

conference

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C 91/INF/16
November 1991

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS ROME

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Twenty-sixth Session

Rome, 9 - 28 November 1991

CONCLUSIONS AND RECOMMENDATIONS OF THE X WORLD FORESTRY CONGRESS

These conclusions and recommendations attempt to take into account every national and regional report, every general and special report, every voluntary contribution, and every idea expressed in debate. They are presented by chapters, in accordance with the structure of the Congress, in order to make them easier to consult. They are primarily aimed at professional foresters, and to everyone interested in various aspects of forestry.

This document complements the final declaration of the Congress, which is aimed more at public opinion, politicians, and inter-governmental and non-governmental organizations.

CHAPTER A : THE FOREST, A PROTECTIVE HERITAGE.

1 Forests and climate

The influence of forest ecosystems on micro-climates and climates is far from being negligible, particularly through their effects on the carbon cycle. Forests and woods can behave as "sources" of greenhouse gases in the event of massive deforestation, or as "sinks", as appropriate silviculture and extensions of forest cover can preserve and improve growing stock. Once removed from the forests, durable uses of wood can increase this carbon storage effect. Current discussion and work concerning climatic changes caused by the greenhouse effect or resulting from natural causes should take these data and perspectives into account.

The inadequacy of the existing predictive climatic models, as well as a relative lack of certainty concerning the mechanisms of interaction between forests and climate prevents the immediate definition of appropriate regional forestry strategies.

However, the global impact of actions to be carried out in the fields of forestry and wood use will only be perceptible from the moment that deforestation is significantly slowed at a global level.

A major research effort should be rapidly carried out in the fields of tree physiology, infraspecific variability of adaptive characteristics, the quantification and the evolution of humus, forest ecology and fire management.

Forest managers and researchers should be better informed of studies on climatology and of research on climatic models. Joint studies could be undertaken on forest climatology in cooperation with the World Meteorological Organization.

The application of appropriate rules of management and silviculture, the extension of reforestation operations, and the development of durable uses of wood or energy production should contribute to reducing the greenhouse effect.

The reduction of fossil fuel consumption should be encouraged, particularly in industrialized countries. The development of alternative energy sources should be promoted.

2 Conservation of soil and water resources.

The positive effects of forest cover are confirmed by most research work into soil and water conservation, the prevention of landslides, and the fixation of dunes.

Nevertheless uncertainty persists on many points: the estimation of evapo-transpiration rates, the impact of various types of forest management, the relationship between the type of forest and the quality of water, and so on.

The introduction or reintroduction of vegetation together with the construction of dams and bench terraces are some of the means available to man.

The texture and structure of soils, their chemical composition and their capacity to retain water are major factors in the potential of forest sites. In order to direct silvicultural operations more effectively, it is essential to have a complete assessment of the site at one's disposal, and sometimes local research on the functioning and nutrition of forest ecosystems.

Current research should be continued and intensified, especially in tropical forests, by:

- *an increase in the number of experimental blocks;*
- *increased use of modelling techniques;*
- *enlarging the scale of research in the catchment areas studied;*
- *the better integration of forest hydrology into global ecosystem research.*

3 Assessment of forest benefits in economic and social terms

Economic factors are not the only ones which are taken into account when a decision is taken concerning forests. The difficulty of objectively quantifying the ecological and social role of forests gives rise to concern that various lobby groups, often of urban origin and not always possessing the necessary scientific, technical or economic information, may strongly influence the decisions taken in forestry policy.

Many failures are due to underestimation of the complexity of relationships between all those directly or indirectly affected by forestry decisions. The success of a development operation does not result from the repressive effect of forest laws, but from the ability to involve the populations concerned. A well-balanced physical, financial, human, natural, institutional and cultural commitment is the condition for real development with durable success.

Foresters are requested to pay more attention to the expectations and needs of society, as well as to the values which have determined the choices made by the decision-makers. A constant effort to inform, explain, and to actively participate in current discussions is essential.

The concept of forest development requires revision of the methods of determining the value of the goods and services provided by forests.

CHAPTER B: CONSERVATION AND PROTECTION OF THE FOREST HERITAGE

4 Protection against biotic and abiotic pressures

The relative simplification of forest ecosystems through human activity, as well as the introduction of a number of species and provenances which are ill-adapted to the local context can make forests more vulnerable in the event of biotic or abiotic disturbances. Moreover the ecological balance of forests may be disturbed by polluting emissions.

Increasing attention must be paid to soil and tree nutrition (water and minerals), and more generally, to the functioning of forest ecosystems. Good forestry practices, such as early and adequate thinning, can substantially increase the resistance of stands of trees against climatic hazards.

During recent decades, there has been a marked increase in the salvage harvest in Europe as a consequence of climatic hazards.

The reduction of polluting emissions remains a priority.

The risk of introducing harmful organisms into healthy geographic zones through international exchanges of forest products must be minimized, in particular through phytosanitary control at the frontiers. Nevertheless, the necessary measures should not, as far as possible, hinder international trade.

Higher priority should be given to the physiological and ecological selectivity of the chemical treatments which will remain necessary in the absence, in most instances, of adequately developed biological control techniques in forestry. The research work necessary to the implementation of an integrated defence strategy must be encouraged.

International coordination of research on forest health should be improved.

5 Protection against fire

Fires may have different prime causes. In developed countries, the desertion of some areas can lead to an unintentional accumulation of dry and combustible biomass. In developing countries, fire as means of clearing is frequent because the demand for land is increasing. In both cases, solutions can only be reached by means of an integrated approach to rural development, allowing wooded areas to become local assets and sources of income for the people of the region. This approach necessarily implies a close association with the populations.

The results of research and of a certain number of new technologies allow the developed countries to be optimistic as regards the prevention of fires, early detection and the use of controlled fires.

Thanks to such techniques, fire used as an element of precise management can (apart from its destructive characteristics) be a tool for forest protection, fire prevention and fire fighting, resulting in benefits to open areas and forests.

In order to prevent forest fires and fires in open woodlands, it is necessary to solve the socio-economic problems that are often the real principal cause.

In all countries, the social and economic context of the endangered zones, a number of thoughtless and criminal actions, as well as the lack of public awareness, make it necessary to attempt to provide intensive and recurrent information and education, indispensable to a global prevention policy.

Preventative measures and the capacity to fight incipient fires should be a priority.

Transborder cooperation should be organized to improve prevention and firefighting capabilities.

6. Ecosystems and genetic resources

The genetic heritage must be preserved and transmitted to future generations.

Forest management can either increase or reduce the genetic diversity, the diversity of species and the variety of ecosystems, which are interdependent, by acting on reproduction systems, renewal rates and death rates within a given population.

The parallel application of various management systems to various groups of forest stands can make it possible to achieve both the objective of conservation and that of the exploitation of forests. Forest management can thus contribute to the efforts made towards conservation. Rapid changes in the conception of management, especially as regards tropical rain forests, are indispensable if we are to save many species as well as their genetic variability.

Regional projects concerning "in situ" conservation of forest genetic resources, complementary to "ex situ" projects and coordinated over the entire distribution area of the species under consideration, should be implemented. Appropriate financial arrangements should be established.

In order to preserve a number of unique forest ecosystems or insufficiently known genetic resources, forest management could plan the creation of integral conservation zones, appropriately delimited and integrated into national and international networks.

Nevertheless the attention rightly paid to indigenous genetic resources should not lead to an underestimate of the interest of genetic improvement and of the introduction of exotic species well adapted to local conditions.

Legal studies into proprietary rights with respect to natural genetic heritage should be rapidly carried out, taking advantage of the negotiations on biodiversity currently underway.

CHAPTER C: FORESTS AND LAND MANAGEMENT

7 Integrated management of rural areas

The integrated management of rural areas originates in a voluntary process aimed at planning the sustainable and rational use of lands.

It is very difficult to impose forest conservation regulations on rural populations, when forest areas undergo pressures arising from the need to satisfy vital food and energy requirements. Meeting these basic needs is a priority.

In the temperate regions where changes in agricultural productivity are leading to a reduction of the surface area allocated to agriculture, afforestation projects are necessarily part of a global management scheme for rural areas.

Reforestation projects must respect the constraints relevant to forest management: selection of well-adapted species, respect of a certain biodiversity, length of production cycles, global balance between age classes in the major supply areas of the wood industry, consideration of present and foreseeable needs...

In the regions where food and energy supply is not yet guaranteed, plantations of trees for multiple uses and, more generally, agroforestry techniques must be developed.

A clear and durable allocation of part of the land to forests, respecting property rights and traditional local common practice is indispensable.

The planning and implementation of projects must allow for the active participation of all people with an interest in the land management of their region.

Planners must thus go beyond sectorial approaches to place forest management in the overall context of integrated regional management.

8. Watershed management

In watershed management, the protection of the upland areas, which are often wooded, helps to limit lowland damage caused by floods and drought. In the lower areas, on gentler slopes, the self-sufficiency of the areas planted for firewood, animal fodder and building materials, as well as the conservation of the fertility potential of these lands will limit the exploitation pressure on the upland environments.

In certain cases, such as tea plantations, forest areas can be converted without damaging the hydrological balance of the affected watershed.

In mountains, erosion can be limited by civil engineering and replanting, often carried out by states.

Efforts to restore mountainous terrains can only be successful if the mountain populations are involved and their traditional knowledge put to good use. Development of tourism in mountain areas poses several challenges that can only be met by taking account of the interests and concerns of the local population.

Watersheds should be managed in an integrated fashion including both upland and lowland areas.

Basic knowledge of the nature of soils and soil mechanics should be improved.

9. Combating desertification

Deserts cover 31% of the world's land area. Desertification must first of all be understood as a degradation of natural resources, which leads to a continuous reduction of land productivity. Its causes are as much of human origin, through an imbalance in resource exploitation, as of climatic or, more generally speaking, of natural origin. It is essential to intervene before the process becomes irreversible. Deserts are found both in temperate Mediterranean zones as well as in dry tropical areas such as Sahel.

Certain practices of fast-growing local populations, as well as some political decisions taken by governments fail to take adequate account of the role of trees and forests in arid areas. The struggle against desertification requires a more global and far-sighted approach, based on a better diagnosis of environmental constraints and of the expectations of local populations.

The success of indigenous vegetation in desert areas reminds us that the struggle against desertification can be successful.

In order to eliminate an important cause of pressure on particularly fragile woodland areas in the arid zones, it is essential to bring sustainable solutions to the energy requirements of local populations. The rehabilitation of natural forests and the planting of trees for multiple use, of windbreaks and shelterbeds, must be envisaged within the framework of an integrated silvo-pastoral management system.

Actions taken in the struggle against desertification must be integrated into programmes containing measures related to health, to the elimination of illiteracy and to the provision of transportation infrastructures. Such programmes must be implemented with the help of experts well aware of the local realities.

The TFAP includes such provisions, as will the Mediterranean Forestry Action Programme.

10. Social, cultural and landscape function of trees and forests

"Forestry is not simply a question of trees; it is above all a question of mankind" (J.WESTOBY).

The rapid growth of major urban centres gives a new importance to trees in the city as well as to forests on the periphery of cities. These forests often offer urban populations a very important, and sometimes unique, opportunity to come into contact with nature, and they merit appropriate specialized management.

Greater attention must be paid to the impact of forestry practices on the landscape, particularly in aesthetically sensitive areas such as forest edges.

The cultural values attached to trees and forests can help to mobilize public opinion in favour of the protection of the forest heritage, at local, national and global levels.

Urban forestry is a recent and interdisciplinary area of study, which is evolving rapidly.

Urban forestry must be promoted in association with local authorities, voluntary associations and the private sector, and greater efforts to inform the public need to be made.

The administration of forests on the periphery of urban centres should be based upon their economic and social value.

Research into maintaining the minimum survival conditions for urban trees, the preparation of species inventories and of cultivation manuals should be undertaken by urban managers, particularly by taking advantage of international exchanges of information.

To facilitate their acceptance by the community, forest management programmes will have to include landscaping.

Cultural aspects and respect for forest dwellers should be carefully taken into consideration.

The implementation of the Convention on the Cultural, Natural and Human Heritage should contribute to the conservation of trees, forests and specific sites, and, in particular trees or groups of trees of historic and cultural significance or having unique biological characteristics.

CHAPTER D: MANAGEMENT OF THE FOREST HERITAGE

11. Assessment of forest resources and monitoring of their development

Microcomputers, statistical and modelling techniques, remote sensing and new geographical information systems have considerably enhanced the technological capability of surveys.

Effective use of these expensive tools is another reason for managers, planners, survey experts and technicians responsible for operational execution to work together more closely. A good preliminary formulation of the needs of the future users is also necessary.

It is essential to promote a better interaction between surveys on the one hand and the formulation and monitoring of forest policies on the other.

Forest surveys must become tools enabling the assessment and monitoring of forest ecosystems, well beyond measures which only apply to commercial wood. The quality of the information already obtained and the coherence of data series must be maintained.

At international and national levels, it will be necessary to find the human and institutional means which will enable an accurate and continuous monitoring of the evolution of the forest heritage. International harmonization of definitions should be sought.

It is necessary to accelerate the transfer of technology necessary to allow developing countries to undertake surveys of their forest resources and to monitor their evolution.

The evaluation of world forest resources carried out by the FAO will constitute an essential international database. Once completed, it will have to be periodically updated.

12 Forest management

Managers now have increasingly powerful tools at their disposal, which make it possible to envisage increasingly complex management, especially in fragile zones. However, the definition of clear objectives, the formulation of problems, the choice of methods examined, the nature and the quality of the data to be gathered remain essential preliminary steps.

Management can be effective only if it takes into account the needs of the people directly concerned, and only if it receives their approval.

In tropical areas, the goal of preserving all forests is utopian because of the pressure from the immediate needs of the neighbouring communities. In future it would be advisable to work with local communities to decide which part of the natural forest is to be kept in reserves and to manage the remainder, with the aim of reconciling as far as possible production, capital maintenance and conservation of biodiversity.

In arid areas, silvo-pastoral management makes it possible to ensure the sustainability of forests and the restoration of sources of animal fodder in a woodland environment, through the maintenance of a balance between wood production and fodder production. The implementation of such management systems requires the active participation of cattle owners who have forest rights.

Forest management must, of necessity, be a long-term activity that seeks to integrate the complexity of forest ecosystems and the many constraints that they are subjected to everywhere in the world.

Desirable developments would include some reduction in the size of basic management units, the introduction of indicators, and development of terminologies and references appropriate to major world areas such as the Mediterranean regions.

Forest management must be planned and applied with flexibility and creativity. In future a diverse range of management approaches will become increasingly common, as illustrated by the notion of "extractive reserve" developed in Amazonia (Brazil).

As a general rule, the areas of tropical forest under effective management should be increased.

An international network of experiments and trials of management techniques should be organized.

13. Afforestation and reforestation

Plantation forests facilitate the rehabilitation of degraded land whose production is now marginal, but could potentially be improved.

The success of plantations depends on the suitability of the species, provenances, the clones used and the objectives to be achieved. In the associated management plan, there must also be good site assessment, genetic improvement, organization of work on the site, planning of forestry operations and control of costs.

Plantation forests represent approximately 3% of the present forest area but contribute a much higher proportion of the annual world production of wood.

The success of plantations presupposes increased involvement of researchers, planners, landowners, administrators and users.

Beyond often dogmatic disputes concerning the introduction of exotic species, priority must be given to maintaining the production potential of the soil, as well as a certain level of biodiversity and sustained yield.

Special attention should be given to the choice of planting stock utilized, as well as to research into symbiotic relationships, especially the establishment of nitrogen fixing species.

A large increase in the area of plantations is an absolute necessity, in order to satisfy a growing demand for wood products, to reduce the stress on natural forest ecosystems and to sequester atmospheric carbon.

Management of plantations should be so planned that silvicultural operations, particularly tending, will ensure the transformation of a plantation to a forest.

14 Forest wildlife management

Wildlife has a considerable economic and social importance, which is all too often neglected in forest management despite the importance of the interactions. More varied management methods can ensure the maintenance of conditions favourable to a rich and diverse wildlife, the existence and density of which should not endanger the permanence of forests or their regeneration.

Furthermore, management methods which take wildlife into account may enhance the value of marginal land. Concrete examples show that tourism based on hunting, and the breeding of particular forest animals, is a major source of income in some regions and countries.

Management systems which integrate both forest management and wildlife management should be developed and should take advantage of international exchanges of information.

Local populations should be involved in wildlife management, and profit directly from it, in order to ensure their support and participation in the very sophisticated management systems which some countries are trying to implement.

The training of foresters should include an introduction to wildlife management.

CHAPTER E : THE FOREST, AN ECONOMIC HERITAGE

15 Forest products

A growing awareness of the ecological and social contributions of forests now complements the traditional interest in wood production.

While still not fully appreciated, there is an increasing awareness of the richness and diversity of forest resources other than wood. The harvesting and processing of non-wood forest products are underrated as sources of employment and income, and are generally undertaken without damage to the environment. Given the present state of scientific development, one can envisage the sustainable and rational exploitation of these resources.

In the context of a management system, the harvesting of wood and other forest products will usually allow the financing of silviculture, thus facilitating the continued implementation of the management plan and therefore the perpetuation of the resource. The economic value of forest products is clearly the best incentive for protecting the forest.

Management faults and improper forest exploitation are only marginally responsible for deforestation in comparison to other factors external to the forestry sector.

Knowledge of the interactions between exploitation and the environment, and the integration of this knowledge into silvicultural management, as well as appropriate investment policies, can in particular allow qualified firms to operate in a manner designed to minimize any negative impact of forest exploitation.

Society needs to appreciate the importance both to the economy and the environment of the rational exploitation of forest products in the context of management plans, and to attach a full value to them.

Forest management plans should take into account non-wood forest products and the potential of "domesticating" animal and vegetable species still in their wild state.

16 Wood, a source of energy

Wood remains the principal source of energy for almost half of the world's population, as well as for many small rural industries. In terms of quantity, energy production is still the main final use for wood.

The discussions on the greenhouse effect at last provide an opportunity to define a voluntary and coherent wood-based energy development policy. Better use could thus be made of wood's potential, which as a renewable resource does not cause imbalances in the carbon cycle. If well managed it could well reduce the burning of fossil fuels which increases the amount of carbon dioxide in the atmosphere.

To increase wood availability, and to decrease rural population pressure on wood resources, it is necessary to manage a larger proportion of existing forests and woodlands in order to render them more productive. Fast-growing plantations, preferably with multiple aims, ought to be established in areas of acute local need.

The recovery of by-products from the wood processing industry and from the manufacture of wood-based finished products should be encouraged in order to increase resource availability.

Research into the improvement of combustion techniques, and more generally speaking, wood energy transformation methods, should be accorded high priority.

There is a need to improve the quality of information and statistical data not only on the consumption of fuelwood but also on its nature and origin.

17 Timber, a raw material

The fact that wood is a natural, renewable construction material will probably contribute to an increase in demand. Furthermore, the demand for wood should increase, as its processing is relatively energy-efficient and inexpensive.

Technological development will remain the principal means of improving the efficient use of wood as a material for manufacturing purposes. It will make it possible to overcome the price increases which will occur as the raw material becomes scarcer, leading to more efficient use of materials which were hitherto poorly utilized. A further problem will be that mills will be to an increasing extent required to process new types of raw material for which they were not designed. Nevertheless, mills will have to be modified in order to accept such new materials.

A research effort should thus allow better use and protection of wood, while leading to the development of new products which exploit the particular qualities of this material. Data-processing and factory automation should contribute to an improvement in factory productivity and the optimization of material yield.

As in the case of any raw material, the price of wood should increasingly take into account external factors such as environmental protection.

It will increasingly be necessary to use forest products more efficiently, while recycling by-products and used products, especially paper.

18 Markets for wood and wood products

World consumption of wood will likely continue to increase, at least keeping pace with population growth and economic progress, particularly in developing countries. After the year 2000, the decisive factor in the development of world trade will be the state of roundwood resources, given smaller harvests from natural forests, especially tropical ones, and the bringing into production of the large scale intensive afforestation projects that some countries have undertaken. Trade will increasingly be oriented towards wood products.

In the industrialized countries, the wood market is increasingly based on a service and a function (insulation, weight-bearing capacity, beauty, etc.), forcing businesses to adapt constantly. At present, three kinds of competition are becoming more intense, intra-material competition (between solid wood and chipboard, for instance), inter-material competition (between wood and plastic, for instance), and competition between sources of raw materials (wood for paper-making, for instance).

Environmental regulations will increasingly intervene in the definition of services required from each product, and will thus favour the materials which are the most effective.

The boycott of tropical wood by the industrialized nations could in fact accelerate the disappearance of tropical forests by lowering the prices of construction wood, thus rendering other uses of the land more attractive.

As a general rule, obstacles to trade in wood and wood products should be eliminated.

Research on the commercialization of a greater number of tropical species should be encouraged.

It will be useful to strengthen activities leading to the definition of commercial norms and to promote exchanges of information, particularly in the context of the ITTO, and regional organizations working towards the harmonization of international trade based on the sustainable management of forests.

The use of wood as a clean and renewable material should be encouraged.

CHAPTER F: INSTITUTIONS AND POLICIES

19 Forest policy and planning

The major challenge we face today is the linking of long-term socio-economic development to environmental conservation, in the face of rapid population growth in some countries which makes major changes in forest areas inevitable.

Support for national forestry policies largely depends on the extent to which they effectively fulfil the needs of society.

The most important factor for a forestry policy is the existence of a general framework for long-term and global land-use planning, in an integrated approach with multiple goals, based on objective and complete information, and the availability of incentives and inducements.

It is necessary to be able to accurately assess the probable consequences of alternative scenarios, and to have effective ways to consult the various interested groups concerned. This will allow the legitimate range of interests of all those concerned, both public and private and including representatives of local inhabitants, to be respected, and bring about their effective participation at each stage of decision-making and arbitration.

It is an important prerequisite that the legal tools associated with forestry policy avoid any contradictions, so that they can work effectively.

Financial assistance and tax incentives are important and can take many forms, but their real effects must be carefully assessed.

The urgency and scope of forestry problems, as well as the implications of those problems and their solutions, should be emphasized to political and economic decision-makers in order to obtain their continuing support.

Aid policies for the developing countries should pay the greatest attention to providing the means to implement forestry policies that incorporate both conservation and development.

Future forestry policies should be policies which ensure that forests, trees, and all their products, become increasingly important factors in land management, development of rural areas and nature conservation, thus integrating and interacting with other sectors of socio-economic activity.

Necessary revisions of forest policy should maintain the principal directions originally envisaged, given the need to plan in terms of forest cycles.

20 Forestry administration

Above and beyond the inertia that slows adaptation, trends toward the deconcentration and decentralization of responsibility can be seen in various countries, while national forestry organizations are being strengthened, and forestry policies integrated into public policy.

Responsibility for the management forestry in the public sector tends to be clearly dissociated from arbitrary decision-making and administrative orientations. The national authorities are increasingly concentrating on formulating forestry policies, negotiating the conditions of their implementation (especially the legal, regulatory and fiscal mechanisms), and mobilizing the required resources. They are taking greater responsibility for international relations currently developing.

In this context it is increasingly important to implement mechanisms for effective cooperation between local, regional and national levels, in order to avoid clashes of interests and authority, misunderstandings, as well as lack of communication and effectiveness between planners and those who are responsible for implementing forestry policies.

Recruitment of staff should be diversified to include other disciplines (economics, sociology, etc...) in order to deal with new challenges or to acquire new skills.

Forest administrations ought to be provided with adequate resources to fulfil their missions.

21 The public sector

While public organizations by their very nature can guarantee a certain continuity of management and a concern for the public interest, they can also fall victim to slowness and rigidity, as well as ineffective decisions and actions. The State may show itself to be incapable of ensuring the budgetary continuity essential to the long-term implementation of major forestry projects.

Quasi-public organizations can have many kinds of legal status and methods of functioning, under State supervision, and these may offer possible solutions to many different types of problems.

The allocation of forest lands or lands designated for forest development to local authorities makes it possible to involve more effectively local populations with the administration of the forest heritage, respecting their rights of use, while generating revenues and creating jobs at a local level.

It is necessary to entrust forest administrations and quasi-public organizations with authority to employ greater flexibility.

22 The private sector

The knowledge and imagination of village communities can guarantee the conditions necessary for ecologically responsible forest exploitation.

When private owners are able identify their interests with those of their forests, it is a strong incentive for good management. A well-suited tax system should facilitate the preservation and improvement of the forest heritage. It is in the public interest to create organizations to train private owners, and in so doing obtain their support and cooperation. It will thus become easier to administer forests on an intensive and regular basis and at an acceptable level of cost to the community.

It is very important to have a dense network of small rural businesses offering many different forest products.

It is advisable to facilitate the access of small businesses to improved technologies which are easy to master, so that they can produce a large range of products essential to the local community, under acceptable economic conditions.

It is essential that immediate improvements be made to forest workers' contracts. These jobs must be made more attractive. In developing countries, the improvement of efficiency and of productivity through well-adapted practical training and the introduction of more satisfactory working conditions is a priority.

It is essential that village communities be involved in the development and implementation of the forest programmes which are implemented in their region.

Private owners must be reassured that the community will continue to respect their rights.

Services provided to the community by private woodlot owners ought to be compensated.

23 Forestry education and training

Institutes for higher forestry education must first of all produce highly-qualified professional foresters, capable of working with experts from related disciplines. As forestry programmes have to be developed within a multidisciplinary framework, the educational institutes should broaden their curriculae, although not in an excessive and superficial way.

It is nevertheless necessary to systematically deepen basic scientific knowledge, as well as knowledge of the functioning and management of forest ecosystems and of agroforestry. Cooperation with specialists in related disciplines also needs to be strengthened.

In developing countries, technical training should be made more precise and relevant. It should be accessible to more women and should increasingly be carried out in the anticipated work environment. It should also be made more accessible to the general public.

Efforts must be made to achieve a suitable alignment between higher education and technical education, and to achieve a balance in the number of professionals and technicians.

It is becoming increasingly necessary to conceive and to implement an active public information policy, well-adapted to the local forest context and to the target groups. In particular, children constitute a very important investment in the future, as do women in certain developing countries.

24 Forestry research

The presently favoured research topics (e.g. global warming) should not lead to the neglect of traditional issues and their scientific evolution towards greater complexity, nor the interdependence between disciplines.

Progress will come from the combined results of many small teams with high scientific standards, open to the international community, rather than from a few big laboratories. Similarly, the decision for the CGIAR (Consultative Group for International Agricultural Research) to include forestry sciences and agroforestry research will serve to increase the necessary synergy.

The recommendations of the 19th IUFRO World Congress (Montreal, 1990) should be implemented. Support should be given to international co-operation and to the co-ordination of the research programmes required, as described in the TFAP. The initiation, development, and redirection of basic and applied research into the role of forests should be encouraged. Greater attention should be paid to the establishment, strengthening and maintenance of forestry research institutions.

Research into the functioning of forest ecosystems and into the other topics already referred to must be further developed.

It is desirable that forestry research should work more closely with agricultural research, especially in the case of agroforestry, provided that the specificities of the forestry research remain respected and valued.

It is essential to ensure finance for a duration that is compatible with the requirements of forest research, if it is to be successful.

It is important to develop research capacity at national levels, and to facilitate national and international exchanges of all sorts between various research centres, especially through the organisation of specialist networks.

The status of the researcher needs to be enhanced in most countries.

25 International cooperation in forestry

Problems such as the greenhouse effect, the protection of biodiversity, the free trade in wood, as well as the protection of certain environments and of threatened species have shown the need to adopt an international approach, making it possible to analyse better cause and effect.

Non-governmental organizations have played an important role in raising the consciousness of the world to problems related to deforestation and to short-term management of forests.

Any cooperation requires close links and meaningful dialogue between countries so that solutions based on a consensus can be found. It follows that consultations, forums and conferences are necessary, although they cannot replace other kinds of cooperation.

The aim of technical cooperation and technology transfer is to increase the capacity of beneficiaries to take full advantage of the investments at national and local levels, so that they will not have to depend in future on this aid.

Financial aid is essential to developing countries, which have such economic problems that they cannot make the investments necessary for the protection and sustainable exploitation of their forests.

During the next five years, priority should be given to providing appropriate expertise to the countries that ask for it, to the collection and processing of the necessary data (especially concerning the resource) through data-processing, to the clarification of the prerequisites for truly sustainable development, to the improvement of coordination between sectors, between organizations and between nations, as well as to the mobilization of the means needed to achieve the effective financing of programmes.

The international community should not only direct their attention towards the developing countries, but also to those of eastern Europe.

The long-term nature of forest management and the multiple functions of forests, both locally and globally, require that financial mechanisms be adapted and specific to forests.

Certain mechanisms have been put in place, such as "debt for nature" exchanges, debt remission, the "Global Environment Facility", specific taxes, etc. These mechanisms need to be better used, developed and adapted, and the delivery of effective assistance of benefit to the recipient needs to be accelerated.

General mechanisms, such as structural adjustment plans, should take account of the specific requirements of forest-related investments.

International financial assistance must be provided within the framework of coherent national programmes ; the plans elaborated within the framework of TFAP being a good example. The T.F.A.P. must receive broader financial and political support from the international community. The same should be the case for the Mediterranean Forestry Action Programme, now under development.

The active involvement of N.G.O.s. should be encouraged and they should contribute to the development of linkages between conservation and development.

Agreements on cooperation and the implementation of assistance programs should be undertaken in such a way as to not infringe upon national sovereignty.

International cooperation in the more general areas of land use planning and land management policies should be strengthened.

The U.N.C.E.D. offers an opportunity to develop a set of non-legally binding authoritative principles on the management, conservation and sustainable development of forests all over the world.

The conclusions and recommendations of this Congress should be taken into consideration in the course of the current negotiations on biodiversity and climate change, undertaken under the auspices of the United Nations.

International and inter-regional organizations which deal with forest issues directly or indirectly as part of their activities must ensure a higher level of collaboration, in order to ensure a coherent response to requests for cooperation, and to improve their effectiveness.

Paris, september 26, 1991