

WORK-PROGRAMME

ON THE CONSERVATION AND ENHANCEMENT OF BIOLOGICAL AND LANDSCAPE DIVERSITY IN FOREST ECOSYSTEMS

1997-2000

Adopted at Expert-Level by the

Third Meeting of the Executive Bureau of the Pan-European Biological
and Landscape Diversity Strategy
20-21 November, 1997, Geneva, Switzerland

and by the

Fifth Expert Level Follow-Up Meeting of the Helsinki Conference and
Third Preparatory Meeting of the Lisbon Conference on the Protection
of Forests in Europe
8-9 December, 1997, Geneva, Switzerland

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Executive Summary

This document introduces the “Work-Programme on the Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems” for the period 1997-2000.

This work-programme is the onset of the co-operation of the Ministerial Conference “Protection of Forests in Europe” and that of “Environment for Europe”, conducted by the European Forestry Ministers and the Environment Ministers, respectively.

The first chapter gives a short description on both Ministerial Conferences, with a historic overview, institutional set-up and a summary of main achievements.

The work-programme is presented in the second chapter. It is structured under four objectives, which are based on the Helsinki Resolution H2 “General Guidelines for the Conservation of the Biodiversity of European Forests” and the objectives specified under Action Theme 9 “Forest Ecosystems” of the Pan-European Biological and Landscape Diversity Strategy. Eight actions were considered most important and urgent to fulfil the four objectives. Some existing initiatives and projects may well fall within the framework of the work-programme. However, for most of the proposed actions more detailed terms of reference will be prepared and possible actors identified.

This work-programme will be submitted for formal endorsement by the Ministerial Conferences in Lisbon and Århus in June 1998.

1. Synopsis of the Ministerial Processes

1.1. Ministerial Conference “Protection of Forests in Europe”

The first Ministerial Conference on the Protection of Forests in Europe, initiated by France and Finland, took place in Strasbourg in December 1990. The need for protection of forests in Europe was recognised the first time at the ministerial level, and the Ministers responsible for forests committed themselves to a progressive implementation of technical and scientific co-operation. The Conference adopted a General Declaration and six resolutions:

- S1 European Network of Permanent Sample Plots for Monitoring of Forest Ecosystems.
- S2 Conservation of Forest Genetic Resources.
- S3 Decentralised European Data Bank on Forest Fires.
- S4 Adapting the Management of Mountain Forests to New Environmental Conditions.
- S5 Expansion of the EUROSILVA Network of Research on Tree Physiology.
- S6 European Network for Research into Forest Ecosystems.

The follow-up process for each resolution was organised through an International Co-ordinator and a network of National Co-ordinators appointed by each Signatory State. A report on the progress achieved was published and presented at the Second Ministerial Conference in Helsinki in June 1993 (Report on the follow-up of the Strasbourg Resolutions).

At the Helsinki Conference, organised by Finland and Portugal, the Ministers responsible for forests made an assessment of the implementation of the Strasbourg resolutions, elaborated their future follow-up and adopted a General Declaration and four new resolutions:

- 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 Co-Operation with Countries with Economies in Transition.
- H4 Strategies for a Process of Long-term Adaptation of Forests in Europe to Climate Change.

Resolutions H1, H2 and H3 have been signed by 37 European countries and the European Community, and resolution H4 by 35 European countries and the European Community. The main decision making body of the process is the Expert Level Follow-

Up Meeting, which is held once a year and attended by the representatives of the Signatory States of the resolutions, and by observers from non-European countries, and from intergovernmental and non-governmental organisations.

The general guidance for the follow-up of the resolutions is on the responsibility of the co-chairman countries (Finland and Portugal) of the Helsinki Conference. As for the implementation of Strasbourg resolutions International and National Co-ordinators were appointed for each resolution. Taking into account the nature and the political relevance of the resolutions H1 and H2 the co-ordinating countries of the process (Portugal, Finland, Austria, Poland) are responsible for the co-ordination at the international level of these resolutions. In the follow-up work the co-ordinating countries are assisted by experts of FAO, ECE and IUFRO.

One of the main achievements of the follow-up of the Helsinki Conference has been the adoption of a set of feasible criteria and indicators for evaluating the progress of efforts to follow the principles of sustainable forest management and conservation of biodiversity of European forests. The progress achieved in the implementation of the Helsinki resolutions and the follow-up work has been described in the "Interim report on the follow-up of the Second Ministerial Conference" published in 1995 and the "Progress Report" published in 1996.

The Third Ministerial Conference on the Protection of Forests in Europe, under the chairmanship of Portugal and Austria, will take place in Lisbon in June 1998.

1.2. Ministerial Conference "Environment for Europe"

The first Ministerial Conference "Environment for Europe" took place in Dobříš in June 1991. The need to assess the environmental status of Europe was identified and the elaboration of a report on Europe's environment was decided. The report "Europe's Environment - The Dobříš Assessment" was published in 1995.

The second Ministerial Conference took place in Lucerne in April 1993. This conference established an organisational framework for the process.

The third Ministerial Conference "Environment for Europe" was held in Sofia in October 1995. The Environment Ministers present agreed on a Pan-European Biological and Landscape Diversity Strategy¹, Which has the following aims and objectives:

¹ 1996. The Pan-European Biological and Landscape Diversity Strategy - a Vision for Europe's National Heritage. Council of Europe, UNEP, European Centre for Nature Conservation. ISBN 90-802482-4-X (English, French, Russian).

Aims:

- 1 Substantially to reduce and, if possible, eliminate current threats to Europe's biological and landscape diversity.
- 2 To increase the resilience of Europe's biological and landscape diversity.
- 3 To strengthen the ecological coherence of Europe as a whole.
- 4 To ensure full public involvement in the conservation of the various aspects of biological and landscape diversity.

Objectives:

- 1 To conserve, enhance and restore key ecosystems, habitats, species and features of the landscape through the creation and effective management of the Pan-European Ecological Network.
- 2 To ensure sustainable management of Europe's biological and landscape diversity by taking full account of the social and economic opportunities available at national and regional levels.
- 3 To integrate diversity consideration and sustainable use objectives.
- 4 To improve information on, and public and decision makers' awareness of, biological and landscape diversity issues; to increase public participation in action to conserve and enhance such diversity.
- 5 To improve understanding of the state of biological and landscape diversity in Europe and of the processes that render it sustainable.

The Pan-European Biological and Landscape Strategy was defined for a twenty year period, but, recognising the need to create an adaptive process that could respond to changing circumstances, a division in four Action Plans, each carried out in five year terms was established. The first Action Plan for Biological and Landscape Diversity covers the period from 1996 to 2000 and is divided in eleven Action Themes. Each Action Theme includes a list of challenges to be addressed, opportunities to be considered, and focus on Pan-European objectives.

The first Action Plan considers the following Action Themes:

- 0 Pan-European action to set up the Strategy process.
- 1 Establishing the Pan-European Ecological Network.
- 2 Integration of Biological and Landscape diversity considerations into sectors
- 3 Raising awareness and support with policy makers and the public.
- 4 Conservation of landscapes.
- 5 Coastal and marine ecosystems.
- 6/7 River ecosystems and related wetlands; Inland wetland ecosystems
- 8 Grassland ecosystems.

- 9 Forest ecosystems.
- 10 Mountain ecosystems.
- 11 Action for threatened species.

The Council of Europe and UNEP are jointly co-ordinating the implementation of the Pan-European Biological and Landscape Diversity Strategy. They are supported by IUCN and OECD. Within the Strategy process, the Council is the main decision making body; it meets once every two years. Its membership consists of representatives of the 54 States and the other governmental and non-governmental bodies which are involved in the process. The Executive Bureau is the Strategy's executive body. Its members are 11 States and the main organisations involved in the Strategy's implementation. The 11 States each represent the various geographical sub-regions. The Executive Bureau meets twice a year and is responsible for implementing the work programmes and raising funds.

The next Ministerial Conference "Environment for Europe" will take place in Århus, Denmark, in June 1998.

1.3. Linkages Between the Ministerial Processes

While the "Protection of Forests in Europe" process is a political co-operation process with a group of lead countries (Portugal, Finland, Austria and Poland) serving as a secretariat, the Pan-European Biological and Landscape Diversity Strategy has a joint secretariat provided by UNEP and the Council of Europe. The two Ministerial Processes share common set of preoccupations and there are similarities between the objectives expressed in the Helsinki Resolutions and in the PEBLDS. The emphasis on landscapes in PEBLDS provides a link to forests that are a major element of European landscapes. Similarly, the link between the two Processes is a trade-off, rather than a perfect match.

The first objective of Action Theme 9 of the PEBLDS aims at assuring the maintenance of forests with a high conservation value. This objective is patent throughout the Helsinki Resolution H2. Particularly H2§6 establishes that a coherent European network at national or regional level should be created to secure the protection of climax, primary and other special forests, aiming with this to maintain or re-establish threatened or representative ecosystems. H2§2 recalls the need for conservation strategies to be based upon specific, practical, cost-effective and efficient appraisal systems, and for methods to evaluate the impact on biodiversity of chosen forest development and management techniques. Resolution H1 adds to this framework the commitment to collaborate in efforts to guaranty forest conservation in Europe (H1§14).

The PEBLDS also focuses on species requiring large undisturbed forest ecosystems (objective 9.2), particularly those of high profile (as defined in the Bern Convention, Birds and Habitats Directives and UNECE threatened species). Resolution H2 of the Helsinki process states the need when formulating national forest policies to take into account the “protection of threatened species and habitats, specially those listed nationally or locally” (H2§5.2).

The relation between forest planning and management and biodiversity is emphasised in the PEBLDS objective 9.3 which recommends the introduction of biodiversity, landscape and ecological networking considerations to forest management, the use of renewable forest products, and the encouragement of national forest policies that favour afforestation with native species. The main aspects of forest management are covered by the Helsinki Resolution H1. Special recommendations are made on tree species choice, namely on chosen trees suitability to the site and in the inclusion of adaptive traits in genetic selection programmes (H1§8). A landscaping consideration is also included in H1§8: “afforestation should not affect ecologically interesting or noteworthy sites”.

Two objectives in the PEBLDS are dedicated to research and development activities, both aiming at the initiation of studies on the adjustment of European forests management systems (objectives 9.4 and 9.5). Objective 9.4 refers directly to resolution H4, emphasising studies on the adjustment of European forest management systems in order to optimise adaptation to climate change, to ensure the health and multiple functions of forests, and to optimise the sequestration and storage of carbon (H4§7). Resolution H2 encourages studies on the improvement of methods for assessing biodiversity in forests and for evaluating the impact on biodiversity of forest management methods (H2§11). Specific cost-effective, practical and efficient methods to assess and monitor the impact of management techniques on biodiversity are requested in H2§2.

1.4. Co-Operation Between the Ministerial Processes

The first meeting of the Council for the Pan-European Biological and Landscape Diversity Strategy (“Environment for Europe” process), held in Strasbourg in May 1996, decided to contact the Ministerial Process for the Protection of Forests in Europe in order to evaluate the possibilities for collaboration concerning the Action Theme 9 “Forest Ecosystems”. The Council of the Strategy further invited ECE to submit a proposal for action to be considered by the Executive Bureau.

This proposal was welcomed and accepted by the representatives of the Pan-European countries and the European Commission participating in the Third Expert Level Follow-

Up Meeting of the Ministerial Conference on the Protection of Forests in Europe, held in Geneva in May 1996.

An exploratory meeting to further discuss the co-operation of the two on-going processes was held in Geneva in July 1996 and was attended by representatives of Austria, Finland and Portugal, ECE and UNEP. The meeting agreed that a co-operative approach would provide an unique opportunity for progress. The commitment and progress achieved within the Pan-European Process for Protection of Forests in implementing of resolutions H1 and H2 and the related criteria and indicators developed, could be a basis for the co-operation while the Pan-European Biological and Landscape Diversity Strategy could provide an opportunity to go deeper into the subject and allow further development of concepts in a wider context. The co-operation should aim to find synergy and avoid overlap in the important areas of mutual interest.

To assist the co-operation effort, Portugal organised two informal working meetings to develop a proposal for a work-programme on biological and landscape diversity in forest ecosystems. The first meeting was held in Lisbon in March 1997 and it was attended by representatives of the co-ordinating countries of the "Protection of Forests" process and UNEP, and the chairman of the Executive Bureau of the PEBLDS. All signatory states of the "Protection of Forests" process as well as all the states represented at the Executive Bureau of the PEBLDS and NGO's were invited to the second meeting, which was held in Sintra in April 1997.

A draft of this work-programme was presented in the 4th Expert Level Follow-Up Meeting of the Helsinki Conference and 2nd Preparatory Meeting of the Lisbon Conference held in Geneva in 20-21 May 1997. The meeting, welcomed the draft work-programme presented by the General Co-ordinating Committee, accepted the basis of the work-programme presented. Some revisions were then added to the proposal and the work-programme was adopted by the Third Meeting of the Executive Bureau of the Pan-European Biological and Landscape Diversity Strategy, 20-21 November 1997 in Geneva, Switzerland and by the Fifth Expert Level Follow-Up Meeting of the Helsinki Conference and Third Preparatory Meeting of the Lisbon Conference on the Protection of Forests in Europe, 8-9 December, 1997 in Geneva, Switzerland.

The Work-Programme will be submitted for endorsement to Ministers of Forests in the Third Ministerial Conference for the Protection of Forests in Europe in Lisbon, Portugal, 2-4 June 1998, and to the Ministers of Environment in the Fourth Ministerial Conference Environment for Europe in Århus, Denmark, 23-25 June 1998.

2. Work-Programme on the Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems

2.1. Introduction

2.1.1. Purpose and Structure of the Work-Programme

The work-programme aims to contribute to awareness-raising of the general public and forest practitioners, on the issues related to forest management and to the conservation of biological diversity in forest ecosystems. Forest owners and managers should have full access to the results of the work-programme and special effort should be put in the dissemination this information to them.

The work-programme indicates the most urgent needs in the field of biological diversity as an essential element of sustainable forest management.

The work-programme can also be considered as a Pan-European contribution to the work-programme for forest biological diversity to be developed at a global level by the Secretariat of the Convention on Biological Diversity, as a consequence of the decision of the Third Conference of the Parties of the Convention on Biological Diversity (COP 3, Decision III/12).

The work-programme, whenever appropriate, refers to the conclusions and proposals for action identified in the IPF4.

In the development of the work-programme also the objectives and priorities identified by NGO's have been taken into account (see e.g. the WWF/IUCN forest policy book "Forests for Life").

Biological diversity includes diversity within species (genetic diversity), between species and of ecosystems. In the development of the work-programme only the diversity of ecosystems was considered as this was regarded as most relevant at the first stage of the work-programme.

The work-programme proposes four objectives further specified into actions. The objectives are based on the Helsinki resolution H2 "General Guidelines for the Conservation of the Biodiversity in European Forests" and on the objectives specified under Action Theme 9 "Forest Ecosystems" of the Pan-European Biological and Landscape Diversity Strategy. The four proposed objectives highlight the principal concerns expressed in these two reference texts.

The proposal has been devised for the period from 1997 to 2000, and the proposed actions are aimed at the coverage of the most urgent issues and information gaps. They

represent the fundamental background work for a possible continuation of a broader and more comprehensive programme to be defined after this first period.

2.1.2. Implementation and Follow-Up of the Work-Programme

Signatory states should actively participate in the implementation of the work-programme, contributing in the development of the proposed actions and/or supplying information to the bodies in charge of the actions.

The proposed actions are to be elaborated into project proposals, to be undertaken by a variety of organisations: international agencies, national or local authorities, research institutes, commercial enterprise or NGO's. Existing initiatives and projects may well fall within the work-programme. However, for most of the proposed actions more detailed terms of reference will be prepared and possible actors will be identified.

The co-ordination of the implementation of this work-programme should be based on a collaboration between UNEP, ECE, FAO and the Liaison Unit of the "Protection of Forests in Europe" process. Co-ordination will include *inter alia* the preparation of the terms of reference for proposed actions, the compilation of results and reporting of ongoing work and conclusions for the Ministerial Conferences.

2.1.3. Criteria for Defining Action

The following criteria were used in defining the proposed actions:

- promotion of synergy between the processes;
- political acceptance;
- importance/urgency on the international (European) agenda;
- possibilities for co-ordination with ongoing projects;
- possibility for immediate funding; and
- implementable in a reasonable time span.

2.2. Objectives and Actions

Objective 1. Conservation and appropriate enhancement of biodiversity in sustainable forest management.

Justification

The role of managed forests, and of sustainable forest management, is of vital importance for the conservation and enhancement of biological diversity, as most of the European forests will remain under management.

References to Existing Initiatives

This objective has been referred in the Helsinki Resolutions when stating that “the conservation and appropriate enhancement of biodiversity should be an essential operational element in sustainable forest management” (H2§1) and that “management should aim at increasing the diversity of forest habitats” (H2§3).

The PEBLDS also refers to this question by dedicating two objectives on Action Theme 9 to the initiation “of studies on the adjustment of European forest management systems” (AT9§9.4 and AT9§9.5)

Article 10 of the CBD is fully dedicated to the “sustainable use of biological diversity”, relating also to Articles 6 and 8, respectively “general measures for conservation and sustainable use” and “*in situ* conservation”.

The report of the Ad Hoc Intergovernmental Panel on Forests on its fourth session recognises the difficulty to quantify the wide range of benefits provided by forests (IPF4§95) and calls for the need to render more attention to “other goods and services provided by forests (...) the sustainable use and conservation and the fair and equitable sharing of benefits of biological diversity...” (IPF4§80). The question of valuing properly the costs associated with biological diversity loss are also addressed (IPF4§95).

Action 1.1. Identify indicators for assessing biodiversity of forest ecosystems at national and sub-national levels.

It is necessary to define indicators that allow an insight on the biodiversity of forest ecosystems, through the assessment of a limited number of variables, this being developed at national and sub-national levels².

The need to “harmonise approaches to data collection and analysis in order to enhance comparability” in forest assessments is also emphasised in IPF4 (IPF4§81), where a full chapter is dedicated to criteria and indicators (IPF4§105-115).

² The First Expert Level Follow-Up Meeting of the Ministerial Conference on the Protection of Forests in Europe, held in Geneva in June 1994, adopted the “European List of Criteria and Most Suitable Quantitative Indicators”. See specially the Criterion 4 “Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems”, and the five indicators defined to assess it.

Action 1.2. *Develop knowledge on the impact of different forest management practices on biodiversity. Review the knowledge on how forest management systems/plans can maintain and enhance biological diversity, while ensuring their economic viability.*

The understanding and evaluation of impact of forest management practices on biological diversity is essential for assuring progressive improvement of forest ecosystems in that respect. Bearing in mind that each forest operation has both positive and negative consequences for various living organisms and communities, this assessment plays a key role as basis for the promotion of sustainable forest management.

Management practices can be combined in very different ways to produce silvicultural systems. These can vary extensively as there are many possible systems and system variations. Research on the impacts of management systems in biological diversity exist for several regions in Europe. It is necessary to compile the knowledge acquired and identify the needs for further research. The existing experience may be of extreme importance for the promotion of change and attitudes, specially when concerning commercially used forest areas.

Action 1.3. *Develop operational level guidelines for sustainable forest management*

The conservation of biological diversity is an essential element of sustainable forest management. It is important to transform the international commitments made at the political level into real activities in the field level. For the purpose concrete recommendations for sustainable forest management are needed.

The IPF recognised the need to clarify the links between criteria and indicators for sustainable forest management at national / sub-national levels and at the forest management unit / operational level (IPF4§110). The panel also supported the promotion of best practices for sustainable forest management in IPF4§113.

Action 1.4. Assessment of methodologies for valuing biological diversity of forests.

Many of the products and services provided by forests do not have a real or estimated market and/or social value. Improved knowledge on the estimation of the value of all forest goods and services will allow a more informed decision making both at the political and the business level taking the economic implications of forest conversion or degradation or of alternative forest uses into account.

This issue was addressed in IPF4 in the recommendation “for international co-operation in the development of methodologies for the valuation of goods and services” (IPF4§102). New valuation methodologies were called for using the following criteria (IPF4§101): “neutrality and scientific validity; practical applicability; simplicity and clarity; multidisciplinary; cost-effectiveness; and orientation towards non-marketable goods and services”. The IPF also recommended international organisations to “prepare comprehensive documents on the available forest valuation methods” (IPF4§104b)

Objective 2. Adequate conservation of all types of forests in Europe.

Justification

Especially in Europe with its long forestry history the way forests are managed play a vital role in the conservation of their biological diversity. Nevertheless, an adequate protection status of sufficient parts of all types of forests is also necessary and should therefore be used as a complementary tool for the conservation of both specific forest species and specific forest types. Whenever appropriate, it should consider not only the conservation of high value selected sites, but also the connectivity of such sites guaranteeing that particular species are able to migrate and colonise other sites while remaining viable in their current distribution. Both specific protection measures and forest management measures should be considered guaranteeing the best possible approach to each local situation.

References to Existing Initiatives

These considerations have been thoroughly assessed in several international *fora*, and are considered in Helsinki Resolutions, PEBLDS and CBD. Several NGO's also have included it in their forest policy proposals.

The Helsinki Resolution H2 states that the signatory states commit themselves to “the establishment of a coherent ecological network of climax, primary and other special forests” at both regional and national levels (H2§6).

The need for an ecological network is also strongly emphasised in PEBLDS, being it’s first action theme “Establishing the Pan-European Ecological Network”. In it’s Action Theme 9 “Forest Ecosystems” it is referred the need to “conserve adequate areas to secure the conservation of all types of forests in Europe” (AT9§9.1) as well as the need to “conserve forest habitats of species requiring large undisturbed forest ecosystems” (AT9§9.2).

The CBD extended the networking priority to the global level by considering in it’s Article 8, on *in situ* conservation, the need to “establish a system of protected areas where special measures need to be taken to conserve biological diversity” (Art.8§a) and the need to “develop (...) guidelines for the selection, establishment and management of protected areas” (Art.8§b).

Several activities on this subject have/are being carried out, namely those related to the ecological networks of the EU (NATURA 2000, EECONET, Biogenetic Reserves), the forest classification systems of the EU (CORINE), the UNECE/FAO, the WCMC, the EFI and the ESA and the actions under this objective should take in due consideration these activities.

Action 2.1. Definition of criteria for setting priorities for forest conservation.

There are many areas with high conservation value. It is however impossible to effectively protect all those areas. Therefore it is necessary to define objective criteria for selection of areas that are to be protected. When applied, these criteria should lead to the selection of areas required for the appropriate conservation of all forest biological diversity optimising cost/benefit functions.

Action 2.2. Gap analysis of the efficiency of existing instruments and initiatives for the establishment of a forest ecological network.

The establishment of an ecological network has social, economic and ecological impacts. Several mechanisms can be proposed to implement such a network. It is important to assess the efficiency of different instruments, in order to

evaluate fulfilment of proposed objectives for the network. Gap-analysis allows the comparison of existing networks and a determination of the effectiveness of those networks in protecting what they are designed to protect.

Objective 3. Clarification of the role of forest ecosystems in enhancing landscape diversity.

Justification

Covering more than one third of Europe's area, the way forests are used and managed has a major impact on the modification of current and future landscapes. Furthermore, the complex pattern created by forests and other land-uses has a tremendous impact on the connectivity of different ecosystems, and as such, on the conservation and enhancement of biological diversity.

References to Existing Initiatives

Landscapes as important aspects of land-use planning have been considered in the Helsinki Resolutions, which state that "forest management should be based on stable and long-term land-use policies" (H1§3), that "afforestation should be conducted in a manner that does not affect ecologically interesting or noteworthy sites and landscapes" (H1§8) and that management "should take account of the scale of variation of the site, in order to better conserve and manage the diversity of habitats" (H2§3).

The landscape diversity has also been addressed in the PEBLDS in Action Theme 4 "Conservation of Landscapes". It is therefore important to show a forest-sector understanding of the matter.

Action 3.1. Review information on the role of forests in increasing landscape diversity based on current practices, land use patterns and land use regulations.

Several research projects have been completed or are on-going in several regions of Europe on innovative land-use planning systems, namely those aimed increasing the landscape and biological diversity. It is necessary to compile this knowledge and detect information gaps.

Objective 4. Clarification of impacts of activities from other sectors on forest biological diversity.

Justification

Many human activities not linked directly to forest management have significant impacts on forests health, vitality and biological diversity.

A holistic approach to study the impacts on forests could provide a valuable insight on the threats and opportunities arising from other sectors activities. The results obtained with actions developed under this objective can provide a basis for education and awareness programmes specially dedicated to the actors of the activities with the greater impact on forests.

References to Existing Initiatives

This objective has a linkage to the PEBLDS Action Theme 2 “Integration of Biological and Landscape Considerations into Sectors”. The action proposed under this objective can produce a valuable input to that action theme by providing a forest-sector understanding to it.

The CBD (Art.6§b) states the need to “integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral and cross-sectoral plans, programmes and policies”.

The IPF considered as a research priority the “(...) consideration of the long term impacts of pervasive external stresses, such as climate change, ozone depletion and air pollution, on (...) biological diversity” (IPF4§93).

Action 4.1. Identify major impacts on forest biological diversity arising from the activities of other sectors.

Several human activities have a significant impact on forest diversity, either by affecting it directly, or by affecting its environment conditions. A correct land-use planning should consider all possible interactions between forest diversity and all the relevant sectors having an impact on forest development and forest diversity. A first step should consider the identification of all impacts on forests arising from other sectors activities.

Appendix 1. Abbreviations

AT	Action Theme (as considered in the PEBLDS)
CE	Council of Europe
CEE	Central and Eastern Europe
CITES	Convention on International Trade in Endangered Species of Wide Fauna and Flora
CORINE	Information system on the Co-ordination of Information on the Environment
ECNC	European Centre for Nature Conservation
EECONET	European Ecological Network
EFI	European Forest Institute
EFICS	European Forest Information and Communication System
ESA	European Space Agency
EU	European Union
FAO	Food and Agriculture Organisation of the United Nations
IPF4	Intergovernmental Panel on Forests - 4 th Session in New York, 11-21 February 1997
IUCN	International Union for Conservation of Nature and Natural Resources
IUFRO	International Union of Forestry Research Organisations
JRC	Joint Research Centre
NGO	Non-Governmental Organisation
OECD	Organisation for Economic Co-Operation and Development
PEBLDS	Pan-European Biological and Landscape Diversity Strategy
UNCED	United Nations Conference on Environment and Development
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
WCMC	World Conservation Monitoring Centre
WRI	World Resources Institute
WWF	World Wide Fund for Nature

Appendix 2. Comparison of the Objectives of the Pan-European Biological and Landscape Diversity Strategy Action Theme 9 “Forest Ecosystems” and the Helsinki Resolution H2

BIOLOGICAL AND LANDSCAPE DIVERSITY STRATEGY, FOREST ECOSYSTEMS: PAN-EUROPEAN OBJECTIVES	RESOLUTION H2
<p>9.1 Conserve adequate areas to secure the conservation of all types of forests in Europe, and specifically prioritise conservation efforts towards protection of 100 per cent of the remaining alluvial and virgin forests, the majority of the remaining ancient secondary woodland, and remaining riparian forest corridors, taking into account considerations of indigenous and local peoples (1996-1999)</p>	<p>2. The conservation and appropriate enhancement of biodiversity in forests should be based both on specific, practical, cost-effective and efficient biodiversity appraisal systems, and on methods for evaluating the impact on biodiversity of chosen forest development and management techniques.</p> <p>5. The Signatory States and the European Community will recognise the conservation and appropriate enhancement of biodiversity as an essential element of sustainable forest management.</p> <p>6. The Signatory States and the European Community will establish at national or regional levels a coherent ecological network of climax, primary and other special forests aimed at maintaining or re-establishing ecosystems that are representative or threatened.</p> <p>9. The Signatory States and the European Community will develop a coherent and responsible approach to the conservation and appropriate enhancement of biodiversity in forests through the development of national or regional guidelines.</p>
<p>9.2 Conserve habitats of species requiring large undisturbed forest ecosystems, including high profile Bern Convention, Habitats Directive and UNECE threatened species (1996-2000)</p>	<p>5.2. Taking account of the protection of threatened forest species and ecosystems, as listed nationally or locally, in the formulation of national forest policies.</p> <p>6. The Signatory States and the European Community will establish at national or regional levels a coherent ecological network of climax, primary and other special forests aimed at maintaining or re-establishing ecosystems that are representative or threatened.</p>

<p>9.3 Devise and promote an action plan for biodiversity, landscape and ecological networking considerations to forest management and in the use of renewable forest products (Helsinki Resolutions). Encourage national forest policies which will favour afforestation with native species to the extent practicable (1996-1997)</p>	<p>9. The Signatory States and the European Community will develop a coherent and responsible approach to the conservation and appropriate enhancement of biodiversity in forests through the development of national or regional guidelines:</p> <ul style="list-style-type: none"> -Obtaining sufficient knowledge about the ecosystem functions and services derived from European forests, -Obtaining sufficient knowledge of the status and requirements for management of the endangered, rare or representative biotic elements of the forests, and -Achieving adequate forecasting, monitoring and evaluation of the consequences for biodiversity of different silvicultural techniques.
<p>9.4 Initiate studies on the adjustment of European forest management systems in order to optimise adaptation to climate change, to ensure the health and multiple functions of existing forests, and to optimise the sequestration and storage of carbon, as well as studies on other matters referred to in Resolution 4 of the Helsinki Ministerial Conference on the Protection of Forests in Europe (1996-1998)</p>	

<p>9.5 Initiate studies on the adjustment of European forest management systems (1996-2000)</p>	<p>2. The conservation and appropriate enhancement of biodiversity in forests should be based both on specific, practical, cost-effective and efficient biodiversity appraisal systems, and on methods for evaluating the impact on biodiversity of chosen forest development and management techniques.</p> <p>3. Where possible, the size and degree of utilisation of forest compartments and other basic management units should take account of the scale of variation of the site, in order to better conserve and manage the diversity of habitats. Management should aim at increasing the diversity of forest habitats.</p> <p>5. The Signatory States and the European Community will recognise the conservation and appropriate enhancement of biodiversity as an essential element of sustainable forest management.</p> <p>10. In order to attain aims 9.1., 9.2. and 9.3. the Signatory States and the European Community will implement surveys and research programmes which are specially adapted to their economic, social and environmental conditions and which are, where appropriate, co-ordinated and integrated with similar work resulting from the implementation of the relevant resolutions of the Strasbourg and Helsinki Conferences.</p> <p>11. The Signatory States and the European Community will continue to improve methods for assessing biodiversity in forests and for evaluating the impact on biodiversity of forest management methods.</p>
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<p align="center">BIOLOGICAL AND LANDSCAPE DIVERSITY STRATEGY, FOREST ECOSYSTEMS: REGIONAL OBJECTIVES</p>	<p align="center">RESOLUTION H2</p>
<p>9.6 Secure an effective network of protected areas to maintain the northern boreal forests (taiga) (1996-2000)</p>	
<p>9.7 Strengthen sustainable management and protection of viable old growth forests in south-western and south-eastern Mediterranean regions to prepare case studies and ensure exchange of expertise in the process (1996-2000)</p>	<p>6. The Signatory States and the European Community will establish at national or regional levels a coherent ecological network of climax, primary and other special forests aimed at maintaining or re-establishing ecosystems that are representative or threatened.</p> <p>8. The Signatory States and the European Community will promote technical co-operation including exchange of experts, courses and seminars, and transfer of technology.</p> <p>10. In order to attain aims 9.1., 9.2. and 9.3. the Signatory States and the European Community will implement surveys and research programmes which are specially adapted to their economic, social and environmental conditions and which are, where appropriate, co-ordinated and integrated with similar work resulting from the implementation of the relevant resolutions of the Strasbourg and Helsinki Conferences.</p>
<p>9.8 Identify and initiate restoration and regeneration plans of the most important fragmented forests of intrinsic value in CEE and Atlantic regions (1997-2000)</p>	<p>2. The conservation and appropriate enhancement of biodiversity in forests should be based both on specific, practical, cost-effective and efficient biodiversity appraisal systems, and on methods for evaluating the impact on biodiversity of chosen forest development and management techniques.</p> <p>5.2. Taking account of the protection of threatened forest species and ecosystems, as listed nationally or locally, in the formulation of national forest policies.</p>

<p>9.9 Establish a programme to assess and define action to conserve biological and landscape diversity as consequence of privatisation and/or market conditions impacting on sustainable forest management in the CEE (1996-1998)</p>	
<p>9.10 Establish procedures to ensure greater collaboration with indigenous and local peoples for effective sustainable management of forests for economic and cultural/biological diversity use in the Arctic, Boreal and CEE regions (1996-1998)</p>	<p>7. The Signatory States and the European Community will establish educational and public awareness programmes on the conservation of biodiversity emphasising, <i>inter alia</i>, the positive aspects of sustainable management of forests on the conservation of biodiversity. These programmes should be aimed, <i>inter alia</i>, at enabling effective participation by local communities, forest owners and Non-Governmental Organisations in the conservation and appropriate enhancement of biological diversity.</p>

Appendix 3. List of the Signatory States of the Ministerial Conferences “Protection of Forests in Europe” and “Environment for Europe”

Country	Forests	Environment
Albania	(Yes) ³	Yes
Andorra	Not Signed	Yes
Armenia	Not Signed	Yes
Austria	Yes	Yes
Azerbaijan	Not Signed	Yes
Belarus	Yes	Yes
Belgium	Yes	Yes
Bosnia-Herzegovina	Not Signed	Yes
Bulgaria	Yes	Yes
European Union	Yes	Yes
Canada	Observer	Yes
Croatia	Yes	Yes
Cyprus	Not Signed	Yes
Czech Republic	Yes	Yes
Denmark	Yes	Yes
Estonia	Yes	Yes
Finland	Yes	Yes
France	Yes	Yes
Georgia	Not Signed	Yes
Germany	Yes	Yes
Greece	Yes	Yes
Holy See	Not Signed	Yes
Hungary	Yes	Yes
Iceland	Yes	Yes
Ireland	Yes	Yes
Israel	Not Signed	Yes
Italy	Yes	Yes
Kazakhstan	Not Signed	Yes
Kyrgyzstan	Not Signed	Yes
Latvia	Yes	Yes

³ Although participating on the follow-up work, Albania is not a signatory state of the Helsinki Resolutions H1 and H2.

Country	Forests	Environment
Liechtenstein	Yes	Yes
Lithuania	Yes	Yes
Luxembourg	Yes	Yes
Macedonia	Not Signed	Yes
Malta	Yes	Yes
Moldova	Yes	Yes
Monaco	Yes	Yes
Netherlands	Yes	Yes
Norway	Yes	Yes
Poland	Yes	Yes
Portugal	Yes	Yes
Romania	Yes	Yes
Russian Federation	Yes	Yes
San Marino	Not Signed	Yes
Slovakia	Yes	Yes
Slovenia	Yes	Yes
Spain	Yes	Yes
Sweden	Yes	Yes
Switzerland	Yes	Yes
Tajikistan	Not Signed	Yes
Turkey	Yes	Yes
Turkmenistan	Not Signed	Yes
Ukraine	Yes	Yes
United Kingdom	Yes	Yes
United States	Observer	Yes
Uzbekistan	Not Signed	Yes
TOTAL	37 Countries and European Commission	53 Countries and European Commission