



## **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 end 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.