Ice Age, Merenkurku's bizarre topography is a product of the withdrawal of the icecap, submergence by the Baltic Sea and rapid isostatic uplift (about 9 mm per year) of the land in reaction to the disappearance of the ice. This foundation in turn hosts an extraordinarily representative succession series (vegetation and geoformations): lagoons, fladas and glo-lakes; barren heaths, old spruce-dominated mixed forests, birch forest, shore meadows and park-like birch groves grazed by sheep. This is the northernmost place where the marine fauna and flora of the Baltic Sea occur.
Country: France Title: Forests and linked habitats in Burgundy (LIFE99 NAT/F/006314) Beneficiary: Direction Régionale de l'Office National des Forêts de Bourgogne 29 rue de Talant 21000 Dijon, France	The project aims to define and implement sustainable methods of managing woodland environments by striking a balance between the economic, social and environmental functions of the forests. It is based on a close partnership between the public authority responsible for managing public forests in France (the ONF) and a regional NGO (Conservatoire des sites naturels bourguignons). The work will be carried out in the public forests of the nine pSCI involved in the project, and will lead to the development of a sustainable forest management strategy which can also be used for private forests. Over 500 hectares of private forest habitats of special interest need to be included to facilitate this management strategy. Forest management plans and restoration work programmes will be drawn up for all these sites in order to apply the aforementioned strategy. Arrangements will be made to compensate private owners for any operating

LIFE project data	*Project description*
Contact: M. Jean-Pierre Perrot Tel. (33-3) 80 76 98 35 Fax (33-3) 80 76 98 49 Duration: 1 May 1999 to 1 December 2002 Total budget: EUR 2 048 599.22 LIFE contribution: EUR 1 024 299.61 (50 %)	constraints. Limits on public use will be imposed. Finally, it is anticipated that regulations will be drawn up to protect those forests with the most outstanding features. The 11 000 hectares covered by the nine proposed sites of Community interest involved in the project include 7 500 hectares of public forests (beech, oak, maple, box and juniper pioneer vegetation, etc.) and associated open habitats (calcareous grasslands and meadows, scree, limestone pavements, etc.). The area contains 20 types of habitat of Community interest, six of which have priority status, and 17 of the species listed in Annex II to the habitats directive, including the plants *Cypripedium calceolus* and *Liguria sibirica* and the insect *Callimorpha quadripunctaria*. These woodland environments are struggling against economic demands resulting from the intensification and standardisation of forestry production techniques or, conversely, suffer from neglect. In order, therefore, to conserve at least some of the natural habitat of these environments, changes must be made to the methods of forestry management employed, in order to nurture all the stages of plant growth, in both time span and area, through actions ranging from the maintenance of open habitats to the preservation of old trees.
Country: France Title: Integrating biodiversity in the management of forest ecosystems (LIFE95 ENV/F/000542) Beneficiary: Institut pour le développement forestier Contact: M. Gérard Dume Tel. (33-1) 40 62 22 80 Fax (33-1) 45 55 98 54 E-mail: idf.paris@wanadoo.fr Duration: 1 January 1996 to 1 January 1999 Total budget: EUR 839 593.26 LIFE contribution: EUR 406 007.69 (48.36 %)	The creation of the Natura 2000 network required by the habitats directive has deeply disturbed the French country actors, especially the forest owners and managers. In fact, they are not yet familiar with such environmental questions as forest biodiversity, though they officially appear on the forest policies in France, Wallonia and the Grand Duchy of Luxembourg. Therefore it was necessary to initiate a broad programme of awareness-raising, information and training for the locally elected councillors and the forest professionals: ■ on the forest habitat types and species from Annexes I and II, including birds (Directive 79/409/EEC), ■ on the principles and good practices for the sustainable management of forest sites with ecological interests in the three member countries. The first aim of the project is to search for representative field examples of various habitat types and species habitats on Directive 92/43/EEC whose past management operations are known. Some of these will make up a demonstration system of reference in the field. A field-guide to recognition and sustainable management of the forest species and habitats of European interest within the Atlantic and continental biogeographic regions of France, Wallonia and Luxembourg, will be published. It will include a descriptive part and an operational part, stemming from previous field observations. This book will be an educational aid for an awareness-raising, information and training programme for local elected councillors, professionals in charge of forest economic organisations and managers of public and private forests. In that respect, the demonstration system of reference will serve to assist the field trips.
Country: France Title: Sustainable management of deciduous non-even-aged high forests. (LIFE99 ENV/F/000477) Beneficiary: Société Forestière de Franche-Comté, 22bis, rue du Rond-Buisson, 25220 Thise, France	Some tools for a sustainable non-even-aged deciduous high forest management already exist. But there is a real need for complementary tools, and above all for ensuring the demonstration, development and diffusion of all these tools, in order for them to be largely and efficiently applied. The project then contains four operations: ■ elaborating complementary tools, decision making, management and monitoring tools. They will be constructed by studying existing information (forest management plan, databases, etc) and by discussions between experts of various origins; ■ setting up a demonstration network of these tools in conjunction with forest-owners: a forest management plan on 1 000 pilot hectares and 50 demonstration sites; ■ carrying out development operations (training, sensitising, popularisation) aimed at forest owners and managers: involving some 1 100 persons;

LIFE project data	*Project description*
Contact: Ms Marie Cosar Tel. (33-3) 81 47 47 37 Fax (33-3) 81 80 26 00 Duration: 1 September 1999 to 1 March 2003 Total budget: EUR 596 311.95 LIFE contribution: EUR 296 326.59 (49.69 %)	■ ensuring a wide and efficient dissemination of the results through the diffusion of informative documents (sylviculture guide, decision-making document for the choice of the treatment, forest management plan scheme, monitoring tools document, videotape), publications (Bulletin de la Société Forestière de Franche-Comté, Revue Forestière Française, Bois National...) and international meetings. Communes will be closely associated with the whole process as forest-owners. Whereas even-aged high forest management has been used for a long time and is now well known, non-even-aged high forest management is innovative and remains badly mastered in deciduous forests: it is therefore handled in an intuitive and limited way. Now, in order to achieve sustainable forest management, it is necessary to have several well-mastered management methods at our disposal to adapt to the diversity of local situations. In particular, non-even-aged high forest management allows in some cases for a better integrated environment. Finally, the intuitive approach to non-even-aged management entails high risks of deviating from a sustainable management path. In that context, the project aims to provide forest-owners (communes and private owners) and forest managers with reliable technical tools for developing sustainable non-even-aged deciduous high forest management. The project will be conducted in Franche-Comté, the most forested region in France where partners are used to working in a concerted way. Supported by the EU, the Regional Council of Franche-Comté, the Ministry of the Environment and the Ministry of Agriculture, it will involve partners of public and private forests (SFFC, ONF, CRPF and owners), experts and scientists. At its completion (March 2003), the project will permit: ■ a sustainable non-even-aged high forest management of deciduous forests (regeneration, equilibrium, stability); ■ biodiversity enhanced through diversification of management methods; ■ in some contexts, better preservation of the ecosystem and sensitive landscapes; ■ economic advantages for owners; ■ gain in rural employment.
Country: Germany Title: Integrated Habitat Protection for the Grouse in the Black Forest (LIFE98 NAT/D/005087) Beneficiary: Forstliche Versuchs- und Forschungsanstalt Baden-Württemberg Contact: Mr Rudolf Suchant Tel. (49-761) 40 18-0 Fax (49-761) 40 18-333 E-mail: suchant@fva.lfv.bwllfv.bwl.dbp.de Duration: 1 May 1998 to 1 May 2002 Total budget: EUR 228 651.21 LIFE contribution: EUR 114 325.61 (50 %)	The Feldberg in the southern Black Forest is, at 1 493 m., the highest mountain in Baden-Württemberg and a popular destination all the year round for tours and outdoor sports. To serve the two million visitors a year, a dense network of hiking tracks, cross-country skiing routes and downhill ski fields has been created, and it is planned to expand this further. Simultaneously the Feldberg area is, because of its altitude, one of the last refuges of sub-Alpine fauna and flora outside the Alps themselves. Typical species are two kinds of grouse, the capercaillie and the hazel grouse. Wherever they or their tracks are spotted in the forests, one can be sure that other characteristic species of the higher altitude forest habitats are not far off. However, the number of grouse have been declining radically for many years, and not only on the Feldberg — the Black Forest is, in fact, a last stronghold for grouse between populations in the Alps and small groups in the central European ranges such as the Vosges and Ardennes. The tourist infrastructure and its year-round use is certainly one of the contributing factors to the decline, but forestry, by fostering high-yield plantations unable to fulfill the birds' habitat requirements, must also bear part of the blame. Baden-Württemberg's Forestry Research Institute is taking on the role of advocate for the grouse, and will try to involve all interested parties in establishing a forward-looking, landscape-oriented tourism and a more ecological kind of forestry. This will improve the habitat conditions for the grouse and other species. The Institute is drawing on a model already applied successfully in the central Black Forest and will be aided by experienced colleagues from a similar LIFE (Nature) project in the French Jura. The objective is to achieve and maintain grouse populations able to survive in the longer term and to augment the value of the unique forest habitats on the Feldberg. The project will prepare and implement an integrated resource management plan which

LIFE project data	*Project description*
	bears the interests of forestry, tourism and conservation in mind. The idea is that all concerned collaborate from the beginning. Instead of unilateral bans, clever visitor guidance and well-targeted alterations to forest structures should improve the prospects of survival for the grouse and act as a model for similar projects.
Country: Germany Title: European Network of Natura 2000; management plan for the future nature reserve Hainich (LIFE95 NAT/D/000070) Beneficiary: Thüringer Ministerium für Landwirtschaft Naturschutz und Umwelt Contact: Mr Uwe Spangenberg Tel. (49-361) 21 44 330 Fax (49-361) 21 44 750 Duration: 1 November 1995 to 1 January 1999 Total budget: EUR 1 151 200 LIFE contribution: EUR 575 600 (50 %)	The planned establishment of a national park in the Hainich to preserve the beech forests and the succession zones, could at the same time offer the local communities promising opportunities and could function as a catalyst for economic development. The LIFE project's principal task is therefore to draw up a management plan which, besides the usual planning aspects, will also grapple with social and economic issues, that is, how the planned national park can contribute to the local economy. To gain the support of the local inhabitants, the management planning work will be accompanied during the project by intensive public relations work, in particular through exchanges with mayors and other representatives of communities located in existing national parks elsewhere. The Hainich zone covers 20 000 hectares of a mainly forested ridge in the Thuringian Basin, over which almost no roads run and which boasts the largest coherent deciduous wood in Thuringia. Two recently-abandoned Red Army military training areas have become a showcase for undisturbed ecological succession from bare ground to deciduous forest; with their total surface area of 8 000 hectares they are the most extensive sites in Germany where succession towards a beech forest can be observed. Other curiosities in the Hainich are the 4 000 hectares of 'Plenterwälder' (forests shaped by centuries of traditional selective logging) and 25 hectares of juniper heathland. Because the area lay near the borders of the GDR, it remained relatively undisturbed, but since the Wall came down it has been under constant threat from infrastructure development plans. As in many other parts of eastern Germany, local unemployment is very high, so that decision-makers are putting all their efforts into working out concepts for the economic revival of the district.
Country: Greece Conservation and management of Mainalo Mountain (LIFE99 NAT/GR/006481) Conservation and management of Mainalo Mountain Beneficiary: Arcadia SA — Development Agency of ArcPref Eleftheriou Venizelou, 34 22100 Tripolis, Ellas Contact: Mr Panayiotis Giannopoulos Tel. (30-71) 23 41 24 Fax (30-71) 23 42 09 E-mail: plan@tri.forthnet.gr Duration: 1 January 2000 to 1 January 2003 Total budget: EUR 1 418 515.68 LIFE contribution: EUR 709 257.84 (50 %)	The project aims to promote the legal protection, conservation and sustainable management of the region. One of the main measures is to design and implement a management plan that focuses on managing the black pine forests. The project also aims to reorganise the intensive silviculture by applying a forestry certification system (ISO 14000). Lastly, it plans to create an action plan for tourist access so as to help the local authorities succeed in drawing up a sustainable plan for their tourism activities. The specific protection and conservation measures include fencing off sensitive regions, managing vegetation and creating small lakes for the amphibian populations. It is also planned to limit access to some forest tracks, maintain forest footpaths and set up an information centre and two kiosks. The awareness-raising actions include producing information brochures, posters and slides and organising seminars for forest ecosystem users. Mount Mainalo is in the centre of the Peloponnese and exemplifies a well-preserved natural and cultural heritage. It is composed of a vast natural forest area, Mediterranean-type thickets and alpine meadows, which are surrounded by a number of small villages of great historical and cultural interest. The geographic location of this region increases the mountain's ecological value, as Mount Mainalo forms a natural link between the massif of the northern Peloponnese and the mountains of the southern (Taigetos) and eastern (Parnonas) Peloponnese. Because of the value of the timber resources, the region is subject to major commercial silviculture and the construction of an extensive network of forest tracks. The habitats of the alpine meadows have the problem of overgrazing and are simultaneously threatened by the uncontrolled development of mountain tourism. These activities have the result of fragmenting and destroying the biotopes. Combined with the pressure caused by hunting and the illegal gathering of plants, this creates unfavourable conditions for the endemic plant species and fauna listed in Annex II to Directive 92/43/EEC. Despite the ecological importance of the region, no appropriate legal framework exists to protect its natural resources.

LIFE project data	*Project description*
Country: Italy Title: Integrated plan of action to protect two Natura 2000 sites (LIFE98 NAT/IT/005112) Beneficiary: Università degli Studi di Udine, Dip. di Scienze della Produzione Animale Via S. Mauro, 2 33010 Pagnacco (UD) Italia Contact: Mr Piero Susmel Tel. (39-432) 65 01 10 Fax (39-432) 66 06 14 E-mail: Piero.Susmel@dspa.uniud.it WWW-Page: http://www.uniud.it/dspa/ Duration: 1 January 1999 to 1 January 2002 Total budget: EUR 665 799.42 LIFE contribution: EUR 332 899.71 (50 %)	The project intends to introduce an integrated system of wildlife management and forest grazing to the two pSCIs which is to allow conservation to be combined with social and economic objectives. One of the first targets is to have the Tarvisio Forest designated SPA under the birds directive. Elaboration of a management plan will be accompanied by a series of actions geared towards the preservation of the 7 habitats and 14 species of Community interest occurring there. Bringing some order to tourism, elaborating a management plan for hunting and involving local interest groups in forestry and livestock management will, together with PR work, aim at reducing human pressure. Actions in the forestry sector, besides improving the habitats, will aim at maintaining and expanding populations of *Rosalia alpina*, *Lynx lynx*, *Canis l*upus, *Ursus arctos* and various bird species listed on Annex I to the birds directive. The Tarvisio forest, strategically located where the borders of Italy, Austria and Slovenia meet, is being used as a corridor by bears from these two countries to recolonise Italian habitats. Because the forest is also important for many bird species of Community interest, the site manager, the Ministry of Agricultural Policy, has launched the administrative procedure to have it designated SPA. The two pSCIs already present at the site display a very rich and heterogeneous vegetation: considerable tracts are covered in *Pinus nigra* forests, mixed beechwoods, Alpine calcareous grasslands, Alpine and subalpine heaths and Nardus grasslands. Besides the brown bear, other priority species such as the wolf and the *Rosalia alpina* beetle occur. Summer and winter tourism is the main human impact, and it is often disorganised, taking no account of the forest's equilibria and the biological cycles of wildlife. As well as tourism, hunting is popular, and is directed with particular intensity at ungulates and at game birds. The abandonment or modification of traditional forest grazing means that the meadows are shrinking and the typical creatures of the forest environment are declining.
Country: Italy Title: Valgrande Wilderness (LIFE95 NAT/IT/000764) Beneficiary: Ente Parco Nazionale Valgrande Villa S. Remigo, Via S. Remigo 28922 Verbania Pallanza (VB) Contact: Ms. Franca Olmi Tel. (39-323) 55 79 60 Fax (39-323) 55 63 97 E-mail: parco.nazionale.valgrande@comunic.it www: http://www.parks.it Duration: 1 January 1995 to 1 January 1999 Total budget: EUR 228 800 LIFE contribution: EUR 114 400 (50 %)	Through LIFE, the EC will provide the necessary support to elaborate the management plans which follow from these strategic priorities. Specifically, plans will be drawn up for forest management, controlled access to the park, wildlife management, land use and the ecological management of the park.. The park will set up a geographic information system (GIS) in collaboration with the regional and national authorities, which will allow networking with the databases of these bodies, in order to keep tabs on the development of the plans and to promote their implementation. Public awareness campaigns will also be launched to inform and involve the local population in creating conditions for a sustainable development of the entire wilderness area. The Valgrande in Piedmont is one of the most important wilderness areas left in the Alps, where there are only a few roads open to traffic, economic activity is very limited and tourist infrastructure is non-existent. Within the Valgrande is a 12 000 hectare national park which in turn encompasses a 3 400 hectare SPA boasting numerous habitats and species listed in the annexes to Directives 79/409/EEC and 92/43/EEC, including priority habitats such as species-rich Nardus grasslands and active raised bogs, as well as siliceous screes. The Valgrande national park was established in 1993 and the two top priorities of its management board, appointed this year, are developing methods to prevent and fight the numerous fires which break out here and to tackle the negative impacts brought on by unregulated tourist access.

LIFE project data	*Project description*
Country: Sweden Demonstration of methods to monitor sustainable forestry (LIFE98 ENV/S/000478) Beneficiary: Skogsstyrelsen, 551 83 Jönköping, Sverige Contact: Mr Erik Sollander Tel. (46-36) 15 57 27 Fax (46-36) 16 61 70 E-mail: erik.sollander@svo.se www: http://www.svo.se Duration: 1 July 1998 to 1 January 2002 Total budget: EUR 1 950 071.29 LIFE contribution: EUR 968 337 79 (49.66 %)	The project will demonstrate and compare methods to monitor all aspects of sustainable forestry in Sweden, France, Denmark, Germany and Finland. Gap analyses relating to the pan-European process on the protection of forests will show the need to develop methods. New methods will be developed and existing methods adapted, and relevant methods will be tested in demonstration areas: the result will support the work on sustainable forestry of the European countries. The project addresses the need for effective assessment of sustainability of forestry. Almost every European country has revised its forestry policy in recent years. The project will demonstrate means of monitoring the sustainability of forestry, which reflect new state-of-the-art methods. The Swedish National Board of Forestry is the lead agency. The partners are the Danish Forest and Landscape Research Institute; the Forestry Development Centre TAPIO, Finland; the Institut pour le Développement Forestier and, CEMAGREF, France; the Niedersächsische Forstliche Versuchsanstalt, Germany; and the Swedish Environmental Protection Agency. Six pan-European criteria and quantitative indicators for sustainable forestry form the basis for the work. Phase 1 includes national analyses of how existing monitoring methods fulfil the needs to assess the criteria. This exercise will also be used to identify the need for further indicators. In Phase 2, each country will assess the selected indicators in the demonstration areas. Appropriate organisations will be invited to participate in this process. Special emphasis will be put on validity, accuracy and cost-effectiveness of the methods. The national experiences will be continuously compared and exchanged. Each partner will disseminate the results within its country. The dissemination to other countries will include workshops. The French partners will invite Belgium, Luxembourg and the Mediterranean countries. Niedersachsen will invite the other German states and Austria. The Danes will invite the UK, Ireland and the Netherlands. Finland and Sweden will invite the Baltic States and Norway. Sweden will arrange the initiation workshop and Finland will arrange the concluding workshop. The latter workshop includes an evaluation of the strengths and weaknesses of the methods.
Country: Sweden Title: Protection of western taiga in Svealand and Götaland (LIFE98 NAT/S/005369) Beneficiary: Swedish Environmental Protection Agency (SEPA) Contact: Ms. Christina Lindhal Tel. (46-8) 698 14 09 Fax (46-8) 698 10 42 E-mail: christina.lindhal@environ.se Duration: 1 February 1998 to 1 July 2002 Total budget: EUR 4 007 959.68 LIFE contribution: EUR 2 003 979.84 (50 %)	Western taiga is a priority habitat that only exists in Sweden and Finland within the Community. Characterised by their complex composition of both young and old trees of deciduous and coniferous species, these virgin forests are extremely rich in biological terms, providing habitats for many threatened species of animals and plants. The dead wood, in particular, plays a central role in maintaining this high conservation value and its scarcity is one of the most serious threats to biodiversity. Much of this richness is due to the fact that the forests have had little or no intervention over hundreds of years, other than naturally occuring fires. Today much of the original natural forest has been harvested and replaced with monocultures. It is estimated that only appoximately 3 % remains of the original western taiga and this is under constant threat from commercial forestry. It is for this reason that the habitat type is considered a priority for conservation under the habitats directive and why the Swedish Environment Protection Agency has initiated a nationwide programme for its conservation. The great biological resources represented in the remaining western taiga sites cannot be protected without extensive restrictions on commercial forestry. Thus, purchase of land or compensation to landowners is the only truly effective means of obtaining its long-term preservation. The project targets seven of the best remaining coniferous forest areas (69 to 992 hectares) in south and central Sweden. Once purchased, the areas will be left to develop naturally, but burning in order to restore conditions for species favoured by fire is planned for two sub-areas of forestry affected. Together with the other two projects agreed for western taiga conservation in Sweden this year, the present project should make a significant contribution to the long-term conservation of the habitat type in the EU.

LIFE project data	*Project description*
Country: United Kingdom Title: Securing Natura 2000 objectives in the New Forest (LIFE97 NAT/UK/004242) Beneficiary: Hampshire County Council The Castle, Winchester, Hampshire SO23 8UE United Kingdom Contact: Mr Tim Greenwood Tel. (44-1962) 84 18 41 Fax (44-1962) 84 67 76 E-mail: plantg@hants.gov.uk Duration: 1 February 1997 to 1 October 2001 Total budget: EUR 7 488 389.67 LIFE contribution: EUR 3 744 911.76 (50.01 %)	A powerful consortium of organisations — from graziers and foresters to conservationists — has put together an ambitious programme to undertake a wide range of habitat management and restoration measures designed to tackle the key threats to the New Forest. The main targets are to produce a management plan to cover the entire pSCI; to increase the land owned and managed for nature conservation purposes; and to restore 4 000 hectares of the pSCI habitats to favourable conservation status. Much of the habitat restoration work will involve clearance of rhododendron, removal of planted and invasive conifers, introducing traditional broadleaved woodland management (like pollarding), and repairing/controlling erosion. One of the most innovative elements of the project is the action to secure the long-term viability of grazing animals in the New Forest. Since much of the nature conservation interest is bound up with traditional grazing practices — ponies, cattle and pigs — it is important that these should not decline. New Forest pony grazing is thought to be most at risk and project activities will focus on stock improvement through incentive payments linked to competitions and stock management by pony owners. Originally created as a hunting forest by William the Conqueror in the 11th century (hence its name) the 'New' Forest is an extensive site covering nearly 300 km^2. It is probably best known as an area of ancient woodland and swathes of 'open forest' grazed by roaming herds of New Forest ponies. Its EU nature conservation interest lies in the nine habitat types (including three priority ones) and two species of the habitats directive and the five Annex I birds directive species it supports. Situated in the densely populated south of England, the New Forest is a magnet to visitors — estimated at 16 million annually. This popularity brings with it problems: recreational pressure causes erosion and disturbance. Afforestation with non-indigenous species leaves a legacy of conifer plantations that are out of keeping with the natural character of the area. Other invasive species like bracken and rhododendron all threaten its integrity.

8.3. Leader + and Interreg III examples

LEADER + and Interreg are Community initiatives to enhance sustainable development in rural and cross-border areas. When combining nature conservation and economic objectives in the field of forestry, LEADER + projects could be used as one possibility for financing innovative approaches to management of Natura 2000 sites (See website reference in footnote in Section 8.3.4).

The LEADER group of Garfagnana in the Tuscany region/Italy has implemented a series of projects in the field of forest management with the aim of protecting the environment and creating jobs. In parallel with the introduction of, and experimentation with, ecological forest management in the zone, and based on training programmes, other 'eco-forestry' activities have been carried out: experimenting with new machines which are better adapted to forest exploitation in mountains and, above all, cultivating native plant species used to restore/reafforest a natural environment severely damaged by erosion and flooding.

Key-elements:

- accredited training for forest workers and the unemployed, in order to reinforce the role of a sector essential to local employment and in order to restore a damaged or fragile environment;
- spreading of good practice in the field of recovery of land and vegetation damaged by erosion and flooding;
- specialisation of a forest nursery in the culture of native forest species.

Several other Leader+ projects have worked on small-scale marketing and processing of forest products.

8.4. Rural development plans and forestry

Giving complete information about the forestry elements in the rural development plans for the present budgetary period has proven to be a task that surpasses the scope of this document because of the sheer magnitude of research needed, the complexity of the programmes and the fact that many of the first reports on projects that started from 2001 onwards still have to come in.

A very interesting attempt to present a synthesis of the current state of forest-related activities that are part of rural development programmes is currently being undertaken in the UK by the Universities of Gloucestershire and of Exeter in collaboration with the Institute for European Environmental Policy (IEEP). A team directed by Prof. H. Buller and Prof. M. Winter has presented a report that compares the RDPs of several Member States and presents an overview of their forestry components. This work was commissioned by the UK Forestry Commission and the Great Britain Countryside Agencies' Land Use Policy Group and will be available on www.forestry.gov.uk).

8.5. Pro Silva: practical close-to-nature forestry

Pro Silva is a European federation of foresters who advocate a type of forest management which has been called 'continuous cover forestry'.

Pro Silva supports the implementation of such management in the following ways:

- exchange of information within regional working groups;
- establishment of demonstration forests;
- meetings and excursions in demonstration forests;
- cooperation with educational and scientific institutions, and other bodies.

Pro Silva forestry principles

Pro Silva promotes forest management which optimises maintenance, conservation and use of forest ecosystems in such a way that the ecological and socioeconomic functions are sustainable and profitable while delivering four categories of benefits to society:

1. Conservation of ecosystems

However society may wish to use forests, the vitality and interrelation of lifeforms within the forest ecosystem is seen as the foundation for all the other forest functions. The preservation, and if necessary the restoration, of the ecosystem is therefore the main priority.

Pro Silva recommends the following methods to allow forest ecosystems to function:

- paying careful attention to (that is, maintaining or restoring) the natural forest vegetation pattern, while making use of the forest;
- maintenance of soil productivity, through continuous cover and through the maintenance of biomass in the forest (including dead wood);
- propagation of mixed forests with special attention to rare and endangered species;
- restricting the use of exotic tree species to cases where this is an economic necessity, and if they can be mixed with the indigenous vegetation pattern within certain limits;
- in special cases, forgo any harvest.

2. Protection

Pro Silva considers the following methods essential to achieve the benefits from the protective functions of forests:

- adopt a holistic approach involving perpetual forest cover;
- achieve specific biological protective functions by specific measures, for example, limits on exploitation, use of exotics, fertiliser, harvesting methods, drainage, etc.;
- establish a regional network of protected forest areas of various kinds, including some non-intervention areas.

3. Production

Pro Silva supports the management of forests and the use of renewable resources such as timber and other forest products.

As methods for achieving a functional production forest, PRO Silva recommends:

- continuous forest cover to protect soil productivity;
- adding value by selection felling and tending at all stages of development;
- maintaining growing stock at an optimal level;
- working towards a balance between increment and harvesting in each management unit;
- paying attention to the function of every single tree in tending and harvesting;
- avoidance of clearcuts and other methods which destroy forest continuity;
- abolition of rotation age as the instrument for determining when a tree should be cut;
- spontaneous forest renewal and forest development, through single tree harvesting and group harvesting with long regeneration periods;
- harvesting methods which do not harm the soil or the stand;
- minimising the use of additional materials (fertilisers, plant protection materials);
- limiting game density to levels which are in balance with the carrying capacity;

4. Recreation, amenity, and cultural aspects

Pro Silva recognises the increasing importance of forests for physical and mental health, especially in densely populated countries in Europe.

Pro Silva recommends the following methods for developing the recreational function of forests:

- giving priority to quiet forms of recreation, by providing appropriate trails and other facilities;
- in so far as is needed, the concentration of recreational facilities in specific zones;
- encouraging attractive trees, groves and other special features;
- maintenance and creation of attractive forests by varied forest structures;
- establishment of non-intervention areas where nature is left to follow its course;
- maintenance of forest meadows, valleys, rocky outcrops, water courses, views, etc.

In the light of the above, it is self explanatory that forest management according to Pro Silva principles and Natura 2000 designation can be quite compatible.

A considerable number of public and private forest owners have adopted Pro Silva principles as the basis for the management of their forest estate.

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8.6. Conservation easements: the American way

A 'conservation easement' is a legal tool which is commonly used in the USA to maintain land in an undeveloped state by a voluntary agreement between a property owner and a qualified organisation, such as a land trust or a government department. The agreement limits the activities and uses that can take place on the property in exchange for compensations to the landowners. Property owners can give up rights to their property in a selective way and the easement may apply only to part of a property. Usually, a third party is responsible for monitoring the property to ensure that the terms of the agreement are being respected. In any case, the owner retains full entitlement to the land and can sell his property when and to whom he wishes, although the easements have a long-term or perpetual validity and are recorded in the land registry.

This system of compensation for income foregone and capital depreciation has proven to be an effective shield against 'urban sprawl' and has resulted in the preservation of 'working forests' in areas of high biodiversity in many states of the USA. Conservation easements can be purchased by government programmes, with the costs borne by nature protection budgets, or by private foundations with all types of co-financing between public and private funding. An instrument of this kind allows effective cooperation between the public sector and many foundations, corporations, NGOs and individual owner families, without disrupting social structures in rural areas.

Information: Society of Amercan Foresters (SAF) — April/May and June/July 2002 issues of Journal of Forestry on http://www.safnet.org/pubs/periodicals.html

8.7. A look down under: nature protection on private land in Tasmania

In order to establish a system of protected areas that is truly representative of the country's enormously diverse natural heritage, the Australian government has established a system of 'conservation covenants' with private landowners that complements public protected areas. Under these contractual agreements, which are established on a voluntary basis, the owners of sites that have a scientifically recognised conservation value can be financially rewarded for not developing their land further, accepting restrictions on economic use or carrying out biotope management work on it.

The regional administration of Tasmania submitted the following description of procedural steps for participation in its 'private forest reserve programme':

1. Contacts between landowners and the programme to initiate an assessment process.
2. A conservation officer visits the site(s), explains the programme's dues and rewards and draws up an assessment of the conservation resources.
3. Using the assessment information, an independent scientific advisory group makes a recommendation about the potential for inclusion of the property in the private forest reserve system.
4. In the case of a positive recommendation, a negotiator is appointed to work out an agreement that suits all parties.
5. An advisory committee considers proposals for agreements that have been negotiated and recommends them for a financing decision at ministerial level.

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Silsombos Fraxinetum 032001 a/G. Raeymaekers

9. General conclusions about forestry on Natura 2000 sites

Pro-active involvement of forest owners and practitioners in discussions on all levels is a prerequisite to preserving the multi-functionality of forestry on Natura 2000 sites. While there is no intention to block all economic activities on Natura 2000 sites, the economic function of forests, usually the highest priority in forest management, will have to be adapted according to the requirements of the ecological function and the conservation of biodiversity on most Natura 2000 forest sites.

This may call for changes in current forest management practices, either by finding new and additional sources of income to continue a traditional form of management, whose profitability is in decline, or by increasing incentives to use forest products obtained by conservation-based management as a substitute for non-renewable, more polluting and more energy-intensive materials. Finding a balance between the potential for local development based on conservation of landscapes, nature, local cultures and global environmental objectives is not impossible. As most of the regions of great natural interest are catalogued as economically underprivileged it would be a mistake to insist that they should compete with intensive forms of land use. If such areas are to find a competitive advantage, it is necessary to look for a differentiating factor, such as 'quality'.

This quality exists, because Natura 2000 sites are areas where, thanks to the outstanding natural resources, goods and services of high environmental and cultural quality can (continue to) be produced, if possible by applying the integrative concept of SFM that does not consider ecological requirements in isolation from other forest functions but aims to unite economic, ecological and social benefits. This also entails increased efforts towards public relations work on the part of foresters and forest owners' associations, to show society that, if biodiversity conservation commitments are to be met, producing modern commodities with the sustainable methods of the past may sometimes be the most appropriate option for the future.

Silsombos Fraxinetum 032001 c/G. Raeymaekers

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11.
Useful Internet links

Topic	Institution/agency/NGO	Link
Access to information on environmental issues	United Nations Economic Commission for Europe	http://www.unece.org/env/pp/
Bern Convention	Council of Europe	http://www.nature.coe.int
Biodiversity — clearing house mechanism	European Environment Agency	http://biodiversity-chm.eea.eu.int
Birds directive — text	Directorate-General for the Environment	http://www.europa.eu.int/comm/environment/nature/legis.htm
Convention on Biological Diversity	CBD Secretariat	http://www.biodiv.org
Environmental protection in Europe	EEB — European Environmental Bureau	http://www.eeb.org/Index.htm
EU clearing house mechanism on biodiversity	European Environment Agency	http://biodiversity-chm.eea.eu.int
European nature conservation journals and publications	European Centre for Nature Conservation	http://www.ecnc.nl/
Forest management certification	PEFC — Pan-European Forest Certification	http://www.pefc.org/
Forest management certification	FSC — Forest Stewardship Council	http://www.fscoax.org/
Forest management certification comparative matrix	CEPI — Confederation of European Paper Industries	http://www.cepi.org/htdocs/newsletters/
Forest resources	European Forest Institute	http://www.efi.fi
Forest resources	United Nations Economic Committee for Europe — Timber Section	http://www.unece.org/trade/timber/Welcome.html
Forests and biodiversity — research on indicators	BEAR project	http://www.algonet.se/~bear
Funding nature conservation	Institute for European Environmental Policy	http://www.ieep.org.uk/eufunds.html
Glossary of international terms of natural forests and natural forest research	EFI — European Forest Institute (COST E4, 1999)	http://www.efi.fi/Database_Gateway/FRRN/howto/glossary.html..
Habitats directive — text	Directorate-General for the Environment	http://www.europa.eu.int/comm/environment/nature/legis.htm
Indicators for forest biodiversity in Europe	BEAR project	http://www.algonet.se/~bear/
International Conservation of Biodiversity	World Wide Fund for Nature	http://www.wwf.org/
Legal texts of European nature conservation legislation	Directorate-General for the Environment	http://europa.eu.int/comm/environment/nature/natura.htm

Topic	*Institution/agency/NGO*	*Link*
LIFE programme	Directorate-General for the Environment	http://www.europa.eu.int/comm/life/home.htm
Managing the European natural heritage	Eurosite	http://www.eurosite-nature.org/
Ministerial Conference on the Protection of Forests in Europe	MCPFE Liaison Unit Vienna	http://www.mcpfe.org/
Monitoring the EU forest policy activities	Fern (NGO)	http://www.fern.org/
National forest programmes	FAO	http://www.fao.org/forestry/foda/infonote/infont-e.stm
Nature conservation in Europe	WWF European Policy Office	http://www.panda.org/resources/programmes/epo/
Nature conservation in Europe	IUCN — The World Conservation Union	http://www.iucn-ero.nl/eng_working_in_europe.htm
Regional policy in Europe and administration of Structural Funds	Regional Policy DG	http://europa.eu.int/comm/dgs/regional_policy/index_en.htm
Research	Joint Research Centre of the European Commission	http://www.jrc.org/
Research on forestry and agriculture	Research DG	http://www.europa.eu.int/comm/research/quality-of-life/ka5/
Research on forestry and agriculture	Research DG	http://www.europa.eu.int/comm/research/agro/fair/en/index.html
Rural development in Europe and LEADER II initiative	LEADER Community initiative	http://www.rural-europe.aeidl.be/
State of the World's Forests Report 2001	Food and Agricultural Organisation of the United Nations	http://www.fao.org/docrep/003/y0900e/y0900e00.htm
Studies on financing nature conservation and rural development	Institute for European Environmental Policy	http://www.ieep.org.uk/
Text of the Convention on Biological Diversity	Earth Summit 2002	http://www.earthsummit2002.org/toolkits/women/un-doku/otherun/biodivtext.htm

Annex I: General information about forests and forestry

1. Global forest condition

Forests cover about 3 870 million hectares, or 30 % of the earth's land area. Tropical and subtropical forests comprise 56 % of the world's forests, while temperate and boreal forests account for 44 % (FAO, 2001).

Together, tropical, temperate and boreal forests offer a multitude of habitats for plants, animals and micro-organisms, holding the vast majority of the world's terrestrial species. Forest organisms provide a wide array of goods and services, from timber and non-timber forest products to playing an important role in mitigating climate change as carbon sinks. At the same time, forests provide livelihoods and jobs for hundreds of millions of people worldwide. Forest biological diversity also has an important economic, social and cultural role in the lives of many indigenous and local communities. Forests are therefore essential for the protection of global biodiversity (Kapos and Iremonger, 1998).

In the last 8 000 years about 45 % of the Earth's original forest cover has disappeared, cleared mostly during the past century. This process of global deforestation continues at an unprecedented rate (FAO, 2001), so that numerous species of plants and animals have already vanished forever together with their forest habitats. Between 1990 and 2000, another estimated 5 % of the world's forest cover was lost, at a rate of around 14 million hectares per year. Deforestation is mainly taking place in tropical forests, which present the most valuable reservoir for biodiversity and have important functions for the world's climate, and in boreal forests, which regenerate very slowly.

The EU has been one of the dominant actors in the international discussion on forests. It is working to halt global deforestation and to reach sustainable forest management (SFM) through cooperation in all global policy processes, such as:

- the UNCED follow-up process (for example, the United Nations Forum on Forests and preceding fora IPF and IFF);
- the Convention on Biological Diversity (CBD) and its recently adopted 'expanded programme of work on forest biodiversity'

- development policies which take into account environmental constraints;
- integrating environmental protection in new procurement rules in favour of wood products from sustainable sources ('green procurement').

2. Forests in the European Union

The EU and its Member States have chosen to act responsibly with regard to one of the main ecological challenges of our time, the preservation and the sustainable management of forests, by approving ([31]) in 1998 a forest strategy for the European Union, proposed by the Commission ([32]).

The strong European influence on the international forest policy debate puts an increasing responsibility on EU countries to serve as a role model for forest protection and sustainable forest management. In this context, the successful establishment of Natura 2000 along with other initiatives, for example the national forest programmes and the application of the resolutions of the Ministerial Conference on the Protection of Forests in Europe (MCPFE), are important achievements for the EU at international level.

Socioeconomic importance of European forests

Forests and forestry in the European Union are characterised by a wide variety of climatic, geographic, ecological as well as socioeconomic conditions. About 70 % of the forest area is located in four countries: Finland, France, Germany and Sweden. Nevertheless, the largest potential for preserving and restoring forest biodiversity lies in the south of Europe. The Mediterrenean biogeographical region has an amazing number of 30 000 vascular plants, of which over 10 000 are exclusively regional, making it one of richest areas concerning endemism.

Forestry is an important economic factor in Europe: forestry and forest industries employ about 2.2 million people. The total amount of industrial roundwood produced in the EU per year was 226 million cubic metres in 1998 (FAO, 2001). Sweden, Finland, Germany, France and Austria are among the world's top 10 exporters of forest products. Nevertheless, an increasing part of European exploitable forests tend to be underutilised and a general phenomenon of forest biomass build-up has been noticed. Actually, annual growth exceeds harvests, and thus very densely stocked forest stands are prevailing in many EU countries (e.g. DFWR, 2001). The sustainable use of European forest resources, taking into account economic, social and ecological objectives like biodiversity protection, should therefore be maintained and even strengthened and the consequences in terms of management considered on a site-specific basis if Natura 2000 areas are affected.

There are approximately 12 million forest owners in the EU today, with an average ownership of less than five hectares of forest. Ownership, however, varies widely within the Community. In Greece and Ireland, the State owns about two thirds of forest lands, while in Belgium, Spain, Italy, Luxembourg, France and Germany, local communities play an important role as forest owners. The forest area per capita is 0.3 hectares on EU average, but again varying widely between Member States.

Forest cover in the EU is actually rising, *not only* through afforestation programmes co-financed by the EU (1 million hectares since 1991) but even more as a result of natural succession on abandoned land that was mostly grazed in the past (IDF, 2001), and it has reached over one third of EU land cover (FAO, 2001). Although this trend is generally viewed as positive, there are some issues that give rise to concern. The fact that afforestation, often with exotic species, tends to be restricted to poor soils and marginal areas endangers some key habitats of open landscapes, while it goes along with a trend of intensification and further specialisation on the remaining agricultural land (EEA, 2001). Partly for this reason, significant new afforestation projects which may impact on existing (semi-)natural open landscapes should generally undergo an environmental impact assessment before they can be approved.

([31]) Council resolution of 15 December 1998, OJ C 56/1, 26.9.1999.
([32]) COM(1998) 649 final of 3 November 1998, transmitted to Council, not published.

The rise in forest area also conceals the fact that some of the last pristine forests in Europe, usually rich in biodiversity and endangered species, are still threatened to be replaced by intensively managed semi-natural forests or plantations (EEA, 1998). Moreover, preference for conifers over deciduous trees and of exotic species over the original species can have a negative impact on biodiversity even though the total forest area is increasing. Therefore it is the quality of the forest rather than the quantity that recent initiatives for nature conservation are focusing on.

Europe's recent forest history

Historical research shows that forests have had a fundamental importance as a basic resource for the progress of human settlement and for the creation of a civilised and prosperous Europe. Until the late 18th century, European forests were mainly seen as wild and uninviting realms of nature, and at the same time as inexhaustible sources of materials, fodder and energy at the ready disposal of the growing human population.

Many central European countries faced a sharp decline in their forest area starting in the 17th century, with devastating effects on forest resources reaching far into the 19th century. Only when wood as the main source of energy could be substituted by coal and later by oil, did the depletion of many of Europe's once heavily forested regions come to a halt. For various needs such as shipbuilding, mining, firewood and building material, salt production and production of charcoal and potash for glass, many forest areas had been logged completely, often without basic regards for sustainable yield. To make matters even worse, the same forests were often subject to poorly regulated and little supervised forms of primitive multi-functional use by rural populations enshrined in local 'user rights'. This led to the open landscapes consisting of forests degraded and impoverished by extensive grazing and diffuse gathering of forest products that appear on the first accurate landcover maps of the late 18th century as heaths or inland dune areas. The lack of clear forest ownership structures and extended periods of warfare spurred this development of general forest decline.

The turnaround for the diminished forest resources in many European countries came when the imminent threat of a timber shortage was recognised and forestry became a scientific profession, with higher education of foresters spreading across Europe. During the early 19th century, this led to the extension of the concept of foresters as 'guardians of the woods', which was originally restricted to the estates of Europe's high nobility, to a double function of managing and policing the national forest patrimonium as a whole, entrusted to self-standing forest administrations. As a result, the decline in forest resources was slowly reversed and vast regions were allowed to regenerate or were actively reforested. This trend further accelerated after 1850, when ever more abandoned agricultural land and disused pasture continued to be converted to forests. However, the main objectives of this forest recovery were the fast and efficient production of timber to supply growing markets and protection against erosion. This mostly led to the establishment of monocultures of conifers. Managed as even-aged plantations, these 'new forests' offered only little value for biodiversity, although some of them have become more diverse as a result of natural decay or human intervention.

Wood shortages occurred again in parts of Europe, on a smaller scale, after the first and the second world wars. Many areas that were devastated or had been logged during or shortly after the war years were replanted for timber production, to serve the demands of society at the time. Thus, in many parts of Europe, forests are characterised by relatively young, even-aged stands of few tree species, offering habitats only to a rather limited number of organisms.

These problems did not occur, or at least not to the same extent, in the vast forests of northern Europe nor in the inaccessible alpine areas and mountain regions of southern Europe, where relatively untouched forests and open multi-functional woodlands can still be found today. These areas represent the last remains of natural forests and traditional woodland use in Europe, and thus they are of extremely high scientific and ecological value. As the economic value of the old-growth timber is often equally high and as pressure for agricultural intensification continues to build up, commercial exploitation often collides with the interests of nature conservation in these areas.

Naturalness of European forests

The actual appearance of forests in Europe is the combined reflection of two fundamentally different phenomena (Falinski and Mortier, 1996) ([33]):

- a primary differentiation that occurred during the postglacial recovery by forest building species, starting during the Holocene geological period approximately 10 000 years ago, a process conditioned by climatic and soil factors;
- a secondary differentiation under the influence of human settlement which has modified forest cover and structure from the Neoliticum, starting 5 000 years ago.

A. The glaciations have left a considerable footprint on northern Europe, central Europe and the mountain regions, leading to a floristic north–south gradient that is still very characteristic today.

- Northern Europe's boreal forests are of most recent origin and have less plant species. Their establishment followed the regression of the ice-cap and the youngest formations, such as the oak-beech and beech-spruce forests of central Europe, only took shape some 5 000 years ago. Pioneer formations, such as the pine-birch forests already appeared much earlier.
- Southern Europe's forests are much older. Some of these formations have already existed for over 15 000 years and as they have been much less influenced by the glaciations, their number of species and the diversity of their floristic associations is much higher.

To this has to be added that the climatic west–east gradient from oceanic to continental influence also implies a decrease in richness of species and vegetation types.

B. The history of human settlement and its impact on forests also reflects a north–south gradient, with the oldest colonisation taking place in the south, starting from the Middle East towards Greece about 8 000 years ago and reaching Fennoscandia as recent as 2 500 years ago.

Human influence first produced fragmentation of forest cover in the plains and has further reduced it categorically to conquer space for agriculture, to open pastures and to meet energy needs. The older the colonisation process, the more its consequences are visible in the present-day landscape. As a result, the high forest cover in Fennoscandia and the large forest complexes in central Europe that exist today are in stark contrast with the situation down in the south-west. In France, forest cover was estimated at around 80 % at the dawn of the Roman conquest, whereas it was down to 15 % by 1800 and has risen again to over 30 % today. In Fennoscandia, slash and burn cultivation had an important impact until the 19th century, but considerably more closed forest cover developed after its abandonment.

The most important impacts of human activities on forest biodiversity are the following:

- harvesting of trees before they reach physiological maturity and potential age, resulting in a decrease of species associated with old and decaying specimens;
- clearing of alluvial forests for pasture, change in composition of alluvial forests after alteration of hydrological conditions in swamp forests;
- modification of tree species composition and vertical structure by silvicultural interventions;
- establishment of formations that do not occur naturally, such as fruit-bearing stands of selected species, coppice, coppice and standards, wicker cultivation, agro-forestry systems, etc., often leading to the development of associated biodiversity linked to continued human interference in natural succession processes;
- drainage of peat soils and humid forests to accelerate tree growth;
- construction of timber road networks in wilderness areas;
- reforestation of abandoned agricultural lands and formerly grazed environments.

It has to be understood that these individual factors

([33]) This section is largely based on a publication by the authors mentioned in a special edition of *Revue forestière française* (XLVIII); which itself refers to ample literature on the subject. To a lesser extent, the work of Noirfalise on the Corine vegetation cover definitions was also taken into account.

did not necessarily occur side by side but that they may have had simultaneous or subsequent influences, which have also produced synergetic effects on specific locations.

From the above, it can be concluded that biological diversity and the naturalness of European forests have been influenced to a varying degree by human activities for a very long time and that natural or 'virgin' forests have become absolutely rare throughout Europe and even more so in the EU. Indeed, if the primary and secondary differentiation influencing forest composition and structure were put together in a matrix-like grid of crossing influences, this would result in an infinite number of possible situations, whereby in general it can be concluded that those sites with the highest biodiversity, especially on fertile soils, are probably the ones that have undergone the most intense change, as they proved to be most interesting for human settlement. Very little untouched forest is left, totally artificial forest is not really abundant and the largest part of Europe's forest can be called semi-natural (for example, Anglo-Saxon literature) or subnatural (for example, French-Swiss literature). Thereby the distinction between natural and semi-natural forests is often difficult to establish because past human influence can lead to many combinations of natural and human influences. Among those forests which are considered to be semi-natural today, one can find plantations with and natural regeneration of indigenous species on agricultural land that was abandoned over 100 years ago, natural forests of which the authentic herbaceous layer was nearly completely degraded by grazing and export of litter, natural forests which have been 'enriched' with exotic species that have regenerated spontaneously, etc.

There also exists confusion between naturalness, meaning absence of human influence, and biodiversity, meaning species and structural richness. Indiscriminate mixing of such concepts has led to mythical visions of what could or should be the aspect of the 'original', 'ancient' or 'primeval' forest, which are sometimes put forward as a management objective for protected areas.

Keeping this in mind the habitats that are listed for their community importance in Annex I to the habitats directive can be divided into three functional groups (Barbier, 2000):

- habitats which occur in environments that have always been marginal in economic terms and were never colonised by man, such as riverine formations, dune areas, wet pockets in forests and active bogs;
- little anthropised climax habitats, such as certain oak forests, beech forests and natural spruce forests, which have been exploited for timber and kept in a stable condition by management of the indigenous species;
- habitats which are mainly man-made landscapes or their transition to the climax vegetation, such as heaths, wooded bogs, open (grazed) woodlands, natural grasslands or pastures.

This leads to the conclusion that there is too little conclusive evidence to determine, with a reasonable degree of confidence, what would have been the exact composition of potential natural vegetation cover on any given spot in Europe and that, in many cases, the continuation of human intervention is absolutely essential to habitat conservation.

ENV-Medittерenean forest2 P. sylvestris nevadensis/A. Gutierrez

Annex II: The framework for biodiversity protection in Europe

1. The birds directive

Directive 79/409/EC, known as 'the birds directive', was adopted in 1979 and its main provision is the obligation for EU Member States to designate special protection areas ('SPAs') for a series of listed birds whose conservation status is threatened and for migratory birds in general. A second important feature of this directive is that it sets common baseline rules for hunting and trading of birds in all Member States.

2. The Bern Convention

The Convention on the Conservation of European Wildlife and Natural Habitats, often referred to as the 'Bern Convention', was agreed at the Council of Europe in 1979 and entered into force in the EU in June 1982. It is one of the oldest international agreements on biodiversity protection but its signatory parties are not tied by mandatory implementation provisions.

The Bern Convention aims to ensure conservation of wild flora and fauna species and their habitats. Special attention is given to endangered and vulnerable species, including endangered and vulnerable migratory species specified in appendices. Altogether 44 States have ratified the Convention, ranging from Turkey to Iceland and from Ukraine to Morocco.

3. The habitats directive

Directive 92/43/EEC, known as the 'habitats directive' or the 'fauna, flora and habitats (FFH) directive', was adopted in 1992 as an implementation instrument of the Bern Convention for EU Member States. The aim of this directive is to contribute to the conservation of natural habitats and species of wild fauna and flora in the European territory of the Member States, taking account of economic, social and cultural requirements and regional and local characteristics. The protection of natural habitats and species listed in its annexes is ensured through the adoption and implementation of specific mea-

sures, such as the designation special areas of conservation (SACs) or the establishment of systems of strict protection for species of Community interest. This directive creates the Natura 2000 network and lays down rules for its establishment and operation.

4. The EU enlargement and the emerald network

The emerald network is the common tool for the protection of habitats under the Bern Convention in non-EU States that have ratified this convention. At the same time, the emerald network is an effective preparatory tool for EU candidate countries, as its areas of special conservation interest (ASCIs) will be used as a basis for the later adoption of special areas of conservation (SACs) as required by the habitats directive. As there will be no transition periods for the implementation of the habitats directive, those countries which have undertaken all necessary efforts to set up the emerald network will be in a good starting position for EU accession.

Many candidate countries can be proud of an exceptionally rich natural heritage. Eastern Europe is still rich in untouched river valley and forest complexes with complete food chains thanks to the presence of large carnivores. In Romania alone, an estimated 6 000 bears are still living in the wild — more than twice as many as in all other European Union Member States put together. At the same time, the fast rate of economic development in many of these countries is threatening this rich natural heritage, and it has to be ensured that economic development is carried out in a sustainable way.

As a part of the EU enlargement preparations, technical consultations to adapt the annexes of the birds directive and of the habitats directive to the specific situation of habitats and species of conservation value in CEECs were concluded in 2001.

5. The Convention on Biological Diversity (CBD)

One of the key agreements adopted at the 1992 Earth Summit in Rio de Janeiro is the Convention on Biological Diversity (CBD). This pact among the majority of the world's governments sets out commitments for maintaining the world's natural heritage along with sustainable economic development. The Convention establishes three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources.

Some of the many issues dealt with under the CBD include:

- measures and incentives for the conservation and sustainable use of biological diversity;
- regulated access to genetic resources;
- access to and transfer of technology, including biotechnology;
- technical and scientific cooperation;
- impact assessment rules;
- education and public awareness raising.

The CBD has 186 parties, and 168 signatures at present. The European Community, as well as all individual Member States, has signed the Convention. The European Environment Agency in Copenhagen has set up a 'clearing-house mechanism for biodiversity' ([34]) to ensure optimal flow of information between European signatories.

At the sixth Conference of the Parties of the CBD in The Hague in April 2002, an 'expanded programme of work on forest biodiversity' was adopted. This programme sets out an ambitious series of objectives and activities which the contracting parties have committed themselves to reach, according to their own priorities. They include applying an ecosystem approach to the management of all types of forests and measures to improve protection, recovery and

([34]) A 'clearing-house' originally referred to a financial establishment where checks and bills are exchanged among member banks so that only the net balances need to be settled in cash. Today, its meaning has been extended to include any agency that brings together seekers and providers of goods, services or information, thus matching demand with supply. The EEA clearing-house website is: http://biodiversity-chm.eea.eu.int/

restoration of forest biodiversity by its sustainable use and important monitoring efforts.

6. The EU biodiversity action plans

To ensure that the protection of biodiversity plays a role in other important policy fields, Commission services have recently developed 'biodiversity action plans' for agriculture, fisheries conservation of natural resources and development and economic cooperation (COM/2001/0162 final). These plans set targets to be reached for the improvement of biodiversity protection and are to be adopted by the co-decision procedure of the European Parliament and the Council of the European Union.

The establishment of Natura 2000 is an important element of these action plans. Concerning forests, the biodiversity action plan for the conservation of natural resources sets the target that all forest types from Annex I to the habitats directive should be assessed as 'sufficiently represented' by 2002. This action plan calls also for a further integration of biodiversity supporting measures into programming documents under the Rural, Structural and Cohesion Funds and programmes relevant for third countries.

The adoption at the sixth COP of the CBD of the abovementioned 'expanded programme of work on forest biodiversity' may lead to more attention for forest-related elements in the existing EU biodiversity action plans.

7. National forest programmes

The purpose of national forest programmes (NFPs) is to establish a workable social and political framework for the conservation, management and sustainable development of all types of forests, which in turn will increase the effectiveness and efficiency of public and private operational commitments. They are an outcome of the follow-up process of the Rio Earth Summit in 1992 (UNCED) regarding forests.

- National forest programmes are guided by the elements and principles that were endorsed as proposals for action by the Ad hoc Intergovernmental Panel on Forests (IPF, 1997), established by the United Nations Commission on Sustainable Development.

More than 120 countries have developed or updated their national forest programmes during the past 15 years. The tangible results of these processes include new forestry policies and improved legislation, institutional reforms, redefinition of the role of the State in forestry development, decentralisation of forest management responsibilities, transfer of power to communities and local groups, greater transparency and participation in decision-making processes.

Biodiversity plays an important role in many national forest programmes, in accordance with the abovementioned international commitments. The funding of some of the Community support mechanisms is tied to a successful establishment of NFPs (that is, the support within the framework of Regulation (EC) No 1257/99 for the support of rural development).

8. The Ministerial Conference on the Protection of Forests in Europe (MCPFE)

The Ministerial Conference on the Protection of Forests in Europe (MCPFE) ([35]) is a major initiative of cooperation amongst European countries to contribute to the protection and sustainable management of their forests. It is shared by the more than 40 member countries of the Council of Europe and numerous observers to address threats and opportunities related to forests and forestry. This process is constituted by a chain of political-level conferences and seconded expert meetings for the follow-up work and brainstorming. The participating States are responsible for the national and regional implemen-

([35]) More information on the work of the MCPFE is available in the Internet at http://www.mcpfe.org or at the MCPFE Liaison Unit in Vienna, Marxergasse 2, A-1030 Vienna, Austria; Tel. (43-1) 710 77 02, Fax (43-1) 710 77 02 13, E-mail: liaison.unit@lu-vienna.at

tation of the recommendations made at the conferences. The discussions and exchanges between the conferences are called the 'MCPFE process', which is characterised by a joint approach of national forest administrations and civil society representatives.

The results of the MCPFE process are recommendations in the form of resolutions which are adopted at the ministerial conferences. So far, these have been held in Strasbourg (1990), Helsinki (1993) and Lisbon (1998) and have produced the following resolutions:

S1: European network of permanent sample plots for the monitoring of forest ecosystems

S2: Conservation of forest genetic resources

S3: Decentralised European databank on forest fires

S4: Adapting the management of mountainous forests to new environmental conditions

S5: Expansion of the Eurosilva network of research on tree physiology

S6: European network for research into forest ecosystems.

H1: General guidelines for the sustainable management of forests in Europe

H2: General guidelines for the conservation of the biodiversity of European forests

H3: Forestry cooperation with countries with economies in transition

H4: Strategies for a process of long-term adaptation of forests in Europe to climate change.

L1: People, forests and forestry: enhancement of the socioeconomic aspects of sustainable forest management

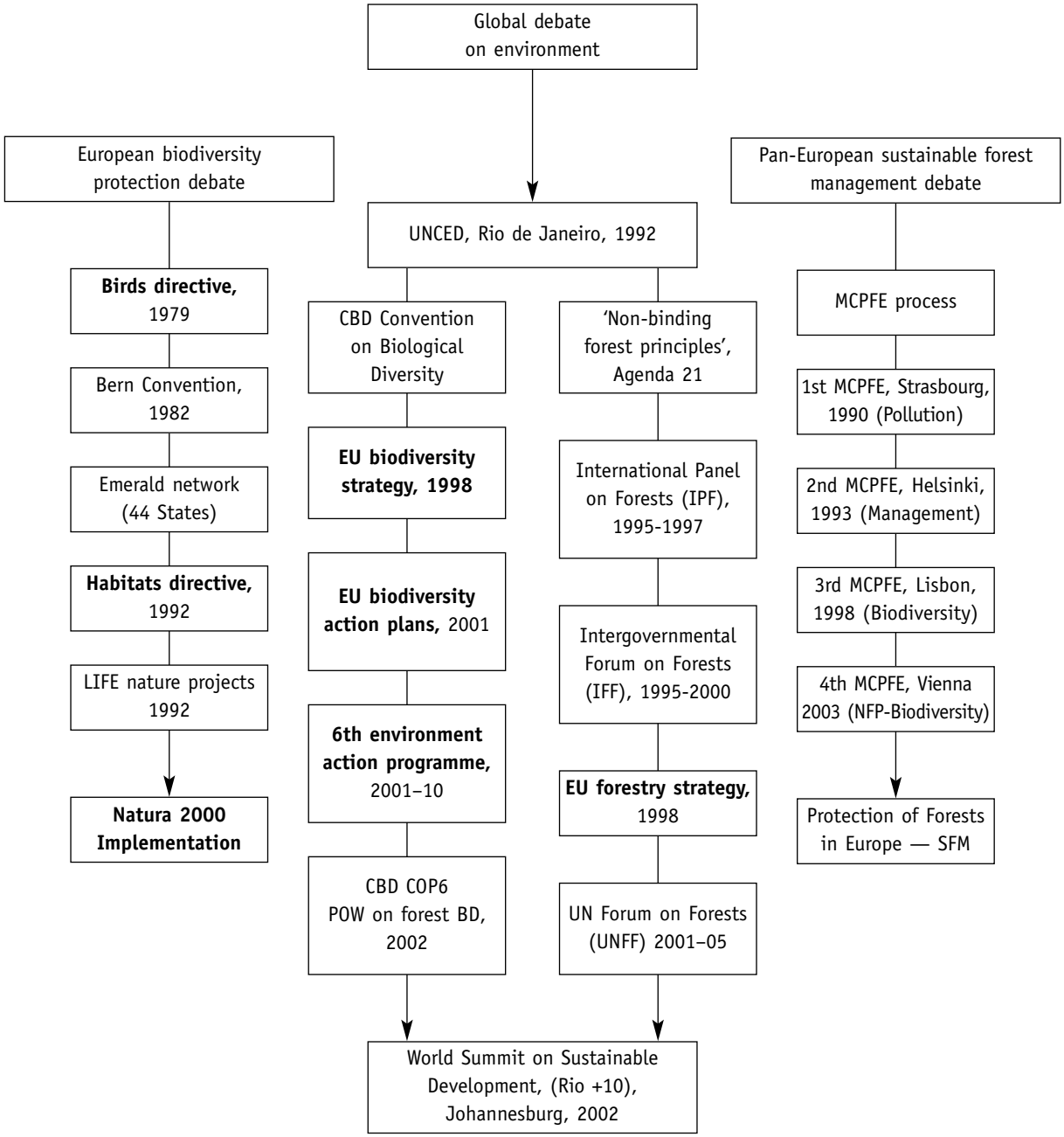
L2: Pan-European criteria, indicators and operational level guidelines for sustainable forest management.

The resolutions cover protection, conservation and sustainable development of Europe's forests and lay down guidelines for achieving those three objectives, including the implementation of objectives from the Convention on Biological Diversity. Because of the comprehensive nature of the resolutions, the European Parliament has emphasised the importance of this pan-European process in relation to the EU forestry strategy ([36]).

([36]) Cf. http://europa.eu.int/comm/agriculture/fore/comm/649_en.pdf

9. Overview of discussions on biodiversity protection and forest issues, 1992–2002

(EU instruments are in **BOLD** text)



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