The sustainable future of mountain forests in Europe facts and figures

European Observatory of Mountain Forests

1998

Keywords: mountains, mountain forests, mountain development, sustainable mountain development, Europe.

FOREWORD

This contribution aims at providing representatives and participants in the Third Ministerial Conference on the Protection of Forests in Europe, Lisbon, 2-4 June, 1998, with some basic facts and figures concerning mountain forest in Europe. It makes no pretence to be comprehensive but provides a discussion snapshot open to further developments, participations and partnerships.

Resolution S4 «Adapting the management of mountain forests to new environmental conditions» has been adopted by 25 countries at the Strasbourg Ministerial Conference on the Protection of Forests in Europe. It deals with relevant issues that have been gaining importance since 1990.

The sustainable future of mountain forests depends today, more than ever, on the commitment of Ministers in 1990 «to strive to mobilise 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» and on the actions to be implemented after Lisbon for the «socio-economic role, the criteria, indicators and guidelines, and for the conservation and enhancement of biological diversity».

Some proposals for action are suggested at the end of the document.

FACTS

1. Mountain forests are the object of a growing international attention. Their place, influence and multifunctional role are recognised at the local, regional and national scale. Those key-ecosystems are at the crossroads of soil and water resource conservation, prevention of natural risks, and protection of fragile and diversified environments, maintenance and enhancement of economic activities in the framework of rural development.

2. European Ministries, at the Ministerial Conference of Strasbourg in 1990, fully acknowledged the importance to be given to mountain forests and ratified their commitments within the Resolution S4 «Adapting the management of mountain forests to new environmental conditions» (1).

3. International community recalled, since then, the urgent need to act in favour of mountain forest resources found in socio-economic contexts showing major issues and opportunities of sustainability.

4. UN Conference on Environment and Development-UNCED, Programme of Action for Sustainable Development Agenda 21, adopted, beside the Forest Principles to be applied to all types of forests and the Chapter 11 on deforestation, the Chapter 13 «Managing Fragile Ecosystems: Sustainable Mountain Development» (2). Europe-wide practical recommendations were accepted in 1996 at the two sessions of the European Inter-Governmental Consultation on Sustainable Mountain Development (3).

5. FAO's European Forestry Commission Working Party on the Management of Mountain Watershed, established 40 years ago, has since then developed coordination activities on technical issues and took in 1992 shared responsibilities for the follow-up of the Resolution S4 together with IUFRO and the Commission of the European Communities (4).

6. UNESCO's Programme Man and Biosphere-MaB6 (Impacts of Human Activities on Mountain and Tundra Ecosystems) has been partly concerned with forest resources in integrated development field projects (5).

7. OECD brought together in 1992 national case studies in which attention has been given to mountain forests within the market and the government failures in environmental management (6).

8. IUFRO recently promoted an international collaborative mechanism, the Task Force on Forest and Mountain Development with a view to bring together existing groups dealing with mountain forest issues such as «operations under mountainous conditions» (3.06.00), «harvesting» (3.06.01), «accessibility» (3.06.02), «subalpine and boreal ecosystems» (8.01.05), «torrent erosion and control» (8.04.01), «snow and avalanches» (8.04.02), «watershed management» (8.04.04), amongst others (7).

9. European institutions and countries have been particularly attentive in the recent years since the adoption of Resolution S4 to mountain forest issues and opportunities. National positions are given in the Helsinki Report of June 1993 on the Follow-up of Resolution S4 and in the FAO Report of the 19th Session of the Working Party on the Management of Mountain Watershed (8,9).

10. Council of Europe's Charter of European Mountain Regions of 1995 makes reference to forest resources in its article 9 (Forestry), promoting «the setting up of guidelines for the economic, social and cultural development of Europe's mountain regions» and recognising the fragile nature of mountain environment (10).

11. European Ministers set out the Pan-European Biological and Landscape Diversity Strategy in 1995, including an Action Theme «Mountain Ecosystems», within the Ministerial Conference «Environment for Europe» (11).

12. European Parliament's Resolution on the European Union's Forestry Strategy of 30.1.97 (PE 255-868) makes a specific call on the Commission to the need of actions, instruments and adequate funding «for the protection of economic and biological value of the forestry heritage and for the enhancement of its role in maintaining rural equilibrium, with particular reference to problems of specific regions, including mountain regions» (12).

13. EUROFOR extensive report on the forest in Europe draws the attention on the «forest as an essential element of activity in mountain regions». The report is an initiative of the European Parliament (13).

14. The Commission of the European Union concern with forest resources in mountain regions is manifold, although there is no specific policy. Recognition of mountain areas handicaps is given in Directive 75/268; under «considerable limitation of the possibilities for using the land and an appreciable increase in the cost of working» some critical constraints are highlighted, such as «difficult climatic conditions, short growing season, steep slopes, requirement of expensive special equipments, and combination of those factors». 24% of the EU falls in this context. Recently the Commission stressed that «less-favoured areas are particularly rich in High Nature Value features designated by EECONET-CORINE land cover exercise»; most of these areas are overlapping those identified Directive 75/268 (14).

15. The Commission of the European Union activities to support research and development on mountain forests is also manifold: DG XII, DG XI and DG VI promoted mountain forest research under STEP, ENVIRONMENT, LIFE, FAIR, COST and other Programmes (15).

16. Four member States addressed the Commission of the European Union in 1995 and 1996 national ministerial Memoranda on forest and agriculture in mountain regions. It is the first time that member States ask for the implementations of forest policy measures to the Commission giving priority to less favoured areas. Strengthening measures for conservation and management of mountain forests are the central concern at the light of the above mentioned EC-Directive 75/268 (16).

17. The European Science Foundation-ESF, within a scientific context, supported in 1995 a preliminary network on «European Mountain Biodiversity» which started a research collaborative mechanism on mountain ecosystems including forests (17).

18. The European Federation of Forest Municipalities and Forest Authorities adopted in 1992 the «European Forest Charter of Local Communities», which in its article 19 makes reference to the negative consequences of the socio-economic situation of mountain forests. Consequently a specific Charter was adopted in 1995 by the Federation calling the attention on the future of mountain forests in Europe (18).

19. In 1996, the 1st International Workshop «A European Project for Mountain Forest» took place in France (St.Jean d'Arvey, 11-12.9.96) under the aegis of the European Federation of Forest Municipalities and Forest Authorities. Institutional representatives of 11 countries and the FAO adopted the threefold proposal to establish a permanent instrument in view of: - debating, monitoring and evaluating mountain forest issues, - strengthening communication, information and training instruments, and - meeting regularly to follow-up actions and evaluate results (19).

20. Several meetings, conferences and workshops, specifically addressing mountain forest issues (20), or more generally mountain issues witness of the demand for providing better knowledge, new orientations and effective solutions.

21. A number of European trans-national initiatives concerning mountain forests have been taken long time ago, such as FAO's «Silva Mediterranea» created in 1922, or throughout the present decade, such as the Convention for the Protection of the Alps-Alpine Convention, the Pyrenean Meetings for Environment and Development, the «Alpenländischer Wald» of the Austrian Confederation of Forest Owners (21).

22. The attentive and comparative analysis of each of those initiatives provides some relevant facts of Europe-wide interest, although the constellation of national situations may presents significant differences or peculiarities. There is clear evidence that major international organisations, European institutions, political, scientific, owners and other actors are raising awareness on mountain forests and call for increased cooperation and reinforced actions.

23. The main concerns expressed on mountain forest in Europe reflect the increasing socio-economic difficulties to secure a multifunctional sustainable management and, as a consequence, the conservation of resources, the prevention of risk occurrence and the sustainable future of forests in the context of rural development and for the benefit of society at large.

24. The following selected figures aim at an overlook of some issues and opportunities which are at the origin of the different initiatives mentioned above.

FIGURES

25. Ecological figures for mountain forest ecosystems are those related to increasing altitude and vegetation belts at given altitude range, within six main features: i. mean annual air temperature decreases linearly by some 0.55 °C/100 m, ii. Precipitation increases non-linearly, iii. Physiological aridity increases, iv. Snow cover increase in surface and duration, v. soil evolution slows and soil temperature decreases, vi. Silvo-pastoral patterns of land use dominate with decreasing vegetation periods and productivity (22).

26. Cartographic evidences and sources show significant areas of the European continent where the above mentioned features dominate. Figures are roughly 25% of the total land under average conditions combining all mountain characterises (23).

27. Mountain forest ecosystems shows clear influences on and interactions with other strategic resources such as soils, grasslands and waters, both in quantity and quality. Although figures are not available, the watershed influence of forest ecosystems is far larger than the forest cover itself. Mountains are widely recognised as primary water sources and this is particularly true in Europe (24).

28. Strategically definitions of mountain areas in Europe are those developed in the European Union Directive on Less Favoured Areas (Dir.CEE 75/268). Those areas show a wide and significant overlapping with High Nature Value areas (CORINE Land Cover). Consequently, mountain forests are classified within areas with natural permanent handicaps in their economic direct use and within the most fragile and sensitive areas of Europe.

29. Amongst the variety of national definitions for mountain areas, the case of Norway shows a practical example applied to mountain forests. Those are related to climatic conditions as limiting factors for seedling setting, seed ripening, germination and production. Climate and topography are dominating the national definitions of many countries in the north and center of Europe, while in the south socio-economic concerns are taken into account. In Italy, where mountain conservation and development are issues included in the national Constitution, the definition is based on altitude and revenues within local communities and their interaction with resources.

30. Statistical definitions of forest and mountain areas could greatly vary and available information is widespread, incomplete and heterogeneous. Nevertheless, by abstracting from various statistics, including those of international organisations such as FAO, rough figures for basic data can be estimated.

31. 25% (280.000 km2) of forest resources in European Union's member countries are found in mountain areas. At the European Union level, mountain areas (Dir.CEE 75/268) represent 24% (800.000 km2) of the total land area

(3.300.000 km2). Forest and other wooded land (following FAO/Forest Resources Assessment's definitions) cover roughly 35% (280.000 km2) of mountain areas.

32. For all of Europe (European Union member countries, Central and Eastern Europe) mountain forest cover evaluation ranges from 600.000 to 700.000 km2.

33. Ownership figures are showing in most mountain forest cases a dominance of public communities. It is the case, for example, of Switzerland, France and of the sub alpine forests of Austria (25).

34. Mountains are the most thickly forested areas of Europe. Most national figures on rate of forest cover in mountain regions clearly show this situation, e.g. for Italy the rate is 45% versus 30% for the national cover, in Spain is 30% versus 25%, in France is 42% versus 27%, in Germany 40% versus 30%.

35. Mountain forests productivity is limited by a short vegetation period. The consequence is that annual increment in mountain areas are reduced of one third of the national average: in Switzerland, for example, the national average productivity is 5,4 m3/ha per year, while in mountain regions the figure is 3,8 m3/ha per year (26).

36. Rates of recolonisation (natural reafforestation) are also higher in mountain areas than national averages, e.g. France shows annual rate of recolonisation in the latest decade that are 50% higher of those at national level: 0,6% in mountain versus 0,3 at national level (27).

37. Growing stock is consequently increasing more rapidly in these areas as well as the age figures: e.g. in Switzerland the larger age class on areas up to 1400 m of altitude is 81 to 120 years and the corresponding between 1401 and 1800 m is 121 to 160 years (28).

38. The overall figures in Europe show that one third of the annual increment is not exploited. In the French Rhône-Alpes region and in Norway this figure rises to one half; the annual round wood amount is equivalent to amount left in the stands. Beside the growing stock, there is an increasing amount of decaying wood which in mountain watersheds influences run-off patterns (29).

39. Some native tree species (e.g.European larch) are decreasing and Underwood is losing diversity of micro site conditions (30).

40. Rates of game populations influencing forest regeneration are higher in mountains regions than elsewhere. In the Trento province, Italy, figures show increasing red deer populations up to +45% in ten years (1982-1991). Animal species associated with mountain forest and grasslands are in some cases decreasing (e.g.capercaillie) (31).

41. Figures of damages caused by deer browsing in mountain forests of Bavaria show through a restoration scheme that around 3200 DM are needed per ha and per year to restore critical damages (32).

42. Increasing stocks and age classes, associated to other factors, are at the origin of wind thrown stands and insect damages on commercial wood. In Switzerland, the consequences of the «Vivian» storm in 1990 are still considerable four years later with 20% of the total amount of wood exploited under damages caused by insects. In Slovakia, the proportion of incidental felling increased in mountain areas of 50% during the period 1985-1995 (33, 34).

43. Land use patterns in mountain areas have been often associating forest to grassland (prairies, pastures and other open areas). The trends in forest recolonisation are influencing the rate of grassland which is decreasing. Forests and grasslands, or mixed forest-grassland ecosystems are important features of the mountain landscapes, playing a relevant role in tourism activities, which are often one of the primary sources of revenues in those areas (35).

44. Infrastructures (roads, buildings, ski resorts, electricity lines, dams, etc.) have been constantly increasing, producing pressures on forest ecosystems.

45. There is a general concern about stability and vitality of mountain forests which are both affected by an increasing number of man-driven factors, such as unadapted or lacking silvicultural practices, sources of pollution, climatic variation and change, insects epidemiology, fire (36).

46. Mountain forest economics is relatively specialised, due to permanent natural handicaps (Dir.CEE 75/268) limiting accessibility and mechanisation, to external constraints limiting incomes, to international market prices and to lack of internalisation of benefits and services provided. Trends in mountain forest economy show dramatic and systematic imbalances in the forest management and primary operations.

47. Direct costs from different national sources show increase, between the years 60s and 90s, ranging from +300% (France) to +500% (Suisse), while prices have not been substantially modified. In mountain forests activities, higher costs depends on access, management operations including tending, extraction (less on felling) and trasport (37).

48. Indirect costs, like forest road construction, are also relevant. Figures available in the case of French Pyrenees show an average increase of +600% in costs when slope is considered to more than 60% (38).

49. Operational financial schemes aimed at maintaining or increasing logging operations in mountain forests have recently shown positive results in France

on the basis of similar schemes adopted in Norway, Switzerland and Austria. Public subsidies in remote mountain areas to cable logging gave positive rate of return, creation of employment, development of silviculture and a solidarity between economic actors concerned (forest owners, managers, workers, industry) (39).

50. Figures from Switzerland in 1998 show public subsidies to be equivalent to an average of 90 SFr/m3 or 400 Sfr/ha for forest management, tending and protection against risks. In mountain areas figures are higher (39).

51. Quantitative assessment of employment potential in mountain forest referring to wood production shows in some test areas of France and Italy that 10000 m3 of round wood provides employment opportunities equivalent to 8 person/year in forest management, 4 in exploitation, 1/2 in transport, 18 in the secondary manufacturing, 3 in pulp and particle board production. The overall figures come to 33,5 persons/year equivalent to 300 m3 for one year employment (40).

52. Promising employment potential figures are reported for mountain forest in the context of rural development, often in support of pluriactivity and in combating depopulation (41).

53. Mountain forests require a specific degree of skills and practices in the management and logging operations. This skill is lacking in crucial areas of Europe and training programmes are under development. (42).

54. Direct protection of sites by mountain forests is one of the common characteristics of those ecosystems. The protection from risks of avalanches, rock falls, erosion and floods is recognised to be far more efficient with a high rate of natural vegetation, including non tree species, than with artificial devices. Switzerland provided eloquent figures for the role of protection which is said to be worth up to Sfr 3 billion (US$ 2 billion) per year to local communities (43).

55. By virtue of their high multifunctional value and a small scale diversification, mountain forests are sources of a wide range of goods and services, globally wider than the other areas (44).

56. Diversification capacities of economic and social activities are greater in those areas, which already provide niche markets to local products in the agro-food chain. A differentiation and market segmentation of mountain wood and non-wood products have been successfully tested in Northern Italy (45).

57. In the marketing of forest services, it has been reported that remote rural areas such as mountain areas, a market price can be achieved (46). The initiative for biotope preservation by forest owners carried out in Austria has

shown that High Nature Value can provide incomes through an efficient communication and entrepreneurial skill and strategy (47).

58. Greek figures for mountain areas shows recreation value to estimate 10 times higher than wood (90 billion drachmas), direct protection of soil to 1/3 of wood and a significant value for bee-keeping as a local development activity linked to forests (48).

59. Socially, mountain forests have a central role in local rural development and in the overall benefits to society. The social demand for landscape, protection, recreation, hunting and collecting is high in those areas where tourism is one od the primary source of revenues. The balancing of local, regional and national benefits requires a higher degree of solidarity along the chain of responsibilities held by actors involved (49).

60. Co-operatives for forest related activities have proved to be successful in some cases as in the Trento province and in Greece (48). In this country where the first forest co-operatives was established 50 years ago, 600 co-operatives exist today in mountain regions where silvicultural practices, timber collection and fuelwood provisions are carried out to the benefit of local communities.

61. Forest related activities can play an active role in reducing migration from areas which are amongst the most affected by depopulation trends. The cases of the Central Massif in France, the Apennines in Italy and large areas in the interiors of Portugal and Spain are reported (50).

COMBINING FACTS, FIGURES AND ACTIONS

62. In the greatest diversity of situations and conditions in Europe, mountain forests show common issues and opportunities. International community provides, by its side, a great variety of initiatives which have common concerns.

63. Some open questions could find an answer by combining facts, figures and actions. In the diversity of national and local situations, what are the trends facing those forests? What are the trends for local mountain communities in terms of interactions with their forests (activities, employments, revenues, risks, challenges)? What are the actions required to seize opportunities and to progress in problem solutions? How to ensure the sustainable future of mountain forests, of local communities and of multiple necessary roles played by those resources in a changing society? What do we want to be the heritage of mountain resources, diversity, knowledge and skills, perception and practices?

64. In the present particular context of international forest activities, the development of the Resolution S4 is a unique opportunity to answer the above

questions. In order to provide the combination of existing capacities in a voluntary action of coordination, monitoring and evaluation, the European Observatory of Mountain Forest is preparing a White Book on European Mountain Forests.

65. The White Book is meant to allow an independent international forum, made by national and international forest actors, to express concerns, to progress towards possible operational solutions and to share views on the sustainable future of mountain resources.

OEFM/PCZ/6.3.98

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Notes to readers

This paper is a report on The Sustainable Future of Mountain Forests in Europe: Facts and Figures. A European Observatory of Mountain Forests report for Third Ministerial Conference on the Protection of Forests in Europe, Lisbon. 2-4 June, 1998.

Contribution by the European Observatory of Mountain Forests to the strengthening, development and follow-up of Resolution S4 «Adapting the management of mountain forests to new environmental conditions»