

**Ministerial conference for the protection of forests in Europe: General  
declaration and resolutions**

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- Follow-up and Continuation of Works Begun at the Strasbourg Conference

**General Declaration**

*The Signatory States and International Institution,*

recognizing the right of future generation to benefit from a quality environment that is healthy and unpolluted, which, for forests, must be expressed in ecological, economic and social terms in a way which is reflected in a sustainable and multi-purpose management of the forest,

conscious of the role of the forest in developing the living environment, notably in relation to soil protection, water saving, harmony of landscapes - for example in peri-urban areas - and sustainable production of goods and services,

conscious that phenomena such as, notably, atmospheric pollution, forest fires, global warming, major climatic events or industrial accidents, erosion, damage caused by insects or other pests, or pathogenic organisms, as well as damage caused in certain regions by game, over-exploitation or even under-exploitation, as well as interactions between all these phenomena, are threatening Europe's forests,

considering that a growing number of problems concerning the protection of forests in Europe and the maintenance of their biological diversity have a transboundary character and that, because of this, the entire European

continent must be the framework in which they are to be defined, both specifically and in their diversity, and resolved in an efficient manner,

convinced that the protection and preservation of the biological diversity of European forests involves all the societies concerned and reaches beyond national boundaries,

conscious that the identification and the resolution of these problems involves an increasing number of participants whose everyday or incidental behaviour has a serious effect on the future of forest areas, as is borne out by the die-back of forests attributed to air pollution,

conscious that forestry operations are long term, and that because of this a central place must therefore be allotted, within the framework of an ecologically-coherent national forestry policy, to continuity over time and to the consideration of dangers that are difficult to foresee, with the goal of maintaining the potentials of forests,

considering that, even if many of the adverse factors are difficult to control, significant results in forest protection can be obtained by recourse to appropriate silvicultural techniques, both traditional and innovative,

reaffirming the sovereign right of States to manage their own resources within the framework of their environment policies, in conformity with the United Nations Charter and to the principles governing international law, notably by taking into account existing international agreements and supranational legal prescriptions,

reaffirming also their obligation to ensure that activities carried out under their jurisdiction or within their area of competence have no harmful repercussions on the environments of other States,

recalling the 1979 Convention on Long-Range Transboundary Air Pollution, and reaffirming the need to have regard to the commitments contained in the HELSINKI and SOFIA protocols linked to this Convention,

insisting on the importance of cooperation with international organizations already working in the field of forest protection or, more generally, protection of the environment,

recalling the recommendations set out in "The Environmental Perspective to the Year 2000 and Beyond" (UNEP) and "The Regional Strategy for Environmental Protection and Rational Use of Natural Resources in the Member Countries of the United Nations Economic Commission for Europe, Covering the Period up to the Year 2000 and Beyond",

taking into account the recommendations of the "World Conservation Strategy", the "World Charter for Nature" and the report by the World Commission on Environment and Development,

recalling that the SILVA international conference held in Paris in 1986 culminated in the "Paris Appeal for Trees and Forests", which insists on the pressing need to act in unison beyond national borders for the conservation and promotion of trees and forests in the interests of present and future generations, thus indicating the direction in which the signatories of the present declaration wish to take joint action,

recalling that, whereas the SILVA conference gave equal attention to the protection of tropical forests, and the present ministerial conference concerns only European forests, nevertheless the problems relative to tropical forests deserve an initiative of the same type,

identify two types of operational approach, the first aiming at better observation and understanding of the functionings and malfunctionings of forest ecosystems in all their diversity, the second at taking action in thematic areas of concern, such as the conservation of forest genetic resources, or in areas of special fragility, such as mountain forests and forests susceptible to fire;

*declare their intention to:*

1. promote and reinforce cooperation between European states in the field of forest protection and sustainable management, by developing exchanges of information and experience, and by supporting the efforts of the international organizations concerned,
2. improve exchanges of information between forestry research workers, managers and policy makers, both within and between the signatory countries, in order that the most recent advances can be integrated into the implementation of forest policies,
3. encourage operations for restoring damaged forests,
4. demonstrate, by way of an agreement on common objectives and principles, their will to implement, progressively, the conditions and the means necessary for the long-term management and conservation of the European forest heritage,
5. examine the follow-up of decisions taken during the present conference and pursue the actions that will have been initiated, in the course of any subsequent meetings of government ministers or officials, and of international institutions, responsible for seeing that forests fully assume their ecological, economic and social functions.

## RESOLUTION S1

### EUROPEAN NETWORK OF PERMANENT SAMPLE PLOTS FOR MONITORING OF FOREST ECOSYSTEMS

*The Signatory States and International Institution,*

considering that forests in Europe make up an ecological, cultural and economic heritage that is essential to our civilization,

considering that studies of the health problems of forests in the last decade:

- have shown that some forest ecosystems are in a precarious state due to various factors, notably air pollution and certain meteorological events,
- have made clear the need for and the great scarcity of reliable data on these ecosystems, particularly for the period preceding the reported incidents,
- have, notably under the auspices of the United Nations Economic Commission for Europe (Convention on Long-Range Transboundary Air Pollution, Geneva, 1979), given rise to important and fruitful work, which has led to the finalizing of jointly-agreed methods for assessing pollution and the state of forests,

considering that, apart from the continuing impact of air pollution, it is to be feared that further pressures are likely, such as climatic changes arising from the greenhouse effect, or others as yet totally unforeseen,

considering that it is important to draw the right conclusions from the experience and knowledge acquired in the field of forest management methods that encourage the vitality of forest ecosystems,

considering that it is necessary to detect as soon as possible every significant change in the functioning of forest ecosystems, and to be able to define their characteristics and analyse their causes swiftly,

considering that it is necessary to determine whether the changes observed to date can be interpreted as falling within the fluctuations around a stable average observed in the recent past,

considering that it is necessary to know the critical levels and critical loads of pollution liable to bring about the destabilization of different forest ecosystems,

considering that the significant effort already made to better understand the evolution of forest ecosystems, often characterized by their fragile nature,

should lead to an advance in the resolution of serious problems identified by monitoring,

*will endeavour to put in their respective countries the recommendations concerning assessment and monitoring put forward by the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests.*

## THE PRINCIPLES

1. The efforts already made to monitor the state of forest ecosystems, within the framework of the various regional, national or international programmes, must be reinforced. Most of these programmes were originally set up to gather the information required for an ecologically responsible management of timber production. At the beginning of the eighties, the concern felt at the damage caused to forests by air pollution led to important international actions, notably in the context of the various study groups set up under the auspices of the Convention on Long-Range Transboundary Air Pollution. With the opening of the nineties, general awareness of the fragility of many European forest ecosystems justifies the continuation and strengthening of initiatives already undertaken.
2. The strengthening of present efforts in monitoring forest ecosystems aims at improving the ways of managing timber production in an ecologically-responsible fashion, and also at adopting the means needed for an effective environmental protection policy. These aims require:
  1. the availability of a permanent mechanism for the gathering of objective and, wherever possible, comparable data, that will allow a better diagnosis and analysis of existing and future problems in all their geographical and temporal variability,
  2. an evaluation of the quantitative development of factors that affect the functioning of forest ecosystems and timber production, as well as the reactions of these ecosystems to air pollution, stress, climatic fluctuations, storms, fires, human interventions, etc...
  3. the adoption of permanent arrangements by which progress may be made in determining relations between cause and effect, for example, by characterizing for a given ecosystem the local pollution level and the critical threshold of pollutants responsible for the ecosystem's destabilization.
3. The monitoring of forest ecosystems should rely simultaneously on two levels of permanent sample plots:
  - sample plots for elementary systematic monitoring
  - sample plots for intensive monitoring
3. The sample plots for elementary systematic monitoring are positioned on the intersection points of systematic inventory

grids, with a density at least equal to that recommended by the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests. This type of systematic network allows regional assessments and statistical research to be carried out, thus providing the data needed for forestry and environmental policy. It also permits the orientation of observations and measurements on to the intensive monitoring sample plots.

4. The intensive monitoring sample plots are installed in order to obtain detailed data on the evolution of a number of forest ecosystems in Europe. This type of approach allows correlations to be established between the variation of environmental factors and the reactions of ecosystems, or, for example, allows us to determine the critical level of pollutants likely to destabilize one type of ecosystem. The data it provides allows a better interpretation of the findings derived from the systematic network.
4. The need for a better grasp of the geographical and temporal variability of the parameters measured and the problems studied, in order to be able to give more precision to a responsible policy for the forest and the environment, justifies a reinforcement of the effort to harmonize the monitoring methods for forest ecosystems and to analyse the data obtained. The comparability of data on the European scale must be developed.
5. The necessity of taking into account the historical dimension of the evolution and variation in forest health, site conditions and climatic events justifies a larger and coordinated effort to describe such fluctuations in the past.
6. Priority must be given to the coherent long-term tracking of the data already gathered within the existing systems, as well as to complementing this data with new measurements, which can contribute as rapidly as possible to the thinking and decisions of national and international authorities.
7. The HAMBURG and PRAGUE coordination centres, set up within the framework of the technical programmes linked to the Convention on Long-Range Transboundary Air Pollution, should intensify the international coordination of these networks, as well as the work of synthesis and interpretation of the data on the scale of large ecological regions or large types of forest ecosystems in Europe, thanks to the funding guaranteed by all the member countries. To this end, minimum batches of data, gathered in a standardized form to be determined later, are transmitted to the centres.

## THE JOINT PROJECT

1. The network of elementary systematic monitoring takes into account the estimation or measurements of some simple parameters concerning ecological site conditions and tree vitality. The inventories currently carried out will have to be progressively completed along these lines, following the recommendations of the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests.
2. The intensive monitoring sample plots are designed for more numerous and finer estimations and measurements, describing the stand and its history, the trees and their foliage, the vegetation, the soil, the climate, and, in a certain number of cases, the chemical composition of open-space rain, intercepted rain, and drainage water. As far as it is possible, some of these sample plots should be installed on-site or in the immediate vicinity of stations for measuring atmospheric pollution.
3. The special team of the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests must draw up the minimum list of the parameters pertaining to the sample plots of the elementary systematic monitoring and the intensive monitoring, as well as the recommended methods of analysis.

## NATIONAL AND INTERNATIONAL COORDINATION BODIES

1. All the countries taking part in the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests are invited to participate in this project and to gather data which will be forwarded to the HAMBURG and PRAGUE coordination centres.
2. All the European countries concerned by the danger of the destabilization of forest ecosystems feel the need for reinforced international action, to make the permanent monitoring of these ecosystems even more effective and, in a more coordinated manner, to make better use of the experience already gained by many countries or through international programmes that are already set up, such as the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests and the other relevant programmes of the Economic Commission for Europe of the United Nations within the framework of the Convention on Long-Range Transboundary Air Pollution (Geneva, 1979), the FAO/ECE 1990 inventory of forestry resources, the EEC's action for the protection of forests against air pollution and in particular its inventory of damage to forests, and the joint research programmes of the Nordic Council of Ministers. The exchanging of information and the coordination of projects must be encouraged and reinforced.
3. The HAMBURG and PRAGUE coordination centres, set up within the framework of the Convention on Long-Range Transboundary Air Pollution

(Geneva, 1979) should have the responsibility of collecting a certain amount of data produced by the elementary systematic network as well as the intensive monitoring network, and for presiding over the management, utilization, synthesis and interpretation of the data provided. The list of data to be transmitted to the coordination centres will be set out in the proposals made by the special teams of the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests. Each member state of the network contributes to the cost of these centres.

## RESOLUTION S2

### CONSERVATION OF FOREST GENETIC RESOURCES

*The Signatory States and International Institution,*

considering that, above and beyond the conservation of forest species, the essential objective is the conservation of the genetic diversity of these species, which are an essential part of mankind's heritage,

considering the seriousness of the risk of the impoverishment or modification of this great diversity,

noting, furthermore, that the priceless wealth represented by the intra-specific variability of species currently present in Europe is often largely due to their very wide natural distribution, which covers a wide range of ecological conditions,

recognizing, also that the use of genetically-improved materials is of great importance for afforestation and restocking, in particular where this is for the purpose of the production of timber,

*commit themselves to implement in their own countries, using whatever methods seem most appropriate, a policy for the conservation of forest genetic resources.*

### THE PRINCIPLES

1. Our responsibility vis-à-vis future generations and the urgency of the problems lead us to undertake, without waiting for the scientific answers, immediate actions within the framework of available resources.
2. The strategy chosen should take into account the present state of knowledge and of the concerns expressed, and give preference to simple, stable and long-lasting methods capable of taking into account developments in knowledge and demand.



3. The variability to be conserved is the total genotypic variability (between species, races and individuals) and not just the variability of individual genes.
4. In view of the objectives and constraints set out above, in situ conservation should be emphasized and integrated in the field of forest management. Ex situ conservation in the form of collections of genotypes as well as the conservation of seeds or of in vitro cultures, are other complementary possibilities that should not be neglected.
5. The conservation of the genetic diversity of forest species that are currently of secondary importance should, initially, and as a general rule, be assured by preserving forest ecosystems and rare forest species.
6. The specific means for conserving forest genetic resources whose principles are set out above should be backed up by recommendations drawn up by each country on the silvicultural techniques practised, at least in public forests.
  - o Note: these recommendations may cover, for example, protection against contamination or dilution of genetic resources within zones identified as being of special interest, the maintenance of sufficient diversity in the choice of afforestation and restocking species, the keeping - at least for public forests - of records covering the exact identity of the reproduction materials used for planting and regeneration, etc.
7. The bodies dealing with the coordination and technical organization of national and methodologically-specific programmes to conserve forest genetic resources should be adequately supported.

#### AN INSTRUMENT FOR COOPERATION ON CONSERVATION OF GENETIC DIVERSITY OF EUROPEAN FORESTS

1. To facilitate and extend the efforts undertaken at national and international levels, a functional but voluntary instrument of international cooperation should be found without delay from among the existing relevant organizations to promote and coordinate:
  1. in situ and ex situ methods to conserve the genetic diversity of European forests;
  2. exchanges of reproductive materials;
  3. the monitoring of progress in these fields.

#### RESOLUTION S3

##### DECENTRALIZED EUROPEAN DATA BANK ON FOREST FIRES

*The Signatory States and International Institution,*

considering that forest fires constitute a major problem from the ecological, social and economic points of view of many European countries, particularly in

Southern Europe, and that this problem may in the long term have an impact on climatic changes,

considering that the States hit hardest by forest fires have in the course of the last decade increased the financial means devoted to the protection of forests, to infrastructures on the ground and to the purchase of fire-fighting equipment, thus enabling them to increase the effectiveness of the systems set into place,

considering that it is difficult to control these disasters which have attained important dimensions, and that consequently, preventative actions must be developed capable of resolving this problem in a lasting way, by reducing the number of fires that break out, by diminishing the amount of combustible material available, and by watching for fire outbreaks and intervening as quickly as possible,

observing that each State has installed, often at the cost of considerable difficulties, its own system for gathering information on fires in different vegetation types, notably in forests and on heathland, and that in this matter those countries generally considered to be the most exposed to fire risk often hold more information or have a more advanced system corresponding to specific needs,

considering that the pooling and exchange of such data between the countries concerned has already been recommended by many international organizations, such as the Food and Agriculture Organization of the United Nations (FAO), the United Nations Economic Commission for Europe (UN-ECE), the European Economic Community and Silva Mediterranea,

considering that an information system is of much more value than the mere mass of data that it contains, insofar as it reflects choices of objectives and modes of organization,

taking formal note of the actions already carried out and the efforts already accomplished under the aegis of the joint FAO/ECE Working Party on Forest Economics and Statistics with regard to collecting and distributing statistics on forest fires in Europe, but considering that a further effort on the part of European countries is needed to gather together precise and comparable data on outbreak and first moments of fires, in order to better accompany the prevention policy,

considering that the establishment of a European data bank on forest fires would by its nature permit dialogue between the different countries concerned,

considering that the comparison of different indices of fire-risk prevailing in the States would enable the determination of a single index for Europe, and thus ensure better forecasting on this scale,

considering that in order to inform and alert the European public, it is necessary to know the precise causes of forest fires, their socio-economic context, and even the motives or psychology of fire-raisers, in order to better ensure the necessary prevention,

*commit themselves to study the feasibility of a decentralized European data bank on forest fires.*

## THE PRINCIPLES

1. The aim of such a project would be to facilitate and to promote, within a decentralized European data bank constituted by a network of national data banks, the exchange of a certain amount of information on forest fires, of practical use in implementing a prevention policy.
2. This system, which does not aim at replacing the different national systems by a standardized universal system, would limit itself to synthesizing the mass of common data made available to the network's participants.
3. A common language will be aimed at in analysing the diverse situations and their practical consequences in order to facilitate cooperation between countries. To this end, it would be preferable to give precedence to a modest objective to increase the system's performance. Having a reliable and systematic inventory, comparable over a large part of Europe, would already be a considerable benefit.
4. It is not so much a question of holding radically new data than of procuring the means of improving the reliability and precision of data already in hand. A project of this kind could not serve as an instrument for the development of national policies, but it might well contribute to better evaluating the techniques used by each country. For example, it would be valuable to be able to exchange results on the systems used for the rapid detection of forest fires, considering that the diversity of existing solutions is considerable.
5. With this in mind, a project of this kind should enable States to set up or maintain in service a more comprehensive data bank, containing information more specific to their particular needs, and whose access would be reserved exclusively to them.
6. The different systems used should be compatible with each other, notably in view of the possibility of long-distance consultation.
7. The system set into place should be capable of evolving in phase with changes in techniques and situations, as well as developments deriving from experience. It should be designed as a communication system: the quality of exchanges between the national and international partners

would indeed be the determining factor for the pertinence of data gathered, and would be obtained by using good communication techniques and by efficiently guiding the networks feeding each national data base.

## RESOLUTION S4

### ADAPTING THE MANAGEMENT OF MOUNTAIN FORESTS TO NEW ENVIRONMENTAL CONDITIONS

*The Signatory States and International Institution,*

considering that the ecological richness of mountain environments (animals, plants and ecosystems of special interest) depends notably on the presence of large areas of highly diversified forests; that are considered and appreciated at large as a natural environment, as an element contributing to the quality of landscapes, as an area for recreation and as a buffer against natural hazards,

considering that the fragility of mountains ecosystems, which are subject to strong pressures and whose ability to react to disturbances is low, justifies their being paid a great deal of attention, in particular as to the state of their health,

considering that mountain forests, in their diversity, are of crucial value to people because of the various roles that they play, in particular in the protection of natural environments, the fight against natural hazards, and the regulation of the hydrological cycle,

considering the place mountain forests occupy in regional management and development,

considering that, among the dangers created by industrial civilization and weighing on these fragile ecosystems are to be numbered long-range air pollution, the risk of climatic changes due to the greenhouse effect, as well as forest fires,

observing that, in most mountain areas, timber production is often becoming less profitable due to the difficulty of harvesting and precarious economic conditions, and

considering in consequence the difficulty of carrying out the silvicultural works necessary to ensure the survival and the balance of these forest ecosystems, which have been modified by human intervention,

considering that forecasts relative to the place and role of mountain forests must take into account the economic, social and cultural context of the region in question,

noting that the economic development of mountain areas can give rise to conflicts over land use and lead to environmental pressures due in particular to large-scale tourism, especially as, by their nature, mountain ecosystems are particularly fragile,

observing that in regions of agricultural and forestry decline where man is abandoning forest stands and large grazing areas, which are sometimes spontaneously reclaimed by trees, uncontrolled and often harmful changes are taking place,

considering that the pressure by game or domestic animals must be controlled so that the protection of existing stands and their regeneration can be ensured,

considering that public authorities must take charge of the prevention of natural dangers and the protection of the irreplaceable ecological heritage of mountain forest areas,

considering that it is opportune to equip ourselves with efficient instruments of analysis, notably of statistical nature, to ensure, in concert with local representatives, a genuine heritage-oriented management of mountain forest areas,

conscious that in order to better adapt the interventions of the forester to the local context, it is necessary to improve our knowledge of mountain forests in all their diversity and richness, as well as in their own dynamics,

conscious that considerable progress has to be made so as to better understand the functioning of mechanisms of protection against natural hazards in order to put public investments to the best use and to regulate the management of these fragile environments in concert with all the local partners,

*commit themselves to strive to mobilize their resources in common so as to advance together in a few concrete projects which are the basis of their forestry policy for mountain ecosystems.*

## THE PRINCIPLES

1. The improving of mountain forests should be based on a deeper knowledge of all that constitutes the environment (forest stands, soil, flora and fauna, climate ... ), whereby all the local ecological factors would be taken into account in determining the geographic management units and in selecting actions to be implemented therein. This would

- suppose that we gather data on flora and fauna, rare environments and landscapes of quality not by limiting ourselves to wooded areas alone, but by an overall study by valley or watershed.
- Note: the presence of an animal or plant species of special interest in an area that includes woodland must be taken into account in the elaboration of the various possible silvicultural scenarios and the proposals concerning objectives assigned to stands.
  - When the conservation of a biotope vital to the survival of a species is subject to strong constraints, it is incumbent on all the interested parties in the region in question to find a common solution.
2. To be able to understand the problems as a whole, by theme, and by following projections of change, a truly ecological cartography should be established with a view to translating, on the scale of the valley or watershed, all observations relating to the environment, notably maps of stands, of the flora and fauna, along with data on natural hazards,
    - Note: digital cartography and recent developments in the field of geographical information systems should offer considerable possibilities in this regard.
  3. These operations should lead to the setting up of data banks for mountain forests on the national level, which could be interconnected to enable international consultation.
  4. It will be vital that we acquire a better understanding of interactions between the vegetation cover, torrential floods and erosion, and more generally what are the relations between the hydrological cycle and the flora, the soil and bedrock, in order to better assess the dangers generated by changes in land use and to elaborate in response to them appropriate strategies, which take into account local constraints.
  5. Considerations economic as well as ecological lead us to be aware of the dangers of an uncontrolled artificialization of mountain forest environments and urge us to limit heavy investments wherever a stable ecosystem can be obtained by natural means, which should always accompany civil engineering, and take precedence over the latter when they offer the same guarantees of effectiveness.
  6. Where revenue from a mountain forest is insufficient to ensure the carrying out of silvicultural works indispensable to the continuity and stability of stands, which are often mixed and irregular, complementary financing schemes should be set up, which involves joint responsibility by the users of the mountain for conserving the heritage of these fragile ecosystems.
  7. The experience gained in the management of mountain forest environments by the different European countries is rich and diverse. They are now confronted with the need to change their practices to avoid destabilizing these fragile ecosystems and provide long term

sustainable resource management. It is necessary to propose efficient methods of analysis and a range of socio-technical options.

## JOINT PROJECTS

1. An international working party, for example that of the European Forestry Commission on the Management of Mountain Watersheds in liaison with the Commission of the European Communities, could pool the expertise gained by the experiences of the different European countries and propose methods of defining and taking into account indices of stability, which assess the ability of forest stands to resist internal and external pressures, and which are useful to planning and management in mountain forestry.
2. Given the number of forests regarded as natural or little transformed in Europe, and, because of their ecological diversity, liable to become a "field" of study for the perfection of our analytical methods and our knowledge of the specific dynamics of mountain forest ecosystems, we shall encourage studies that aim at defining what is the minimum level of forest operations to be practised to ensure lasting stability of the ecosystem.
3. The drawing up of a coordinated research programme on mountain forests, bringing together teams working in different countries, could be requested from the specialized section of the International Union of Forestry Research Organizations (IUFRO) in liaison with the European Forestry Commission's Working Party on the Management of Mountain Watersheds and the management committees for the research and development of the programme dealing with forests of the European Communities Commission.
4. To facilitate the exchange of information and experience, certain posts in research-development teams or with forest unit managers could be proposed in a list to be circulated yearly in all the interested countries. These posts would accommodate foresters who have gained experience concerning mountain forests in their own country for a duration of one to three years, according to the administrative arrangements of each host country or the agreements made between the country of origin and the host country.

## RESOLUTION S5

### EXPANSION OF THE EUROSILVA NETWORK OF RESEARCH ON TREE PHYSIOLOGY

*The Signatory States and International Institution,*

considering that because of the development in silvicultural techniques, trees are sometimes subject to nutritional deficiencies, to competition or reaction to climatic and other conditions, whose consequences have not always been

foreseen and which may lead to serious difficulties, in particular to phenomena of decline in health,

considering that the impact of long-range air pollution or the consequences of global climate changes that may ensue on the greenhouse effect may substantially aggravate these difficulties,

considering that, to conserve the stability and vitality of forest ecosystems, it is important that we better understand the adaptation capacities of woody plants, and the limits of these capacities, so as to be able to react by elaborating appropriate strategies,

observing that, in order to make progress in basic scientific disciplines, such as genetics, pathology or entomology, a better knowledge of the functioning of the tree is required, to understand and master its relationship with its environment,

considering that this desired improvement of knowledge should also cover the physiology of healthy trees as much as the malfunctionings that affect trees subject to attacks by living organisms or by stressful situations,

bearing in mind that the Oak n°3 resolution of the SILVA International Conference on Trees and Forests, held in Paris in December 1986, recommended the setting up of EUROSILVA, an advanced research network on the physiology of trees,

considering that with the experience gained over the last two years by Franco-German cooperation this EUROSILVA network can now take on the truly European dimension desired by the SILVA conference, and that certain research and development projects co-financed by the European Communities contribute to the promotion of a successful international cooperation,

recognizing the specificity of tree physiology and of the quality of the teams already engaged in various research programmes covering tree physiology,

conscious of the need to reinforce and to structure bilateral and multilateral relations between the research institutes, as well as between the research workers,

conscious of the necessity to support these research programmes and this cooperation with appropriate resources, which notably may be national in origine, in such a way as to enable current researches to be reorganized and research teams to be directed towards fundamental themes hitherto neglected,



*commit themselves to set up a joint European research programme on tree physiology within the expanded EUROSILVA network, in accordance with the Oak n°3 resolution of the SILVA conference.*

## THE PRINCIPLES

1. The EUROSILVA network has as its goal the development of cooperation between research institutes and researchers in the following four fields:
  1. influence of stress and diseases on trees
  2. tree physiology, biochemistry, biotechnology
  3. molecular biology of trees
  4. methods of studying tree physiology
2. After the establishment of an inventory of scientific resources in each country, the possible complementary features between programmes thus revealed should lead to exchanges of researchers for periods of a few weeks to a year and to continuing collaboration.
3. The EUROSILVA network is intended to encourage and sponsor scientific meetings at different levels, as for example:
  1. joint seminars with two or more teams
  2. colloquia or workshops on very precise subjects, bringing young researchers in contact with recognized specialists
  3. workshops centred on specific techniques
  4. series of lectures given by top-level researchers in different countries
4. Existing coordination mechanisms, flexible but official, could guide the network in each country and internationally.

## THE JOINT PROJECT

1. The European network of advanced research on tree physiology, known as EUROSILVA, working in the manner described above, is to be extended to all of the signatory countries, after the identification of top-level laboratories is complete.
2. The priority topics needing particular attention and which will be the object of programmes and doctoral theses are enumerated in the Annex.
3. In view of the complex problems posed by woody material, each country is invited to promote appropriate procedures for the awarding of doctoral thesis grants and financial support that is sufficiently motivating and durable to allow new well-qualified laboratories to make a long term contribution to the work of the EUROSILVA network.
4. This dialogue would allow several laboratories of the EUROSILVA network to respond jointly to international tenders. Furthermore, it would facilitate coordination in the choice of projects financed by each country within the framework of an overall project.

## NATIONAL AND INTERNATIONAL COORDINATION BODIES

1. Each country is invited to organize its national network on the basis of the principles set out in chapter 2, and to participate jointly with other countries in the international activity of the EUROSILVA network.
2. A chairman is chosen by the participating countries to lead the EUROSILVA network as a group and to represent the network when dealing with other bodies. Appropriate mechanisms for coordination of international proposals of tree physiology research, especially in the European Communities, should be used.
3. Each country is responsible for the financing of its contribution to the EUROSILVA network.

## ANNEX:

### EUROSILVA - MAIN CURRENT TOPICS

1. Methodology
  - 1.1. Plant physiological and biochemical methods are as yet little developed in the case of forest trees. Therefore appropriate methods must be newly developed or methods in use for the study of agricultural plants should be adapted for studies of tree species.
  - 1.2. Some examples are:
    - 1.2.1. organogenesis and regeneration "in vitro"
    - 1.2.2. isolation and characterization of organelles, enzymes, nucleic acids and metabolites from cell cultures as well as needles, leaves, woody parts and roots of intact trees
2. Tree molecular biology
  - 2.1. Considerable advances have been made in recent years concerning the molecular biology of agricultural plants. Such studies are also essential for forest trees in order to understand processes of developmental regulation, of tree growth and of stress effects and for gene transfer (e.g. for insect, disease or frost resistance). Two major areas concerned are cellular membranes and differential gene expression.
  - 2.2. Some examples are:
    - 2.2.1. study of gene expression at the levels of transcription and translation
    - 2.2.2. identification and mode of formation of secondary metabolites that are related to specific developmental or stress effects (e.g. phytoalexins, terpenes)
3. Tree physiology, ecophysiology and biochemistry
  - 3.1. There is again a wide discrepancy in knowledge on agricultural plants and forest trees. A variety of key physiological processes will have to be studied in close cooperation with

neighbouring disciplines (forest ecology, forest pathology, tree propagation).

- 3.2. Some examples are:
  - 3.2.1. study of dormancy and germination of tree seeds
  - 3.2.2. study of aging and of normal and premature senescence processes
  - 3.2.3. study of the light and dark reactions of photosynthesis as well as carbon transport and allocation
  - 3.2.4. study of stomatal processes, gas exchange and ecophysiology
  - 3.2.5. biosynthesis, turnover and mode of action of phytohormones
  - 3.2.6. uptake, distribution and effects of mineral ions
- 4. Stress and disease factors
  - 4.1 In principle, each of the above mentioned physiological processes may be growth-determining and be involved in stress and disease phenomena. It is therefore mandatory to coordinate studies on "normal" trees with studies on stressed or diseased trees.
  - 4.2. Some examples are:
    - 4.2.1. effects of air pollutants such as ozone, nitrogen oxides, sulfur dioxide, etc...
    - 4.2.2. pathogenic organisms (e.g. viroids, viruses, bacteria, fungi), insects
    - 4.2.3. environmental factors (e.g. soil parameters, mineral nutrition, salt stress, wounding, allelochemicals)

## RESOLUTION S6

### EUROPEAN NETWORK FOR RESEARCH INTO FOREST ECOSYSTEMS

*The Signatory States and International Institution,*

deeming that the increase in knowledge and the changes in attitudes over the last two decades have permitted a clearer perception of the need to establish, on a scientific basis, an overall protection strategy for forests, which is not limited to the conservation of a small fraction of forest land,

noting that difficulties in forestry management have been encountered in certain cases, due to insufficient knowledge and understanding of the complexity of ecosystems,

considering that scientific works carried out in the framework of international collaboration, notably those under the aegis of the European Economic Community, have confirmed the fact that recently recorded damage to

European forests is the result of complex interaction between natural causes and the actions of man,

conscious that a coherent ecosystem-based approach implies close collaboration between specialists from various disciplines in joint programmes, often bringing about the development of original methods for ecological analysis, in the field of forestry,

considering that it is necessary to limit ourselves to the study of a few themes of major interest, such as, for example, the hydrological cycle, the nutrition cycle and the energy cycle,

conscious that such research demands substantial financing, and that it is unlikely that each European country will be able to face a scientific challenge of this magnitude alone,

*commit themselves to better combine their research efforts at the international level, on the management of forestry ecosystems and, to this end, to set up a European network for research into forestry ecosystems.*

## THE PRINCIPLES

1. In the framework of this cooperation, well-qualified teams will coordinate on themes defined in common, thus enabling the development of a real European competence, capable of elaborating concepts and works methods that will allow us to analyse problems concerning European forests, and to take into account ecosystems in all their diversity.
2. Each signatory country is invited to organize a mechanism for national cooperation, in the framework of its own appropriate structures, and then, to participate in the international activity of this network, together with the other countries.
3. The definition of a few priority research subjects particularly important for the protection of forests, and object of coordination within this network, is entrusted to a working group in which each signatory is represented, in liaison with the international organizations concerned, notably the International Union of Forestry Research Organizations.
4. A chairman will be chosen by the participating countries to lead the entire network and represent it before other bodies. Appropriate procedures will be set up to ensure collaboration and coordination with those in charge of international calls for tender in the field of research on the functioning and malfunctioning of forestry ecosystems, especially those of the European Communities.
5. Each country will finance its own contribution to this network.

## FOLLOW-UP AND CONTINUATION OF WORKS BEGUN AT THE STRASBOURG CONFERENCE

### *The Signatory States and International Institution,*

considering that the protection of forests poses numerous diverse and complex problems, necessitating concerted thought and action,

conscious that the practices and culture of each European partner influences the methods of forest management, which enable the forest to fulfil in a lasting manner its long-term ecological, economic and social functions,

considering that each nation, while its separate identity must be respected, should better assume its share of the responsibility common to all European countries as regards the future of forests,

taking note that it is necessary to try to settle common principles of action between the States and organizations for regional economic integration concerned, through common consideration and concerted action, case by case, according to the diverse nature of the problems dealt with,

recognizing the need for common follow-up action on the application of the principles adopted, within the forestry policies of the signatory States and organizations for regional economic integration, and at the level of those government officials in charge of forestry affairs, in order to maintain the established momentum,

*declare their intention to proceed with discussions begun at the STRASBOURG conference, on the level of those government officials in charge of seeing that forests assume their ecological, economic and social functions in the long term.*

## THE PRINCIPLES

1. In the same spirit as that which presided over the conference proposal made jointly by the French and Finnish Ministers of Agriculture and Forest, further ministerial conferences could be convened as and when these are considered necessary in the light of the work carried out within the international bodies mentioned below. The chairmanship will be assumed by two participants, one of whom will have been co-chairman of the preceding conference, during which the other will have declared candidacy for chairmanship. The host country or organization will be in charge of the secretariat.
2. The follow-up of the recommendations adopted during the preceding conference will be included in the agenda of each meeting, as well as new proposals for joint action that may interest several of the

- participating countries, put forward on the initiative of one or several ministers. Each proposal examined should aim at being signed only by those countries interested in joint action in the field in question.
3. The proposals examined should be supported by expert research and consideration carried out in diverse international bodies, such as the United Nations Economic Commission for Europe, the Food and Agriculture Organization of the United Nations and in particular its European Forestry Commission, the Council of Europe, the International Union of the Forestry Research Organizations, the European Environment Agency, the working groups of the European Community,...
  4. The aim is to reinforce excellence and the specific features proper to each country, while creating conditions conducive to a further coordinated effort which would enable us to protect forests more efficiently and to maintain their biological diversity.