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# Principles for Sustainable Management of Global Forests

## EARTH SUMMIT UNCED

United Nations Conference  
on Environment and Development  
June 14, 1992, in Rio de Janeiro, Brazil



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**REVIEW OF  
THE FOREST PRINCIPLES  
and AGENDA 21 - Chapter 11  
COMBATING DEFORESTATION**

**ADOPTED AT THE UNITED NATIONS CONFERENCE  
ON ENVIRONMENT AND DEVELOPMENT**

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International Society of Tropical Foresters; National Audubon Society;  
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**The content of this report does not necessarily reflect the views of the individual representatives  
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# INTRODUCTION

CONCERN ABOUT GLOBAL ENVIRONMENTAL ISSUES has been steadily growing since World War II. The first international environmental conference held in Stockholm, Sweden, in 1972, led to the creation of the United Nations Environment Programme (UNEP). It began systematic documentation of many of the growing ecological problems, such as air and water pollution, dumping of toxic wastes, erosion of topsoil, and destruction of tropical forests.

During the 1980s, news media documentation of the rain forests' destruction around the world dramatically illustrated the threats to the tropical forests as biological treasures and stabilizers of global climatic patterns. These images left deep impressions of the effects of fire and smoke, loss of species and their habitat, and the dire impact on forest dwellers.

Intrigued by the mystique and beauty of the rain forests, the public voiced concern and called for action to stop the destruction. However, neither international action nor national programs were sufficient to stem the loss during the 1980s.

The Tropical Forestry Action Plan (TFAP), once lauded as a coordinated solution to massive deforestation, has not met proposed goals for the sustainable management of tropical forests. Thus the ever-increasing deforestation rates—from 11 million hectares per year in 1980 to 15 million hectares per year in 1990—propelled this forest concern onto the world's environmental agenda.

By 1989, social and economic conditions were beginning to be recognized as being inextricably linked to environmental degradation. This frightening realization led the United Nations General Assembly to call on national leaders to meet at a United Nations Conference on Environment and Development (UNCED). UNCED was to be held in Rio de Janeiro, Brazil, in June 1992.

The UNCED Charter called for drafting a document to outline ethical principles for sustainable life-styles (which became known as the Rio Declaration) and a plan for sustainable development in the 21st century, Agenda 21. In addition two formal, legally binding conventions (treaties)—Climate Change and Biodiversity—were proposed to be signed at Rio.

At Houston, Texas, in July 1990, the leaders of the Group of Seven (G-7—Canada, France, Germany, Great Britain, Italy, Japan and the United States) voiced their concerns about global environmental issues, including forests. During this discussion, then President George Bush proposed that negotiations begin on an international forest convention for signature at the Earth Summit. The basic idea was "to curb deforestation, protect biodiversity, stimulate positive forestry actions and address threats to the world's forests." This action was the first proposal for a global forest convention.

In addition to governments, many other persons and non-governmental organizations (NGOs) were also working to conserve forests. Awareness was spreading that the interna-

tional procedures and projects of banks, national governments, and development agencies, plus the repayment of external debt, were all parts of a complex web of “root causes” contributing to the destruction of tropical forests. These causes became the focus of major reform campaigns by NGOs throughout the world.

As the discussion of the G-7 proposal for a Forest Convention would reveal, planning and achieving sustainable management of the world’s forests are complex and highly controversial. Deep rifts between developed and developing countries prevent such a “leap of faith.” Developing countries were not prepared to enter into a legally binding agreement on forests in such a short time. The political will generated by the G-7 meeting did, however, result in a consensus on a non-legally binding Forest Principles document that emerged from the UNCED process as a first phase.

Two years of intensive diplomatic negotiations culminated in the Earth Summit, as UNCED was popularly known. Maurice Strong, UNCED Secretary General, proclaimed it “the most important conference in the history of humanity.” More than 130 national leaders came together, a first in the history of the world. They came in peace, in the name of environment and development. And when they came together, they proclaimed the inextricable linkages between the social, economic and environmental dimensions of sustainability.

Discussion of the Forest Principles at UNCED revealed that the sustainability issue as applied to forests defies simple solutions. It goes well beyond trying to plan the use of natural resources. The conflicts associated with forests go to the very heart of issues of equity between developing and developed nations, sovereignty, public participation, poverty, the rights of indigenous peoples, and many other deep, cross-cutting issues.

Because forests are the earth’s largest terrestrial ecosystems, their conservation and sustainable management were central to many of the UNCED negotiations. Forests also figured significantly in the conventions on Biodiversity and global Climate Change.

The stage was thus set at the Earth Summit for citizens and world leaders to move the family of nations toward sustainable development in the 21st century. Three major agreements were adopted by consensus of nearly 180 countries: The Rio Declaration on Environment and Development, Forest Principles and Agenda 21. In addition, two major conventions, Climate Change and Biodiversity, were signed by heads of state.

Chapter 11 of Agenda 21, “Combating Deforestation,” describes an action plan for the conservation and sustainable development of all types of forests worldwide. An assessment of the conditions of and threats to the world’s forests was also conducted—the Secretary General’s report on Conservation and Development of Forests. Taken together, the conventions, Forest Principles, Agenda 21 and the assessment form the first global consensus on forests and establish a firm foundation for international forestry cooperation.

We share the Forest Principles and Chapter 11 of Agenda 21 with you, hoping that you will be inspired and encouraged by the consensus of world leaders to take positive personal and organizational actions to move the world’s family of nations forward, toward the conservation and sustainable management of forests worldwide. ■

# ABOUT THE AUTHORS

## **JOHN HEISSEN BUTTEL (JH)**

Assistant Vice-President of American Forest and Paper Association, 1988–present; Division Forester, American Forest Products Company, 1977–1988.

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## **GERALD GRAY (GG)**

Vice President for Resource Policy of AMERICAN FOREST, 1988–current; Forest Resource Planner, Minnesota Department of Natural Resources; Ph.D. Forestry, University of Minnesota.

## **GARY L. LARSEN**

Senior technical advisor at the United States Coordination Center for the United Nations Conference on Environment and Development (UNCED). He served as a member of the U.S. delegations to UNCED Preparatory Committee negotiations and the Conference at Rio.

# COMMENTS ON THE UNCED FOREST PRINCIPLES

The UNCED Forest Principles are presented here with the analysis of three individuals—John Heissenbuttel, Charlotte Fox and Gary Larsen—who were directly involved in the development of the Forest Principles during the Preparatory Committee Meeting IV held in New York during March 1992. The fourth person, Gerald Gray, followed the process closely and brings to the analysis the perspective and questions of those who were not immediately involved in the UNCED process.

Their analyses are presented so that persons interested in global sustainable natural resource management might understand the historic significance of the Forest Principles. They encourage all to build upon Forest Principles toward a vision of sustainable use of natural resources for the needs of present and future generations.

The reader is encouraged to remember the following points while reading and analyzing the Forest Principles and Chapter 11 of Agenda 21, Combating Deforestation:

- 1.** This was the first attempt on the part of the international community to negotiate a set of principles encompassing all forests—tropical, temperate and boreal.
- 2.** The UNCED negotiation process was extremely rigorous, requiring 100% consensus on all wording before the text could be incorporated into any document.
- 3.** The forest negotiations were a sub-set of a complicated discussion between the Northern and Southern countries concerning the interrelationship of future social, economic and ecological global needs. This tension caused the negotiations to be affected strongly by external factors such as financing and technology transfer.
- 4.** Under the constraint of point three above, although many attempts were made, it proved impossible for the negotiators to further edit and organize the Forest Principles to have a more consolidated document.
- 5.** One pressure on developing countries in the UNCED process was having insufficient staff to negotiate all the related environment issues in such a short time span.
- 6.** The Forest Principles are an important first step on the part of the international community in finding a way to ensure the conservation and sustainable management of all forests worldwide.

# FOREST PRINCIPLES SEPARATED BY GENERAL TOPICS

## PREAMBLE

- 0(a)** Range of Related Issues
- 0(b)** Guiding Objectives
- 0(c)** Multiple Benefits
- 0(d)** Commitment to Implementation
- 0(e)** Comprehensive Coverage
- 0(f)** Ecological Processes
- 0(g)** Forests are Essential
- 0(h)** Government Levels

## RIGHTS

- 1(a)** Sovereign Rights & Responsibility
- 2(a)** Right to Use, Manage & Develop Forests
- 5(a)** Indigenous People & Communities
- 8(g)** Biotechnology

## FUNCTION OF FORESTS

- 2(b)** Inter-generational Needs
- 4** Ecological Processes
- 6(a)** Energy
- 6(d)** Planted Forests
- 6(e)** Natural Forests

## INTEGRATION, ENVIRONMENT & DEVELOPMENT

- 3(c)** Integration, Environment & Development
- 6(c)** Assessment-Based Decisions
- 8(e)** Adjacent Areas
- 9(c)** External Pressure
- 13(c)** Environment & Market Forces
- 13(d)** Policy Integration
- 13(e)** Incentives/Avoiding Forest Degradation
- 15** Pollutants

## **NATIONAL CONTEXT**

- 3(a)** National Framework
- 6(b)** Comprehensive Assessment
- 8(b)** Maintain & Increase Forest Cover
- 8(d)** Guidelines
- 8(f)** Protected Areas
- 8(h)** Environmental Impact Assessments

## **INVOLVEMENT OF PEOPLE**

- 2(c)** Provision of Information
- 2(d)** Public Participation
- 5(b)** Women's Participation
- 12(d)** Local Knowledge

## **RESEARCH & EDUCATION**

- 12(a)** Research & Inventory
- 12(b)** Education & Training
- 12(c)** Exchange of Information

## **TRADE**

- 13(a)** International Trade
- 13(b)** Tariffs & Markets
- 14** Trade Restrictions

## **INTERNATIONAL COOPERATION**

- 1(b)** Sharing of Costs
- 3(b)** International Institutions
- 7(a)** International Economic Climate
- 7(b)** Financing Conservation & Reserved Areas
- 8(a)** Greening the World
- 8(c)** Support of Implementation
- 9(a)** International Support
- 9(b)** Rural & Urban Poverty
- 10** Financial Resources
- 11** Technology Transfer

*(Analysis by Gary Larsen)*

**A non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests.**

## **PREAMBLE** WITH COMMENTS

**(a)** The subject of forests is related to the entire range of environmental and development issues and opportunities including the right to socio-economic development.

**(b)** The guiding objective of these principles is to contribute to the achievement of the management, conservation and sustainable development of forests, and to provide for their multiple and complementary function and uses.

**(c)** Forestry issues and opportunities should be examined in a holistic and balanced manner within the overall context of environment and development, taking into consideration the multiple functions and uses of forests, including traditional uses, and the likely economic and social stress when these uses are constrained or restricted, as well as the potential for development that sustainable forest management can offer.

**(d)** These principles reflect a first global consensus on forest. In committing themselves to the prompt implementation of these principles, countries also decide to keep them under assessment for their adequacy with regard to further international cooperation on forest issues.

**(e)** These principles should apply to all types of forests, both natural and planted, in all geographic regions and climatic zones, including austral, boreal, sub-temperate, temperate, sub-tropical and tropical.

**(f)** All types of forests embody complex and unique ecological processes which are the basis for their present and potential capacity to provide resources to satisfy human needs as well as environmental values, and as such their sound management and conservation is of concern to the Governments of the countries to which they belong and are of value to local communities and to the environment as a whole.

**(g)** Forests are essential to economic development and the maintenance of all forms of life.

**(h)** Recognizing that the responsibility for forest management, conservation and sustainable development is in many States allocated among federal/national, state/provincial and local levels of government, each State, in accordance with its constitution and/or national legislation, should pursue these principles at the appropriate level of government.

**Gerald Gray:**

**STRENGTHS:** The Preamble recognizes that although the UNCED Forest Principles are not necessarily clear and detailed, they represent the first international consensus on global forests and will serve as a basis to further international cooperation on forest issues.

This is the first international agreement of forests that includes all forests—tropical, temperate and boreal.

The guiding objective (Paragraph b) covers the right dimensions—management, conservation and sustainable development—but the terms remain largely ambiguous especially in an international context.

It is also important that the critical role of forests in both economic development and environmental protection is recognized, as well as the need to consider forests in the context of larger social and environmental issues.

**WEAKNESSES:** In addition to the lack of definitions and thus the high degree of ambiguity with respect to critical terms, the most significant weakness is the omission of any language recognizing a global interest in all forests. Paragraph (f) states that the sound management of forests “is of concern to the Governments of the countries to which they belong and are of value to local communities and to the environment as a whole.” By mentioning national and local interests in forests, but failing to mention the interests of the international community at large, the Preamble falls short of setting a truly cooperative tone for the protection, management, and use of global forests.

**Charlotte Fox:**

**GOOD POINTS:** “Forests” are defined as all forest types around the world and are not limited to tropical forests, whose destruction served as the impetus for this discussion. The multiple uses and values of forests, including their role in ecosystem stabilization and social development, are stated, and these values and uses are called “essential.” The document supports considering these broad values in making decisions on “forestry issues and opportunities.” It does not, however, make any recommendation as to whether one value should take precedence over another—for example, environment over development.

**MISSING:** The environmental community agreed that the key component of the Forest Principles negotiations must be a call for a halt to rampant, massive, global deforestation. This has not been included in the Preamble, nor in any other portion of the document. In fact, there is no immediacy in any of the language of the Forest Principles. Unlike the Climate Change and Biodiversity conventions negotiated during UNCED, the Forest Principles do not refer to the critical issue of deforestation at all. There is no indication that this is a global phenomenon resulting in the loss of millions of hectares of forest daily. There is no mandate requiring States to place a high priority on forests, either through conservation, by management protection or by changing the current “way of doing business.”

# PRINCIPLES WITH COMMENTS

*1. (a) "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction."*

**GG:** The sovereignty issue, similar to the private property rights issue in the U.S., suggests that "ownership" provides rights to "exploit" (a negative term in the U.S.) resources, but also carries responsibilities. How those rights and responsibilities are interpreted by the international community (and evolve over time) is critical.

**JH:** Decided at Prepcom 4. No significant impact on U.S. forestry.

*(b) The agreed full incremental cost of achieving benefits associated with forest conservation and sustainable development requires increased international cooperation and should be equitably shared by the international community.*

**GG:** This recognizes that increased international cooperation is necessary to achieve sustainable development and that costs should be shared equitably, but it leaves the issue of equity open to broad interpretation.

**JH:** Decided in Rio Working Group. No significant impact on U.S. forestry.

**CF:** The debate over 1 (a) and (b) centered on the developing countries' perception that the Forest Principles (or a convention on forests) would not allow self-determination in development. This "North-South debate" was evident when developing countries took offense and vehemently objected to any language that implied restricting use of forest resources for development. They successfully argued that "Northern" or developed countries had exploited their forests for the sake of development and that they should be allowed to choose to do the same. If the "Southern" countries were expected to follow another development path, then their Northern partners should be required to offset any costs, including sharing monetary costs or providing technology transfers to assist in implementing alternatives.

*2. (a) States have the sovereign and inalienable right to utilize, manage and develop their forests in accordance with their development needs and level of socio-economic development and on the basis of national policies consistent with sustainable development and legislation, including the conversion of such areas for other uses within the overall socio-economic development plan based on rational land-use policies.*

**GG:** This again gives states the sovereign right to develop their forest resources, but suggests that such development should be consistent with "national" sustainable development policies and plans. It seems to apply some limits to sovereignty by suggesting that all development be consistent with rational policies and plans for sustainable practices.

**JH:** Decided at Prepcom 4. No significant impact on U.S. forestry.

*(b) Forest resources and forest lands should be sustainably managed to meet the social, economic, ecological, cultural and spiritual human needs of present and future generations. These needs are for forest products and services, such as wood and wood products, water, food, fodder, medicine, fuel, shelter, employment, recreation, habitats for wildlife, landscape diversity, and other forest products. Appropriate measures should be taken to protect forests against harmful effects of pollution, including air-borne pollution, fires, pests and diseases in order to maintain their full multiple value.*

**GG:** This section recognizes many values according to which forests need sustainable management, for current and future generations. This is very consistent with multiple-use language in the U.S. but incorporates some values (fodder, fuel, and medicine) less common in U.S. statements, and other

values (landscape diversity, carbon sinks) only recently included in U.S. statements.

**JH:** Decided at Prepcom 4. Endorses productive forest management and identifies importance of supplying human need for forest products.

**CF:** There is an important reference here to the variety of needs and services that forests provide. But, as before, there is no identification of prioritization of these services or any indication as to how they should be managed for, within “sustainable” guidelines. Considerable debate took place over the final sentence of (b); the reference to “airborne pollution” implies a transboundary responsibility which goes beyond a state’s sovereign right to pollute. Hotly contested, the phrase was weakened to its present wording, even though air-borne pollution is a major cause of loss of temperate forests.

*(c) The provision of timely, reliable and accurate information on forests and forest ecosystems is essential for public understanding and informed decision-making and should be ensured.*

**GG:** This is truly a global forestry need.

**JH:** Decided at Prepcom 4. No significant impact on U.S. forestry—existing Forest Service inventory and analysis program meets the intent of this paragraph. This paragraph may be used to justify additional federal investments in forest inventory.

*(d) Governments should promote and provide opportunities for the participation of interested parties, including local communities and indigenous people, industries, labour, non-governmental organizations and individuals, forest dwellers and women, in the development, implementation and planning of national forest policies.*

**GG:** The only question is how to involve numerous public interests in the implementation phase. This has proven difficult in the U.S.

**JH:** Decided at Prepcom 4. No significant impact on U.S. forestry —existing federal land-management planning meets the intent of this paragraph.

**CF:** Sections (c) and (d) include references to components that the NGO community had strongly argued be included in the Preamble (or at least required of all states). The debate over the Forest Principles showed that very little reliable information was readily available to negotiators. Their inability to agree on specific language and definitions reflects that lack of information. Good decisions on management of forests cannot be made without adequate data on local systems and global concerns. Since governments have very little such information on forests, the best decision-makers are those most familiar with the resource and the needs of the resource users—the local community. Failed forest projects have ignored the community’s needs and have not gained their input early in the planning process. NGOs promoted the involvement and reliance on local people’s participation over any other form. They lobbied heavily for the inclusion of this approach early in the text. Most consider the final language inadequate to express the importance of local participation, and some consider this issue as proof of the document’s overall failure.

*3. (a) National policies and strategies should provide a framework for increased efforts, including the development and strengthening of institutions and programmes for the management, conservation and sustainable development of forests and forest lands.*

**JH:** Decided at Prepcom 4. No significant impact on U.S. forestry—existing federal legislation and structure meet the intent of this paragraph.

*(b) International institutional arrangements, building on those organizations and mechanisms already in existence, as appropriate, should facilitate international cooperation in the field of forests.*

**JH:** Decided at Prepcom 4. Somewhat helpful in keeping bureaucracies to a minimum by calling for the use of existing international structures.

*(c) All aspects of environmental protection and social and economic development as they relate to forests and forest lands should be integrated and comprehensive.*

**GG:** Calls for environmental protection and social and economic development to be integrated and comprehensive. That seems to be sustainable development, by definition.

**JH:** Decided at Prepcom 4. Helpful to productive forest management because it reinforces the need to integrate development and environmental protection.

**CF:** This section is considered weak for many reasons. It refers to “national policies” without equal reference to local participation. It also suggests building on existing international institutions and mechanisms, which the international NGO community has criticized because of their lack of transparency, accountability and effectiveness. Section (c) is adequate in supporting an integrative and comprehensive approach but does not spell out how this is to be implemented or measured.

**4. The vital role of all types of forests in maintaining the ecological processes and balance at the local, national, regional and global levels through, inter alia, their role in protecting fragile ecosystems, watersheds and freshwater resources and as rich storehouses of biodiversity and biological resources and sources of genetic material for biotechnology products, as well as photosynthesis should be recognized.**

**GG:** Forests should be recognized as vital in maintaining ecological processes on all human and geographic scales. Their role in maintaining biological diversity should be given special attention. This is consistent with the debate in the U.S.

**JH:** Decided in Rio Working Group. Should have no significant impact on U.S. forestry, but this is a paragraph to watch, to see how it may be interpreted. The text carries no requirements other than to “recognize” the role of forests in maintaining ecological processes—existing U.S. legislation/practices meet this intent.

**CF:** While broad, this statement is a significant accomplishment. It marks the first occasion on which government representatives noted the importance of forests to the global environment and mandated that it be recognized. It fails in not defining this “recognition,” in not setting any framework for the decisions which must be made regarding forest systems, and not going further to specifically outline the role of forests in global climate stabilization (referred to as “photosynthesis”). Conflict arose over this section because similar language was being debated in the Climate Change Convention; the delegates wished to avoid any conflict with language in that treaty.

**5. (a) National forest policies should recognize and duly support the identity, culture and respect the rights of indigenous people, their communities and other communities, and forest dwellers. Appropriate conditions should be promoted for these groups for them to have an economic stake in forest use, to perform economic activities, and achieve and maintain cultural identity and social organization, as well as adequate levels of livelihood and well-being, including through those land tenure arrangements which serve as incentives for the sustainable management of forests.**

**GG:** This element has parallels in the U.S., but the language and the underlying issues are often different. Statements in the U.S. generally wouldn't mention “indigenous people” or focus on “land-tenure arrangements.” Rather, they would focus on rural or forest-dependent communities and on policies such as tax incentives and technical or financial assistance.

**JH:** Decided at Prepcom 4. No significant negative impacts on U.S. forestry—perhaps some positive aspects. Existing federal laws address the intent of the paragraph regarding the rights of indigenous people. The text could generate some interesting questions on the subject of protecting “local communities.” The paragraph also advances U.S. suggestions for ensuring appropriate land tenure arrangements.

**(b) The full participation of women in all aspects of management, conservation and sustainable development of forests should be actively promoted.**

**GG:** The full participation of women is important in the U.S., but does not carry the same meaning as in developing countries where women play such critical roles in fuelwood gathering and need to be involved in forest management decisions.

**JH:** Decided at Prepcom 4. Favorable impact—the U.S. has a good record of meeting the intent of this paragraph.

**CF:** These two sections attempt to acknowledge the contributions of two groups in whose hands

management of forest lands rests in many developing countries: women and indigenous peoples. Environmental, human rights, indigenous and forest dwellers' rights groups believe that the reference to indigenous peoples does not assure their legal status. The United Nations used the word "people" (instead of "peoples") because it was unwilling to recognize collective rights of indigenous groups and the true essence of what makes these peoples unique. The vast majority of work done with forests and forest products (fuel collection, forest management) is done by women in developing countries. This statement goes far in separately noting the contribution of women. Women's NGOs lobbied for separate references to women, youth and children throughout the UNCED process.

**6. (a) All types of forest play an important role in meeting energy requirements through the provision of a renewable source of bio-energy, particularly in developing countries, and the demands for fuelwood for household and industrial needs should be met through sustainable forest management, afforestation and reforestation. To this end, the potential contribution of plantations of both indigenous and introduced species for the provision of both fuel and industrial wood should be recognized.**

**GG:** Recognizes that fuelwood, particularly in developing countries, is a critical human need that has to be met through "sustainable forest management, afforestation, and reforestation." It also recognizes the potential contribution of plantations—using both indigenous and introduced species—to meet fuelwood demand. This element is critical in calling not only for sustainable forest management, but also afforestation and reforestation efforts, using plantations—not just native forests—and even exotic species, if necessary, to help meet social needs for energy.

**JH:** Decided at Prepcom 4. Favorable impact on U.S. forestry—recognizes the positive aspects of bio-energy, reforestation, afforestation, and plantations.

**(b) National policies and programmes should take into account the relationship, where it exists, between the conservation, management and sustainable development of forests and all aspects related to the production, consumption, recycling and/or final disposal of forest products.**

**GG:** This must mean that national policies should look at the entire "life cycle" of forest products to be sure that they are rational and provide the right incentives. Policies in the U.S. have given little attention, historically, to recycling and final disposal of forest products.

**JH:** Decided at Prepcom 4. Favorable impact because U.S. commitment to improved utilization and recycling meets the intent of this paragraph.

**(c) Decisions taken on the management, conservation and sustainable development of forest resources should benefit to the extent practicable from a comprehensive assessment of economic and non-economic values of forest goods and services and of the environmental costs and benefits. The development and improvement of methodologies for such evaluations should be promoted.**

**GG:** Calls for a comprehensive economic and environmental assessment of forest management decisions, recognizing the need for improved methodologies. This type of assessment is critical, but requires substantial investment and technical support.

**JH:** Decided at Prepcom 4. Impact on U.S. forestry depends on how this paragraph is interpreted. On the positive side, the existing Forest Service forest-inventory and resource-accounting systems attempt to quantify many commodity and noncommodity resources, and are continually being improved with the assistance of industry. On the negative side, existing inventories and accounting systems do not address all forest resources and values.

**(d) The role of planted forests and permanent agricultural crops as sustainable and environmentally sound sources of renewable energy and industrial raw material should be recognized, enhanced and promoted. Their contribution to the maintenance of ecological processes, to offsetting pressure on primary/old-growth forest and to providing regional employment and development with the adequate involvement of local inhabitants should be recognized and enhanced.**

**GG:** This recognizes the role of "planted forests" as "environmentally sound sources of renewable energy and industrial raw material," providing both economic and environmental benefits.

**JH:** Decided at Prepcom 4. Favorable impact on U.S. forestry because this paragraph recognizes the importance of plantations for raw material, maintenance of ecological processes, and employment. One issue to watch is the contribution of plantations to “offsetting pressure on primary/old-growth forest[s].”

**(e) Natural forests also constitute a source of goods and services and their conservation, sustainable management and use should be promoted.**

**GG:** This recognizes that natural forests also “provide goods and services” but it doesn’t specifically acknowledge their environmental contributions.

**JH:** Decided at Prepcom 4. Impact on U.S. forestry depends on how this paragraph is interpreted. On the positive side, the U.N. negotiators intended for this paragraph to mean that natural forests [aka “old-growth”] should be used for commodity production. On the negative side, others could interpret this paragraph to lend support for natural forest set-asides.

**CF:** This section reflects concerns about continued destruction or conversion of forests to meet consumption demands. Key portions include the reference to the “contribution” of plantations, agricultural crops and natural forests. A highly debated issue was the use of plantations as an offset to increasing demand for forest products (usually pulpwood and timber). Use of “plantation” as an undefined term was strongly discouraged by environmental NGOs. Globally, plantations are characterized by large-scale monoculture planting of non-native species. These are targets for rampant spread of disease and contain very little biological diversity or capacity as habitat for native wildlife. The word as used here does not imply that plantations should be ecologically sound or appropriate. NGOs feared that plantations would be viewed as a viable solution to demand and would cause even greater destruction of forests. It should be noted that the word “forest” here does not distinguish a fully functioning, native forest from a large planting of trees (plantation). Paragraph 6(e) does represent a success in acknowledging the importance of forest products (nuts, fruits, vines, etc.). It does not, however, determine the long-term sustainability of these products if extracted in a non-sustainable manner.

Environmental NGOs consider the possibility that U.N. negotiators intended for this paragraph to mean that natural forests (aka “old-growth”) should be used for commodity production as opposed to “set-asides” to be a very distinct “negative” possibility, not a “positive.” Environmental NGOs emphatically believe that very large portions of the world’s remaining primary (old-growth) forests should indeed be set aside for their non-timber values and uses.

**7. (a) Efforts should be made to promote a supportive international economic climate conducive to sustained and environmentally sound development of forests in all countries, which include, inter alia, the promotion of sustainable patterns of production and consumption, the eradication of poverty, and the promotion of food security.**

**GG:** Recognizes the need to promote a “supportive international economic climate” for sustainable development, specifically addressing concerns about poverty and food security. These are key underlying social concerns.

**JH:** Decided at Prepcom 4. No significant impact on U.S. forestry—potentially some positive aspects. U.S. industry investments in developing countries have met the general intent of this paragraph.

**(b) Specific financial resources should be provided to developing countries with significant forest areas which establish programmes for the conservation of forests including protected natural forests areas. These resources should be directed notably to economic sectors which would stimulate economic and social substitution activities.**

**GG:** It appears that this paragraph targets countries that set aside protected forest areas, since the funding is intended to stimulate “economic and social substitution activities.”

**JH:** Decided in Rio Working Group. No significant impact on U.S. forestry.

**CF:** These sections, along with 8(c), 9(a) and 10, promote transfer of funds to developing countries to assist them in protecting their forest resource or in formulating alternative development plans. This

is significant because it specifically identifies the protection of “protected natural forest areas,” implying the maintenance of current native primary/old-growth forests. Protection for these specific forests is one of the most important goals of this agreement promoted by environmental NGOs.

**8. (a) Efforts should be undertaken towards the greening of the world. All countries, notably developed countries, should take positive and transparent actions towards reforestation, afforestation and forest conservation, as appropriate.**

**GG:** This is important in complementing efforts to reduce deforestation and forest degradation.

**JH:** Decided in Rio Working Group. Favorable impact on U.S. forestry given our nation’s commitment to reforestation and sound forest management.

**CF:** This section possibly best incorporates the scope of concerns of the environmental community. Section 8(a) had some problematic language during its drafting and debate. The idealistic call to “green” the world was objected to on the ground that deforestation could not be resolved by a massive tree-planting effort. Instead, afforestation/deforestation should be approached cautiously—using regionally appropriate strategies in an ecologically sound manner. Also, an implied part of this was the percentage of forest/vegetative cover that should be considered “ideal.” Numerous attempts to establish a minimum level failed to materialize; so the resulting consensus was to call for the “greening of the world.”

**(b) Efforts to maintain and increase forest cover and forest productivity should be undertaken in ecologically, economically and socially sound ways through the rehabilitation, reforestation and re-establishment of trees and forests on unproductive, degraded and deforested lands, as well as through the management of existing forest resources.**

**GG:** This paragraph addresses efforts to maintain existing forests, increase forest productivity, and re-establish forests on unproductive and degraded lands, in ecologically sound ways. The focus on degraded lands—where costs of re-establishing trees may be high but future environmental and economic benefits can also be significant—is important, particularly in countries that historically have had substantial deforestation or forest degradation.

**JH:** Decided at Prepcom 4. Favorable impact on U.S. forestry given our nation’s commitment to reforestation and sound forest management.

**CF:** Again, Section 8(b) reflects the considerations that should be included in any forest management, development, or conservation strategy.

**(c) The implementation of national policies and programmes aimed at forest management, conservation and sustainable development, particularly in developing countries, should be supported by international financial and technical cooperation, including through the private sector, where appropriate.**

**JH:** Decided at Prepcom 4. Favorable impact on U.S. forestry and international partnerships, since paragraph includes reference to “private sector” in providing technical cooperation for advancing sustainable development in developing countries—industry has a good record in this area. Favorable impacts will be enhanced if the Administration’s “Forests for the Future Initiative” is successful.

**CF:** This reflects the demand by many Southern countries that the burden of these changing patterns of forest management be shared by the developed (Northern) countries and supported through international mechanisms—but not by an international legally binding agreement.

**(d) Sustainable forest management and use should be carried out with national development policies and priorities and on the basis of environmentally sound national guidelines. In the formation of such guidelines, account should be taken, as appropriate and if applicable, of relevant internationally agreed methodologies and criteria.**

**GG:** This calls for sound national guidelines for sustainable forest management, but provides great flexibility to states in determining whether to abide by “internationally agreed methodologies and criteria.”

**JH:** Decided in Rio Working Group. No significant immediate impact on U.S. forestry; existing national policies are consistent with the intent of the paragraph.

**(e) Forest management should be integrated with management of adjacent areas so as to maintain ecological balance and sustainable productivity.**

**GG:** Calls for forest management on a landscape basis, integrating adjacent areas.

**JH:** Decided at Prepcom 4. Impact on U.S. forestry depends on how this paragraph is interpreted. It is a compromise between those promoting buffer zones around parks and those who did not want to surrender productive land base.

**(f) National policies and/or legislation aimed at management, conservation and sustainable development of forests should include the protection of ecologically viable representative or unique examples of forests, including primary/old-growth, cultural, spiritual, historical, religious and other unique and valued forests of national importance.**

**JH:** Decided in Rio Working Group. Impact on U.S. forestry depends on how this paragraph is interpreted. It is a compromise between those who wanted the size of "protected areas" always to be "ecologically viable," and those who believed that the words "ecologically viable" were too expansive and ill-defined.

**CF:** To the United States environmental NGOs, the reference to "primary/old-growth forests" was one of the most important inclusions. Though they lobbied strongly for its inclusion in the preamble section, its appearance in this principle does not lessen its impact. Establishing the significance of these forests, and hopefully lessening the threat to their continued existence, was a primary concern.

**(g) Access to biological resources, including genetic material, shall be with due regard to the sovereign rights of the countries where the forests are located and to the sharing of mutually agreed terms of technology and profits from biotechnology products that are derived from these resources.**

**JH:** Decided in Ministerial Consultations. No significant impact on U.S. forestry.

**(h) National policies should ensure that environmental impact assessments should be carried out where actions are likely to have significant adverse impacts on important forest resources, and where such actions are subject to a decision of a competent national authority.**

**GG:** The last phrase is critical in assuming that a national agency has the authority, resources, and technical expertise to conduct such assessments.

**JH:** Decided in Ministerial Consultations. No significant impact on U.S. forestry, as this paragraph is consistent with existing U.S. law, regulation and practices.

**CF:** The decision to ensure environmental impact assessments was rather easily agreed upon by most countries.

**9. (a) The effort of developing countries to strengthen the management, conservation and sustainable development of their forest resources should be supported by the international community, taking into account the importance of redressing external indebtedness, particularly where aggravated by the net transfer of resources to developed countries, as well as the problem of achieving at least the replacement value of forests through improved market access for forest products, especially processed products. In this respect special attention should also be given to the countries undergoing the process of transition to market economies.**

**GG:** Calls for the international community to support the sustainable development efforts of developing countries by addressing foreign debt issues and promoting "improved market access for forest products, especially processed products." This focuses on wood-product exports, especially value-added products, from developing countries as a means of improving their balance of trade with developed countries.

**JH:** Decided in Rio Working Group. This paragraph is a grab-bag of issues and impacts, all dependent on interpretation of the text. It could be used to address issues ranging from local social problems to international balance of payments. Impact on import segment of U.S. forestry depends on how "achieving at least the replacement value of forests" is interpreted.

**(b) The problems that hinder efforts to attain the conservation and sustainable use of forest**

**resources and that stem from the lack of alternative options available to local communities, in particular the urban poor and poor rural populations who are economically and socially dependent on forests and forest resources, should be addressed by Governments and the international community.**

**GG:** Both national governments and the international community need to address underlying concerns such as “the urban poor and poor rural populations who are economically and socially dependent on forests.”

**JH:** Decided at Prepcom 4. No significant impact on U.S. forestry.

**(c) National policy formulation with respect to forests should take account of the pressures and demands imposed on forest ecosystems and resources from influencing factors outside the forest sector, and intersectoral means of dealing with these pressures and demands should be sought.**

**GG:** This is a catch-all paragraph, stating that national policies should account for pressures on forests that occur outside the forest sector. It’s critical, but the issues are extremely complex and this paragraph is vague.

**JH:** Decided in Rio Working Group. Impact on U.S. forestry depends on how this paragraph is interpreted and implemented. Taken literally, this paragraph could mean that all proposed federal actions—even those unrelated to forests—should evaluate their potential impacts on forests.

**CF:** This is the foundation of the “Southern” countries’ argument for equitable treatment in regard to shifting approaches to forests and their management. Their strength in forming a solid alliance, through the G-77 and regionally, enabled them to make their concerns heard and addressed. This section outlines what is required to change “traditional” forest management and policy. The section openly recognizes the failures of current policies and calls for increased “support” (read financial and technological support) from the international community. It acknowledges the pressures on developing countries to exploit their natural resources to fund debt repayment (widely criticized as a major contributor to ecological destruction and fiscal instability). These issues were the key components of the arguments of both Northern and Southern NGOs. Together, they underscore the failures of most international and national development policies and their negative implications for forests and the people who rely on them. While it is significant that these negative policies are acknowledged, it should also be noted that there are no requirements to address them and no commitments to change.

**10. New and additional financial resources should be provided to developing countries to enable them to sustainably manage, conserve and develop their forest resources, including through afforestation, reforestation and combating deforestation and forest and land degradation.**

**GG:** This implies that developed nations need to contribute more money to the efforts of developing nations.

**JH:** Rio consensus. No significant direct impact on U.S. forestry. The paragraph does lend support to the President’s “Forests for the Future Initiative.”

**CF:** While the United States was the leading supporter of a forest convention, in all Earth Summit venues it vehemently objected to any increase in or commitment to “new and additional” finances—which would support a change in policy or approach. A close reading shows that additional monies are intended for forestry projects focusing on recovery of degraded forestlands and “combating” deforestation, but the section fails to mention the negative policies stated in Principle 9. Also, no indication of the origin of these new and additional resources is made. The debate focused on provision of funds through multilateral institutions (with the U.S. supporting a more bilateral approach); but again, this was not included in the final language.

**11. In order to enable, in particular, developing countries to enhance their endogenous capacity and to better manage, conserve and develop their forest resources, the access to and transfer of environmentally sound technologies and corresponding know-how on favourable terms, including on concessional and preferential terms, as mutually agreed, in accordance with the relevant provisions of Agenda 21, should be promoted, facilitated and financed, as appropriate.**

**GG:** It is critical for developing countries to develop their own institutional expertise to implement sustainable forestry efforts. Technology transfer, including favorable financial terms, is important, but should be done in concert with international trade policies.

**JH:** Decided in Rio Working Group. Provides opportunity for U.S. agencies and private sector to promote a positive image through transfer of forest management knowledge by investing in or cooperating with developing countries.

**CF:** To shift the development paradigm, it is crucial to call for open access to new technologies. This call followed a parallel discussion of technology transfer in other fora at the Earth Summit (Biodiversity Treaty and Agenda 21 negotiations). Southern countries were adamant that without guaranteed access to new technologies, and with the global community requiring them to change their forest development patterns, they would be crippled—their people would be denied the right to improve their lives by utilizing the resources available to them. The U.S. opposed this idea throughout the Earth Summit, yet developing countries succeeded in adding this language, but not without significant qualifiers, such as “as mutually agreed” and “as appropriate.”

*12. (a) Scientific research, forest inventories and assessments, carried out by national institutions which take into account, where relevant, biological, physical, social, and economic variables and the technological development as well as its application in the field of sustainable forest management, conservation and development, should be strengthened through effective modalities, including international cooperation. In this context, attention should also be given to research and development of sustainably harvested non-wood products.*

**GG:** Calls for strengthening research and biological, social, and economic assessments by “national” institutions through “effective modalities,” including international cooperation. Also specifies attention to non-wood products.

**JH:** Decided at Prepcom 4. Should have favorable impact on U.S. forestry since the paragraph is consistent with and may serve to reinforce the forestry community’s recommendations for the Forest Service forest-inventory system.

*(b) National and, where appropriate, regional and international institutional capabilities in education, training, science, technology, economics, anthropology and social aspects of forests and forest management are essential to the conservation and sustainable development of forests and should be strengthened.*

**JH:** Discussed at Prepcom 4. Should have favorable impact on U.S. forestry —consistent with and may serve to reinforce forestry community’s recommendations on forestry education.

*(c) International exchange of information on the results of forest and forest management research and development should be enhanced and broadened, as appropriate, making full use of education and training institutions, including those in the private sector.*

**JH:** Decided at Prepcom 4. Should have favorable impact on U.S. forestry; the paragraph is consistent with and may serve to reinforce the private sector’s recommendations on technology transfer. Mention of the role of the “private sector” shows recognition that industry and environmental NGOs have expertise and should be players.

*(d) Appropriate indigenous capacity and local knowledge regarding the conservation and sustainable development of forests should, through institutional and financial support, and in collaboration with the people in local communities concerned, be recognized, respected, recorded, developed and, as appropriate, introduced in the implementation of programmes. Benefits arising from the utilization of indigenous knowledge should therefore be equitably shared with such people.*

**JH:** Decided in Rio Working Group. No significant impact on U.S. forestry.

**CF:** This section attempts to recognize the broader values and considerations promoted under the rubric of ecological “sustainability,” including those of the native users. The first three sections point out the real lack of information and understanding of the complexities of forest ecosystems and their complete ecological, economic and cultural contributions. The debates made it clear that there was not a sufficient foundation of knowledge on which to build the necessary reforms. Generally, the in-

ternational and national contributions of forests (from climate stabilization to non-timber forest products) are not well understood in the scientific, let alone the diplomatic, realm. This made productive debate impossible. A fundamental component in the shift to sustainability is the recognition and incorporation of indigenous peoples' culture and knowledge; its inclusion here may be one of the most significant contributions of this document. Although brief, it is direct, requiring that their contributions and cultural expertise be "recognized, respected, recorded, developed," without any qualifiers. While the actual implementation of these approaches may be included in the program design "as appropriate," this section certainly focuses global attention on and grants legitimacy to the role of indigenous peoples. It achieved some of what the environmental community hoped, although overall they consider the language insufficient to lead to real change. Also of major importance is the determination that indigenous peoples' contributions are significant, and the statement that the benefits should accrue to them in an equitable manner. This marks the first time that the international community has recognized these contributions as not only valuable but requiring recompense at an equivalent level. The environmental, human-rights and indigenous sectors have long sought international recognition of these contributions. This was also under debate among the negotiators of the Biodiversity Treaty—and the actual rate of compensation was not resolved in either document.

**13. (a) Trade in forest products should be based on non-discriminatory and multilaterally agreed rules and procedures consistent with international trade law and practices. In this context, open and free international trade in forest products should be facilitated.**

**JH:** Decided at Prepcom 4. Favorable impacts on U.S. forestry; paragraph endorses existing international trade law as well as open and free trade.

**(b) Reduction or removal of tariff barriers and impediments to the provision of better market access and better prices for higher value-added forest products and their local processing should be encouraged to enable producer countries to better conserve and manage their renewable forest resources.**

**GG:** Calls for reducing or removing trade barriers to provide better market access and better prices for higher value-added products and to encourage more local wood processing in producer countries. The objectives here are fine, but it's always hard to identify trade barriers between nations that are clearly unjustifiable.

**JH:** Decided in Rio Working Group. Potentially, favorable impacts on U.S. forestry if paragraph is implemented in its entirety; eliminating barriers to trade can lead to increased local processing. However, some may use the "local processing" passage to support proposals for additional—and unwarranted—restrictions of log exports.

**(c) Incorporation of environmental costs and benefits into market forces and mechanisms, in order to achieve forest conservation and sustainable development, should be encouraged both domestically and internationally.**

**GG:** Calls for efforts to incorporate environmental costs and benefits into market forces, both nationally and internationally. This is clearly consistent with efforts in the U.S.

**JH:** Decided at Prepcom 4. Should have no immediate impact on U.S. forestry. However, this is a paragraph to watch, as it can be used to support "innovative" (and counter-productive) market mechanism ideas.

**(d) Forest conservation and sustainable development policies should be integrated with economic, trade and other relevant policies.**

**JH:** Decided in Rio Working Group. Should have no significant impact on U.S. forestry, as U.S. currently attempts to integrate conservation and development policies. The paragraph could generate interesting questions in specific policy debates, such as the Endangered Species Act, or attempts to integrate economics into the conservation process.

**(e) Fiscal, trade, industrial, transportation and other policies and practices that may lead to forest degradation should be avoided. Adequate policies, aimed at management, conservation and sustainable development of forests, including where appropriate, incentives, should be encouraged.**

**JH:** Decided in Rio Working Group. Impact on U.S. forestry depends on interpretation—especially of the phrase “forest degradation.” Some may use this paragraph to support elimination of below-cost timber sales and clearcutting. The paragraph can also be used to support programs such as Tree Farm and Stewardship.

**CF:** The trade debate provided an opportunity to understand another critical concern of the timber producing countries. Most environmental and other non-forest-products-industry NGOs lacked solid expertise in economic and trade issues, which were not a major part of their Forest Principles campaign. Historically, these NGOs have demonstrated their ability to draw world attention to tropical forest loss through targeted boycotts of forest products and U.S. fast-food corporations. Yet they did not contribute significantly to the development of this section. Concerns expressed by the environmental NGOs were incorporated into consideration of environmental costs and benefits. This is probably the environmental groups’ key contribution, but “greening” economics is not an easy task. Addressing traditional externalities will be difficult until broad reforms are in place. Until then, this language gives no indications about prioritizing the valuing or weighing of economic vs. environmental costs and benefits.

Environmental NGOs, particularly from Northern countries, are increasingly concerned about the liquidation of their remaining primary forests to feed the log export market, particularly in the U.S., Russia and Canada. They believe emphatically that this is not biologically or economically correct—and it is not even consistent with the principles of GATT, which makes it plain that products do not have to be exported unless they are “surplus” to the needs of an individual nation. Clearly, in the eyes of environmental NGOs, primary forests are so increasingly scarce in the Northern nations, as well as the Southern, that they in no way can be considered as “surplus,” in terms of their other values, any more. Environmental NGOs, particularly in the United States, are also strongly opposed to the continued practice of “below-cost” timber sales and clearcutting, which they believe has neither economic nor silvicultural justification.

**14. Unilateral measures, incompatible with international obligations or agreements, to restrict and/or ban international trade in timber and other forest products should be removed or avoided, in order to attain long-term sustainable forest management.**

**GG:** This appears to address increasing pressures to ban primarily tropical wood products in some developed countries.

**JH:** Decided in Rio Working Group. Generally favorable impacts on U.S. forestry; paragraph calls for elimination of trade restrictions (boycotts) that are not consistent with international trade law.

**CF:** This applies mainly to a call for utilization of forest products exclusively from sustainably managed forests and the threat to exclude wood and other products that do not meet that standard. This also recognizes the detrimental effect that some bans or boycotts can have on local forest systems if improperly applied—in effect reducing the value of the trees to zero and encouraging their immediate removal and conversion of the lands to non-forest uses.

**15. Pollutants, particularly air- borne pollutants, including those responsible for acidic deposition, that are harmful to the health of forest ecosystems at the local, national, regional and global levels should be controlled.**

**JH:** Impact on U.S. forestry depends on interpretation and application. The U.S. already has programs and legislation to control airborne pollutants and acidic deposition. However, the paragraph contains no “cost-effective” qualifier.

**CF:** This apparently innocuous reference to threats faced by forests due to pollution was a contentious issue that was left unresolved until the very end of the negotiations—partly because of the reference to transborder effects of air pollutants and partly because of the implied reference to a major cause of forest loss in developed countries, acid rain. The term “acid rain” was modified to “acidic deposition” to remove some of the onus. This language provides another example of the conflicts that arose over sovereignty concerns and the definition of international responsibilities in forest conservation. Notice the tone—directed at the harmful pollutants, not the polluters.

# INTRODUCTION TO CHAPTER 11 OF AGENDA 21

Chapter 11 provides a common approach for countries to integrate national actions and international cooperation for the conservation and sustainable development of forests. This chapter is an important part of the first global consensus on forests. The consensus reached at UNCED is a far-reaching foundation for the conservation, management and sustainable development of forests worldwide and is composed of:

- acceptance by countries of the Secretary General's report Conservation and Development of Forests, which documents condition of and threats to the world's forests;
- adoption of forest principles that express a consensus of international political will on a wide spectrum of issues;
- adoption of Agenda 21, Chapter 11, "Combating Deforestation," which provides a common approach and action plan;
- those aspects of the Climate Change Convention involving forests; and
- those aspects of the Biodiversity Convention involving forests.

Agenda 21 is a voluntary plan of action for a wide range of environmental issues, including combating deforestation. Each Agenda 21 chapter identifies for each program:

- Basis for Action—Objectives—Activities—Means of Implementation including Financing

## PROGRAMME AREAS AND OBJECTIVES

### **Programme Area A: SUSTAINING MULTIPLE ROLES & FUNCTIONS OF FOREST**

- Strengthening Institutions
- Strengthening Skills, Expertise, & Capabilities

### **Programme Area B: PROTECTION, SUSTAINABLE MANAGEMENT & CONSERVATION**

- Maintain and Expand Forests
- National Forestry Action Programs - Sustainable Management and Conservation of Forests
- Maintain & Increase Contributions of Forest in:
  - Biological ● Ecological ● Socio-cultural ● Climatic
- Implementation of Forest Principles

### **Programme Area C: PROMOTING EFFICIENT UTILIZATION & ASSESSMENT**

- Recognition of Social, Economic, and Ecological Values
- Efficient, Rational & Sustainable Utilization - Efficient and Sustainable Fuelwood & Energy Supply
- Eco-tourism

### **Programme Area D: PLANNING, ASSESSMENT & PERIODIC EVALUATIONS**

- Systems for Assessment & Periodic Evaluations
- Providing Information to Officials & Communities

# AGENDA 21, CHAPTER 11 COMBATING DEFORESTATION

## INTRODUCTION

**11.1.** This chapter refers to the four programme areas resulting from the negotiations held at the fourth session of the Preparatory Committee.

## PROGRAMME AREAS

### A. Sustaining the multiple roles and functions of all types of forests, forest lands and woodlands

#### Basis for action

**11.2.** There are major weaknesses in the policies, methods and mechanisms adopted to support and develop the multiple ecological, economic, social and cultural roles of trees, forests and forest lands. Many developed countries are confronted with the effects of air pollution and fire damage on their forests. More effective measures and approaches are often required at the national level to improve and harmonize policy formulation, planning and programming; legislative measures and instruments; development patterns; participation of the general public, especially women and indigenous people; involvement of youth; roles of the private sector, local organizations, non-governmental organizations and cooperatives; development of technical and multidisciplinary skills and quality of human resources; forestry extension and public education; research capability and support; administrative structures and mechanisms, including intersectoral coordination, decentralization and responsibility and incentive systems; and dissemination of information and public relations. This is especially important to ensure a rational and holistic approach to the sustainable and environmentally sound development of forests. The need for securing the multiple roles of forests and forest lands through adequate and appropriate institutional strengthening has been repeatedly emphasized in many of the reports, decisions and recommendations of FAO, ITTO, UNEP, the World Bank, IUCN and other organizations.

#### Objectives

**11.3.** The objectives of this programme area are as follows:

- (a) To strengthen forest-related national institutions, to enhance the scope and effectiveness of activities related to the management, conservation and sustainable development of forests, and to effectively ensure the sustainable utilization and production of forests' goods and services in both the developed and the developing countries; by the year 2000, to strengthen the capacities and capabilities of national institutions to enable them to acquire the necessary knowledge for the protection and conservation of forests, as well as to expand their scope and, correspondingly, enhance the effectiveness of programmes and activities related to the management and development of forests;
- (b) To strengthen and improve human, technical and professional skills, as well as expertise and capabilities to effectively formulate and implement policies, plans, programmes, research and projects on management, conservation and sustainable development of all types of forests and forest-based resources, and forest lands inclusive, as well as other areas from which forest benefits can be derived.

## **Activities**

### **(a) Management-related activities**

**11.4.** Governments at the appropriate level, with the support of regional, subregional and international organizations, should, where necessary, enhance institutional capability to promote the multiple roles and functions of all types of forests and vegetation inclusive of other related lands and forest-based resources in supporting sustainable development and environmental conservation in all sectors. This should be done, wherever possible and necessary, by strengthening and/or modifying the existing structures and arrangements, and by improving cooperation and coordination of their respective roles. Some of the major activities in this regard are as follows:

(a) Rationalizing and strengthening administrative structures and mechanisms, including provision of adequate levels of staff and allocation of responsibilities, decentralization of decision-making, provision of infrastructural facilities and equipment, intersectoral coordination and an effective system of communication;

(b) Promoting participation of the private sector, labour unions, rural cooperatives, local communities, indigenous people, youth, women, user groups and non-governmental organizations in forest-related activities, and access to information and training programmes within the national context;

(c) Reviewing and, if necessary, revising measures and programmes relevant to all types of forests and vegetation, inclusive of other related lands and forest-based resources, and relating them to other land uses and development policies and legislation; promoting adequate legislation and other measures as a basis against uncontrolled conversion to other types of land uses;

(d) Developing and implementing plans and programmes, including definition of national and, if necessary, regional and subregional goals, programmes and criteria for their implementation and subsequent improvement;

(e) Establishing, developing and sustaining an effective system of forest extension and public education to ensure better awareness, appreciation and management of forests with regard to the multiple roles and values of trees, forests and forest lands;

(f) Establishing and/or strengthening institutions for forest education and training, as well as forestry industries, for developing an adequate cadre of trained and skilled staff at the professional, technical and vocational levels, with emphasis on youth and women;

(g) Establishing and strengthening capabilities for research related to the different aspects of forests and forest products, for example, on the sustainable management of forests, research on biodiversity, on the effects of air-borne pollutants, on traditional uses of forest resources by local populations and indigenous people, and on improving market returns and other non-market values from the management of forests.

### **(b) Data and information**

**11.5.** Governments at the appropriate level, with the assistance and cooperation of international, regional, subregional and bilateral agencies, where relevant, should develop adequate databases and baseline information necessary for planning and programme evaluation. Some of the more specific activities include the following:

(a) Collecting, compiling and regularly updating and distributing information on land classification and land use, including data on forest cover, areas suitable for afforestation, endangered species, ecological values, traditional/indigenous land use values, biomass and productivity, correlating demographic, socio-economic and forest resources information at the micro- and macro-levels, and undertaking periodic analyses of forest programmes;

(b) Establishing linkages with other data systems and sources relevant to supporting forest management, conservation and development, while further developing or reinforcing existing systems such as geographic information systems, as appropriate;

(c) Creating mechanisms to ensure public access to this information.

### **(c) International and regional cooperation and coordination**

**11.6.** Governments at the appropriate level and institutions should cooperate in the provision of expertise and other support and the promotion of international research efforts, in particular with a view to enhancing transfer of technology and specialized training and ensuring access to experiences and research results. There is need for strengthening coordination and improving the performance of existing forest-related international organizations in providing technical cooperation and support to interested countries for the management, conservation and sustainable development of forests.

## **Means of implementation**

### **(a) Financial and cost evaluation**

**11.7.** The secretariat of the Conference has estimated the average total annual cost (1993–2000) of implementing the activities of this programme to be about \$2.5 billion, including about \$860 million from the international community on grant or concessional terms. These are indicative and order of magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

### **(b) Scientific and technological means**

**11.8.** The planning, research and training activities specified will form the scientific and technological means for implementing the programme, as well as its output. The systems, methodology and know-how generated by the programme will help improve efficiency. Some of the specific steps involved should include:

(a) Analysing achievements, constraints and social issues for supporting programme formulation and implementation;

(b) Analysing research problems and research needs, research planning and implementation of specific research projects;

(c) Assessing needs for human resources, skill development and training;

(d) Developing, testing and applying appropriate methodologies/ approaches in implementing forest programmes and plans.

### **(c) Human resource development**

**11.9.** The specific components of forest education and training will effectively contribute to human resource development. These include:

(a) Launching of graduate and post-graduate degree, specialization and research programmes;

(b) Strengthening of pre-service, in-service and extension service training programmes at the technical and vocational levels, including training of trainers/teachers, and developing curriculum and teaching materials/methods;

(c) Special training for staff of national forest-related organizations in aspects such as project formulation, evaluation and periodical evaluations.

### **(d) Capacity-building**

**11.10.** This programme area is specifically concerned with capacity-building in the forest sector

and all programme activities specified contribute to that end. In building new and strengthened capacities, full advantage should be taken of the existing systems and experience.

## **B. Enhancing the protection, sustainable management and conservation of all forests, and the greening of degraded areas, through forest rehabilitation afforestation, reforestation and other rehabilitative means**

### **Basis for action**

**11.11.** Forests worldwide have been and are being threatened by uncontrolled degradation and conversion to other types of land uses, influenced by increasing human needs; agricultural expansion; and environmentally harmful mismanagement, including, for example, lack of adequate forest-fire control and anti-poaching measures, unsustainable commercial logging, overgrazing and unregulated browsing, harmful effects of airborne pollutants, economic incentives and other measures taken by other sectors of the economy. The impacts of loss and degradation of forests are in the form of soil erosion; loss of biological diversity, damage to wildlife habitats and degradation of watershed areas, deterioration of the quality of life and reduction of the options for development.

**11.12.** The present situation calls for urgent and consistent action for conserving and sustaining forest resources. The greening of suitable areas, in all its component activities, is an effective way of increasing public awareness and participation in protecting and managing forest resources. It should include the consideration of land use and tenure patterns and local needs and should spell out and clarify the specific objectives of the different types of greening activities.

### **Objectives**

**11.13.** The objectives of this programme area are as follows:

(a) To maintain existing forests through conservation and management, and sustain and expand areas under forest and tree cover, in appropriate areas of both developed and developing countries, through the conservation of natural forests, protection, forest rehabilitation, regeneration, afforestation, reforestation and tree planting, with a view to maintaining or restoring the ecological balance and expanding the contribution of forests to human needs and welfare;

(b) To prepare and implement, as appropriate, national forestry action programmes and/or plans for the management, conservation and sustainable development of forests. These programmes and/or plans should be integrated with other land uses. In this context, country-driven national forestry action programmes and/or plans under the Tropical Forestry Action Programme are currently being implemented in more than 80 countries, with the support of the international community;

(c) To ensure sustainable management and, where appropriate, conservation of existing and future forest resources;

(d) To maintain and increase the ecological, biological, climatic, socio-cultural and economic contributions of forest resources;

(e) To facilitate and support the effective implementation of the non-legally binding authoritative statement of principles for a global consensus on the management, conservation and sustainable development of all types of forests, adopted by the United Nations Conference on Environment and Development, and on the basis of the implementation of these principles to consider the need for and the feasibility of all kinds of appropriate internationally agreed arrangements to promote international cooperation on forest management, conservation and sustainable development of all types of forests including afforestation, reforestation, and rehabilitation.

## **Activities**

### **(a) Management-related activities**

**11.14.** Governments should recognize the importance of categorizing forests, within the framework of long-term forest conservation and management policies, into different forest types and setting up sustainable units in every region/watershed with a view to securing the conservation of forests. Governments, with the participation of the private sector, non-governmental organizations, local community groups, indigenous people, women, local government units and the public at large, should act to maintain and expand the existing vegetative cover wherever ecologically, socially and economically feasible, through technical cooperation and other forms of support. Major activities to be considered include:

(a) Ensuring the sustainable management of all forest ecosystems and woodlands, through improved proper planning, management and timely implementation of silvicultural operations, including inventory and relevant research, as well as rehabilitation of degraded natural forests to restore productivity and environmental contributions, giving particular attention to human needs for economic and ecological services, wood-based energy, agroforestry, non-timber forest products and services, watershed and soil protection, wildlife management, and forest genetic resources;

(b) Establishing, expanding and managing, as appropriate to each national context, protected area systems, which includes systems of conservation units for their environmental, social and spiritual functions and values, including conservation of forests in representative ecological systems and landscapes, primary old-growth forests, conservation and management of wildlife, nomination of World Heritage Sites under the World Heritage Convention, as appropriate, conservation of genetic resources, involving in/situ and ex situ measures and undertaking supportive measures to ensure sustainable utilization of biological resources and conservation of biological diversity and the traditional forest habitats of indigenous people, forest dwellers and local communities;

(c) Undertaking and promoting buffer and transition zone management;

(d) Carrying out revegetation in appropriate mountain areas, highlands, bare lands, degraded farm lands, arid and semi-arid lands and coastal areas for combating desertification and preventing erosion problems and for other protective functions and national programmes for rehabilitation of degraded lands, including community forestry, social forestry, agroforestry and silvipasture, while also taking into account the role of forests as national carbon reservoirs and sinks;

(e) Developing industrial and non-industrial planted forests in order to support and promote national ecologically sound afforestation and reforestation/regeneration programmes in suitable sites, including upgrading of existing planted forests of both industrial and non-industrial and commercial purpose to increase their contribution to human needs and to offset pressure on primary/old growth forests. Measures should be taken to promote and provide intermediate yields and to improve the rate of returns on investments in planted forests, through interplanting and underplanting valuable crops;

(f) Developing/strengthening a national programme and/or master plan for planted forests as a priority, indicating, inter alia, the location, scope and species, and specifying areas of existing planted forests requiring rehabilitation, taking into account the economic aspect for future planted forest development, giving emphasis to native species;

(g) Increasing the protection of forests from pollutants, fire, pests and diseases and other human-made interferences such as forest poaching, mining and unmitigated shifting cultivation, the uncontrolled introduction of exotic plant and animal species, as well as developing and accelerating research for a better understanding of problems relating to the management and regeneration of all types of forests; strengthening and/or establishing ap-

appropriate measures to assess and/or check inter-border movement of plants and related materials;

(h) Stimulating development of urban forestry for the greening of urban, peri-urban and rural human settlements for amenity, recreation and production purposes and for protecting trees and groves;

(i) Launching or improving opportunities for participation of all people, including youth, women, indigenous people and local communities in the formulation, development and implementation of forest-related programmes and other activities, taking due account of the local needs and cultural values;

(j) Limiting and aiming to halt destructive shifting cultivation by addressing the underlying social and ecological causes.

## **(b) Data and information**

**11.15.** Management-related activities should involve collection, compilation and analysis of data/information, including baseline surveys. Some of the specific activities include the following:

(a) Carrying out surveys and developing and implementing land-use plans for appropriate greening/ planting/ afforestation/ reforestation/ forest rehabilitation;

(b) Consolidating and updating land-use and forest inventory and management information for management and land-use planning of wood and non-wood resources, including data on shifting cultivation and other agents of forest destruction;

(c) Consolidating information on genetic resources and related bio-technology, including surveys and studies, as necessary;

(d) Carrying out surveys and research on local/indigenous knowledge of trees and forests and their uses to improve the planning and implementation of sustainable forest management;

(e) Compiling and analysing research data on species/site interaction of species used in planted forests and assessing the potential impact on forests of climatic change, as well as effects of forests on climate, and initiating in-depth studies on the carbon cycle relating to different forest types to provide scientific advice and technical support;

(f) Establishing linkages with other data/information sources that relate to sustainable management and use of forests and improving access to data and information;

(g) Developing and intensifying research to improve knowledge and understanding of problems and natural mechanisms related to the management and rehabilitation of forests, including research on fauna and its interrelation with forests;

(h) Consolidating information on forest conditions and site-influencing immissions and emissions.

## **(c) International and regional cooperation and coordination**

**11.16.** The greening of appropriate areas is a task of global importance and impact. The international and regional community should provide technical cooperation and other means for this programme area. Specific activities of an international nature, in support of national efforts, should include the following:

(a) Increasing cooperative actions to reduce pollutants and trans-boundary impacts affecting the health of trees and forests and conservation of representative ecosystems;

(b) Coordinating regional and subregional research on carbon sequestration, air pollution and other environmental issues;

(c) Documenting and exchanging information/experience for the benefit of countries with similar problems and prospects;

(d) Strengthening the coordination and improving the capacity and ability of intergovernmental organizations such as FAO, ITTO, UNEP and UNESCO to provide technical support for the management, conservation and sustainable development of forests, including support for the negotiation of the International Tropical Timber Agreement of 1983, due in 1992/93.

## **Means of Implementation**

### **(a) Financial and cost evaluation**

**11.17.** The secretariat of the Conference has estimated the average total annual cost (1993- 2000) of implementing the activities of this programme to be about \$10 billion, including about \$3.7 billion from the international community on grant or concessional terms. These are indicative and order of magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

### **(b) Scientific and technological means**

**11.18.** Data analysis, planning, research, transfer/development of technology and/or training activities form an integral part of the programme activities, providing the scientific and technological means of implementation. National institutions should:

- (a) Develop feasibility studies and operational planning related to major forest activities;
- (b) Develop and apply environmentally sound technology relevant to the various activities listed;
- (c) Increase action related to genetic improvement and application of biotechnology for improving productivity and tolerance to environmental stress and including, for example, tree breeding, seed technology, seed procurement networks, germ-plasm banks, "in vitro" techniques, and in situ and ex situ conservation.

### **(c) Human resource development**

**11.19.** Essential means for effectively implementing the activities include training and development of appropriate skills, working facilities and conditions, public motivation and awareness. Specific activities include:

- (a) Providing specialized training in planning, management, environmental conservation, biotechnology etc;
- (b) Establishing demonstration areas to serve as models and training facilities;
- (c) Supporting local organizations, communities, non-governmental organizations and private land owners, in particular women, youth, farmers and indigenous people/shifting cultivators, through extension and provision of inputs and training.

### **(d) Capacity-building**

**11.20.** National Governments, the private sector, local organizations/communities, indigenous people, labour unions and non-governmental organizations should develop capacities, duly supported by relevant international organizations, to implement the programme activities. Such capacities should be developed and strengthened in harmony with the programme activities. Capacity-building activities include policy and legal frameworks, national institution building, human resource development, development of research and technology, development of infrastructure, enhancement of public awareness etc.

## **C. Promoting efficient utilization and assessment to recover the full valuation of the goods and services provided by forests, forest lands and woodlands**

### **Basis for action**

**11.21.** The vast potential of forests and forest lands as a major resource for development is not yet fully realized. The improved management of forests can increase the production of goods and services and, in particular, the yield of wood and non-wood forest products, thus helping to generate additional employment and income, additional value through processing and trade of forest products, increased contribution to foreign exchange earnings, and increased return on investment. Forest resources, being renewable, can be sustainably managed in a manner that is compatible with environmental conservation. The implications of the harvesting of forest resources for the other values of the forest should be taken fully into consideration in the development of forest policies. It is also possible to increase the value of forests through non-damaging uses such as eco-tourism and the managed supply of genetic materials. Concerted action is needed in order to increase people's perception of the value of forests and of the benefits they provide. The survival of forests and their continued contribution to human welfare depends to a great extent on succeeding in this endeavour.

### **Objectives**

**11.22.** The objectives of this programme area are as follows:

- (a) To improve recognition of the social, economic and ecological values of trees, forests and forest lands, including the consequences of the damage caused by the lack of forests; to promote methodologies with a view to incorporating social, economic and ecological values of trees, forests and forest lands into the national economic accounting systems; to ensure their sustainable management in a way that is consistent with land use, environmental considerations and development needs;
- (b) To promote efficient, rational and sustainable utilization of all types of forests and vegetation inclusive of other related lands and forest-based resources, through the development of efficient forest-based processing industries, value-adding secondary processing and trade in forest products, based on sustainably managed forest resources and in accordance with plans that integrate all wood and non-wood values of forests;
- (c) To promote more efficient and sustainable use of forests and trees for fuelwood and energy supplies;
- (d) To promote more comprehensive use and economic contributions of forest areas by incorporating eco-tourism into forest management and planning.

### **Activities**

#### **(a) Management-related activities**

**11.23.** Governments, with the support of the private sector, scientific institutions, indigenous people, non-governmental organizations, cooperatives and entrepreneurs, where appropriate, should undertake the following activities, properly coordinated at the national level, with financial and technical cooperation from international organizations:

- (a) Carrying out detailed investment studies, supply-demand harmonization and environmental impact analysis to rationalize and improve trees and forest utilization and to develop and establish appropriate incentive schemes and regulatory measures, including tenurial arrangements, to provide a favourable investment climate and promote better management;
- (b) Formulating scientifically sound criteria and guidelines for the management, conservation and sustainable development of all types of forests;

(c) Improving environmentally sound methods and practices of forest harvesting, which are ecologically sound and economically viable, including planning and management, improved use of equipment, storage and transportation to reduce and, if possible, maximize the use of waste and improve value of both wood and non-wood forest products;

(d) Promoting the better use and development of natural forests and woodlands, including planted forests, wherever possible, through appropriate and environmentally sound and economically viable activities, including silvicultural practices and management of other plant and animal species;

(e) Promoting and supporting the downstream processing of forest products to increase retained value and other benefits;

(f) Promoting/popularizing non-wood forest products and other forms of forest resources, apart from fuelwood (e.g., medicinal plants, dyes, fibres, gums, resins, fodder, cultural products, rattan, bamboo) through programmes and social forestry/participatory forest activities, including research on their processing and uses;

(g) Developing, expanding and/or improving the effectiveness and efficiency of forest-based processing industries, both wood and non-wood based, involving such aspects as efficient conversion technology and improved sustainable utilization of harvesting and process residues; promoting underutilized species in natural forests through research, demonstration and commercialization; promoting value-adding secondary processing for improved employment, income and retained value; and promoting/improving markets for, and trade in, forest products through relevant institutions, policies and facilities;

(h) Promoting and supporting the management of wildlife, as well as eco-tourism, including farming, and encouraging and supporting the husbandry and cultivation of wild species, for improved rural income and employment, ensuring economic and social benefits without harmful ecological impacts;

(i) Promoting appropriate small-scale forest-based enterprises for supporting rural development and local entrepreneurship;

(j) Improving and promoting methodologies for a comprehensive assessment that will capture the full value of forests, with a view to including that value in the market-based pricing structure of wood and non-wood based products;

(k) Harmonizing sustainable development of forests with national development needs and trade policies that are compatible with the ecologically sound use of forest resources, using, for example, the ITTO Guidelines for Sustainable Management of Tropical Forests;

(l) Developing, adopting and strengthening national programmes for accounting the economic and non-economic value of forests.

## **(b) Data and information**

**11.24.** The objectives and management-related activities presuppose data and information analysis, feasibility studies, market surveys and review of technological information. Some of the relevant activities include:

(a) Undertaking analysis of supply and demand for forest products and services, to ensure efficiency in their utilization, wherever necessary;

(b) Carrying out investment analysis and feasibility studies, including environmental impact assessment, for establishing forest-based processing enterprises;

(c) Conducting research on the properties of currently underutilized species for their promotion and commercialization;

(d) Supporting market surveys of forest products for trade promotion and intelligence;

- (e) Facilitating the provision of adequate technological information as a measure to promote better utilization of forest resources.

### **(c) International and regional cooperation and coordination**

**11.25.** Cooperation and assistance of international organizations and the international community in technology transfer, specialization and promotion of fair terms of trade, without resorting to unilateral restrictions and/or bans on forest products contrary to GATT and other multilateral trade agreements, the application of appropriate market mechanisms and incentives will help in addressing global environmental concerns. Strengthening the coordination and performance of existing international organizations, in particular FAO, UNIDO, UNESCO, UNEP, ITC/UNCTAD/GATT, ITTO and ILO, for providing technical assistance and guidance in this programme area is another specific activity.

### **Means of Implementation**

#### **(a) Financial and cost evaluation**

**11.26.** The secretariat of the Conference has estimated the average total annual cost (1993–2000) of implementing the activities of this programme to be about \$18 billion, including about \$880 million from the international community on grant or concessional terms. These are indicative and order of magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

#### **(b) Scientific and technological means**

**11.27.** The programme activities presuppose major research efforts and studies, as well as improvement of technology. This should be coordinated by national Governments, in collaboration with and supported by relevant international organizations and institutions. Some of the specific components include:

- (a) Research on properties of wood and non-wood products and their uses, to promote improved utilization;
- (b) Development and application of environmentally sound and less-polluting technology for forest utilization;
- (c) Models and techniques of outlook analysis and development planning;
- (d) Scientific investigations on the development and utilization of non-timber forest products;
- (e) Appropriate methodologies to comprehensively assess the value of forests.

#### **(c) Human resource development**

**11.28.** The success and effectiveness of the programme area depends on the availability of skilled personnel. Specialized training is an important factor in this regard. New emphasis should be given to the incorporation of women. Human resource development for programme implementation, in quantitative and qualitative terms, should include:

- (a) Developing required specialized skills to implement the programme, including establishing special training facilities at all levels;
- (b) Introducing/strengthening refresher training courses, including fellowships and study tours, to update skills and technological know-how and improve productivity;
- (c) Strengthening capability for research, planning, economic analysis, periodical evaluations and evaluation, relevant to improved utilization of forest resources;
- (d) Promoting efficiency and capability of private and cooperative sectors through provision of facilities and incentives.

## **(d) Capacity-building**

**11.29.** Capacity-building, including strengthening of existing capacity, is implicit in the programme activities. Improving administration, policy and plans, national institutions, human resources, research and scientific capabilities, technology development, and periodical evaluations and evaluation are important components of capacity-building.

### **D. Establishing and/or strengthening capacities for the planning, assessment and systematic observations of forests and related programmes, projects and activities, including commercial trade and processes**

#### **Basis for action**

**11.30.** Assessment and systematic observations are essential components of long-term planning, for evaluating effects, quantitatively and qualitatively, and for rectifying inadequacies. This mechanism, however, is one of the often neglected aspects of forest resources, management, conservation and development. In many cases, even the basic information related to the area and type of forests, existing potential and volume of harvest is lacking. In many developing countries, there is a lack of structures and mechanisms to carry out these functions. There is an urgent need to rectify this situation for a better understanding of the role and importance of forests and to realistically plan for their effective conservation, management, regeneration, and sustainable development.

#### **Objectives**

**11.31.** The objectives of this programme area are as follows:

- (a) To strengthen or establish systems for the assessment and systematic observations of forests and forest lands with a view to assessing the impacts of programmes, projects and activities on the quality and extent of forest resources, land available for afforestation, and land tenure, and to integrate the systems in a continuing process of research and in-depth analysis, while ensuring necessary modifications and improvements for planning and decision-making. Specific emphasis should be given to the participation of rural people in these processes;
- (b) To provide economists, planners, decision makers and local communities with sound and adequate updated information on forests and forest land resources.

#### **Activities**

##### **(a) Management-related activities**

**11.32.** Governments and institutions, in collaboration, where necessary, with appropriate international agencies and organizations, universities and non-governmental organizations, should undertake assessments and systematic observations of forests and related programmes and processes with a view to their continuous improvement. This should be linked to related activities of research and management and, wherever possible, be built upon existing systems. Major activities to be considered are:

- (a) Assessing and carrying out systematic observations of the quantitative and qualitative situation and changes of forest cover and forest resources endowments, including land classification, land use and updates of its status, at the appropriate national level, and linking this activity, as appropriate, with planning as a basis for policy and programme formulation;
- (b) Establishing national assessment and systematic observation systems and evaluation of programmes and processes, including establishment of definitions, standards, norms and intercalibration methods, and the capability for initiating corrective actions as well as improving the formulation and implementation of programmes and projects;

(c) Making estimates of impacts of activities affecting forestry developments and conservation proposals, in terms of key variables such as developmental goals, benefits and costs, contributions of forests to other sectors, community welfare, environmental conditions and biological diversity and their impacts at the local, regional and global levels, where appropriate, to assess the changing technological and financial needs of countries;

(d) Developing national systems of forest resource assessment and valuation, including necessary research and data analysis, which account for, where possible, the full range of wood and non-wood forest products and services, and incorporating results in plans and strategies and, where feasible, in national systems of accounts and planning;

(e) Establishing necessary intersectoral and programme linkages, including improved access to information, in order to support a holistic approach to planning and programming.

## **(b) Data and information**

**11.33.** Reliable data and information are vital to this programme area. National Governments, in collaboration, where necessary, with relevant international organizations, should, as appropriate, undertake to improve data and information continuously and to ensure its exchange. Major activities to be considered are as follows:

(a) Collecting, consolidating and exchanging existing information and establishing base-line information on aspects relevant to this programme area;

(b) Harmonizing the methodologies for programmes involving data and information activities to ensure accuracy and consistency;

(c) Undertaking special surveys on, for example, land capability and suitability for afforestation action;

(d) Enhancing research support and improving access to and exchange of research results.

## **(c) International and regional cooperation and coordination**

**11.34.** The international community should extend to the Governments concerned necessary technical and financial support for implementing this programme area, including consideration of the following activities:

(a) Establishing conceptual framework and formulating acceptable criteria, norms and definitions for systematic observations and assessment of forest resources;

(b) Establishing and strengthening national institutional coordination mechanisms for forest assessment and systematic observation activities;

(c) Strengthening existing regional and global networks for the exchange of relevant information;

(d) Strengthening the capacity and ability and improving the performance of existing international organizations, such as the Consultative Group on International Agricultural Research (CGIAR), FAO, ITTO, UNEP, UNESCO and UNIDO, to provide technical support and guidance in this programme area.

## **Means of Implementation**

### **(a) Financial and cost evaluation**

**11.35.** The secretariat of the Conference has estimated the average total annual cost (1993- 2000) of implementing the activities of this programme to be about \$750 million, including about \$230 mil-

lion from the international community on grant or concessional terms. These are indicative and order of magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.

**11.36.** Accelerating development consists of implementing the management-related and data/information activities cited above. Activities related to global environmental issues are those that will contribute to global information for assessing/evaluating/addressing environmental issues on a worldwide basis. Strengthening the capacity of international institutions consists of enhancing the technical staff and the executing capacity of several international organizations in order to meet the requirements of countries.

#### **(b) Scientific and technological means**

**11.37.** Assessment and systematic observation activities involve major research efforts, statistical modelling and technological innovation. These have been internalized into the management-related activities. The activities in turn will improve the technological and scientific content of assessment and periodical evaluations. Some of the specific scientific and technological components included under these activities are:

- (a) Developing technical, ecological and economic methods and models related to periodical evaluations and evaluation;
- (b) Developing data systems, data processing and statistical modelling;
- (c) Remote sensing and ground surveys;
- (d) Developing geographic information systems;
- (e) Assessing and improving technology.

**11.38.** These are to be linked and harmonized with similar activities and components in the other programme areas.

#### **(c) Human resource development**

**11.39.** The programme activities foresee the need and include provision for human resource development in terms of specialization (e.g., the use of remote-sensing, mapping and statistical modelling), training, technology transfer, fellowships and field demonstrations.

#### **(d) Capacity-building**

**11.40.** National Governments, in collaboration with appropriate international organizations and institutions, should develop the necessary capacity for implementing this programme area. This should be harmonized with capacity-building for other programme areas. Capacity-building should cover such aspects as policies, public administration, national-level institutions, human resource and skill development, research capability, technology development, information systems, programme evaluation, intersectoral coordination and international cooperation.

#### **(e) Funding of international and regional cooperation.**

**11.41.** The secretariat of the Conference has estimated the average total annual cost (1993- 2000) of implementing the activities of this programme to be about \$750 million, including about \$530 million from the international community on grant or concessional terms. These are indicative and order of magnitude estimates only and have not been reviewed by Governments. Actual costs and financial terms, including any that are non-concessional, will depend upon, inter alia, the specific strategies and programmes Governments decide upon for implementation.