

White Book 2000 on Mountain Forest in Europe
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Executive summary

TOWARDS A MOUNTAIN FOREST POLICY IN EUROPE

Mountain forest provides to society multiple functions which are increasingly of public utility. It contributes to the protection of soils, of habitats and infrastructures. Beyond its direct economic role in the production of wood and the indirect one in the support of rural activities (grazing), tourism and recreation (including hunting), it is a basic element of the mountain natural heritage by its fauna and flora, and takes part in the cultural heritage by its landscapes and traditional practices.

During the last two decades, the economic context of mountain forest has been deeply modified. Subject to external competition, handicaps related to slope have been providing a consistent incomes degradation in forest production, bringing sometimes to abandon the management of individual forests and thus to risks of a further degradation.

Moreover, such a trend has been increasing within a societal process leading to parallel demands incorporating recreation-based utilities (ski-resorts and summer trekking) and to some catastrophic event recalling the role that trees and forest can play in protection. All those demands, sometimes complementary, sometimes competitive, which are making pressure on forest owners and managers, call for urgent actions adapted to the current critical situation.

Untargeted partial actions issued by decisions often taken a posteriori, i.e. too late and which in any case do not meet causes of relevant phenomena to combat, are insufficient to answer this urging concern. To allow a sustainable development of mountain forests, equitable and balanced, public powers must take, at the different levels, regional, national and European, adapted and relevant measures, inherently coherent and organised around the five following axes:

1st axis: Allow participation of all stakeholders in forest development: Forest owners, users, and more widely citizens, should take part in the development of mountain forests, with all rights and obligations concerned, being involved in the most responsible and thoroughly way. All decisions in orientation and management should be taken calling all interested parties, including and in the first place mountain peoples, to formulate jointly a compromise between everyone's expectations for the benefit of a sustainable development of mountain forests.

As far as long term conservation and development of mountain forest resources will be implemented by participation and commitment of all concerned stakeholders, the policy to be identified should be issued by a compromise to be found within a participatory process of all stakeholders in the choices. To do so, rights and obligations of forest owners must clearly be established. At the same time, information and training of local stakeholders, often neglected in the debate on mountain forests, should be systematically encouraged by adapted means.

2nd axis: Establish territorial contracts for the management of mountain natural areas involving stakeholders:

The compromise should be identified contractually, involving all stakeholders in the negotiated development of mountain forests. Forest should not be seen as isolated but integrated in the mountain land use wherein it is a component able to secure stability. Territorial contracts for the management of mountain forest areas, identifying responsibilities of different parties (Europe, states, regions, provinces, municipalities and other local mountain communities, owners, users, forest workers and industries, inhabitants) should be established, and, when appropriate, linked to the management of the overall rural and natural resources. Those different parties should be concretely committed to jointly participate in the financing of actions to be dealt in the implementation of contracts, as well as in the development of the human resources requested for the best efficiency of the actions.

3rd axis: Support less favoured areas by measures reducing handicaps and training for development:

Human and financial means to reduce mountain handicaps should be established in a targeted way in the less favoured areas. Link as much as possible to market and based on a preliminary assessment of the handicap's extent and of the efficiency of existing measures (legislation, financial aids, extension), those support and training measures should be the object of planning and prioritization in relation to local opportunities for a sound mountain forest development. Areas where framework conditions in human resources (pro-active entrepreneurs, trained labour) allow carrying on development should be given priority in the allocation of those economic aids. Wherever handicaps are more relevant, support actions should be envisaged in order to help the establishment of framework conditions which are essential in the effective implementation of further development. To direct grants allocated without return, other tools of economic support should be given preference; they should be integrated in the territorial contracts and able to produce training effects in development, and not simply be compensatory measures.

4th axis: Promote the quality of products and services related to mountain forest:

Measures aiming at promoting a sound image of the quality of products (wood and manufactured products, other forest products) and services (namely landscape and recreation) issued by mountain forests should be established. As production costs are higher in mountain areas because of the overcharges coming from the difficulties in the access to resources, the only way to promote the mountain forest products in the market is to develop the qualitative assets, mechanical, aesthetic or cultural. A set of labels specifying the mountain character, and some linked to the eco-certification of forest management, should be identified by inter-professional groups with the aim to promote a positive and valuable image. Territorial contracts will include this component, if necessary.

5th axis: Define multifunctional forest management plans:

Forest management should be reoriented in order to provide further sustainability of mountain forests. The implicit current identification of areas splitting protective from productive stands should be revised to secure a higher sustainability (mapping and prioritization of functions). In both the private and public sector, new forest management plans should be dealing with the promotion of multifunctionality by integrating different utilities of woodland areas by means of a process associating all interested parties in the decisions of direct management. The socio-economic balance should become an explicit objective of the management plans. Researches carried out on the management of mountain forests should be orientated to answer directly to the concerns of forest owners, managers and users.

For the implementation of the above five major axes, all consistent with Resolution S4 of the Pan-European Process, a real commitment of all stakeholders is needed. The purpose is to build a genuine Pan-European policy for mountain forests, made by the participation of all stakeholders, coherent, coming from joint and interdependent commitments of Europe (for the EU's member countries), of States and regions, and furthermore of the stakeholders of mountain forest development, either owners or users of woodland areas.

The FECOF and the EOMF commit them entirely in the support of such a coherent long-term policy that they believe to be the only one able to solve the problems found today in the sustainable development of mountain forests for the benefit of owners, managers and users.

Introduction

RAISING A EUROPEAN PROJECT FOR MOUNTAIN FOREST

The European Federation of Local Forest Communities (FECOF), organisation gathering local communities owning forests in Europe - and managing them in some countries - adopted in 1992 a European Charter of Forest Local Communities. Mountain forest has a central place in it, in consideration of its vital role in the protection of habitats and human activities.

In 1995, recognising the degradation of the situation of mountain forests, the FECOF proposed some concrete actions in favour of mountain forests to be taken, and helped the establishment of a specific tool: the European Observatory of Mountain Forests (EOMF).

Scientific, policy and partnership tool, the EOMF has the mission of federating competences to develop a real policy for mountain forests in Europe, built jointly with all stakeholders: private and public owners, managers, professionals of the forest-timber chain, elected officials, administrators, ecologists and researchers.

THE WHITE BOOK: AN ASSESSMENT AND SOME PROPOSALS

The main mission of the EOMF is today reinforced by the mandate of international coordination of the Resolution S4 of the Ministerial Conference on the Protection of Forests in Europe. The mandate, given to the EOMF in collaboration with the Food and Agriculture Organisation of the United Nations (FAO) and the International Union of Forest Research Institutes (IUFRO) by the 24 European ministers in charge of forest, commits signatory countries and the European Commission to a work of monitoring and evaluation on the sustainable management of mountain forests in Europe. Yet, the definition of precise common orientations to be encouraged is needed in the different countries in order to promote the sustainable management of mountain forests. The core objective of this White Book on Mountain Forests in Europe is to provide a first set of actions at the European scale, based on a sound assessment of the situation including an evaluation of existing policy measures. Proposals formulated by the White Book open to political, economical and technical solutions which are hard to be postponed without a number of severe consequences for the environmental and socio-economic future of mountain regions. Wherever the market regulation is insufficient to secure a sustainable development, some rules, even restrictive, are sometimes necessary. In the field of mountain forests, public policy measures, which have certainly a cost for society and whose effects can only be evaluated on the long-term, need to be adopted.

THE WHITE BOOK: SOME ESSENTIAL QUESTIONS FOR MOUNTAIN FOREST

In the diversity of national and local situations, of stakeholder's interests, and with the concern of adapting the measures of environment protection, of

resources development and of maintenance of a viable level of local socio-economic activities, the main questions are the following:

- What are the main trends in mountain forest areas, in multiple utilities, in stand resistance to different pressures, in management and in natural risks?
- What are the forces and weaknesses characterizing mountain forests within the current environmental, territorial, economic and social context?
- What are the most suitable measures to the development of mountain forest products and services, and consequently to the maintenance of a viable level of socio-economic activities?
- How to conciliate the requests of the owners of those forests, public and private, with the expectations of the whole society?
- How to secure the strong multifunctional character of mountain forest integrating in a same management, the prevention of natural risks, the protection of the environment and biodiversity, the recreation, the local development and the economic activities?

To answer all those questions, the White Book on Mountain Forests in Europe includes three parts:

- a. An assessment of the current situation of forests and the forest sector in the mountains of Europe,
- b. The identification of some options for the future on which we are all called to make societal choices,
- c. Some concrete proposals to promote an equitable, sustainable and balanced development of mountain forests based on a compromise committing all the stakeholders.

1. An assessment

Overall situation and trends

The importance of mountain forest resources and utilities in Europe can only be assessed starting from diversified sources inevitably producing approximate figures. Indeed, the very notion of mountain region, as well as that of forest area, can vary from country to country, and at the European level, mountain areas are not taken into account in any specific statistics. If we take the commonly accepted definition of the European Union's countries, which makes reference to average elevation and slope, the forest cover in mountain areas in the EU's countries is estimated to some 28 million ha, i.e. 36% of the total mountain areas and 27% of that of total forests. This relative importance is even higher in countries of Central and Eastern Europe. Mountain regions are at the same time, the most forested areas in Europe and those where the forest cover increases most rapidly. In France, for example, such a progression is

twice as rapid as the rest of the land because of the abandonment of rural activities in the peripheral regions and the natural recolonisation of fields in less favoured areas.

Diversity and multifunctionality of resources

In the diversity of national situations, mountain forest resources are important in both cover and biomass. In most of the countries, mountain forest plays a central role in terms of land use, landscape and available raw material. The distribution of forests in the valleys is often the result of functional choices linked to the protection of sites, to soils less favourable to agro-pastoral production, to property regimes. This distribution is today displayed in the structured landscapes and in the multiple functions often found on the same site, even where the land use do not correspond to current needs.

Importance of Mountain Forests in Europe:

Member Countries of the European Union

<i>Countries</i> <i>(data dirCEE 75/268, EUROFOR 94, AEM 97, Helsinki 93, national sources, FAO, EOMF)</i>	<i>Criteria defining mountain areas a: average altitude p: average slope d: difference in altitude.</i>	<i>Area (million ha) and rate (%) of mountain area on the national territory</i>	<i>Forest cover in mountain areas (1000 ha)</i>	<i>Rate of forest in mountain areas (%)</i>
Germany	a>700 m+geo-climatic handicaps	1,60 13%	1,40	84%
Austria	a>900 m	4,90 58%	2,70	55%
Spain	a>de 1.000m p>20% d>400 m	21,00 42%	5,00	18%
France	a>600 m p>20%	12,40 22%	5,10	41%
Greece	a>800 m p>20%	7,90 60%	4,00	51%

<i>Italy</i>	a>700 m p=forte p=high	16,30 54%	4,50	28%
<i>Portugal</i>	a>700 m p>25%	3,70 42%	2,00	53%
<i>United Kingdom</i>	a>240 m	3,00 13%	0,40	13%
<i>Sweden</i>	-	7,20 16%	3,00	42%
<i>Total EU countries</i>		78,00 24%	28,00	36%

Other European Countries

<i>Countries</i> (data dirCEE 75/268, EUROFOR 94, AEM 97, Helsinki 93, national sources, FAO, EOMF)	<i>Criteria defining mountain areas</i> a: average altitude p: average slope d: difference in altitude.	<i>Area (million ha) and rate (%) of mountain area on the national territory</i>	<i>Forest cover in mountain areas (1000 ha)</i>	<i>Rate of forest in mountain areas (%)</i>
<i>Albania</i>	a>650 m	1,60 60%	0,80	51%
<i>Andorra</i>	-	0.50 100%	0,15	33%
<i>Bulgaria</i>	a>600 m	4,40 40%	2,20	51%
<i>Croatia</i>	a>650 m	2,10 38%	0,80	-
<i>Hungary</i>	-	-	0,40	-
<i>Norway</i>	a>600 m	11,80 39%	4,50	38%
<i>Poland</i>	-	2,50	0,90	36%

		8%		
<i>Czech Republic</i>	-	-	0,50	-
<i>Romania</i>	-	7,30 32%	4,00	54%
<i>Russia</i>	-	-	75,00	-
<i>Slovakia</i>	a>600 m	-	1,20	-
<i>Switzerland</i>	-	-	1,00	-
<i>Slovenia</i>	a>550 m	9,50 47%	0,70	72%
<i>Turkey</i>	-	-	6,00	-
<i>Total-European Union countries</i>		78,0 24%	28,00	36%
<i>Total-Other European countries</i>		-	98,15	-
<i>TOTAL- European countries</i>		-	126,15	-

The frequency of fragile habitats, rich and diversified, the risks of erosion, floods, land-slides and avalanches, the increasing pressures at the different scales and the diversification of socio-economic activities give mountain forest resources a particular strategic importance. Because of the tourism development, protection has become of central interest in many regions.

The ecological importance, the influence on the dynamics of soils and waters, the protection against natural hazards and the provision of other benefits of general interest (external to accounting and market systems, as, for example, air quality, mountain watershed protection, conservation of soils and waters, landscape patrimonial values, participation to other benefits such as tourism) are particularly important in mountain regions, even if they do not correspond significantly to the creation of revenues and employments.

European mountain forests are very scattered at the national, regional and local level, from the Mediterranean, to the Alpine, Boreal and Central-Eastern

Europe. Diversity, patrimonial richness and natural handicaps are three important features of these forests. Climatic, physical, economic, social and cultural factors characteristic to each mountain region in Europe are at the origin of a great diversity of situations and of a numbers of correspondent utilities. Such diversity is on one side a strong element, represented by the patrimonial richness and the employment opportunities, and, on the other side, a weak element because of the permanent natural handicaps limiting the biological productivity and the economic income capacity.

Forces

Although a general lack of explicit definitions, mountain forests are well-identified at the geographical, ecological and economic level of each country. They are an integral part of rural peripheral regions and they play a central role of socio-economic balance for the local communities and of public interest for the national community.

The capacity of mountain forest to provide multiple products and service is high. These forests are found in areas of strategic importance for local communities; they can be coordinated with other land uses and allow to provide with solidarity and a direct impact on the local collective interests, mainly when is possible to pay environmental or protective services (protection against natural risks, maintaining of landscape's features, framework for tourism, protected areas).

The importance of mountain ecosystems in a patrimonial and biodiversity framework can be summarized in the ten following statements:

1. Mountain regions represent the largest semi-natural areas in Europe.
2. Mountain ecosystems are very rich in biodiversity due to a combination between the number of species and habitats, and specific adaptative patterns to the environment.
3. Mountain regions are very complex in terms of hydro-geological systems (watersheds).
4. They are intensive and privileged areas for the study of interactions between ecological, atmospheric, geo-pedological factors and agro-silvo-pastoral practices.
5. Mountain ecosystems are ecologically very sensitive to perturbations, with important unbalances and a particular slow recuperation in regeneration and growth.
6. Mountain ecosystems are highly dynamics and the stabilization role is very important (erosions, floods, avalanches).
7. Mountain regions are biological shelters hosting endemic species (large mammals, birds, insects, plants, fungi, lichens).

8. Mountain ecosystems are fragile, with a very limited carrying capacity and punctual pressures calling for adapted actions of prevention and management.
9. Forests form the crowns of mountain landscapes.
10. Mountain forests are characterised by a strong resistance and a weak resilience.

In Europe, mountain areas generally correspond to areas of "High Natural Value" following the definition of the European Commission. This is confirmed by the number of areas under specific juridical protection - protected areas - which is higher in these regions than in the average of national land. Finally, because of the slope, mountain forests are generally less influenced by human actions than the other, and therefore the closest to natural conditions. In a number of cases, forests in mountain regions are relatively under better conservation conditions than elsewhere.

Furthermore, forest land in mountain areas plays a key role in the prevention of natural risks (erosion, floods, avalanches, rock falls, and landslides) and in the conservation of soils. As stated by the Protocol on mountain forests of the Alpine Convention, mountain forests represent the form of vegetation able to provide the most effective, less expensive and more aesthetic protection against natural risks. The role of protection is vital in mountain areas, either when considered in a global way or in specific local conditions of risk.

The importance of mountain forests in the conservation of soils, air, and water and in the protection against natural risks can be summarized in the seven following statements:

1. The importance of mountain forests in the conservation of soils and water, and in the protection against natural risks is of public interest.
2. Forest is a guarantee of security in mountain areas. The protection over the soils and waters overcome the geographical limits of its cover and influence the upstream and downstream regions.
3. Mountain forest adapts itself to the less rich soils, in physical, chemical and microbiological terms. It contributes to their conservation, evolution and diversity.
4. Mountain regions in Europe - around 25% of the territory - provide more than 50% of freshwater. Mountain forest has a central, but not exclusive, role in the availability of freshwater.
5. Mountain forest has a central, but not exclusive, role in the maintenance of the quality of freshwater, as well as in the air quality.
6. Mountain forests represent the form of vegetation able to provide the most effective, less expensive and more aesthetic protection against natural risks.
7. The economic value of the protective role of mountain forest is considered as highly relevant.

In mountain regions, interactions between forest and water resources are very close and consistent. The importance of mountains as reservoirs and water quality supply is capital and strategic. The role of the forest cover, and generally of the vegetation cover, is crucial in providing water quantity and quality. The Resolution S4 of the Ministerial Conference on the Protection of Forests in Europe included such a concern within one of its principles which states the better understanding of interactions between water cycle, vegetation system, soil and bedrock in order to better assess the risks and to work out appropriate answers.

In the conservation of soil and water resources, the influence of mountain forests on the whole territory is wide, involving the lower watershed areas. An estimation of interactions between mountain ranges, forests and water, raises this concern to a place of world priority. In Europe 60% of freshwater is provided by mountain ranges. Because of the loss of quality of waters in lowland regions and its increasing demand, mountain will represent a vital challenge in this strategic context.

Finally, forest resources and the activities they provide participate in mountain rural development in virtue of a range of characteristics and activities.

The importance of mountain forests in the socio-economic context can be summarized in the eight following statements:

1. Forest is an integral and central part of local development in mountain regions.
2. Mountain forest, due to the diversity of situations found, is a support adapted to local demands of economic development and social cohesion.
3. Mountain forest participates significantly in the maintaining of social, cultural and solidarity links of mountain peoples.
4. Mountain forest takes a relevant part in creating local permanent revenues and employments. Silviculture, use and manufacturing of products are tools to fight rural depopulation.
5. Mountain forest is the basis of a local productive chain, essential to rural development of remote regions.
6. Mountain forest provides benefits of public interest and non-market.
7. Mountain forest provides quality market products.
8. The sustainable management of mountain forest needs higher costs than the average, but the social and economic importance of goods and services provided is higher than the average.

The supply of wood for construction, furniture and handcraft, as well as those non-wood products had a special place.

With rates of forest cover higher than national averages, mountain regions has an abundant raw-material, renewable and diversified locally available which is a strength for wood industry and handcraft.

Saw-mills and wood manufacturing enterprises are generally the most important employers in the secondary sector in mountain regions.

Touristic and sport activities benefit economically from a landscape with forest, from an air and water quality forest-linked, from the ecological value reinforced by diversified forests, and site, infrastructure and people protection.

In the context of rural development and due to a high multifunctionality, mountain forests are directly or indirectly a strength for the local economy; directly, through the activities linked to the wood chain and indirectly through the activities linked to tourism and protection of goods, peoples and landscapes. They provide in a number of cases a human settlement in dangerous mountain areas.

Ownership regimes deserve an attentive consideration. In a significant number of countries, the patterns of land ownership distribution, and that of forest land in particular, show a rate of community property increasing with elevation. This aspect reinforces the character of public utility of the roles played by mountain forests.

The main challenge for mountain forests in all countries of Europe within this framework is therefore multifunctionality able to develop the diversity of situations, conserving at the same time the ecological, socio-economic and protective stability face to natural risks in this particularly fragile habitat.

This challenge is underlined in its importance by the fact that the European Commission reports half of the 40 mountain regions (which have at least 50% of their territory within the definition of Directive 75/268/CEE) as having a economic development index 65 to 25% lower to that of the community average.

Forest is therefore amongst resources for which development is fundamental.

Weaknesses

Volumes, age, resistance and resilience of mountain forests have reached critical levels in many countries, although efforts have been made in the wood harvesting and especially in road-system improvement. The increase in areas, in mean age and in forest stand volumes in mountain regions needs adapted measures in management and tending. This is particularly concerning stands originated from natural and artificial reforestation since the middle of last

century. Mountain forest is far from being in a natural state, and fluctuations should be expected if preventive measures are not implemented.

Forest ecosystems in mountain areas, already under severe habitat conditions, are at present under global (climatic changes, pollution, abandonment of silvicultural practices), and local pressures (damages by game and grazing, wind- and snow-storms, heavy infrastructures, tourism). Mountain forests are submitted to external pressures at different scales.

Atmospheric pollution and the state of forests in Europe are central concerns within international agreements. Because of the severe climatic conditions, of the sensibility of high-elevation ecosystems to pressures and the advanced age of a number of stands, the state of mountain forests in different biogeographical regions is problematic.

Mountain forest ecosystems are actually very sensitive to modifications of climatic parameters. The effects of possible climatic changes have been found particularly heavy in high elevations also bringing increasing natural risks.

One must add the instability of stands to storms, to damages produced by increased game and cattle populations, the consequences of the abandonment of silvicultural practices due to a lack of revenues. Concerning the stand resistance to climatic or physical (landslides), biological (parasites, game) and combined (pollution and fires) variability, all countries are in a fragile situation. In fact, resistance is not secured in every case only by the natural dynamics.

Environmental organisations have been expressing for several years their concerns on the increasing pressures on mountain forest ecosystems.

On the other hand, an adapted and continuous silviculture is often financially negative in mountain forests because of the increase in costs and stability in prices of wood products.

Management and exploitation costs are higher in mountain areas than elsewhere, even if the standing volume per unit and per ha is often higher in mountain because of the general ageing of stands.

At the same time, the common socio-economic difficulties in remote regions are consistent and well-known: demographic density is lower than the national averages; mountain regions are clearly less favoured in availability and accessibility to services, producing inequality in revenues and a general loss in the quality of life for local populations.

Concerning the forest road system, differences with other regions are significant. This unfavourable situation is due to different impacts (landscapes, natural habitats) and very high costs of work in those regions.

Management is technically less easy, economically more expensive. Logging requires a high degree of specialization. Forest works are more dangerous. Wood utilisation is also lower in mountain regions, and prices more variable in space and time.

Due to all those constraints, the silviculture in mountain areas is more complex, the management more expensive, the logging more difficult and transportation often longer and more onerous than elsewhere.

Employment rates are lower than the wood production potential and remunerations for non-market services. The know-how is getting unavailable and training does not provide the number of workers needed in the first manufacturing.

Logging and wood manufacturing of mountain forests are depending on a network of small enterprises in increasingly difficult economic situation because of costs increasing and wood price stagnation.

A logical consequence of the current trend in reducing, or even abandoning, silvicultural practices in mountain forests is the loss of a know-how and a technical control over the evolution of stands with, as a consequence, ecological risks.

The general trend of the above mentioned elements is today alarming: local communities, face to a degradation at the mountain range scale and lacking of adapted statistics, underline the negative trend of the socio-economic fabric.

Concerning the forest resources and their conservation, the land tenure, the economy of the wood system, the existing juridical bases are often too specialized or dispersed. They do not take into account the interactions, the socio-economic balances in mountain regions and the integration in the rural context. Property rights are not clearly established, reducing all efforts of sustainable management.

Forest policies in mountain regions have not been evolving in relation to the deep socio-economic transformations of recent decades. At the end of the 19th century mountain forest showed all its importance for the downstream security. It provided the implementation of difficult and often conflictual policies for local stakeholders and the centralized powers in many countries.

Today, the recognition of the multiplicity of functions of mountain forest is not always transferred to an accompanying structured policy for conservation and

development. Existing policies have not always been correctly applied. Security and biodiversity are considered as common goods whose value can finally be too weak.

Existing measures are seldom complementary between environmental protection, resource development and maintaining of a viable level of harmonized local socio-economic activities (pastures and regeneration, game and hunting, sport activities and habitat protection).

Acknowledgement of existing potentials and the urgent need to provide solutions to main problems have moved 24 countries towards a pan-European strategy through the Resolution S4. More specifically, four countries have committed themselves to take actions following Memoranda for mountain areas.

It is high time to give a concrete content to this commitment.

2. A vision for sustainable development

Which sustainable development?

The need to better identify the diversity of conditions and situations in Europe leads to a common framework for mountain forests.

First it is necessary to identify criteria and indicators for sustainable management which are specific to these resources. Options of sustainable management should be based on fields and variables allowing a more in-depth and comparable analysis between countries, avoiding any rigid distinction between mountain woodland and other land areas.

For mountain forests, which are the object of the Resolution S4 adopted at the Conference of Strasbourg (1990), an adaptation of criteria and indicators will lead to a better and more appropriate consideration of sustainable management in the diversity of situations found.

At the national scale, some European countries have applied, improved or developed the Helsinki framework. It is the case of Switzerland and Finland. The experience of countries in the implementation of criteria and indicators is very useful to better identify their application in mountain habitats which should essentially be based on a better consideration of multifunctionality.

In the perspective of defining a monitoring framework which is adapted to mountain forest starting from the Helsinki criteria and indicators, some categories of data for mountain forest at the national level should be identified and developed at different scale in the different countries.

These criteria and indicators should notably insist on the following situations:

- a. The wood chain in mountain regions has a specific structure and works adapting to conditions of diversification and territorial dispersion. Its capacity to generate a local sustainable economy, based on small scale enterprises, on local customer systems, on craftsmanship and on the development of peculiar quality, is high.
- b. Mountain forest resources are at the origin of a diversified offer of goods and services. Some of them have a well identified market; other non-market services should be progressively better identified.

Data collection is expensive and requires concerted approaches, especially on the field. It is therefore necessary to dispose of means to associate to evaluations the forest owners, the local populations and the private sector. A training of personnel and the extension on simple technical directives for data collection should be envisaged.

Silviculture of mountain forests relies on an increasing knowledge and technical means. Those forests, in their large diversity, require precise and punctual approaches without any hasty generalisation.

The interest of sharing national competences and experiences is in this case essential. The EOMF should help this shared activity.

Stakeholders and their interests

Stakeholders in rural development, owners, managers or simply users, should be acknowledged in their responsibilities towards mountain forest and the benefits provided to the whole community. This is in any case a guarantee that mountain forest policy corresponds to their demands, satisfying their interests.

Local stakeholders

All those who, in a way or another, have direct rights and obligations in sustainable mountain forest management, either municipal or private owners, entrepreneurs of small-scale enterprises, wood workers, craftsmen end users, forming together the vital socio-economic fabric for the development of rural mountain regions, are, in the first place, concerned in and interested by the development and conservation of mountain forests.

Their primary role is in any case recognised for the following reasons:

- the effective implementation of means able to achieve the objectives of sustainable management can not be secured without a direct commitment of local stakeholders, even if this commitment is sometimes made difficult by the high number of beneficiaries,

- motivation of, know-how by and solidarity between local stakeholders are essential elements not only in the history of right and management of mountain forests, but also the very basis of any sustainable development,
- participation of local stakeholders in the definition of aims to be achieved and of means to be made available are a warrant of effectiveness,
- juridically, rights and obligations of local stakeholders can broaden or limit
- balanced conservation and development actions,
- considering responsibilities, the follow-up of actions in a time frame is effectively managed by actors in the field, involved in and concerned by the sustainability of results,
- in the context of rural development in mountain regions, local stakeholders take part in the integration of activities, revenues and employments supporting multifunctionality with a non-sectoral approach.

Participation of local stakeholders (owners, resident users and tourists) in decisions of strategic orientation for mountain forest management is in many cases very weak, because of the globalisation of the debate on mountain forest, the importance of international conceptual framework and the technicity of manager's intervention. Much has been said on associating different interest groups, often for political reasons, but few concrete initiatives have been so far carried out to implement this objective, often because of a lack of an adapted institutional framework.

Recent sociological studies have been showing that current ineffectiveness of some technical and political measures was originated by the lack of involvement of local stakeholders interests, namely of farmer users. In the same way, a management of public forest unrespectful of user's expectations has led to impasse situations unfavourable to development.

A sound development of mountain forests should be based on the principle of participation and equity of the community members.

The establishment of local stakeholders groups increases considerably their capacity of intervention and their impact on decisions.

A role of facilitating local initiatives is essential in mountain regions where the solidarity required by sustainable management is high considering the physical and socio-economic constraints. All this goes through intense and coordinated actions of information and capacity building of stakeholders.

Forest municipalities, finding themselves in a position of both mountain forest owners and of representatives of local user's interests, should play a leading role in this context which is also a revealing role of local democracy.

Other interest groups, such as local users groups or non governmental organisations whose first aim is the sustainable management of mountain forests, have also a central role to play. Environmental protection organisations, tourism associations, involved in the promotion of sustainable forest management, should be particularly effective actors in the mountain forest policy.

But nothing can be achieved without a full commitment, and at the resource closest level, of local stakeholders.

Europe

As a support to local stakeholders, national, regional and international institutions should operate to encourage, assist and establish the activities to implement with an aim to provide impetus for sustainable development.

Within this strategy to be elaborated, the European Union should play a central role in information and support, in the respect of the subsidiarity principle, for the member countries.

Europe has not so far provided direct aids to mountain forests as such: nevertheless, silviculture has benefited in mountain areas from a number of favourable measures.

Even if it is almost impossible to quote any relative rate for mountains in the different initiatives carried out so far by the European Union, the most important action is the one concerning the development of forest resources in rural areas (EAOGF and the Integrated Mediterranean Programmes, Regulation CEE 1610/89, in connection with CEE 4256/88 and 867/90).

Implementation in regions lagging behind in development (Objective 1, Structural funds) and in rural areas (Objective 5b) has not provided mountain regions with a beneficial adaptation. Measures concerning equipment and afforestation have been initially placed into a context none sufficiently studied, and have been producing failures and undesirable impacts at the environmental level.

Aids to afforestation of agricultural lands (Regulation CEE 2080/92) have been equally little effective in mountain forest because they were not proper to the sector. The essentially agricultural nature of this measure has been excluding a large amount of mountain regions from any benefit.

At the same time these subsidies could only be effective if they combined with the real requirements of beneficiaries and if the latter committed themselves to share a significant part of the total costs.

A relevant new event is the recent Regulation on Rural Development (Council Regulation 1257/99) which, in a chapter on silviculture, identifies a set of actions to support forest management and sustainable development of management and sustainable development of private-, municipal- or association-owned forests.

The amount of subsidies is determined within a range going from 40 to 120 Euros/ha per year, identified on the basis of effective costs of implemented measures, preliminarily established in a regional and contractual context.

The overall budget adopted in 1999 for the policy of rural development is some 4.3 million Euros per year during seven years.

For forest and silviculture the available means will be fixed, on one hand, on the basis of a programme prepared by each country (and region) and , on the other hand, on new territorial objectives.

National forest programmes, fixing specific objectives and actions based on the consideration of commitments taken at the Ministerial Conferences, will be the tools for the concentration and definition of means of which each one, private or municipal owner, could benefit.

But the European Union is not the only international institution involved in the sector of sustainable development of mountain forests in Europe.

The forest Protocol of the Alpine Convention can provide to non-member countries with a basis for their strategies in favour of mountain forests. Its content should be further identified with the support of interested stakeholders and turned into concrete development actions.

At the pan-European level, the Resolution S4 is the key-tool to implement policies in favour of mountain forests. 25 countries adopted in 1990, at the Ministerial Conference of Strasbourg, this Resolution on mountain forests which provided a framework of priority objectives for the sustainable management of these forests.

The role of this Resolution is to allow signatory countries to improve the identification and analysis of issues and opportunities as well as to find political, economical and technical solutions facing current changes.

The following box summarizes the content of Resolution S4.

Analysis

- ecological richness
- multifunctionality
- fragility
- natural risks and water cycle regulation
- difficult exploitation
- local and regional contexts
- pressures
- abandonment and uncontrolled evolution
- game damages
- weak analysis tools and knowledge to be reinforced

Principles

- global ecological inventories for management support
- integrated habitats/risks mapping
- data bases
- vegetation-water-soil interactions
- stability
- support to revenues
- socio-economic management options

Proposals

- commonly mobilise resources
- identify concrete projects (stability, management, research, information, exchange of experiences)
- initiate a policy for mountain ecosystems

It is basically a federative and strategic action which could benefit every country.

States and regions

States and regions have a key role to play in implementing the measures of support and frameworking for mountain forest development.

In the context of the Resolution S4 on mountain forests, four countries (Italy, France, Austria and Portugal) have taken position in 1996 referring to alarming situations of mountain forests within their territories and in relation to European objectives. In their Memoranda on forest and agricultural resources in mountain areas, these member countries ask for the implementation of actions specific to mountain forest recalling the solidarity already applied to agriculture in these regions.

These four Memoranda identify common elements and propose common measures in the primary sector (agriculture and forestry) which represent, with the analysis and proposals made by Ministerial Conference, the platform of global action strategy calling for decisional structures of the European Commission.

The request for a global programme in favour of mountain forests is explicit.

More generally, countries are in Europe, in the forest sector, the first responsible for the implementation of actions of forest policy, considering national plans as framework instruments. The synergy between the new European Union's policy of rural development, the federative action of the Ministerial Conferences and the willingness of countries to play an effective role in favour of mountain forests, represent a real opportunity for the sustainable future of these forests.

The role of the EOMF

In the promotion of a strategy for the sustainable management of mountain forests at the European scale, the EOMF should play a pivotal role of technical support.

The EOMF should orientate the knowledge capacities, namely of research, towards the most useful components in current problem solving of forest management at the field level. In this context, the EOMF should mobilise all possible synergies and transfer them into approaches to concrete problems such as those expressed by local actors.

The EOMF should also intensify information and training efforts for local actors, based on an ambitious tool addressed to forest owners, managers and users, who too often ignore or underestimate the problems and solutions to be applied. This tool should be based on concrete experiences and therefore on a network of pilot sites or experimental sites for technical and policy measures to be implemented and monitored in terms of impacts on mountain forest sustainability.

Local stakeholders should play a central role in the conservation and development of mountain forests and the EOMF should concentrate primarily towards the support to local forest actors.

What future to envisage?

We do need to envisage the future of mountain forests.

Facing the current situation in terms of problems and assets for mountain forests, there are several possible scenarios.

If nothing happens

The first option is to do nothing.

In this perspective, mountain forest does not exist as a specific area or resource. It will be included under the same measures supporting and assisting conservation and development of all kind of forests. Concerning conservation, the risk is to include actions which are not connected with the economic and social fabric. In this case, stand stability will decrease and the protection of people and goods deteriorate. Actions will be necessary after catastrophic events with heavy economic and social costs and direct questioning of actors responsibilities.

Risks on peoples (inhabitants and tourists) and goods (infrastructures) developed considerably in all European countries. At the same time, a growing number of mountain forests, namely reforested and overgrowth stands, are ageing. A relevant accumulation of material -aged trees and decaying wood- is found within forests and by water transportation in case of floods. At the same time, game and overgrazing damages affect regeneration and growth of younger trees.

The increasing risks and standing material turn to be an increase in damages by natural phenomena which are expected to be themselves increasing in the perspective of climate changes. This is why wind- and snow-thrown stands have been producing increasing consequences in mountain areas in many countries during the 90s. Biodiversity will progressively be affected, landscapes impoverished and made inhospitable for many users, diseases, and other damages (hunting, grazing) including fires are supposed to increase in intensity. Fragility characterizing these kinds of ecosystems will be increased by pressures made and by requirements of multifunctionality not remunerated. Concerning production, existing measures, closely linked to market and ignoring production conditions, generally are supportive of investments in most effective sectors in terms of marketing. This will strengthen production handicaps already affecting mountain areas.

The lack of intervention, the degradation of the socio-economic fabric will therefore increase. In all European countries, the socio-economic balances in the mountain forestry sector are submitted to relevant additional costs: access, removal and transportation have currently very limited or no margin, and low capacity in productivity improvement. The decreasing trends in wood pricing, with in parallel, the growing costs of labour, energy and other indirect costs are worsening the difficulties of wood marketing.

In such a situation, forest owners risk the abandonment of a minimum level of silvicultural cares. Downstream, while rapid market transformation in manufactured products and in industrial rehabilitation limit the possibilities of

commercial use of mountain wood, the exploitation difficulties and the management abandonment of forest in some areas for lack of revenues will end in a lack of stability and multifunctionality of forests.

In this context mountain forests will be further marginalized or partly abandoned: the situation will lead to a differentiation between accessible forest, where the more or less exclusive objective is production at the lowest investment, and inaccessible forests with environmental functions. The issue of protective role against natural risks will be avoided or resolved through the disappearing of downstream interests within a scenario of social decomposition.

Choosing untargeted partial actions

The second scenario is the one found in some countries and consisting in choosing untargeted partial actions to compensate local or occasional difficulties. Actions are implemented separately and generally a posteriori on handicaps even if the requirements by local or other actors are clearly stated. This scenario brings two main risks which are often found in the current practices.

- The first consists in separating the protective function from other utilities provided by mountain forest, and compensating problems a posteriori, i.e. too late. It is the current situation in which most of the countries identify mountain areas through the dominance of the protective function. Health, stability and regeneration of mountain forests are nevertheless the essential conditions to prevent physical risks (erosion, floods, rock fall, avalanches). This strategy does not always allow satisfying this need.
- Secondly, it is found that isolated aids, not integrated, mostly lead to a reduction in silvicultural practices and in logging, to more fragile stands, to a loss of added value and local employments, beside a loss of specialised activities and know-how.

These kinds of aids are often direct subsidies, which are locally allocated whenever a problem grows to be crucial and there is a need to compensate the often catastrophic consequences. These aids are not real economic supportive measures, but simple subsidies whose effect in development is often weak or inexistent if not even negative in the long term (establishment of a dependency and an unwillingness to rehabilitate). By a lack of means and because of their scope, they cannot sustainably compensate handicaps which are meant to reduce in an insufficient local framework in human resources and entrepreneurial capacities. They can even reinforce handicaps instead of limiting it.

From the perspective of society and economy, current untargeted partial actions come generally too late, and they never get to the very causes of facts.

Consequently this kind of actions does not appear to be the solution to adopt if the aim is to support the development of mountain forests.

Choosing an ambitious policy

An ambitious and coherent policy must be based on the promotion of a balanced mountain forest development, by a mechanism of public authority's intervention of pro-active character linked to market and able to reinforce multifunctionality as a condition for a sustainable management of mountain forests.

This strategy would radically modify the current situation by aiming at:

- a. maintaining and reinforcing the protection of people and goods within a global prevention target, and securing at the same time the management of forest so-called 'protective' for an effective long term protective role;
- b. integrating investments on multifunctionality producing added value and local employment opportunities, in the wood processing and, at the same time in the overall products and services provided, notably in tourism and recreation;
- c. maintaining and rehabilitating biodiversity with a redefinition of landscapes shaped on conservation and sustainable management of forests integrated with non-forest areas.

This is a scenario of mountain-oriented policy aimed at meeting main expectations found within those areas and their specific characters.

It is a future-oriented strategy for anticipating and not reacting a posteriori to requirements, too late to be adequately and effectively satisfied.

This would be a policy linking the development of mountain forests to the whole rural areas by measures integrated to those concerning agriculture, environment and local development.

Within this framework, each actor should undertake his own role, with his rights, responsibilities and financial resources, within a fabric of local contractual actions corresponding to international agreements.

3. Proposals for concrete actions

An ambitious, proactive and coherent policy should not be uniform and unique but, on the contrary, respectful of local situations found in the large variety of

mountain forests in Europe. The following proposals, together with their ways of implementation, are meant to be adapted locally. They are mainly guidelines to (re)-orientate national decisions, reinforce the exchange of experiences and the harmonisation of measures amongst countries within the final objective of adapting the sustainable management of mountain forests to current environmental and socio-economic changes. Those proposals, addressing to states, regions and international entities, take into account the national diversity and a pan-European scale of action. This is the reason why they are general, providing more a philosophy than a ready-to-use solution to be applied to each and everyone in the same way. In the diversity, the stress is given on common points more than on differences, on the global and overall character of actions, on the encouragement of solidarity within the economic sectors, on the harmonized and balanced development of economic activities, on a growth respecting the environment, on a high level of employment and a higher level in the quality of life.

Those proposals are structured over five main axes:

1st axis - Allow participation of all stakeholders in forest development:

Forest owners, users, and more widely citizens, should take part in the development of mountain forests, with all rights and obligations concerned, being involved in the most responsible and thoroughly way, at the service of the overall community. All decisions in orientation and management should be taken calling all interested parties, including and in the first place mountain peoples, to formulate jointly a compromise between everyone's expectations for the benefit of a sustainable development of mountain forests. Certainly this participation is not easy to be established, but communal ownership and management could help in the development of this form of shared action. Conservation and development of mountain forest resources will be implemented by participation and commitment of all concerned stakeholders. Information and training of local stakeholders, often neglected in the debate on mountain forests, should be systematically encouraged by adapted means. Training should be shaped following regions, related to ecological and socio-economic systems, take into account existing forces and weaknesses, to be rooted on the multifunctional character of mountain forest management. It should be addressed primarily to representatives of local communities, as well as to mountain forest private owners, workers and entrepreneurs. Communication with education actors, citizens and society on the challenges of mountain forests and their resources should be reinforced. In a pedagogical way, users should be informed on the quality of sites, practices applied to their conservation and management, services provided by the forest, and products on the market. In this effort of training and information, the reinforcement of entrepreneurial capacities and the establishment of networks and associations of stakeholders will be the object of a special attention. The European Observatory of Mountain Forests (EOMF) should play in this strategy of

association of interests in forest development, a networking role to encourage participation, in the respect of everyone expectations.

2nd axis - Establish territorial contracts for the management of mountain natural areas involving stakeholders:

The compromise to be found between different expectations in mountain forest management should be identified contractually, involving all stakeholders in the negotiated development. Forest should not be seen as isolated but integrated in the mountain land use wherein it is a component able to secure stability. Territorial contracts for the management of mountain forest areas, identifying objectives, measures and necessary means, but also responsibilities of different parties (Europe, states, regions, owners, users, forest workers and industries, inhabitants) should be established. Those different parties should be concretely committed to jointly participate in the financing of actions to be dealt in the implementation of contracts, as well as in the development of the human resources requested for the best efficiency of the actions. The contracts will aim at applying existing national and European measures in a local framework where management, conservation and sustainable development of mountain forests will be integrated to the land use plans and to national forest programmes. The EOMF will work at the definition of contract models corresponding to the different situations found.

3rd axis - Support less favoured areas by measures reducing handicaps and training for development:

Human and financial means to reduce mountain handicaps should be established in a targeted way in the less favoured areas. They will be supportive to revenues and employment linked to mountain forests which are necessary to secure the sustainable and multifunctional management and the rural development. These means will serve to make more dynamic the fabric of small and medium size enterprises working upstream and downstream in the forest-wood chain, including wood for energy, and to support associations in favour of inter-professional, inter-institutional and interdisciplinary cooperation which could help sustainable management, added value, revenues, employment, enterprise capacities, information strengthening, motivation and solidarity. A statute of mountain forest worker should be established, acknowledging a 'green' profession, to secure a reduction of risks and a decreasing social inequality.

Supportive economic measures could be, amongst other, as follows:

- decrease handicaps in products recovering and in services provision whenever conditions of economic efficiency are fulfilled,
- increase management efficiency reducing costs in the respect of limits linked to mountain environmental fragility,

- assisting the economical start of sustainable and multifunctional management actions in well identified contexts,
- establish and implement codes of behaviour in the promotion of goods and services,
- encourage investments with mixed public and private capitals and partnerships.

Linked as much as possible to market (including for non market goods and services), and based on a preliminary assessment of the handicap's extent, those support and training measures should be the object of planning and prioritization in relation to local opportunities for a sound mountain forest development. Corresponding measures should be established to support entrepreneurial capacities by identifying beneficiaries, in relation to development capacities and not simply to needs expressed. Areas where framework conditions in human resources (pro-active entrepreneurs, trained labour) allow carrying on development should be given priority in the allocation of those economic aids. Wherever handicaps are more relevant, support actions should be envisaged in order to help the establishment of framework conditions which are essential in the effective implementation of further development. For equity reasons, it is proposed to provide an economic support aiming at compensating handicaps linked to sustainable multifunctional management in mountain regions taking into account each local situation by means of simple, adapted and targeted mechanisms. Such compensation could be included in a contract over a territory following a precise project. The adaptation of fiscal and banking measures to the socio-economic contexts of mountain regions will be implemented with the aim of help the economic sustainability of employments, revenues, competitively and investments. These measures should be integrated into the national forest programmes in which mountain regions will be the object of a specific analysis, and harmonized in the more general framework of a pan-European programme in favour of mountain forests to implement the Resolution S4.

4th axis - Promote the quality of products and services related to mountain forest:

Measures aiming at promoting a sound image of the quality of products (wood and manufactured products, other forest products) and services (namely landscape and recreation) issued by mountain forests should be established. As production costs are higher in mountain areas because of the additional charges coming from the difficulties in the access to resources, the only way to promote the mountain forest products in the market is to develop the qualitative assets, mechanical, aesthetic or cultural. It is necessary to promote the use of local wood and local silvicultural products of mountains, including wood for energy, and any products of local character (wood construction, traditional framing, floors, furniture, fungi, berries, medicinal herbs, amongst others), and consequently motivate owners and managers through an

information and training, adapted to the need of quality. With the aim to optimize the marketing of local wood and non-wood products, including wood for energy, and to encourage new commercial capacity for forest products (fungi, berries, medicinal herbs, amongst others) from mountain areas, marketing measures should be taken.

They will include the following:

- promotion, commonly with non forest sector, of new niches for a large set of quality products and services specific to mountain regions,
- organisation and structuring of the offer and demand for goods and services,
- encouragement of associations between forest actors and commercial chains with a view on a better marketing,
- development of ecotourism

A set of labels specifying the mountain character, and some linked to the eco-certification of forest management, should be identified by inter-professional groups with the aim to promote a positive and valuable image.

5th axis - Define multifunctional forest management plans:

Forest management should be reoriented in order to provide further sustainability in mountain forests. This means to integrate into management economic, ecological and social considerations. The implicit current identification of areas splitting protective from productive stands should be revised to secure a higher sustainability (mapping and prioritization of functions). In both the private and public sector, new forest management plans should be dealing with the promotion of multifunctionality by integrating different utilities of woodland areas by means of a process associating all interested parties in the decisions of concrete management. With the aim to encourage a sustainable and integrated management of agro-silvo-pastoral areas associating the multifunctionality of forest to that of the agricultural and natural quality areas, those plans will identify adapted silvicultural measures, intensive or extensive, to each particular situation, respecting the potentials (multifunctionality) and limits (carrying capacity) of these fragile ecosystems. The precautionary principle should be applied whenever the field or the knowledge are not sufficient, or in case of interests conflict between actors. Researches carried out on the management of mountain forests should be orientated to answer directly to the concerns of managers in the field, and to promote interaction. Concentration and synergy between researchers and stakeholders of mountain forests on issues needs and expected results. Statistical data bases allowing the monitoring of multifunctionality of forest management should be established and organised with scientific investigations on mountain forest ecosystems and landscapes. It will be necessary to develop adapted techniques to improve access to forest and wood removal in full

respect of environmental and economic criteria which helps interactions between ecosystems, populations and local communities. The implementation of infrastructures needed for forest development will be revised consequently.

Concluding remarks

The situation of mountain forests is full of concerns but not hopeless. Beside evident weaknesses, some forces exist to be used as bases for their sustainable management. It is basically on them, and as an urgent priority that we need to progress towards the future. Maybe sound policies will not immediately be implemented, because of the diversity of national and regional existing situations, and of human and financial resources required. Without expecting an international policy decision which will not in any case all provide, we can already start to improve significantly the current situation orientating measures toward a common direction, by means of:

- a monitoring of local evolutions concerning ecological and socio-economic aspects,
- an orientation of technical and political measures towards the encouragement of multifunctionality, after an evaluation of current situation,
- a reinforcement of information and training addressed to concerned parties, namely local stakeholders,
- an effort for a wide association of stakeholders in the decisions taken at different levels.

The EOMF is ready to play, within this trend, the most active role in relation to its resources.

Mountain forest is a strategic and symbolic area whose conservation and development must be for the benefit of all. Utilities, products and services as well as benefits - financial, social or ethical -, provided must have a sustainable balance based on a compromise negotiated between different expectations of economic actors and all citizens. It is necessary that decision-makers at all levels seize the message of field practitioners in favour of urgent measures for its protection and improvement. The challenge is urgent enough to act timely.

Annexes

Country national profiles

a) Countries member of the European Union

1. Germany
2. Austria
3. Spain
4. France
5. Finland
6. Greece
7. Italy
8. Portugal
9. Sweden

b) Other European countries

1. Albania
2. Andorra
3. Bulgaria
4. Croatia
5. Russian Federation
6. Hungary
7. Iceland
8. Liechtenstein
9. Monaco
10. Norway
11. Poland
12. Czech Republic
13. Roumania
14. Slovakia
15. Slovenia
16. Switzerland
17. Turkey

International initiatives in favour of mountain ecosystems and sustainable development.

Country national profiles

The following national profiles are a brief synthesis of four main aspects:

- the mountain context,
- mountain forests,
- main issues,
- measures and trends.

A more detailed analysis, monitoring and evaluation for each national context have been proposed through the European Mountain Forest Action Plan for the Resolution S4, following two main initiatives:

- the FAO Forest Resources Assessment, which recently started a specific analysis of mountain land areas, and
- the adoption of National Forest Programmes by countries as major frameworks to integrate and harmonize mountain specific issues.

The full text of the European Mountain Forest Action Plan and the references for each country are available at the EOMF.

a) Countries member of the European Union

1. GERMANY

(HÜBNER, 1998; BECK & SUDA, 1997; BRANDL & PRETZSCH, 1998; BAYERISCHE STAATSFORSTVERWALTUNG, 1996; WALD, 1993; SYRER, 1999)

Population (thousands)* 82 000

Population growth rate (1990-96)* 0.4

Gross National Product/capita (US\$)* 22 500

Gross National Product/capita (Purchasing Power Parity in US\$)* 21 110

Land area (thousands km²)* 357

Forest cover (thousands km²)* 107

Mountain area (thousands km²)** 16

Mountain Forest Area (thousands km²)** 14

Annual water use (% of total resources/an)* 48

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

The mountain area of Germany is mainly situated in the South. The most significant mountain forest region is Bavaria where the Alps cover 5 300 km². The number of inhabitants reaches 450 000 with a number of visitors of more than 5 million per year. The two-thirds of all the mountain area (Alps and other regions), benefiting from compensation in agricultural land use in Germany are located in Bavaria with around 10 500 production units. The total amount of this mountain area is 6 500 km² including 2 400 km² of agricultural land.

Mountain forests

Great mountain forest areas are found e.g. in the Alps, in the Bavarian Forest, the Jura and Harz Mountains, the Palatinate and the Black Forest. In Bavaria the forest cover is 250 000 ha (47% of the Bavarian Alps). To manage the state forests (31%) and to support and supervise the private and municipal forests (69%), the Bavarian Forest Service employs 1 432 forest rangers et 524 senior foresters. 147 000 ha of forests are declared "protective" (Schutzwald), i.e. around 60% of the total forest area. 400 000 m³ of wood, considered of high quality, are annually cut in the region. The tree composition of Alpine Bavarian forests has been reduced during the latest 150 years: on wide areas, mixed forests of the montane vegetation belt have been transformed in pure Norway spruce stands occasionally with beech. Between 1860 and today, the percentage of silver fir has decreased from 25% to 7%.

Issues

The rights of pasturing involve 62 000 ha of forest where regeneration problems are found. Since 1987, 19 000 ha have been liberated from those rights for maintaining stability. Also the damage by game causes problems on natural regeneration. Main difficulties are still the advanced age of stands, the deficit situation in exploitation, the increasing tourism pressures, and the damages of pollution on 33% of trees examined. Compared to the average national

situation, the number of damaged trees in mountains is exceptionally high: in 1999 one third of the trees showed significant damages with a loss of needles between 26% and 100%.

Measures and trends

The Bavarian Alpine forest is highly multifunctional. The objectives of the forest programme include all potentials:

- maintaining the competitiveness of enterprises, guarantee of sustainable forest management,
- supporting wood production,
- prevention of natural risks.

The current Plan of Forest Functions identifies and maps all functions on the whole forest ownerships. In this Plan one area can support more than one function. The Plan reports that site protection involves 40% of forests, protection against avalanches 22%, protection of water resources 46%.

Since 1986 for the prevention from natural risks a programme has benefitted of 77 MDM with interventions planned over 128 km² of forest. The private protection forest can benefit up to 100%.

2. AUSTRIA

(BUNDESMINISTERIUM FÜR LAND- UND FORSTWIRTSCHAFT, 1997,, 19972; GRABHERR, 1997; KATASTRALFLÄCHE, 1998; .KUDJELKA, SINGER, 1998; KUDJELKA, 1993; WEISS, 1998; KOLLER, 1996; PFEFFER, 1996)

Population (thousands)* 8 059

Population growth rate (1990-96)* 0.7

Gross National Product/capita (US\$)* 28.110

Gross National Product/capita (Purchasing Power Parity in US\$)* 21.650

Land area (thousands km²)* 83

Forest cover (thousands km²)* 39

Mountain area (thousands km²)** 49

Mountain Forest Area (thousands km²)** 27

Annual water use (% of total resources/an)* 4

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

Following the criteria of Directive 75/268 CEE, 48 804 km² (58%) of the total land in Austria are found in mountain (in their majority in Carinthia, Styria, Tyrol, Salzburg and Voralberg).

Mountain forests

Mountain forests cover, following the cadaster data of 1998, 26 780 km², i.e. 69% of the total forest area of Austria (39 000 km²). The rate of forest cover is 55% in mountain areas, with a national average of 47%. One third of the

Austrian forests has a general protective function (13 000 km²). The Alpine forest in Austria has been classified as 'natural' or 'semi-natural' by the Programme 'Haemerobia in Austrian forest ecosystems'. This is a Programme aiming at an in-depth analysis of 'natural' parameters over the whole of the national forests. It has showed a clear correspondence between mountain areas and forest in natural conditions or close to a natural state.

The issues

The aging of stands in mountain regions is considered as a major threats to the stability of stands. Forests have mostly been regenerated artificially by clear-cut and are aged of 150 years or more. Game damages are relevant and they negatively influence natural regeneration. Forest grazing is sometimes one of the causes of damage on the young sprouts. Lack of stability affects around 150 000 ha of general protective forest, with 75 000 ha without sufficient natural regeneration or with damages by game. The decrease in forest revenues is officially acknowledged as a main problem for the sustainability of silviculture, of the regeneration and of the achievement of the four functions established by the forest law of 1975: production, protection against risks, ecology and recreation. In mountain regions, the municipal, state or small private ownership are frequent. Over the whole country, the private property covers 82% of forests. Unexploited forests (21,5%) are found in sites with difficult access. 7 400 km² (39%) of forests in mountain areas have a general or a specific protective function. The private mountain forest owners are in a difficult situation; on one side, direct revenues decreases, on the other, revenues from cattle breeding and hunting can be more attractive for the investments.

Measures and trends

The objectives of the forest policy in Austria are:

- to maintain and to improve conditions securing all functions on the long term,
- to promote reforestation in areas with low forest cover,
- to promote diversification in the forest sector,
- to promote wood in the building and energy sectors,
- to improve economic conditions for enterprises and for forest owners,
- to support in an adapted way the social functions of mountain forests,
- to promote a transparent planning within a process of decision support with an evaluation of non-market services,
- to promote public relations with communication to decision makers and to the public,
- to reinforce international cooperation and information exchange, particularly in the area of regional planning.

The forest law of 1975 establishes four leading functions for the forests: production, protection against risks, ecology and recreation. The two main objectives of the forest policy in mountain areas are: conservation of general

protective forests (Schutzwald) and the management of forest with specific protective function (Bannwald).

The strengthening of external benefits from forests and the management of stability in relation to the degree of fragility of ecosystems are supported by juridical, economic and informational means. Amongst the juridical measures, the most significant is the maintaining of forest cover, the areas of cut and silviculture.

Currently, the economic means cover the improvement of stands with grants up to 90% shared by the State for 2/3 and the province for 1/3; 10% is in charge of the owner. The province of Tyrol, 100% mountainous, has developed prevention actions, included in the plans for protective forest improvement, within a system of coordination and evaluation of projects already implemented.

The principle of the Austrian programme for the prevention of natural risks has been developed since 1884 on three bases:

- the watershed as a whole with the consideration of the ecosystem (vegetation, soil and water),
- the integration of the prevention in the dynamics of the landscape and of the land use activities,
- the improvement of the functioning process over the long term.

The informational means aim at the progress of the economic objectives of the forest owners strengthening their motivation.

The Austrian forest law of 1975 defines also protection as the essential function characterizing forests in mountain areas: the forest with general protective function (Schutzwald) is the one protecting against erosion but not directly protecting Infrastructures, the forest with specific protective function (Bannwald) face to the socio-economic interests.

After the data of 1993, forests with general protective function represent 8 500 km², i.e. 22% of the forest area. The financial means necessary to improve the protective functions are evaluated at 1 billion ATS/year, on a total real budget of 0.3 billion ATS/year. The area of priority intervention is 4 800 km² and, at the second degree 3 700 km². A specific institution is in charge in mountain regions of the control of floods and avalanches, under the responsibility of the Federal Ministry of Agriculture and Forestry. This institution defines an hazard area mapping for every municipality, including the technical and biological measures for protection. After the statistics of the Federal Ministry, constructions for protection against floods and avalanches represented an average cost, between 1994 and 1997, of 1,7 billion ATS/year.

The influence of private owners in Austria is important within the orientations of forest policy. Two associative structures represent the interests of owners. The first is an obligatory association, the Agricultural Chamber (Kammern für Land- und Forstwirtschaft); the second is not obligatory, the Association of land and forest owners (Hauptverband der Land- und Forstwirtschaftlichen Betriebe-HVLF). The characteristic of those associative structures is the significant

number of small owners (with less than 200 ha for 53% of the total) within the first and the influence of owners with more than 200 ha within the second organisation. The rate of harvesting over the country is 63% (data HVLF, 1994).

3. SPAIN

(MONTERO, 1993; CANELLAS, 1998)

Population (thousands)* 39.260

Population growth rate (1990-96)* 0.2

Gross National Product/capita (US\$)* 14.350

Gross National Product/capita (Purchasing Power Parity in US\$)* 15.290

Land area (thousands km²)* 500

Forest cover (thousands km²)* 84

Mountain area (thousands km²)** 210

Mountain Forest Area (thousands km²)** 50

Annual water use (% of total resources/an)* 28

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

All Spain's territory is linked to the particular conditions of mountain watersheds for three main reasons: the complexity of the hydrological system, the importance of soils erosion, the number of reforestation areas on marginal lands. The rate of mountain area is evaluated at around 21 045 000 ha, i.e. 42% of the total land area.

Mountain forests

More than 5 000, 000 ha of forests are found in areas shaped by mountainous factors (climate, orography, hydrology, depopulation). They are found in a number of ranges (Galicia y Leon, Cantabric cordillera, Pyrenees, Catalane cordillera, mountains of Toledo, Sierra Morena, Sierra Nevada, etc.) distributed over the 17 Autonomous Communities of the country.

The issues

Depopulation, ageing of local inhabitants, of infrastructures and weak equipments, represent the common profile in the mountain regions of Spain. At the same time, it is recognised that territories of high ecological value and of importance for the conservation of habitats and species, because of the level of biodiversity, are found in mountain regions.

The main issues identified for the mountain forests are the following:

- forest fires,
- high or very high level of erosion of forest soils,
- difficulties in the follow up practices in the reforested areas,
- insufficient natural regeneration,
- increasing damages from biotic and abiotic factors,
- appropriate multifunctional management,
- lack of financial means,

- limited availability of forest woodworkers.

Measures and trends

At the national level, the responsibility of the forest policy is given to the Ministry of Environment. Currently, a new framework law is under definition. The Royal Decree 616/1983 fixed the means of cooperation with the regional administrations in the fields of establishment, regeneration and improvement of "green areas", including forests, and the rehabilitation of degraded lands.

4. FINLAND

(KORHONEN, 1993; METSÄTALOUSHMINISTERIÖ, 1998)

Population (thousands)* 5.125

Population growth rate (1990-96)* 0.5

Gross National Product/capita (US\$)* 23.240

Gross National Product/capita (Purchasing Power Parity in US\$)* 18.260

Land area (thousands km²)* 305

Forest cover (thousands km²)* 200

Mountain area (thousands km²)** -

Mountain Forest Area (thousands km²)** -

Annual water use (% of total resources/an)* 2

(Sources: *World Bank, 1998 ; **EOMF, 1999)

NB. Although Finland has no mountainous lands, latitude and climate conditions made it part of the less favoured area within the regional policies of the European Union. Finland is also signatory country of the Resolution S4 of the Ministerial Conference on the Protection of Forests in Europe.

5. FRANCE

(FNASEA, 1996 ; DERF-SEGESA, 1997 ; CONSEIL SUPERIEUR DE LA FORÊT ET DES PRODUITS FORESTIERS, 1995 ; MINISTERE DE L' AGRICULTURE, 1997a ; 1997b ; MINSTERE DE L' AGRICULTURE, 1996 ; RTM, 1997 ; ONF, 1997 ; INTERFORÊTBOIS 73)

Population (thousands)* 58.375

Population growth rate (1990-96)* 0.5

Gross National Product/capita (US\$)* 26.270

Gross National Product/capita (Purchasing Power Parity in US\$)* 21.510

Land area (thousands km²)* 550

Forest cover (thousands km²)* 150

Mountain area (thousands km²)** 124

Mountain Forest Area (thousands km²)** 51

Annual water use (% of total resources/an)* 21

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

Mountain regions in France cover around 25% of the total national land. 41% of Municipalities in mountain areas are under threats of at least one type of risk, against 27% outside those areas. Demographic density, variable within each range, was lower than one third of the national average in 1990; ageing of population in the mountain is higher than elsewhere. French mountain regions are characterised by a relevant importance of forest activities, of independent workforces, the specialised industries of natural resource transformation, the touristic activities, seasonal employment and pluriactivity, the significant number of small enterprises. Revenues in these regions were, in 1990, 16% lower than the national average.

Mountain forests

The mountain forest cover in France is 5 065 434 ha, i.e. 34, 2% of the total French forest area (14 809 590 ha). The rate of reforestation is 27, 6% over the country and 42, 1% in mountain areas. 74% of the protective forests and 37% productive forests are found in mountain regions (corresponding to 24% of the national land). The increase in forest cover in France is evaluated at 0, 3% over the country and 0, 6% in the mountains. Municipal ownership is important in mountain regions and in some departments it is dominant. 88% of the municipal forests have an average size of more than 100 ha; for the private forest data report 25% with a size of more than 100 ha. Concerning the volumes of wood per ha, France has the highest quantities in mountain regions: with 24% of mountain areas, volumes are 37% of the total and 35% of the biological wood growth. The increase in the volume of wood has been of +17% in the latest ten years in mountain areas.

The issues

Natural constraints in mountain regions generate over costs in exploitation and the transportation, which are variable from one situation to another, estimated to more than 25% compared to lowland areas. The issue of ageing and of the increase in the standing volumes is linked to the fragilisation of stands submitted to storms. During the three decades 1965-1974, 1975-1984 and 1985-1994 the increase in the volumes of wood thrown by wind and snow storms in the public forests has been the equivalent of 3 million, 3,6 million and 9,7 million m³,. The volume of decaying wood in the forest is in progression: around 50% of increase in 10 years. Another source of fragilisation is given by game damages. Regeneration is usually heavily affected. In mountain areas, because of severe habitat conditions, game damages can seriously affect the sustainability of forest management. Around 350 000 ha of public forests are managed mainly for the protection of the physical habitat (landslides, rock falls, avalanches, floods). Currently 380 083 ha of lands distributed over 25 departments are included in the area of Mountain Soil Rehabilitation (Restauration des Terrains en Montagne - RTM); 191 611 ha of forest cover play a primary protective role. Mountain forest also plays an active role in the protection of water resources: the area of protection of sources for drinkable water and commercial mineral water is around 800 000 ha. Within the forest

profession, the comparative trends between wood prices and average salaries in the silvicultural activities are divergent and are considered as impossible to be balanced by productivity increase.

Measures and trends

A strong requirement in favour of a mountain forest policy comes by forest municipalities which in France are mostly located in mountain regions. Their expectations are linked to balance the negative trends of abandonment, instability of stands to protect people and infrastructures from natural risks, and progressive loss of revenues and employment opportunities. Proposals have been made by means of the 'Conseil Supérieur de la Forêt', a committee made of different interest groups. They are concerning a better assessment of the situation and trends, specifying the role of European networking of the European Observatory of Mountain Forests, a special attention to protective needs against major risks, the need to support silviculture against the increasing costs of the natural handicaps, a marketing improvement of wood and non-wood products, and finally an overall consideration of mountain forest as a pillar in land use, landscape and large territorial concerns (erosion, water, tourism and public interest assets). Although local stakeholders are playing a crucial role in alerting national level decision-makers on the dramatic consequences of an untimely concerted action, the diversity of situations found slows down the implementation of a coherent policy.

6. GREECE

(GALANOS, 1993; VAKROU, 1998; TRAKOLIS, KASSIOUMIS, VAKROU, 1998; KALLAS, 1998)

Population (thousands)* 10.475

Population growth rate (1990-96)* 0.5

Gross National Product/capita (US\$)* 11.460

Gross National Product/capita (Purchasing Power Parity in US\$)* 12.730

Land area (thousands km²)* 129

Forest cover (thousands km²)* 65

Mountain area (thousands km²)** 79

Mountain Forest Area (thousands km²)** 40

Annual water use (% of total resources/an)* 11

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

The mountain area in Greece is estimated at approximately 7 900 000 ha, i.e. around 60% of the total land. 80% of the Greek municipalities are settled in mountainous regions or in less favoured areas, following the criteria of the CE 75/268.

Mountain forest

Some 4 000, 000 ha of forests are found in mountain areas, i.e. a rate of forest cover of 51%. 350 000 ha are considered as directly protective. State owns 65% of forests. Because of the mountainous character and of socio-economic features in the country, most of the Greek forests are related to mountain watersheds. Most of the forests are native with a limited rate of reafforestation.

The issues

Some limitations to the development of mountain areas are clear today: difficult livelihood conditions because of distances, poor social services, unadapted training, difficulties in the administration, and conflicts in the land use systems. The implementation of management meets problems of lack of qualified personnel, of suitable infrastructures and funding. Forest fires, delaying or limiting the implementation of the management are the cause of an annual destruction of some 30 000 ha of forests, thus representing the priority forest problem. Forest pastures are also a major problem for the forest and for their regeneration.

Measures and trends

Forest management applies to all forests following management plans approved by the Forest Service, central body with responsibilities for administration. Management tasks are given to regional services in the 54 country authorities. The dominating public ownership facilitates a multifunctional management in accordance with site and stand conditions.

Current forest policy is based on the following objectives:

- protection and development of natural resources,
- increased productivity of forests,
- reinforcement of the recreation and touristic functions,
- reinforcement of the protective function.

The central role of the forest sector in the programmes of development of mountain regions is progressively recognised. A recent law (2234/94 integrating the law 1892/90) aims at encouraging the economy and the development of mountain regions. Each mountain range is considered separately in relation to its physical, historical and cultural characteristics. The programmes are focused on conservation, regeneration and rehabilitation of forests and on aspects linked to the improvement of infrastructures. Employment has been supported directly by the State as owner for the whole of the services provided by mountain forests. Forest cooperatives, which are growing at a rate of 6 % annually, play a critical role in the implementation of silvicultural works. Revenues from wood and non-wood products trade are devoted totally to the local communities providing activities for the cooperatives. The state, in this framework, has a supervision task.

7. ITALY

(SPINELLI, 1997; MARINELLI, LASSINI, PETTENELLA, 1998; MANNI, 1993; COLAONE, 1998; PETTENELLA, 1998)

Population (thousands)* 57.380

Population growth rate (1990-96)* 0.2

Gross National Product/capita (US\$)* 19.880

Gross National Product/capita (Purchasing Power Parity in US\$)* 19.890

Land area (thousands km²)* 294

Forest cover (thousands km²)* 65

Mountain area (thousands km²)** 163

Mountain Forest Area (thousands km²)** 45

Annual water use (% of total resources/an)* 35

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

Italy is a mountainous country on more than half of its area (55%). Mountains are the object of a specific statement (art.44) of the Constitution establishing measures in favour of mountain areas. Although 15% of the national population is living in mountain regions, this rate rises to 28% including municipalities which are partly mountainous. The definition of mountain areas is quite comprehensive including geographical and socio-economic aspects. Following this definition, the mountain context is very diversified from one region to another and within each region, both in terms of environmental situations than in terms of socioeconomic indicators: mountain regions are in some situations amongst the richest and in other situations the most marginalised areas over the country.

Mountain forests

The latest available inventory (1985) allows to consider forest with mountain characters over 4 500 000 ha which represents two third of all national forest area. The increase of forest cover, between 0.3 and 0.5% per year, is mainly found in mountain regions. Closely linked to forest cover is the issue of soil conservation and stability that for hydro-geological reasons is set as a priority in land use policies and planning. A common feature of mountain forests in Italy is the character of multifunctionality: protective role is integrated by a landscape role recognised by a specific law, and production can be highly significant for some regions, especially in the Alps; the environmental roles (biodiversity and water) are everywhere consistent.

The issues

There is a clear difference in Italy between the forest sector, involving some 500 000 workers and 90 000 small and medium size enterprises, and the forest resources, involving mostly mountain areas, a large set of functions and a limited production. Most of the wood for manufacturing is imported, leaving forests in many areas, public and private, without management and control.

Thus one of the main issues in combination with climatic conditions is fire control in area with difficult accessibility.

Measures and trends

The national framework for mountain areas and resources is consistent making reference to the Constitutional asset. The national law for the forests was set up in 1923 and gives to mountain regions a high priority. Successive laws since 1952 on mountain areas included measures in favour of forest resources: key instruments are the "Comunità Montane" (mountain communities) which, since the law of 1992, have a statute of local authorities. Nevertheless policy implementations for forests are limited and management is still extensively lacking in many regions beside the weak institutional support given to local community level structures called "forest consortia" which are at the core of local forest management and development capacities. Some of these structures, like the Magnifica Comunità di Fiemme in the Alps, are well-known world wide as models of participatory and multifunctional sustainable forest management.

In Italy, regions have a responsibility for decisions and implementation in the forest sector since 1977. A large variety of situations is therefore due to the different approaches to mountain forest development in each region which has been working out policies linked to its own cultural and historical context. The main innovative trends supported by regions and of interest for mountain forest sustainable management are:

- better identification and definition of resources,
- development of the multifunctionality concept and of silvicultural practices,
- reinforcement of forest planning,
- competence delegation to local level (sub-regional) structures,
- support to associative schemes.

A recent assessment on the forest sector in Italy provides an overview of gaps and priorities for promoting sustainable forest management and development. The orientations given together with the basis established by the National Mountain Law represent a concrete perspective for mountain forest policy. The following orientations are highlighted:

- promotion of multifunctionality,
- strengthening of links between short- and long-term strategies,
- monitoring based on criteria and indicators,
- promoting and motivating forest owners, forest enterprises and forest marketing,
- improving public administration,
- support to diversification of forest enterprises activities,
- Strengthening of research, training and communication.

8. PORTUGAL

(MINISTERIO DE AGRICULTURA, 19981, 19982; OLIVEIRA E SILVA, 1993, 1998)

Population (thousands)* 9.930

Population growth rate (1990-96)* 0.1

Gross National Product/capita (US\$)* 10.160

Gross National Product/capita (Purchasing Power Parity in US\$)* 13.450

Land area (thousands km²)* 91

Forest cover (thousands km²)* 29

Mountain area (thousands km²)** 37

Mountain Forest Area (thousands km²)** 20

Annual water use (% of total resources/an)* 19

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

More than one third of Portugal is mountainous, 3 742 900 ha on a total of 9 200 000 ha of land.

Mountain forests

Forest cover in these regions is evaluated to some 2 000, 000 ha, i.e. 53% of the mountain areas. The importance and interest of mountain forests in Portugal have been confirmed by the position taken in the coordination of the Resolution S4 of the Ministerial Conference on the Protection of Forests in Europe.

The issues

The forest situation in Portugal can be summarised by the three main problems identified by the sub-group 'Mediterranean mountain area' of the Resolution S4:

- agricultural abandonment,
- socio-economic difficulties,
- forest fires.

The structural problems are identified with:

- a. harsh climatic conditions, particularly water availability;
- b. low quality of soils (52% are classified as bad by the CORINE Programme as compared to 27% in average in the Southern Europe), with very high erosion potential (68% against 35%) and real risk in the degradation of soils (30% against 19%);
- c. forest fires with limited means of reduction because of the topographic conditions.

Measures and trends

The 1996 memorandum on agriculture and forest in arid and semi arid lands which associated Portugal to Italy, France and Austria in a common-based position on mountain regions in Europe provides strong and structural policy orientations. Concerning trends, Portugal suffers from increasing unfavourable climatic conditions combined with poor soil quality and stability. Degradation

of water resources, soils and socio-economic assets decline increasingly. Concerning challenges and proposals, forest policies, at the national and European level, are expected to combine a specific attention to these structural problems, to socio-economic balances (revenues and employments), including infrastructures for marginal areas and an improved access to market.

9. SWEDEN

(WALLIN, 1993; NATIONAL BOARD OF FORESTRY, 1996; SWEDISH ENVIRONMENT PROTECTION AGENCY, 1998)

Population (thousands)* 8.843

Population growth rate (1990-96)* 0.5

Gross National Product/capita (US\$)* 25.710

Gross National Product/capita (Purchasing Power Parity in US\$)* 18.770

Land area (thousands km²)* 412

Forest cover (thousands km²)* 244

Mountain area (thousands km²)** 72

Mountain Forest Area (thousands km²)** 30

Annual water use (% of total resources/an)* 2

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context and the mountain forests

Mountain forests in the alpine and sub-alpine areas of Sweden cover some 3 000, 000 ha. Most of them are coniferous forests of low productivity (less than 1 m³/ha/year) mixed with birch and of relevant environmental interest, as the number and variety of protected areas prove.

The issues

Mountain forests in Sweden have multiple functions. This is the cause of local conflicts. The interest in terms of revenues and employment is high in these regions where alternatives to forest activities are limited. The ecological aspects are nevertheless the primary conditions for the conservation of forests in these areas as well as the maintaining of reindeer breeding for economic and socio-cultural reasons.

Measures and trends

The Forest Act of 1991 makes reference to this type of forests with measures of technical and economic character. Whenever environmental priorities are put forward, the loss in revenues is compensated by subsidies to the owners.

b) Other European countries

1. ALBANIA

(DIDA, 1998; ASLLANI, 1993; HORVAT, 1974)

Population (thousands)* 3.286

Population growth rate (1990-96)* 0.0

Gross National Product/capita (US\$)* 820
Gross National Product/capita (Purchasing Power Parity in US\$)* -
Land area (thousands km²)* 27
Forest cover (thousands km²)* 10
Mountain area (thousands km²)** 2
Mountain Forest Area (thousands km²)** 1
Annual water use (% of total resources/an)* 0.4
(Sources: *World Bank, 1998 ; **EOMF, 1999

The mountain context

Albania is a mountainous country where the importance of Dinaride range influences the variety of resources and the economic activities: the mixed agro-silvo-pastoral activities involve most of the mountain population. 1 644 000 ha, i.e. 60% of the national land, are found over 600 m of elevation, with an average of 30% in slope. Around 90% of soils are under erosion and 24% intensively eroded. The water resources in mountain areas are particularly abundant.

Mountain forests

Albania is also a forest country: 38% of the land, i.e. 1 050 000 ha in 1995. Officially 77% of national forest cover is considered as degraded from the soil and the vegetation point of view. This is particularly relevant in mountain regions, where the forest cover is 840 000 ha, i.e. a rate of 51%. On slopes ranging from 20 and 50% the degradation is more limited (50% of the surface). Because of its geographical location and its morphology, the ecological richness of Albania is relevant -3 250 species of plants are inventoried-. Around 95% of forests formerly under state ownership are supposed to be given back to private and municipal owners (some 40% of forests and 60% of grasslands).

Issues

The main causes of degradation of forest can be summarized by an often excessive exploitation, the intensive pasture and the fires. The current situation is alarming, mainly because of the overall political and socio-economic situation. Mountain forests are directly affected in their vital roles on rural population which represents 70% of the total, 90% of them heavily depending from wood as the only source of energy. Transformation of property regimes and socio-economic constraints are main issues for the redefinition of sustainable management policies. Albania, in cooperation with international institutions, is reallocating priorities and resources for mountain forests as a strategy within the general development policy of the country.

Measures and trends

The current legislation (1992) supports ongoing transformations, market economy, environmental aspects and sustainable forest management. The Albanian law has always been very attentive to the integration of forest to grassland areas and produced in 1995 new orientations in this regard. The law on the protection of the environment (1993), on forest revenues (1998), on

agricultural and forest lands (1995) and on the wildlife (1995) provides Albania with juridical measures to support the sustainable management of forests through funding of agro-forest exploitations and a public utility function of forests funded through an international programme of cooperation.

The specific objectives of the strategy for mountain forests are the following:

- inventory, management and mapping with an accent on the ecological functions and the protection against risks, controlled by the state,
- forest exploitation respecting ecological conditions and the follow up of natural regeneration
- rehabilitation of degraded forests, of the wood and industry chain,
- the exchange of experiences with other countries producing new orientations in the current phase of economic transition.

2. ANDORRA

(MAGALLON-FONT, 1998)

Population (thousands)* 71

Population growth rate (1990-96)* -

Gross National Product/capita (US\$)* -

Gross National Product/capita (Purchasing Power Parity in US\$)* -

Land area (thousands km²)* 0.5

Forest cover (thousands km²)** 0.15

Mountain area (thousands km²)** 0.5

Mountain Forest Area (thousands km²)** 0.15

Annual water use (% of total resources/an)* -

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

Andorra is a mountainous country at 100% of its land of 460 km², summarizing in its limited dimension most of the characteristics and challenges of the mountain forests of Europe.

Mountain forests

The 15 000 ha of forest are owned up to 95% to municipalities and to "quarts", the administrative units of small villages. The forests are mainly located over 1 000 m and are particularly rich in species.

The issues

Heavily exploited during centuries for charcoal production and then for industrial use wood, forests have been abandoned for over thirty years with, as a consequence, an important ageing of all stands. Today, socio-economic evolution and infrastructures justify an attentive management to achieve the stability of stands.

Measures and trends

In 1997, 3 000 ha of forests were already concerned by a multifunctional management, integrating the protection of peoples and goods, the conservation of ecological heritage, the recreation and the landscape. The implementation of this management has been the task of municipal associative structures.

3. BULGARIA

(RAFAILOV, 1993; ROUSSEV, 1994) (RAFAILOV, 1993; ROUSSEV, 1994)

Population (thousands)* 8.356

Population growth rate (1990-96)* -0.7

Gross National Product/capita (US\$)* 1.190

Gross National Product/capita (Purchasing Power Parity in US\$)* 4.280

Land area (thousands km²)* 111

Forest cover (thousands km²)*32

Mountain area (thousands km²)** 44

Mountain Forest Area (thousands km²)** 22

Annual water use (% of total resources/an)* 77

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

The central and south-western part of Bulgaria is mainly mountainous. Mountain regions in Bulgaria cover 40% of the land and contribute to 81% of the water resources of the country. In these regions, between the range of Stara Planina and the Rilo-Rhodopes, lives 30% of the total Bulgarian population.

Mountain forests

Of the total 3 400 000 ha of forests, some two-third (2 250 000 ha), are found in mountain regions.

The issues

The importance of Bulgarian mountains has to be identified in the links between the ecological and the socio-economic aspects: revenues of inhabitants are decreasing and the trend to depopulation is following the one of unemployment, which is estimated to 40% of the total working population. After the Parliamentary Commission for mountain regions, « within the forest sector, which can be considered as one of the main stakeholders in mountain development, main problems are:

- a decrease in the production and transformation of wood caused by lack of subsidies and market situation;
- A series of problems within the land ownership and the forest ownership ».

Measures and trends

Forest management has a long tradition in Bulgaria: it is based on detailed plans and a typology of site of intervention. The objectives to be achieved during recent years, particularly for mountain forests, are the following:

- normalization of wood exploitation as a condition of sustainable management,
- restriction of clear cuts and of even-aged structures,
- natural regeneration,
- achievement through selection of differentiated age structures,
- reinforcement of exploitation techniques respecting the environment,
- identification of priorities of functions,
- implementation of a geographical information system,
- Identification of research projects on the management of mountain forest.

In 1993, a law on the development of mountain regions was adopted with a chapter devoted to water and forest resources. Those two resources are considered by this law as closely related and their management is taken into account within a harmonized and favourable framework for local populations. Subsidies are planned for the exploitation and use of forest secondary products (mushrooms, berries and medicinal plants).

4. CROATIA

(KUSAN, 1999; MINISTARSTVO POLJOPRIVREDE I SUMARSTVA, 1998)

Population (thousands)* 4.771

Population growth rate (1990-96)* 0.0

Gross National Product/capita (US\$)* 3.800

Gross National Product/capita (Purchasing Power Parity in US\$)* 4.290

Land area (thousands km²)* 56

Forest cover (thousands km²)* 18

Mountain area (thousands km²)** 21

Mountain Forest Area (thousands km²)** 8

Annual water use (% of total resources/an)* -

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

The mountain area in Croatia is relevant, between 35 to 40% of the total land is considered mountainous. 17, 5% of the land is higher than 1 000 m.

Mountain forests

Some 777 000 ha of forests on a total of 1 800 000 ha are found in mountain regions. 80% of the forest ownership is public.

The issues

Forest in mountain regions play a relevant socio-economic role through the production of wood and a manufacturing industry providing stable employments.

Measures and trends

The recognition of general interest for forest resources is given and regulated by the Forest Act (1990, revised in 1993), the Act for the Conservation of Nature (1994) and the Act for the Protection of Environment (1994).

Forest management for public ownerships is in charge of a state enterprise, the 'Hrvatske šume'. The management objectives are particularly adapted to mountain forests:

- concertation with public interests,
- investments in the ecological values,
- maintaining of stability,
- production rationalized following the market conditions,
- better accessibility to forests,
- promotion of the multiple role of forests.

The tradition of sustainable management goes back to the XVIIIth Century with significant results especially for mountain forests: the semi-natural character of the structures, composition and regeneration. Following the Forest Act, all forest owners are obliged to invest between 15 and 20% of their revenues from wood sales into silvicultural practices aiming at natural regeneration. Enterprises pay taxes of 0, 07% of their financial turnover for multifunctional management, rehabilitation and forest research: in 1990 the total investment has been of some 20 million US\$, i.e. 11 US\$ per ha.

5. RUSSIAN FEDERATION

(SOLNTSEV, 1993; KULIKOVA, 1999)

Population (thousands)* 147.739

Population growth rate (1990-96)* -0.1

Gross National Product/capita (US\$)* 2.410

Gross National Product/capita (Purchasing Power Parity in US\$)* 4.190

Land area (thousands km²)* 16.888

Forest cover (thousands km²)* 7.550

Mountain area (thousands km²)** -

Mountain Forest Area (thousands km²)** 3.000

Annual water use (% of total resources/an)* 2.7

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context and mountain forests

Russia owns one fifth of the world forest cover, 755 000, 000 ha. After a recent Federal Forest Service evaluation, some 300 000, 000 ha of forests (40% of the total forest area), are located in mountain regions. Concerning the European part, including the range of Eastern Carpathians, Caucasus, Pontus, the Urals, the Mont Elbrus and the Kopet Dag, an estimation of 75 000, 000 ha is given.

Issues

Damages caused by storms, game and insect populations, and forest fires are those menacing mostly mountain forests.

Measures and trends

The principle of a forest sustainable management is part of the Article 58 of the Constitution which makes reference to natural resources and to their protection. In 1997 a new Forest Code of the Russian Federation was established with a reinforced presence of the state in the conservation of forest resources.

The objectives of the forest policy are the following:

- utilisation, regeneration and conservation of resources,
- multifunctionality
- monitoring of the productive and environmental aspects.

The Russian Federal Forest Service is in charge of the implementation of the sustainable development strategy for the forest sector. A system of contribution for the forest exploitation has been adopted with the aim of increasing the sector revenues. The system is based on a fiscal aid for the mobilisation of wood with an important impact on forests located in mountain areas.

6. HUNGARY

(SOMOGYI, 1993, 1998; SZEPESI, 1998)

Population (thousands)* 10.193

Population growth rate (1990-96)* -0.3

Gross National Product/capita (US\$)* 4.340

Gross National Product/capita (Purchasing Power Parity in US\$)* 6.730

Land area (thousands km²)* 92

Forest cover (thousands km²)* 17

Mountain area (thousands km²)** -

Mountain Forest Area (thousands km²)** 0.4

Annual water use (% of total resources/an)* 113

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

Only a limited part in the North of the country is concerned with mountain ranges within the Carpathians.

Mountain forests

41 000 ha of the Hungarian forests are found over 550 m, nevertheless, they are considered as those with the highest patrimonial value. Those are semi-natural forests affected, by former practices, by a reduction in the number of species and age classes. Subsidies are given by public authorities for maintaining native species, differentiated age classes and natural regeneration.

Issues

Biodiversity and the state of forest represent the two main priorities for those forests. Protected areas include a large part of the total area of those forests. The statute of park makes reference to the maintaining of multiple functions which can be secured by the biological diversity and by a good health state. Secondary products (mushrooms, herbs and grains) are of increasing value for mountain forests. In the forest management, agreement between private companies, research institutions and administration of parks and the state have allowed to test multifunctional practices for mountain forests. Game damages, which have been serious for a long time, are the object of juridical measures linked to the transformation of the ownership structures. The achievement of this goal is also followed by the reduction in the pasture pressure and in the cut areas.

Measures and trends

The new Forest Law of 1996 codifies the basic criteria for sustainable forest management which is applicable through specific rules adapted the 173 regions of the country, including mountain areas. An important research effort is providing further elements to management rules such as better analysis of forest ecosystems and monitoring of biodiversity. Rights and obligations of forest owners are balanced in a long term support by the national level. Special attention is given by the Law on Nature Protection to protected areas where close-to-nature methods and native species are identified as needs.

7. ICELAND

(BRAGASON, 1998)

Population (thousands)* 270

Population growth rate (1990-96)* 1.0

Gross National Product/capita (US\$)* 26.580

Gross National Product/capita (Purchasing Power Parity in US\$)* 21.710

Land area (thousands km²)* 100

Forest cover (thousands km²)** 1.4

Mountain area (thousands km²)** -

Mountain Forest Area (thousands km²)** -

Annual water use (% of total resources/an)* 0.1

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

Climate and geology of Iceland characterise the vegetation following the parameters of the boreal zone which are comparable to those of the elevation.

Mountain forests

The only native tree species of Iceland is birch (*Betula*) covering with wood stands 1% of the total land. Forests in Iceland cover a total of 120 000 ha in areas used also for animal breeding and 20 000 ha of reforestation areas.

Historically, an intensive pasture reduces the forest cover evaluated to some 25 to 30% of the land more than ten centuries back.

Issues

Because of the evolution mentioned above and of the importance of erosion processes, some forest programmes start to be implemented since the beginning of this century. Non native tree species have been introduced and the increase in forest cover has been the object of information schemes and of public participation.

Measures and trends

A Forest Service has been established in 1907 with the mission of reforestation which has progressively turned to supervision and technical assistance. Forests, managed to achieve protective goals against erosion and the conservation of habitats, have also a considerable recreation role: Icelandic forests have a relevant number of visits. The 2 800 ha forest area close to the capital Reykjavik is visited each year by more than 200 000 people. Grants, from 75 to 93% of the costs of plantation, are allocated to private owners with a direct assistance by the Forest Service. The multifunctional importance of forests and the decrease of animal pastures since the 80s both contributed to the increase of a socio-economic dimension with the perspective of a real wood industry for the coming decades.

8. LIECHTENSTEIN

(MINISTERIAL CONFERENCE, 1998; NIGSCH, 1993)

Population (thousands)* 31

Population growth rate (1990-96)* -

Gross National Product/capita (US\$)* -

Gross National Product/capita (Purchasing Power Parity in US\$)* -

Land area (thousands km²)* 0.2

Forest cover (thousands km²)* -

Mountain area (thousands km²)** 0.2

Mountain Forest Area (thousands km²)** -

Annual water use (% of total resources/ann)* -

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context and mountain forests

Liechtenstein is Alpine country where forests have a primary importance for their many functions, and particularly for the protection which involves in a dominant way some 40% of the forests.

Issues

Stability of stands and damages by game are the most relevant issues.

Measures and trends

The aim of maintaining the amount and the quality of forests with a multifunctional management based on adapted plans is essential for the many goods and services provided. Public authorities work with social groups in the implementation of management plans with the support of a system of financial compensation. The legal basis is the Forest Act of 1991 and its Regulation of 1995 which aim at defining the conditions for the access to financial aids.

9. MONACO

(van KLAVEREN, 1993)

The Principality of Monaco do not own forests on its national land. Its commitments in the international initiatives - such as the Ministerial conference or the Alpine Convention - are motivated by a demand of cooperation with neighbouring countries.

10. NORWAY

(NILSEN, 1998; AAKRE, 1993; GISLERUD, 1998; SKAUGE, 1996; DAEHLEN, 1996; THE ROYAL NORWEGIAN MINISTRY OF AGRICULTURE, 1994)

Population (thousands)* 4.381

Population growth rate (1990-96)* 0.5

Gross National Product/capita (US\$)* 34.510

Gross National Product/capita (Purchasing Power Parity in US\$)* 23.220

Land area (thousands km²)* 307

Forest cover (thousands km²)* 81

Mountain area (thousands km²)** 118

Mountain Forest Area (thousands km²)** 45

Annual water use (% of total resources/an)* 0.5

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

The rate of mountain areas in Norway is estimated at some 11 800 000 ha, i.e. 39% of the total territory.

Mountain forests

Some 4 500 000 ha are considered as mountain forests, equivalent to a rate of cover in these regions of 38%. In Norway the definition of mountain forest corresponds to those found 'in climatic conditions, particularly related to temperatures and wind, highly restrictive for the production, germination, maturity and establishment of seeds'. It is a pragmatic definition of biological character. On 12 million ha of forests, some 2 million are mountain forests, productive and/or protective, 2.5 million are non productive, with growth of less than 1 m³/ha/year of wood exploited.

Issues

The standing volume has doubled since 1925, going from 300 million m³ to 600 million. In mountain regions the accumulation of standing wood increases and it is assessed that in mountain forests the rate of aged or mature stands is higher than in the lowland. Main problems come from climatic conditions affecting sufficient natural regeneration. Productivity is also limited by the short vegetation period. Exploitation operations are expensive because of natural handicaps and habitat fragility. On the other hand, the economic, social and cultural roles of these forests are essential.

Measures and trends

For policy aims, the Forest Act identifies mountain forests with a direct protective role. Those forests are included in the inventory with data linked to environmental and multifunctional management aspects.

The main objective of forest management, following the Forest Act, is to secure the stand stability on the long term. Stability is a condition to implement multifunctionality which characterizes this type of forests. Guidelines have been therefore elaborated in 1993 to provide orientations for silviculture. The precautionary principle and prevention of natural risks are at the basis of the guidelines which involves the responsibilities of owners. Private owners in Norway are some 125 000, totalizing a rate of 80% of all forest owners.

Two axes are highlighted in the strategy for mountain forests:

- identification, management and monitoring of biodiversity through adapted indicators,
- maintaining of stable revenues in the exploitation of wood.

Multifunctionality, in the frame of rural development, is a priority to which the two mentioned axes should contribute. A large national project on biodiversity and a system of subsidies in forest exploitation are implemented to achieve the objective of stability and multifunctionality for mountain forests.

11. POLAND

(NIEMTUR, 1998; SPOREK, 1993; MINISTRY OF ENVIRONMENTAL PROTECTION, NATURAL RESOURCES AND FORESTRY, 1997)

Population (thousands)* 38.618

Population growth rate (1990-96)* 0.2

Gross National Product/capita (US\$)* 3.230

Gross National Product/capita (Purchasing Power Parity in US\$)* 6.000

Land area (thousands km²)* 304

Forest cover (thousands km²)* 87

Mountain area (thousands km²)** 25

Mountain Forest Area (thousands km²)** 9.5

Annual water use (% of total resources/an)* 24.9

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

In Poland, all territories located over 350 m of elevation are classified as mountain areas. These regions are found in the Carpathians (17 000 km²), Sudetes (5 000 km²) and the Gory Swietokrzyskie (2 500 km²). Mountains, because of their geographical situation, contribute to 8 % of the total land area and to 30% of the hydric resources, mainly rivers. These regions play an important role for health and amenities.

Mountain forests

Mountain forest in Poland are estimated at some 950 000 ha. They are found mainly in the Sudetes and the Carpathians and from the forest sites point of view they begin much higher than 350 m of elevation. Climatic, soil, vegetation and socio-economic conditions made these forests a much diversified habitat. Composition has been largely modified from natural conditions. Nevertheless, a part of the Polish mountain forests are considered as primary. Stand volume of 250 m³/ha is 25% higher than the average at the national level. Afforestation of formerly arable fields in the Eastern part of Polish Carpathians around 80 000 ha in the post-war period: it's an increase of about 10% of the current mountain forests' total. These areas have been dominated by elms (*Alnus incana*) while other parts have been planted with Scottish pine (*Pinus silvestris*), in order to create fore crop stands. Concerning ownership regimes, the state owns 77% of the forest land, while 8% is municipally owned and 15% is private. For the private owners, the size of the ownership is very limited, mostly less than one hectare. Proportions of ownership regimes over the all country are very much the same. Nowadays, the Polish Parliament is discussing the document 'About retaining of national character the strategic resources of the country' in which is strongly recommended the proposal of maintaining the present State forests without privatization.

Issues

Effects of atmospheric emissions, among other from border countries, are heavy in consequences for the Polish forests and for mountain forests in particular. The process consists in the degradation of mountain spruce stands and is stronger in stands of artificial origin, which are not genetically adjusted to the local conditions. These effects are even more critical on account of severe and intense climatic conditions. The average precipitation decreased of some 100 mm in the last 50 years and temperatures increased of around one degree. As a consequence, distribution of wood insects and fungi is today a major cause of damage. Damages by game are also important in mountain areas; natural and artificial regenerations are in some cases affected up to 80-100%.

Measures and trends

A process of revision of the Polish forest policy has started in 1991. In 1997, the National Policy for Forests, which makes reference to Rio and Ministerial Conference principles, has completed it. Within these two frameworks,

mountain forest has been the object of a special recognition. The main objective to achieve in mountain regions is multifunctionality based on sustainable development. The concrete achievement will depend on the recovering of most site-adapted conditions.

12. CZECH REPUBLIC

(VACEK, BALCAR, 1998; KRECEK, CHALUPA, 1996; VACEK, 1993; MINISTRY OF AGRICULTURE, 1996)

Population (thousands)* 10.315

Population growth rate (1990-96)* -0.1

Gross National Product/capita (US\$)* 4.740

Gross National Product/capita (Purchasing Power Parity in US\$)* 10.870

Land area (thousands km²)* 77

Forest cover (thousands km²)* 26

Mountain area (thousands km²)** -

Mountain Forest Area (thousands km²)** 5

Annual water use (% of total resources/an)* 4.7

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context and mountain forests

The 500 000 ha (20% of all forest cover) of mountain forests in the Czech Republic have a critical importance in the conservation of soils and water resources in the watersheds. Main rivers have their sources in the mountains. Because of the state of health, forests are the object of a special ecological attention. Their structure allows as well a considerable wood production and other complementary activities (e.g. hunting). 16% of mountain forests are found under juridical protection with adapted silvicultural practices.

Issues

The man-made structure of stands have produced a high sensitivity to industrial pollutants, going back to the 70s, as well as to natural risks such as snow and wind. Large damages are recorded and consequent measures are implemented. Being mountain areas inclusive of all values, they are at the same time special protection areas, hydrological relevant areas and sources of economic activities and local employment opportunities.

Measures and trends

A first national project "Management of Mountain Forests" started in 1981 with the aim to rehabilitate degraded sites and secure essential functions, notably the soil and water resources conservation. A first objective is to differentiate the structures of stands, follow the natural successions and help native species. The need to identify methods of adapted management is recognised and depends on extremely variable conditions of sites (166 types have been identified). A second objective is to adapt methods to needs coming from the economic forces. Current orientation is consequently axed on a systemic

concept of management on reinforced ecological bases. The regulatory framework is today established by the Forest Act of 1996 which is based on the resolutions adopted by the Ministerial Conferences.

13. ROMANIA

(TOADER, 1993; RADU REY, 1994)

Population (thousands)* 22.608

Population growth rate (1990-96)* -0.4

Gross National Product/capita (US\$)* 1.600

Gross National Product/capita (Purchasing Power Parity in US\$)* 4.580

Land area (thousands km²)* 230

Forest cover (thousands km²)* 62

Mountain area (thousands km²)** 73

Mountain Forest Area (thousands km²)** 40

Annual water use (% of total resources/an)* 70.3

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

Mountain regions cover 7 300 000 ha, i.e. 32% of the Romanian land with a population of 3.6 million inhabitants.

Mountain forests

Forests in these regions cover a total of 3 970 000 ha, which represent three quarters of the country forests and 54% of the mountain land area. In mountain regions the community property (municipalities, towns, and farmer and church communities) rises to up 41%. Production of wood is significant, with some 16 million m³ per year and an accumulation of standing wood volumes up to 400 m³/ha. Market is not organised. The protective function, regulated by the law of 1954, covers 20 % of mountain forests. This part of the forests has progressively been considered as multifunctional (scientific interests, landscape and environment). The faunal component is well represented and characteristic: bear populations (7 000 individuals), wild grouse (10 000), and the last European bison population (45).

Issues

Mountain forests in Romania are under pressure from climate factors (wind and snow) and human activities (overgrazing, illegal cuts, forest fires). The access to mountain forests is still a central problem with 35% of forests inaccessible.

Measures and trends

Currently, a series of laws concerning forest resources (environment law of 1995, penal law of 1995, law of property of 1991 and new forest code of 1996). The forest administration is structured in the National Administration of Forests Romsilva which depends from the ministry of water and forests.

14. SLOVAKIA

(MIDRIAK, 1993; SVITOK, 1998; JANSKY, 1999)

Population (thousands)* 5.343

Population growth rate (1990-96)* 0.2

Gross National Product/capita (US\$)* 3.410

Gross National Product/capita (Purchasing Power Parity in US\$)* 7.460

Land area (thousands km²)* 48

Forest cover (thousands km²)* 20

Mountain area (thousands km²)** -

Mountain Forest Area (thousands km²)** 12

Annual water use (% of total resources/an)* 5.8

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context and mountain forests

After different sources, Slovakian forests in uplands range between 28% and 60% (551 500 to 1 200 000 ha) of the total forests. The climatic conditions shape forests found between 600 and 1 600 m of elevation with mountain characteristics. Some 13 000 to 20 000 ha of forests are identified as being primary and are located in mountain regions. In the latest 40 years mountain forests have been progressing of more than 10 % with a net increase in standing volumes which average 190 m³/ha with 20% more in the latest 20 years. Slovakia has an information system applied to forest management which allows identifying mountain forest in operational terms combining potential erosion, avalanche and landslide risks and the conservation of water resources.

Issues

Four types of pressure are characterizing these forests: pollution, touristic activities, infrastructures development and damages caused by game on young regeneration sprouts. A significant decrease in vitality and stability has been detected in the Western Carpathians because of climatic anomalies, pollution, wind, snow, insects and fungi. The increase in cuts following storm damages is considerable: since 1993, more than 50% of the volume is coming from climatic accidents. Socio-economic difficulties are important and they affect the implementation of necessary silvicultural measures including the use of cables in exploitation.

Measures and trends

In 1993 two major instruments were established: the Strategy for the Development of Management and the Principles of State Forestry Policy. Considering the mountain nature of the country, these measures are of particular interest for upland forests. They include management support to a wide range of roles based on a long forest tradition of the country and an important export asset of the forest sector.

15. SLOVENIA

(MINISTRSTVO ZA KMETIJSTVO, GOZDARSTVO IN PREHRANO, 1995; MINISTRY OF AGRICULTURE, FORESTRY AND FOOD, 1996; GOLOB, 1998; STATISTICNI URAD REPUBLIKE SLOVENIJE, 1997; GOLOB, HRUSTEL-MAJCEN, CUNDER, 1995; VESELIC, 1991)

Population (thousands)* 1.991

Population growth rate (1990-96)* -0.1

Gross National Product/capita (US\$)* 9.240

Gross National Product/capita (Purchasing Power Parity in US\$)* 12.110

Land area (thousands km²)* 20

Forest cover (thousands km²)* 11

Mountain area (thousands km²)** 9

Mountain Forest Area (thousands km²)** 7

Annual water use (% of total resources/an)* -

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

The mountain area in Slovenia is estimated at 952 800 ha, i.e. 47% of the total land. The land classification established in 1990 shows that the mountain nature of the country -uneven topography, harsh climate, and soils of low fertility- concerns half of the country (47%).

Mountain forest

Some 690 000 ha of forests are found in mountain areas, with a rate of cover of 72%. Private forest owners are the majority (70%) on the national level, but this rate decreases in mountain areas where public forests increase steadily with the elevation. The natural aspect of upland forests is recognised and those ecosystems host a large number of protected species. In mountain regions, forests with a dominating protective function increase up to five times the national average. In 1771, an official order included the concept of sustainable forest management and introduced the notion of protective forest.

The issues

Atmospheric pollution, storm damages and tourism pressures have a greater impact on mountain ecosystems than the national average. Standing volumes are high (+15% between 800 and 1200 m) and they contribute to the general stability of mountain forests. Issues linked to game damages and to forest recolonisation, as a consequence of agricultural practices abandonment, are severely outlighted. A number of juridically protected areas are experiencing conflicts with local populations who are depending from wood trade up to 80 % of their revenues.

Measures and trends

The Forest Act of 1993 represents, together with the Forest Development Programme of Slovenia, the basis of the new forest policy whose three main objectives are:

- conservation and sustainable development of the biological diversity and of all forests functions,
- conservation of the environment and ecological balance of the land,
- sustainable rural development.

In forests where the protective function is a priority, the Forest Act envisages contracts with owners and a compensation for the management activities to implement. The Slovenian Forest Service employs 700 foresters, i.e. one forest officer every 1 600 ha, with responsibilities in the monitoring of forest development and in guiding forest management. Forest owner is at the center of all concerns of sustainable management. The aims of management, harmonized with those of forest policy, include the complementarity of the forest and the agricultural enterprise, the dependency of farmers on the products and services provided by the forest, the integration of agricultural and forest activities to the development of rural areas and, finally, the importance of permanent training for owners and forest workers. The measures applied in the forest policy are regulative, financial and supportive. The first, apart from legislation, are planning and management and are systematically applied. Management is close-to-nature in character and provides continuity to Slovenian tradition of a silviculture based on strong principles of sustainability. Owners are associated to the preparation of management plans in all phases and all components of multifunctional forest management (e.g. hunting, mushrooms gathering and recreation).

Financial measures are established in view of implementing a policy and not in an individual perspective. Owners are therefore considered as the first carriers of the political forest project. Owners are also remunerated in the share concerning general benefits from forests. The following table shows rate of State participation in forest activities.

<u>Type of activity</u>	<u>Rate of State co-funding</u>
Regeneration (artificial and natural)	30%
Silvicultural measures	from 20 to 40%
Preventing measures and fire combatting	up to 70%
Protection measure from herbivores	materials plus 30% of costs
Measures against diseases and insects	30% or materials plus 20% of costs
Maintaining natural habitats	from 30 to 70%
Investments	following public tenders
Rehabilitation of fire damaged forests	seedlings plus 20% of the costs
Maintaining of forest roads	35% of costs

Owners of less than 100 ha, those depending exclusively from agricultural and forest activities, and groupings of owners are given priority in grant allocation. Priority is also given to natural conditions under particularly difficult handicaps where grants are increased up to a maximum of 30%. Support measures are based on technical assistance, information and training. The overall funding for those measures has been fixed between 1991 and 2000 to 4 380 MST/year (26 MEuro/year), i.e. a national average of some 4 018 ST/ha (23 Euros/ha). In mountain regions, the average is estimated at 33% more, i.e. 5 357 ST/ha (32 Euros/ha). This financial effort, including financing of the Forest Service, corresponds, on the State budget in 1999, to 0.42%, or the equivalent of 0.105% of the GNP of the country, 20% of the value of wood exploited annually. Finally, the newly adopted 1997 Act on Agricultural and Forestry Chambers, will give owners an important place in the definition of forest policies.

16. SWITZERLAND

(BUWAL, 1996; MÜHLEMANN, 1998; OFEFP, 1989; SAB, 1988; EIDG.ANST.FORSTL.VERSUCHSWES., 1988; ZIMMERMANN, 1998; SEAFL, 1991; SEAFL 1992)

Population (thousands)* 7.074

Population growth rate (1990-96)* 0.9

Gross National Product/capita (US\$)* 44.350

Gross National Product/capita (Purchasing Power Parity in US\$)* 26.340

Land area (thousands km²)* 40

Forest cover (thousands km²)* 11

Mountain area (thousands km²)** -

Mountain Forest Area (thousands km²)** 10

Annual water use (% of total resources/an)* 2.8

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context and the mountain forest

In Switzerland 80% of the forests, corresponding to some 1 000 000 ha, are found in natural habitat or a geographical context of mountain (slope steepness over 60%). One fifth of the Swiss forest shows damages from rock falls and avalanches. Forest cover has been increasing of 48 000 ha (+4%) between 1985 and 1998 and this progression has taken place mainly in mountain areas. The new stands are found basically on former less productive prairies, located over 1 200 m. The forest ownership is public at 73%. In the Alps and the Jura, this rate increases to 78 and 75%. The structure of public ownership is very complex and diversified: one can identify communal municipalities, mixed communities, fractions, user's communities, bourgeoisies, the school wards, parishes, "bourses des pauvres", "patriziati", corporations, etc. The dominating mountain forest has influenced policy and legislation. Silviculture has gained in Switzerland a remarkable know-how, adapted to conditions and factors characteristic of a fragile and complex habitat. This is the feature of the first policy measures addressing upland forests (Gebirgswälder, Hochgebirge). Since

1876 mountain forest is a synonym of protection. In 1968, forest policy recognised and supported forest economy as a means to secure the protective role.

Issues

Forest progression on less productive prairies over 1 200 m modifies policy orientations which aims at helping regeneration of old and high-volume stands. Forest stability has been decreasing in higher areas. Wind and snow storms are responsible for half the cuts. Always in higher areas, silver fir and maple, two species of high ecological value, are threatened at a large scale by game. While social demands on forests are increasing, the owner's capacity to manage sustainably is constantly decreasing. If costs are not covered by revenues, it is impossible for owners to provide services of public interest. For maintaining biodiversity, a new strategy has to be explored. The rate of dead wood has increased dramatically up to 6% of the total standing volume. On the other side, dynamics and diversity, coming from management activities which are considered as decisive contribution to maintaining biodiversity, are progressively disappearing. Concerning recreation, forest owners are in charge of services which are not compensated. In the future, a debate in Switzerland is open on the principle of the user-payer to solve this problem. A number of protective forests are losing their stability and application of silvicultural measures is requested as well as a development of research on the protective capacity of forests. For regeneration and carbon fixation reasons, an increase in forest exploitation seems necessary. Providing some 90 000 employments, forest economy is the first source of activity in rural areas.

Measures and trends

At present, the federal Law of October 4, 1991 and the Order on forests of November 30 1992, both implemented since 1993, include the five objectives of the Swiss forest policy:

- to secure the conservation of forest areas,
- to protect forests in an environmental framework,
- to provide all forest functions,
- to promote forest economy,
- to protect population and infrastructures against natural risks.

Implementation measures of this policy are, at the same time restrictive, through obligations to owners, and accompanying, by means of grants. Concerning multifunctionality and economic promotion, accompanying measures are provided. Protection against risk is under a federal framework of measures. Beside those measures, the Swiss approach provides training, assistance, research, documentation, information tools, covering the overall forest activities. Protection of peoples and infrastructures benefits from a

federal grant up to 70%. In protective forests, silviculture is supported to 70% by the Confederation upon demand of the cantonal authority. The importance given to mountain forests within the forest policy implementation is attested by grants as showed in the following table.

Type of grant	Alps and Jura	Other areas
Improvement of management conditions	75%	25%
Protection of peoples and goods	100%	0%
Silvicultural measures	85%	15%
All projects	90%	10%

Owners are the final users of grants in most of the cases. The total amount of aids was in 1996 some 180 MFS (111 MEuros). Between 1970 and 1981, grants have been constant, at around 50 MFS (62 MEuros), then, up to 1990, they have been increasing to 280 MFS (188 MEuros). From this date, the trend is decreasing. The national average for individual owner is 1 500 FS/owner (923 Euros/owner), 90 FS/m³ (42 Euros/m³) and 400 FS/ha (246 Euros/ha). In mountain areas grants are largely higher then the national average.

17. TURKEY (REIS, 1993)

Population (thousands)* 62.697

Population growth rate (1990-96)* 1.8

Gross National Product/capita (US\$)* 2.830

Gross National Product/capita (Purchasing Power Parity in US\$)* 6.060

Land area (thousands km²)* 770

Forest cover (thousands km²)* 89

Mountain area (thousands km²)** -

Mountain Forest Area (thousands km²)** 60

Annual water use (% of total resources/an)* 16.1

(Sources: *World Bank, 1998 ; **EOMF, 1999)

The mountain context

The average elevation of the country is 1 132 m, while the European one is 330 m. Some 62.4% of lands are more than 15% steep.

Mountain forests

A large part of Turkish forests are located in mountainous areas. A rough estimation is some 6 000, 000 ha out of a total of 8 856 000 ha of forests in the whole country in 1990.

Issues

Problems in mountain regions cover the whole range of problems found in forest management: illegal cuts, over-grazing, fires, insect damages, pollution and erosion.

Measures and trends

The National Afforestation Law (1995) can be considered beside the National Biodiversity Strategy and Action Plan as tools for mountain policy implementation. Attention is given to forest owners, including village communities through a Forest Village Development Fund providing credits and grants to support small-scale activities linked to natural and forest resources (e.g. bee-keeping). An effort in communication is made to raise awareness on the importance of forests and consequences of degradation and loss.

International initiatives in favour of mountain ecosystems and sustainable development.

The forest resources found in mountain regions are the object of a growing number of commitments taken by Member States and by the European Union:

- Chapter 13, Agenda 21, Programme of Action for Sustainable Development of the UNCED of Rio de Janeiro, 1992,
- Resolution S4, Ministerial Conference for the Protection of Forest in Europe, Strasbourg 1990,
- Action Theme "Mountain Ecosystems", Pan-European Strategy on Biological and Landscape Diversity 1996-2000,
- Protocol on Mountain Forests of the Alpine Convention, 1996,
- Memoranda on Mountain Agriculture and Forestry (Italy, France, Austria; Portugal for the dry zones), 1995, 1996,
- European Parliament, Resolution on the forestry strategy of the European Union (31.1.97, JO C 55, 24.2.97, p.22),
- Committee of Regions of the European Union, Advice of 18.9.97 on "A Policy for Mountain Agriculture in Europe", CoR (97)178, 1997,
- Chapter Silviculture of the European Charter of Mountain Regions of the Council of Europe, 1995,
- European Intergovernmental Consultation on Sustainable Mountain Development,
- IFF II (Intergovernmental Forum on Forests)

The compared content of those commitments or initiatives of countries and EU shows common positions around issues linked to conservation and sustainable management of forest resources in mountain regions.

Chapter 13, Agenda 21, UNCED

Managing Fragile Ecosystems: Sustainable Mountain Development: (a) Strengthening knowledge on the ecology and sustainable development, (b) Promoting integrated watershed management.

Resolution S4

Adapting the management of mountain forests to new environmental conditions, ecological richness and fragility, natural risks, water, regional development, pollution and climate change, exploitation difficulties and economic uncertainty, conflicts, tourism, unmanaged evolution, game pressure, regeneration: - preventing risks, - protecting patrimony, - providing analysis tools for a patrimonial management, - increasing knowledge of ecological factors for management, - establishing an ecological cartography, - building an international data base, - better understanding of water/vegetation/soil interactions, - supporting biological approaches, - implementing complementary financing mechanisms, - providing performing methods of analysis and a set of socio-economic options, - identifying stability indexes, - identify minimum level stability management, - identifying coordinated research programmes, - exchanging technical personnel.

Action Theme 10, Pan-European Strategy for Biological and Landscape Diversity Mountain Ecosystems: - develop guidelines for conservation of biodiversity in mountain regions, - implement sample reforestation programmes, - assess support measures for rural development, - inform, - protect, - promote environment-friendly agriculture.

Mountain Forest Protocol of the Alpine Convention

Protection against risks, carbon fixation, regional climatic balance, air purification, water regulation, recreation function, source of raw renewable materials, of employment, of biodiversity, common transboundary measures: - respectful, sustainable and close-to-nature management, - natural regeneration, native and adapted species, - erosion control, - integration of policies objectives on pollutants reduction, game control, forest grazing, recreation, wood exploitation, fire control, personnel training, - participation of local communities, - international cooperation (exchanges, evaluation, transboundary activities, research, observation, training and information.

Memoranda

Italy:

Implementation of international commitments (S4, UNCED Agenda 21, Alpine Convention), - global EU economic policy based on regional-local development projects, - subsidies for surface unit and for specific exploitation handicaps, - support to pluriactivity, to young entrepreneurs, to forest management consortia, to small and medium enterprises, to investments on typical products, - integrated development, - development of local resources, - maintaining of forest multifunctionality, - fire control, - grants for infrastructures, - aid to management and trade groupings, - aid to forest management, technical and communication.

France:

New impulse to the Community policy in favour of mountain areas, - strengthening of existing measures and planning of new ones, - open measures to forests, market, products and services quality, - small-scale approach to field situations, - support to wood exploitation, - management of protective forests, - research on the ecosystems following the criteria established by the S4 and the Alpine Convention, - development of training, - management and control of natural risks.

Austria:

Compensation of natural handicaps with individual assessment and grant differentiation by administrative unit in order to reinforce the regional importance of an integrated mountain policy, - increased and more balanced remuneration of multifunctional services with a minimum level for small holdings, following the importance of handicaps and the social conditions, with no differentiation between full-time and part-time farmers, - subsidies for silvicultural practices and for the use of biomass for energy, - promotion of rural integrated development rural through a global community programme in favour of mountain areas.

Portugal:

This memorandum deals with dry zones with problems of ageing of local population, soil degradation and decreasing water resources.

European Parliament

Resolution on a Forestry Strategy for the European union: - recall to the Commission on the need of action, measures and funding concerning the protection of the economic and biological value of the forest resources and the strengthening of the maintaining of real balances, with a special reference to issues of specific regions, namely mountain regions.

Council of Europe/ Congress of Local and Regional Powers

European Charter of Mountain Regions, Article 9, Silviculture: - development of the forest-wood sector, - development of mountain forests for production purposes, - protection of forests against natural hazards, - implementation of control and combat against fires, - programmes of reforestation through participation of local actors, - control of naturally regenerated stands following abandonment with the aim of avoiding landscape uniformity, - compensation of natural and ecological constraints and grants for maintaining landscapes.

Committee of Regions

Enhance for mountain regions the Regulation 2080/92 towards the management of mountain forests and protective forests; - increase the use of biomass for energy purposes as a contribution to the maintaining of agriculture in mountain regions.

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Development of mountain regions in Europe; - promote multifunctionality in mountain forest management, - link financial subsidies to the quality of environment, - compensate natural handicaps and integrate externalities.

IFF II

Intergovernmental Forum on Forests; in its second session, participants underlined that mountains deserves special attention and ask the Secretariat, in view of the third session, to prepare a document evaluating options for mountain areas (IFF II, II.d.8).

Positions taken by Member States and the European Union converge into some major objectives and actions:

Common objectives

- sustainable management and development, integrated and adapted to global changes,
- promotion of multifunctionality and compensation of management constraints,
- reinforcement of knowledge (ecological and socio-economic),
- prevention of risks,
- protection of resources and conservation of biodiversity,
- Implementation of international commitments.

Common actions

- elaboration of information, training and research programmes,
- exchange of experiences and personnel,
- identification of methods and tools of analysis (socio-technical options, cartography, data base),
- evaluation and promotion of existing and new measures,
- Elaboration of a code of behaviour for the conservation of biodiversity.

One can easily recognise that a significant number of international organisations and institutions, representing a variety and diversity of interests, are committed in demonstrating the specificity of the mountain environment in its forest resources component ⁽¹⁾.

⁽¹⁾ amongst others and as an indication, the following can be mentioned:

Institutional initiatives:

- FAO/EFC, Working Party on the Management of Mountain Watersheds, biennial sessions,
- the UNESCO Man and Biosphere programme, with researches on the 'Impact of human activities on mountain and tundra ecosystems'
- the Task Force of the International Union of Forestry Research Organisations (IUFRO), started in 1997 and devoted to Forests in sustainable mountain development,

Research and study initiatives:

- the OCDE Report (1992) on market and governments dis-functioning in the management of environment,
- the EUROFOR study of the European Parliament of 1994,
- the activities of research and development, and of scientific concern, supported by the European commission, particularly the COST E3 Programme 'Forests in Rural Development',
- the research network of the European Science Foundation (ESF), on 'Biodiversity in European Mountains', 1997,
- the IGBP (International Geosphere-Biosphere Programme) collaborative initiative "Global Change and Mountain Regions"

Meetings:

- 1st (St.Jean d'Arvey, France, 1996) and 2nd (Trento, Italy, 1998) International Workshop 'A European Project for Mountain Forest',
- Conferences (Kracow, Poland, 1995, Ljubljana, Slovenia, 1998) of EUROMONTANA on a new cooperation for European mountain regions
- Seminar of the European Topic Centre on Land Cover in Mountain Areas, Vienna, 1996,
- Seminar of the University of Karlstad, Sweden, 1996 on cartography and remote sensing in mountain areas,
- Congress INTERPRÄVENT, regularly held on issues of prevention and security of mountain watershed,
- Congress of the Institute of Nuclear Research in Sofia, Bulgaria, 1997 on observation of the environment in mountain regions,

Ad hoc programmes:

- the European Charter of Local Communities Forests, Trento, 1992,
- the strategic project on the Sustainable Development of the Pyrenees, as an output of the meetings organised in 1994 by the Agence Régionale pour l'Environnement Midi-Pyrénées,
- the 'Alpenländischer Wald', 1996, of the Austrian Confederation of Forest Private Owners.

For 2000, Europe and the international community are providing further instruments for progressing in sustainable mountain forest management.

In Europe, the EU Council Regulation (EC) No 1257/1999 on Rural Development includes a Forestry Chapter (VIII). Support is given to private owners and to municipalities and their associations with a view to "maintaining and improving the ecological stability of forests where the protective and ecological role is of public interest and where the costs of maintenance and improvement exceed the income from forestry. Payments shall be granted to the beneficiaries provided that the protective and ecological values are ensured in a sustainable

manner and the measures to be carried out are laid down by contract and their cost specified therein".

The Ministerial Conference on the Protection of Forests in Europe adopted its Work Programme which includes the European Mountain Forest Action Plan with five main actions:

- i. follow the state-of-the-art to be made by the first White Book of Mountain Forest in Europe with an up-dating and Workshop every two years,
- ii. establish a network of communication on policies, techniques, research and training concerning sustainable management of mountain forests,
- iii. establish a network of sample sites in each country for the implementation and monitoring of criteria and indicators, as well as for the exchange of experiences between countries,
- iv. establish a referential of socio-economic and environmental data provided by countries and the sites of the network, and following the criteria and indicators endorsed in Lisbon,
- v. Organise training meetings between representatives of countries, based on decisions adopted at Lisbon, Helsinki and Strasbourg.

The international community declared, by means of the General Assembly of the United Nations, 2002 as the International Year of Mountains: coordinated forest-related initiatives are expected.

In preparation of this major event, the Mountain Forum has published the proceedings of the first Electronic Conference of Mountain People, Forest and Trees which gathered one thousand participants. IUFRO has carried out a comprehensive report on Forest and Sustainable Mountain Development where 90 world wide contributions raise the global importance of these forests. Finally, the first World Mountain Forum will be held in France, June 5 to 12, 2000 to provide an opportunity for cooperation and awareness raising on mountain resources and communities.

Notes to readers

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