



**SUMMARY OF THE
XI WORLD FORESTRY CONGRESS
13-22 OCTOBER 1997**

The XI World Forestry Congress took place from 13-22 October 1997 in Antalya, Turkey. The general theme of the Congress was "Forestry for Sustainable Development: Towards the 21st Century." More than 4,400 participants from 145 countries attended the Congress, representing the scientific community, governments, international organizations, non-governmental organizations (NGOs) and the private sector. During the nine-day conference delegates attended eight Plenary sessions and 43 technical sessions.

The technical sessions were organized around eight main programme areas: Forest and Tree Resources; Forests, Biological Diversity and Maintenance of Natural Heritage; Protective and Environmental Functions of Forests; Productive Functions of Forests; Economic Contribution of Forestry to Sustainable Development; Social Dimensions of Forestry's Contribution to Sustainable Development; Policies, Institutions and Means for Sustainable Forestry Development; and Eco-regional Review.

In addition to these sessions, three pre-Congress satellite meetings, an informal ministerial meeting and approximately 30 side meetings and other special events took place in connection with the XI World Forestry Congress (XI WFC). The Congress produced recommendations and conclusions from each technical session and programme area and the Antalya Declaration of the XI World Forestry Congress.

The general theme of the XI WFC, "Forestry for Sustainable Development: Towards the 21st Century" was established in view of the opportunity to undertake initiatives in the follow-up to discussions of global forest issues at the Intergovernmental Panel on Forests and the nineteenth Special Session of the UN General Assembly (UNGASS). The Congress aimed to provide a forum for the forestry sector to discuss technical responses, to identify actions to be taken and to take stock of the state of forestry at inter-regional, regional and national levels, to respond to challenges and to consider new directions in orienting forestry towards sustainable development in the 21st century.

**A BRIEF HISTORY OF THE WFC AND RECENT
INTERGOVERNMENTAL FOREST-RELATED
DECISIONS**

THE WORLD FORESTRY CONGRESS

The International Forestry Institute, established in 1905, organized the first World Forestry Congress (WFC), which was held in Rome in 1926. The second WFC took place in Budapest in 1936, and recommended the establishment of a permanent International Committee in charge of organizing subsequent Congresses and monitoring results. III WFC, held in Helsinki (1949), recommended that future Congresses specially devoted to tropical forests be convened. The fourth WFC, which met in Dehra-Dun (1954), addressed tropical forest problems.

Subsequent Congresses, convening roughly every six years, were organized around specific themes: V WFC in Seattle (1960) addressed the multiple uses of forests; VI WFC in Madrid (1966) considered the role of forestry in world economic changes; VII WFC in Buenos Aires (1972) discussed forests and socio-economic development; VIII WFC in Jakarta (1978) revolved around the theme of forests and population; IX WFC in Mexico City (1985) addressed forest resources in society's overall development; and X WFC in Paris (1991) focused on the theme of forests as the heritage of the future.

**RECENT INTERGOVERNMENTAL FOREST-RELATED
DECISIONS**

The UN Commission on Sustainable Development's (CSD) open-ended *ad hoc* Intergovernmental Panel on Forests (IPF) was established in 1995 to pursue consensus and coordinated proposals for action to support the management, conservation and sustainable development of all types of forests. The IPF focused on 12 programme elements under five chapter headings: implementation of UNCED forest-related decisions; international cooperation in financial assistance and technology transfer; research, assessment and development of criteria and indicators for sustainable forest management; trade and environment; and international organizations and multilateral institutions and instruments. Its objective was to submit final conclusions and policy recommendations to the CSD at its fifth session (CSD-5) in April 1997.

The Panel met four times from 1995-1997 and adopted a final report at its fourth session in February 1997, which it submitted to CSD-5. The report contains approximately 130 proposals for action under its 12 programme areas, including a call for continued inter-governmental forest policy dialogue. However, IPF delegates could not agree on a few major issues such as financial assistance and trade-related matters, or whether to begin negotiations on a global forest convention. On these and other elements, the IPF forwarded a range of options to the CSD in its report. CSD-5 adopted the IPF's report and forwarded a set of recommendations based upon its findings to UNGASS.

The UN General Assembly, at its nineteenth special session in June 1997, decided to continue the intergovernmental policy dialogue on forests through the establishment of an *ad hoc* open-ended Intergovernmental Forum on Forests (IFF) under the aegis of the CSD. In addition, the General Assembly decided that "the Forum should also identify the possible elements of work toward consensus on international arrangements and mechanisms, for example, a legally-binding instrument." The Economic and Social Council, by its resolution 1997/65, established the IFF, which will report to the CSD at its eighth session in 2000.

The IFF held its organizational session from 1-3 October 1997 at UN Headquarters in New York. Delegates agreed on its programme of work, which will consist of the following three categories: I) promoting and facilitating the implementation of the IPF's proposals for action, and reviewing, monitoring and reporting on progress in the management, conservation and sustainable development of all types of forests; II) considering matters left pending and other issues arising from the programme elements of the IPF

process (financial resources, trade and environment, transfer of environmentally sound technologies, forest-related work of international and regional organizations, and other issues requiring further clarification); and III) identifying elements, building a global consensus and engaging in further action on international arrangements and mechanisms to promote the management, conservation and sustainable development of all types of forests.

Delegates also agreed on the schedule and allocation of programme elements to receive substantive discussion at future sessions, the number, date and venue of future sessions, participation and the organization of intersessional meetings or consultations.

PRE-CONGRESS SATELLITE MEETINGS

Three Pre-Congress satellite meetings took place from 10-13 October 1997 in Antalya. The reports of the meetings, summarized below, were presented in the relevant technical sessions on related topics.

INTERNATIONAL MEETING ON CONFLICT MANAGEMENT AND COMMUNITY FORESTRY

The purpose of this meeting was to identify ways to better integrate conflict management considerations into national policy frameworks to ensure greater participation from forest-dependent communities and indigenous peoples in policy formulation processes. Participants formulated five guiding principles and 19 recommendations to be incorporated into national policies. The guiding principles emphasize: recognition and respect for local rights, knowledge, structures, responsibilities and values; development and implementation of clear and transparent procedures for addressing conflict; adoption of participatory processes for development, implementation and appraisal of natural resource policies; development and dissemination of information; and encouragement of management for multiple use of forests and trees to meet the needs and values of diverse users. The recommendations call for several actions in the areas of: policy harmonization; collaboration and cooperation; community empowerment; participation; capacity-building and training; communication; and resource planning and management.

INTERNATIONAL EXPERT CONSULTATION ON THE ROLE OF FORESTRY IN COMBATING DESERTIFICATION

Major themes addressed at this meeting included: the establishment and management of trees and stands in arid zones; the economic and social importance of wood and non-wood products in arid zones; the role of local communities in combating desertification through forestry; and the role of forestry in the implementation of the Convention to Combat Desertification (CCD). The Consultation called for: revision of national forestry action programmes to encompass international commitments; adoption of inclusive approaches to planning and implementation that emphasize the participation of women; retraining of foresters to help them adapt to changing requirements; and recognition of the importance of dryland forests to food security and poverty alleviation.

17TH SESSION OF THE AFWF/EFC/NEFC COMMITTEE ON MEDITERRANEAN FORESTRY

The Committee reviewed the activities of the Mediterranean Forest Action Programme from 1994-1997; examined the state of forestry in the region; discussed the activities of related research networks; assessed the need for a new research network on the development of Mediterranean forest products and services; examined international conventions in the Mediterranean context; and reviewed scenarios for the future of Mediterranean forests as presented by the Blue Plan (MAP/UNEP). The Committee recommended: improving communication within the Committee; developing more links with other organizations; seeking financial support from donors and partners such as the EU; considering collaboration with NGOs; and continuing cooperation with the Blue Plan.

INFORMAL MINISTERIAL MEETING

An informal Ministerial meeting took place on 13 October, and a press release was issued to present the meeting's findings. According to this document, the meeting took note of actions taken

thus far at the national level in policy formulation and implementation in the framework on national forest programmes and of actions promoted at sub-regional, regional and international levels. Statements highlighted a wide spectrum of problems related to forests and stressed that the requirements of individual countries vary. Ministers agreed that the challenges of sustainable forest management (SFM) require further enhancement of national capabilities and international financial and technical cooperation for the formulation and implementation of appropriate policies.

Ministers considered that further efforts must be made to build upon the foundation laid by UNCED, and recognized that the inter-governmental consensus on priority actions of forests, reached through the IPF's deliberations, represents a significant step forward. While the majority of Ministers indicated that it is desirable to pursue work aiming at finalizing a global convention on forests as a comprehensive and holistic solution to the problems of degradation and depletion of forest resources, some others, although accepting the need for a legally-binding instrument, expressed the view that such a document should not compromise national inalienable rights. In this regard, it was noted that it is within the mandate of the IFF process to work toward arriving at a consensus on the eventual content of a legally-binding document on all types of forests. Ministers stressed that the XI WFC constituted a unique opportunity to work toward consensus on the many issues of forest policy, thus providing useful guidance to governments and international organizations.

REPORT OF THE MEETING

OPENING CEREMONY

The XI WFC began with an opening ceremony on Monday evening, 13 October, where participants were welcomed with several Turkish cultural presentations and with introductory speeches by WFC Organizing Committee Chair Hari Berk and Lord Mayor of Antalya Hasan Subasi.

Mesut Kamiloglu, XI WFC Secretary-General, outlined highlights from the Congress agenda. He reported that the Procedures and Nominations Committee had established a working group that had already begun drafting the Antalya Declaration and announced the nominated members, who were then approved by acclamation.

Ersin Taranoglu, Turkish Minister of Forestry and Congress Chair, introduced the theme of the Congress: *Forestry for Sustainable Development: Towards the 21st Century*. He underscored the problem of high consumption of forest products due to population pressures and noted the threat of forest fires to sustainable forestry. He stressed that forests house biodiversity and are important for sustainable agriculture.

Jacques Diouf, FAO Director-General, emphasized the critical role of forestry in food security and highlighted the outcomes of the World Food Summit. He stressed FAO's commitment to sustainable forestry as an integral part of overall socio-economic development and the importance of partnerships among international organizations.

Mesut Yimaz, Prime Minister of Turkey, said the Congress would provide information about recent developments in forestry, stimulate new ideas for decision-making and raise global awareness of forestry issues, thereby enabling countries to expedite decision-making and make joint decisions. He commented that forestry policies should be aimed at sustainable management, not at solving national economic problems.

Süleyman Demirel, President of Turkey, noted that in the 20th century humanity has made great progress, but major wars and environmental ills also threaten it and other life forms. He said preparation for the 21st century must be conducted with a sense of responsibility for future generations. He lauded the progress made since UNCED in building international consensus on sustainable forestry and stated that the WFC is part of these efforts to pursue sound criteria and guidance for the sustainable development of all types of forests. He called for a renewal of the pledge for global partnership to meet the needs of the present without compromising the "green dreams" of future generations.

PLENARY SESSIONS

THE CHALLENGE TO FORESTRY FOR SUSTAINABLE DEVELOPMENT

On the morning of 14 October, five keynote speakers set the stage for Congress deliberations, highlighting the main issues of the current debate on global forestry and analyzing trends and the need for change in the forestry sector.

David Harcharik, Assistant Director-General, FAO Forestry Department, stressed that forests must be managed according to a conceptual framework uniting science with social consciousness. He outlined challenges in the environmental, economic and social dimensions of SFM, including: broadening sustained yield forestry to incorporate sustaining forests as ecological systems; increasing commercial uses for non-wood products; and broadening the forest stewardship community. He challenged delegates to redouble efforts to manage forests in ways that enhance their environmental, economic and social values and to build partnerships among stakeholders.

Jeffrey Burley, President of IUFRO, challenged forestry research to: produce innovative, timely knowledge for all levels; use collaborative integrative approaches directed towards applicable outputs; draw on existing information; and be fully accountable. Results must be disseminated, donors must support research, particularly in developing countries, and taxpayers and policy-makers must be convinced of the value of long-term research.

Jag Maini, Head of the IFF Secretariat, spoke on forest-related events in the 1990s, the current state of thinking on SFM and challenges in the next millennium. He cited the IPF's achievements, including agreement on proposals for action and consensus that SFM must take socio-economic, political and environmental conditions into account, as a significant step forward. He identified future challenges, including future demand for forest products, allocation of resources to SFM and cross-sectoral policy creation.

Ola Ullsten, Co-President, World Commission on Forests and Sustainable Development, stated that forest security is as important as food security. He underscored forest decline as a political issue and indicated a need to stop trade-distorting subsidies. He called on the multinational forest industry to develop criteria and indicators (C&I) and a code of conduct for SFM and suggested that a "forest watch" organization be established to monitor forest practices.

David Bizon, on behalf of the Standing Commission on Commonwealth Forestry, presented the outcomes of the 15th Commonwealth Forestry Conference in May 1997. The conference theme, "Forestry in a changing political environment," underlined the need for the forest sector to address means of cooperation, technological means to ensure sustainable forestry, and forestry products and services. He highlighted Conference recommendations on participation, forest management, research, training and information.

TAKING STOCK OF THE VARIOUS SFM PROCESSES

Congress delegates were briefed on the status of the eight regional processes on C&I for SFM in a Plenary session on 14 October. Don Wijiwardena, New Zealand Ministry of Forestry, discussed development of C&I for SFM. He listed the criteria: enabling conditions; soil and water protection; ecosystem health; biological diversity; productive capacity; production flow; and social, cultural and economic effects. He noted that each criterion is measured by indicators. Eight ongoing voluntary international C&I processes conceptualize forests as complex ecosystems and use similar approaches, though they differ in scope, level of assessment, array and number of indicators. He stated that a global dialogue is underway to encourage: participation in C&I development; national implementation of C&I; development of sub-national C&I; and common understandings of what is needed.

Montreal: Hoduck Kang, Korean Forestry Administration, noted the convening of the ninth meeting of the Montreal Process in Seoul in July 1997 and the completion of the First Approximation Report of Montreal Process Countries. The report revealed that, for a large percentage of indicators, data are being collected and gaps identified, but application, monitoring and capacity to apply C&I vary. He announced that the tenth meeting would be held in 1998.

Helsinki: Luis Costa Leal, Secretariat, Ministerial Conference on Protection of Forests in Europe, outlined the Ministerial Conferences in Strasbourg in 1990 and in Helsinki in 1993. He noted that implementation and follow-up of Conference resolutions are undertaken through national and Pan-European activities. Ongoing Pan-European activities include developing guidelines for SFM at the operational level, developing a work programme on conservation and enhancement of biological and landscape diversification for ecosystems, and preparing a report on the status of SFM in Europe. At the third Ministerial Conference in June 1998, ministers will review progress, provide regional responses to the IPF's action proposals, and emphasize socio-economic challenges in forestry.

Tarapoto: Victor Carazo, Amazon Cooperation Treaty, stated that in 1995, Amazonian countries established the Tarapoto Process aimed at guiding policy, establishing positions at meetings, preserving biodiversity and planning sustainable development. He explained that national consultations that analyze C&I in the economic, environmental and political context of each country are an important and ongoing part of the regional process.

Dry Africa Zones: Jinhoa Zhang, UNEP, described the regional process, initiated in 1995 by FAO and UNEP, which created C&I for SFM in sub-Saharan dry-zone Africa. He said a follow-up workshop in November will discuss the significance of C&I to individual countries in a regional context and the applicability of the criteria. He identified challenges to the process, such as new data collection, implementation capacity and limited financial resources.

Lepatique Central America: Juan Blas Zapata, CCAB, noted that the Central American C&I cover a variety of forest types, including wetlands, highland forests and conifer forests, and are founded on four principles: ensuring integration of peace and democracy; benefiting from experiences in other regions; cooperating with FAO; and encouraging international support.

Near East: Hosny El-Lakany, FAO Forest Resources Division, stated that C&I had only recently been introduced into the Near East. Their application presents challenges due to the prevalent aridity and ecological, social and technical problems of the region. As a result, foresters have had to be trained to apply the C&I.

ITTO: Lachlan Hunter described the International Tropical Timber Organization's (ITTO) development of C&I associated with trade and productivity of tropical forests. These efforts complement other ITTO processes, including its objective to achieve SFM in forests producing tropical timber for international trade by 2000. As the first intergovernmental C&I for SFM, the ITTO C&I are currently under revision, to be used as templates for national-level development of more stringent guidelines.

ATO: Mohammed Lawal Garba, African Timber Organization (ATO), spoke of the need to reconcile forests' productive functions with their environmental role. ATO, with the Centre for International Forest Research (CIFOR), is developing unit-level C&I to improve market competitiveness in connection with certification. The C&I will also reflect national forestry plans. Six countries have been selected for pilot tests based on recently completed studies. **CIFOR:** Dennis Dykstra, CIFOR, noted that CIFOR is researching whether C&I can: be applied across different eco-regions; consider the needs of forest dwellers; and be modified for community forestry. It is also investigating whether natural forest C&I can be applied to plantation forests.

SPECIAL PLENARY ON YOUTH IN FORESTRY

A special Plenary session on youth in forestry was held on 17 October. Joanna Schoenenberger, President of the International Forestry Students Association (IFSA), gave an overview of the global relevance of IFSA. She called on all WFC participants to look less at the politics and concentrate more on the ecological costs of forest loss. Giorgio Andrian, previous President of IFSA, emphasized the need for forestry curricula in universities to be flexible in order to meet the changing needs of society.

The Turkish Ministry of Forestry and the Organizing Committee of the WFC presented awards to students based on an essay competition for university students, a photography and poster competition for school students, and an essay competition for elementary school students in Antalya. A performance by an Antalya school youth choir concluded the special Plenary session.

SPECIAL PLENARY ON WOMEN IN FORESTRY

A special Plenary on women in forestry was held on 20 October. Imren Aykut, Turkish Minister of the Environment, chaired the session. Her opening remarks focused on the question of how to increase the importance of women in forestry, particularly in decision-making. Keynote speaker Prof. Türkel Minibas, University of Istanbul Faculty of Economics (Turkey), stated that foresters and women should consider how to improve women's situations in forest villages, and proposed increasing income through marketing their products, training and participation in project design.

Authors of seven case studies on women in forestry received awards, three of which presented their studies. Prof. K. Narayana Gowda, University of Agricultural Sciences, Bangalore (India), presented "Ms. Thimmakka and her proud children," the story of a poor woman who planted and cultivated 230 banyan trees over 25 years.

Christine Verheijden, formerly of the FAO (Netherlands), presented "Women leading forestry activities in their communities," documenting a project in rural forestry development in Ecuador. The women learned to participate in project decision-making and extension workers changed their attitudes about women's role in project design and leadership.

Zeliha Inaltd, Middle Technical University (Turkey), presented "It's our turn to talk." Her study noted that women are the major users of natural resources and the first to realize problems, but are not usually consulted in decision-making bodies. Her cases involved the introduction of participatory processes for forest decision-making by women in rural villages of Turkey.

INTERNATIONAL COOPERATION AND RESOURCE MOBILIZATION FOR SUSTAINABLE FORESTRY DEVELOPMENT

In a Plenary session on 21 October, two special papers were presented on financial mechanisms and modalities. A panel discussion followed on building partnerships for international cooperation.

Financial Mechanisms and Modalities: Jeffrey Sayer, CIFOR, presented a special paper on global changes in the economics of forestry. It noted that: national barriers are eroding as international investment flows more freely; an increasing amount of aid is being spent on emergencies; and financial flows from the private sector are increasing dramatically. He observed that the purchasing power of countries has changed, with four "developing" countries - Indonesia, Brazil, China and India - ranking in the top ten highest GDPs in the world.

He highlighted the private sector's role in seeking efficient and competitive sources of wood fiber, and how this may lead governments to reduce their regulatory control over forests. He suggested that intensive forestry practices may soon demand only one fifth of the land currently being occupied by forests and questioned who will pay for the environmental and social benefits of the remaining forest areas, which are essential for 350 million forest-dependent people. He highlighted the need for: management of forests for multiple use; increased resources for forest research; and globally accepted, minimum standards for forest management. He underscored the importance of the C&I processes.

C. Chandrasekharan, FAO, presented a special paper on global financing. The paper emphasized that sustainable development means long-term growth for meeting the needs of a growing population, which requires increasing forest production. Two types of investment in forests are needed: new capital for growth, and replenishment of capital lost due to deforestation.

The paper noted that there are a number of obstacles to aid flow and utilization, including: lack of coordination among donors and recipients; inadequate or unpredictable flows; difficult conditionalities; lack of frameworks for aid absorption; and lack of donor interest in areas that are not "fashionable." Obstacles in recipient countries include: insufficient commitment or capacity; lack of post-project sustainability; and institutional weaknesses in various sectors.

The paper suggested that improving sustainable forest production will require: broadening the understanding of long-term forest benefits; understanding deforestation as capital loss; reforming

national accounts to include all forest benefits; filling gaps in donor commitment, policy and implementation; correcting inefficiencies in order to stretch available funds; using existing available financial mechanisms appropriately; pricing at full cost; and utilizing foreign funding from debt-for-nature swaps and tradeable emissions permits. A world forestry fund could also be established toward this end.

Building Partnerships for International Cooperation: Jag Maini, IFF Secretariat, began the panel discussion by suggesting how to increase efficiency in international partnerships. He noted that synergy between partners and knowledge of ecosystem ecology improve efficiency and stressed the need for better coordination between the donor community and recipient countries.

Andrei Laletin, Friends of Siberian Forests (Russia), discussed how to increase recognition of NGO participation in international cooperation and suggested that as a first step, NGOs, governments and intergovernmental agencies collaborate to convene an international workshop on underlying causes of deforestation as proposed by the IPF.

François Grison, CIRAD-Forêt (France), addressed the effectiveness of conservation projects in meeting the needs of recipient countries. He said that projects designed outside of recipient countries often fulfill the needs of the designers and not those directly affected. This approach can undermine sustainability, because local populations need development projects before conservation projects. He stressed the need to draw supply and demand for international aid closer together to meet the needs of the recipient countries.

Roger Kameni Foteu, Ministry of Forestry (Cameroon), stated that international cooperation must be based on developing countries' needs. He added that recipient countries do not always have the capacity to absorb all the activities proposed by donors.

G.O. Igugu, Federal Ministry of Agriculture and Natural Resources (Nigeria), focused on problems with projects funded by international NGOs, and said they must learn to cooperate with governments to attain goals, emphasizing the need for country-driven projects.

Catherine de Pater, National Resource Center for Natural Resource Management (Netherlands), explained how the demands of domestic accountability can restrict donors when funding projects. She stressed that partnerships must: be placed in the context of national plans; have reciprocal elements; start small; acknowledge cultural elements; and recognize capacity and personnel limitations of both donor and recipient countries.

Untung Iskandar, Bureau of International Cooperation and Investment (Indonesia), explained how cooperation between international donors and Indonesian counterparts, including NGOs, civil servants, universities and the private sector, is facilitated in order to harmonize efforts of various donors and to improve domestic capacity.

Manuel Rodriguez, Co-Chair of the IPF (Colombia), noted that donors are not homogeneous; some are respectful of national realities, while some attach onerous conditions to their funding. He suggested that donors make an effort to be less variable in this respect.

Following their introductory statements, the panelists responded to questions from the audience. Regarding mechanisms to address forest issues at the international level, Maini noted that the IPF process generated a set of guidelines for national forest plans, which, while not legally-binding, were agreed at the highest political level. They should become more universal and could be a means to enhance cooperation and partnerships. In addition, the IFF's programme of work includes consideration of what the potential elements of a legally-binding instrument on forests might be. Laletin stated that no consensus currently exists as to whether a convention is needed and what one might contain. He said NGOs worry that a convention would result in a lowest-common-denominator approach to forests.

Panelists discussed the need for mechanisms to coordinate the actions of donors on a regional or sub-regional level. Rodriguez underscored the great potential and opportunities for regional activities, but also noted that there are considerable pressures from globalization on legal and environmental regimes, and regional agreements that can ensure minimum legal requirements would

level the playing field on foreign investments. Foteu said establishing a coordination mechanism at the international level would be difficult but could be viable and effective at a sub-regional level. He emphasized that any global coordinating mechanism on forests would have to be accompanied by coordination on finance.

CHALLENGES FOR FORESTRY IN A NEW ECONOMIC, SOCIAL AND ENVIRONMENTAL CONTEXT

In a Plenary session on the final day of the Congress, Manuel Rodriguez, IPF Co-Chair, emphasized that international and national will is far from overcoming the political causes of deforestation. This is due to: a lack of solidarity between governments; differing interpretations of the Rio agreements; and a refusal by political and economic elites to combat the underlying causes of forest loss. He highlighted key differences between developed and developing countries in international dialogues, including: the right to development; international solidarity; common but differentiated responsibilities; and the transfer of new and additional financial resources and technologies on preferential terms. He underscored key issues affecting the achievement of SFM: a decline in ODA; a concentration on free trade in the developed world; and inequitable land tenure systems in developing countries. Despite these concerns, he noted some positive signs: development of new land tenure systems in some countries; increased community participation in forest management; new international formulas for economic compensation such as joint implementation; and the positive outcomes of the IPF.

Hans-Peter Blauberg, Forest Director, Kimmene Corporation (Finland), stated that the relationship between humanity and forests has changed with social development. Using Finland as an example, he noted that with economic prosperity, post-industrial societies have come to consider forest values other than purely economic ones as important and have been able to promote economically, socially, ecologically and culturally sustainable forestry. However, the world's forests continue to be destroyed. He suggested that the Finnish model might offer an example of how to alter the current course from forest destruction to growth and sustainable production.

Prof. Neomi Sonmez, President of the Turkish Development Foundation (Turkey), noted that recent international summits had the common purpose of addressing the three great problems of hunger, poverty and natural resource degradation, but action on the summits' conclusions is slow while these problems continue to worsen. He stated that the targets and solutions identified must be extended with action plans and decisions to all levels of society, particularly through community forestry. He recommended, *inter alia*, the use of participatory processes, training, improvements in the status of women and decentralization of authority.

CLOSING PLENARY

At the closing Plenary, the Antalya Declaration and the conclusions and recommendations from each programme area were presented and adopted by acclamation. Final remarks and a unanimous vote of thanks were given by representatives from Europe, Asia-Pacific, Africa, Latin America and the Caribbean, North America and the Near East. Applications to host the XII World Forestry Congress were presented by Canada, the Dominican Republic, Myanmar, Russia and the US.

Mesut Kamiloglu, XI WFC Secretary-General, Osman Taskin, Vice-Chair of the WFC Organizing Committee, and David Harcharick, Assistant Director-General of the FAO Forestry Department, delivered brief closing remarks and thanked the Turkish government, supporting donors, the Turkish Ministry of Forestry, the FAO, supporting staff and participants of the XI WFC.

Ersin Taranoglu, Turkish Minister of Forestry, stated that important steps had been taken toward protecting and managing forests at the local, national, regional and international levels. He noted that at the informal ministerial meeting on 13 October 1997, ministers discussed the problems facing forests, underlined the importance of forests and the social, economic and environmental benefits they provide, and agreed on the need to adopt sustainable management methods for forests to meet the expectations of future generations. He underscored that forest destruction has major global effects, necessitating cooperation and partnerships at all levels. He said the XI WFC, the last major international conference

on forests in the 20th century, succeeded in reinforcing existing cooperation in the international arena, exchanging information and establishing important bilateral and multilateral relations, and its findings will constitute a basis for further work on forests in the 21st century. He expressed hope that representatives from forest villages would be able to participate in future WFCs. He called on participants to convey the messages of the Congress to the rest of the world. He thanked the assembly and brought the XI World Forestry Congress to a close.

TECHNICAL SESSIONS

From Tuesday afternoon, 14 October through Monday, 21 October, XI WFC delegates attended 43 technical sessions, organized around eight main programme areas: Forest and Tree Resources; Forests, Biological Diversity and Maintenance of Natural Heritage; Protective and Environmental Functions of Forests; Productive Functions of Forests; Economic Contribution of Forestry to Sustainable Development; Social Dimensions of Forestry's Contribution to Sustainable Development; Policies, Institutions and Means for Sustainable Forestry Development; and Ecoregional Review.

More than 1,200 papers were submitted to the Congress. Seven papers were invited as "position papers" to introduce the first seven programme areas, others as "special papers" to introduce each of the 43 technical sessions. The remaining papers were submitted as "voluntary papers," many of which were orally presented at the technical sessions. (These papers are available on the Internet at <http://www.fao.org/WAICENT/FAOINFO/FORESTRY/WFORCONG/EN/CONGDOC.HTM>.)

On the penultimate day of the Congress, the conclusions and recommendations of each technical session were presented in a Plenary session. On the final day, a set of general conclusions and recommendations for each programme area was presented. Following is a cross-section of key papers and recommendations presented.

FOREST AND TREE RESOURCES

The position paper on forest and tree resources surveyed topics such as public information, forest and tree sustainability indicators, international harmonization, population growth, climate change and the positive and negative effects of plantations on forest health. Suggested actions for maintenance of the resources include broad consultation, capacity-building, adaptation to climate change and regional networks.

Assessment and Monitoring of Forest and Tree Resources:

A special paper was presented on global assessments, noting that techniques for inventory exist, but many inventories are unreliable due to a lack of funds, capacity and data. Voluntary papers discussed: analysis and application of technologies such as remote sensing, innovative mapping and field assessments in Brazil, Russia, Chile, France and Thailand; applications of GIS and remote sensing for forest surveying in Nepal; use of aerial photographs versus satellite imaging for national forest inventory in France; causal modeling of deforestation in Bolivia; use of GIS for forest remapping in Israel; forest cover assessment and monitoring in Vietnam using satellite imagery; and a new World Forest Monitoring Forum.

The session made recommendations regarding information needs, advances in technology and country capacity. It called for up-to-date and reliable information on: C&I; forest area; timber volume; biodiversity; causal mechanisms of deforestation; forest health; non-wood forest products; land degradation; and ecosystem monitoring. Consideration must be given to the applicability, limitations, cost, efficiency, cost-effectiveness and accuracy of new technologies such as global positioning systems and GIS and to the compatibility of their assessments. Regarding country capacities, there is a need for: financial, human and technological resources; external assistance; cooperation; non-duplication of work; and support for the global Forest Resources Assessment 2000.

The Forestry Agriculture Interface: A special paper discussed forestry and agriculture in China, revealing that sustainable land-use systems require effective cooperative mechanisms between government, scientists and farmers. Another special paper focused on environmentally beneficial and nutritional indigenous food and tree crops for combating Kenyan deforestation and degra-

dation. Voluntary papers addressed: the benefits of agroforestry motivated by European agricultural reform; the effects of shea trees on agricultural production; understorey effects on tree characteristics in agroforestry; trees for erosion reduction and pest management on small and medium-sized farms; indigenous buffers for household food security in Nepal; and agroforestry models of bamboo cultivation on farmers' degraded agricultural lands in central India.

Recommendations call for efforts to: modify agricultural policies with a negative impact on forests; ensure compatibility of national policies and strategies for agricultural and forestry development; increase institutional coordination; intensify agriculture to decrease pressure on forest resources; increase research in agroforestry, especially on socio-economic factors; improve extension to develop capacity; and improve marketing of agroforestry products.

Urban and Peri-urban Forests: A special paper detailed the planning, species selection, management, maintenance, cost-effectiveness and environmental and social aspects of urban forests. Another special paper outlined the history of urban forests. Voluntary papers emphasized: the cultural, social and psychological roles of forests in cities; benefits of urban forestry in the US including energy cost reduction and improved water quality; reduction of air pollution and community betterment; and pest and disease management in urban forests in Moscow.

The session recommended: increasing public awareness and political support for urban forestry; developing national urban forestry strategies; establishing city plans for urban forestry through a participatory approach; strengthening links between urban forestry, landscape ecology and community forestry; and increasing twin city programmes and developing effective mechanisms for sharing expertise.

Forests and Climate Change and the Role of Forests as

Carbon Sinks: A special paper emphasized that with proper management, forests can mitigate carbon dioxide emissions by sequestering carbon and can be strategic for meeting emission reduction targets in some countries. Another special paper documented accumulation of carbon dioxide due to biomass increases in Turkish and Bulgarian forests. Voluntary papers underscored the role of forests as carbon sinks and provided estimates of the carbon budgets in Indonesia, Korea, Lithuania and Russia.

The meeting recommended that governments adopt forest management options compatible with carbon sequestration where appropriate; highlighted joint implementation as a promising instrument for funding and promoting international cooperation for tropical forest protection; stressed the need for new methods for estimating atmospheric and forest-stored carbon; and called for prioritization of further research on the role of forests as sources and sinks of greenhouse gases.

Protecting Forests Against Pests and Diseases, Air Pollution

and Decline: A special paper on forest health management noted that while disease and pests are natural phenomena, outbreaks need to be considered in the context of historic patterns. Protection of forests from disease and pests has moved from eradication techniques to long-term management based on an ecosystem approach. Another special paper gave examples of numerous pest infestations affecting southern and eastern Africa. It noted that integrated pest management strategies must be sustainable, based on low technology and suited to local conditions. Voluntary papers were presented on: effects of air pollution on European forests; effects of power plant air pollution on forests in Turkey; major insect pests of humid, tropical regions of Africa; problems of alien species in fragile island ecosystems; and introduction of chemical fungicide-resistant genes to protect bio-control fungi in seedlings.

The session concluded that there is a need to: coordinate regional approaches to integrated pest management; undertake scientific studies to determine the benefits of mixed species planting to prevent pest incidence; record native natural enemies of insects and develop methods for conserving their potential to combat pests; and improve policies to reduce airborne and other forms of pollution.

Forests and Fire: A special paper on fire and forests noted advances in fire-danger rating systems, crown fire documentation and identification of combustion products. Another special paper described recent changes in fire frequency and extent in the

Northern hemisphere, and compared the major reasons for human-induced fires. Another special paper on the effectiveness of radio fire hazard warnings in Guinea found a positive correlation between radio transmission range and reduction in fire incidence. A special presentation on recent and ongoing forest and farmland fires in Indonesia noted that the fires are most prevalent in highly populated areas, with 40% occurring within forest boundaries and the remainder in agricultural land and conversion forests. It suggested that fire was the cheapest way to clear land. Voluntary papers were presented on: the effect of forest fires in West African rainforests; use of remote sensing to monitor changes in tropical forests and savannahs; fuel load in Malaysian forest plantations; and forest fires in Turkey.

The session recommended that fires could be used as a tool for forest management. However, during the presentation of this recommendation in the Plenary session, the tenet was questioned by a number of interventions.

FORESTS, BIOLOGICAL DIVERSITY AND THE MAINTENANCE OF THE NATURAL HERITAGE

The position paper explained the concept of biological diversity, noting that its loss degrades watershed quality, deteriorates quality of life and reduces development options.

Conservation of Forest Ecosystems: A special paper on patterns of forest biodiversity loss highlighted the concern that structural adjustment programmes are forcing countries to dismiss their forestry staff and emphasized that forest protection is not an election issue. Another special paper on the estimation of opportunity costs for sustainable ecosystems explained various tools to determine non-market values of forests. Voluntary papers were presented on: an ecological stewardship project in the US; management of tropical ecosystems in French Guiana; mapping of forests of the world; monumental tree conservation in Turkey; shrub ecosystems and their utilization; restoration of degraded vegetation in southeastern Brazil; and the protection of landscape and biodiversity in forest ecosystems.

The session recommended: the need for studies to build a global view of forest degradation and identify hotspots for action; the improvement of extension and education programmes; and the inclusion of biodiversity in forest resource assessments.

Conservation and Utilization of Forest Genetic Resources:

A special paper addressed forest conservation through maintenance of genetic resources, stressing handling methods, application, valuation, databases and multi-subject linkages. Others special papers considered: strategies for prioritized genetic resource conservation based on adaptive value and plasticity; South African clonal programmes for micro-propagation of somatic embryos for commercial production and genetic conservation; and a Mexican network of germplasm banks. Voluntary papers considered: *in situ* and *ex situ* measurement problems in countries with economies in transition; conservation and utilization of natural tree populations in Yugoslavia; international partnership and resource mobilization on bio-active compounds and *ex situ* conservation; natural evolutionary processes versus species preservation; and biogenetically developed poplar clones for pulp and paper.

The meeting called for: assistance for capacity-building through technology transfer, networking and support for collaboration; genetic conservation programmes that are compatible with other national strategies; parallel *in situ* and *ex situ* strategies where socially, biologically and economically feasible; further research on new biotechnologies to improve forest genetic resources; and continued discussions in international fora to develop an international framework for national action.

PROTECTIVE AND ENVIRONMENTAL FUNCTIONS OF FORESTS

The position paper focused on the role of forests in protecting against soil erosion, preserving biodiversity in fragile ecosystems and combating land degradation.

Watershed Management, Torrent and Avalanche Control, Land Rehabilitation and Erosion Control: A special paper on integrated watershed management highlighted rehabilitation of degraded watersheds and prevention of watershed deterioration. Additional papers discussed comprehensive strategies for overhauling watershed management in tropical mountain areas and

technical issues in research on maintenance of mountain watersheds. Voluntary papers discussed: the effect of changes in fog forests on water collection in Colombia; effects of selective cutting on streamflow characteristics of watersheds in mature forest ecosystems; natural disaster protection for forests; and an international authority for management of the Shat-al-Arab watershed.

The session concluded that watershed management requires: a cross-sectoral, multi-dimensional approach; appropriate policies, legislation and financial support; dialogue at national and international levels; enabling conditions for private sector involvement; monitoring and evaluation; conflict management tools; equitable compensation to upstream populations for goods and services provided; and greater knowledge of mountain ecosystems, women's roles and mechanisms for institutional and inter-sectoral cooperation.

The Role of Forestry in Combating Desertification: A special paper focused on afforestation, natural vegetation management, and agroforestry and silvo-pastoral systems for desertification control. Voluntary papers were presented on: growth and production models for Argentine windbreaks; afforestation with fodder shrubs in Chile; energy plantations for afforestation in India; sand dune afforestation with stone and cluster pines in Turkey; and use of the traditional Libyan oasis to combat desertification.

The session recommended that: human well-being be considered a priority for forestry in drylands, linking forests to food security and poverty alleviation; national forest plans be revised to encompass international commitments; planning and implementation take a grassroots approach; foresters be retrained to meet changing requirements; further decentralization and empowerment of local institutions be encouraged; the potential of plant formations in dry zones as a source of food, bio-active and medicinal products be assessed; and devices for efficient action against land degradation be increased.

Protection of Wetlands and Coastal Lands and Their Habitats: A special paper on forests' role in the protection of wetlands and coastal habitats highlighted the Ramsar Convention's role in encouraging wise use of forested wetland areas. Voluntary papers were presented on: coastal vegetation management in France; seaweed use in coastal vegetation restoration; classification of important bird areas in Turkey; and wetland protection in Turkey.

The session stressed: urgent measures to develop knowledge on wetland forests; the need to identify innovative approaches to river basin management; and allocation of resources for wetlands as wildlife and waterfowl habitat.

PRODUCTIVE FUNCTIONS OF FORESTS

The position paper discussed challenges in enhancing the productive functions of tropical rain forests and addressed natural forest management, logging, silviculture and enrichment planting.

Afforestation and Plantation Forestry: A special paper considered the environmental, economic and social sustainability of plantation forests and the dichotomy between simple plantations and complex "community forestry" forms. A second special paper focused on biological sustainability in wood production for the tropics, and highlighted data suggesting that up to three timber harvest rotations are sustainable. A third paper targeted improving tropical plantation productivity through proper land-use policies, C&I and monitoring and databanks. Voluntary paper topics included: mechanization techniques for industrial plantations to meet Turkish wood needs; trials of exotic coniferous species for industrial plantations; forest product quality from planted stands of quick-growing species in tropical countries; teak timber production in intensively managed plantations in the tropics; and impediments to sustainable development of forests for the pulp and paper industry in India.

The session recommended: maintenance of the hydrological cycle through good management; consideration of the social impacts of plantations; policies on land-use and plantation forestry; data on national plantation resources; development and implementation of C&I for sustainable forest plantation management; expansion of forest plantations for broad objectives; and international collaboration in research, development and funding of plantation programmes, particularly in developing countries.

Silviculture and Management of Production Forests: A special paper was presented on practical steps contributing to SFM, stressing the importance of: long-term tenure and tenure security; permanent definition of forest boundaries; balance between wood production and social and environmental objectives; effective, flexible management plans; continuous forest inventory; and monitoring. Another special paper was presented on sustainable multi-functional management of natural forests, which enables forests to be economically productive while addressing sustainability criteria and incorporating social and ecological functions of forests. Voluntary papers were presented on: contributions of modeling to the management of humid tropical forests; the Instant Yield Program for growth model calibration, yield table generation and stand data projection; natural forest dynamics by three-dimensional model interpretation; silviculture on the Menominee Indian Reservation; the effect of wind damage on rotation length on plains in New Zealand; and conversion of chestnut coppices into high forest.

The meeting concluded that: forests should be managed under a multi-functional approach; involvement of local communities in management planning ensures forest protection and long-term productivity; care must be exercised when using models to predict yield and growth of tropical forest stands, as they tend to be site- and species-specific; growth simulation models must be practical and easy to apply; technical and socio-cultural aspects should be considered in the development of C&I; and indicators should be limited in number, simple and well-defined.

Forest Harvesting and Transportation: A special paper discussed reducing the need for new harvesting areas by increasing yield through: plantations; wood residue reduction; codes of practice; new technologies; and better planning, supervision and training. A second paper addressed selective tree harvesting to achieve SFM. Voluntary papers discussed: environmental impacts of harvesting in mountainous terrain; an electronic database on environmental consequences of logging; soil and tree disturbances in logging; improvement of timber utilization in production; and joint implementation funding for sustainable logging projects.

The session called for: increased yields per hectare; improved efficiency through better planning, control and training; use of new harvesting technologies; incentives and policies for the adoption of reduced impact harvesting and transport systems; local and regional guidelines for environmentally sound forest practices; procedures for assessing the sustainability of forest practices; forest harvesting practice codes; and further consideration of forest management and certification programmes adapted to local ecological and socio-economic conditions.

Non-wood Forest Products: A special paper was presented on the importance of non-wood forest products (NWFPs) and strategies for sustainable development, emphasizing the social and economic importance of NWFPs to rural development. It recommended adoption of a sustainable management strategy that addresses the need for: a new silviculture system; improved tenurial rights; micro-level management; and marketing and conservation measures. Voluntary papers were presented on: harvesting techniques in tapping Philippine resins; marketing of NWFPs; commercial and sustainable extraction of NWFPs; the economic and productive potential of palm species for semi-arid areas; value-added processing of NWFPs; the economic feasibility of tapping a species of pine in Brazil; and Botswana's policy to promote rural community strategies for sustainable resource and NWFP use.

The meeting recommended: development of participatory programmes to assess NWFP resource bases and plan resource management for the sustainable production, harvesting and use of key NWFPs; greater attention to research and development of technologies and their transfer to major users for the rational production, trade, marketing and use of NWFPs; development of new market opportunities; improvement of tenurial rights of local producers; adoption of measures for sustainable harvesting, especially in fragile areas; and establishment of incentives to promote NWFPs. The meeting also suggested that FAO provide a framework for national policy formulation and international cooperation on NWFPs and assistance to countries for capacity-building to promote and develop sustainable NWFP activities.

Wood Fuel and Biomass Energy: A special paper discussed future energy demands and sources and carbon emission abatement through renewable energy. A special paper on forest industry residues as a fuel in Southeast Asia found opportunities for energy production from residues in off-grid locations, areas with strict environmental regulations and locales without a wood residues market. Voluntary papers addressed: biomass and energy forestry for energy balance in Turkey; bio-fuels as an alternative to fossil fuels in Estonia; and forest replanting to achieve sustainability by fuelwood consumers in Brazil.

The session recommended: the propagation and implementation of newly developed technologies in order to make wood fuel production more competitive and cost-effective; the dissemination and application of new models and approaches for forest inventories to estimate biomass for energy use; the dissemination and implementation of new approaches to tree plantation management; the establishment of new communication links to encourage the use of wood fuel; and the use of fiscal, economic and environmental policies to promote bio-energy.

Grazing in Rangelands and Forest Lands: A special paper on forest grazing discussed how Maghreb countries address over-grazing by incorporating popular participation and applying sustainable and silvo-pastoral management systems of pastureland rotation.

The session concluded that: grazing in forests should be considered in an integrated village land use context; silvo-pastoral systems should include conservation of biodiversity and soil erosion control; land tenure systems should be compatible with land capabilities and accepted by user communities; and governments should assist pastoral communities in adapting to livelihoods with less dependence on natural resources.

Wildlife, Tourism and Other Products from Wildlands: A special paper described the importance of conservation and tourism in Africa. It outlined the threats to wildlands and stressed the importance of involving local communities in planning and managing parks and of sharing the benefits accrued from parks. Voluntary papers described: strategies for integrating forestry operations into wildlife conservation and management in central Africa; the effects of selective logging on fruit-eating birds in lowland Malaysian forests; pre-planning for development of eco-tourism in Iran; and ecological rehabilitation in response to declining forest cover and eco-tourism in the Himalayas.

The session concluded that: the combination of conservation, tourism and local community development can provide substantial economic returns if well-managed; the designation of conservation units should follow biological and socio-economic criteria and be integrated into national land-use and economic planning; conservation and tourism should respect local values and culture and involve and promote local lore and products; eco-tourism should be encouraged and developed; SFM should include guidelines and measures to preserve wildlife in forests; and conservation issues in transboundary areas with high levels of biodiversity should be addressed with strong cooperation and a common approach.

ECONOMIC CONTRIBUTION OF FORESTRY TO SUSTAINABLE DEVELOPMENT

The position paper highlighted the need for macroeconomic policies to ensure SFM and the need to expand economic evaluation to incorporate non-market based benefits.

Processing and Forest Industries: A special paper detailed: the necessity of management for desirable forest conditions; opportunities for profits from wood removal to finance forest management costs; the interdependence of environment and economy; and future environmentally friendly technologies that will emphasize conservation of wood resources. Voluntary papers discussed: the relationship between stand management and lumber quality in the US; the relationship between log quality grades and sawnwood quality grades; management strategies to meet changing demand for wood products in Russia; polystyrened bamboo's resistance to pests in Indonesia; and fiber morphology and chemical composition of eucalyptus grown in Turkey.

The session recommended: the elaboration of voluntary codes of conduct for the wood processing industry on aspects pertaining to local community and environmental considerations; the use of

life-cycle studies for forest products to address consumers' concern for the environment; and recognition of NWFPs and other forest services as sources of income generation and contributors to sustainable development.

Forests, Industrialization Strategies and Employment: A special paper on forests and employment highlighted misconceptions about forest-based employment, including over-statement of current employment, future employment opportunities and informal forest-based employment. It suggested that employment be incorporated into C&I for SFM.

The session recommended that: forest-based employment be addressed in forest planning and management; strategies be developed to promote investments in human resources development in the forestry sector; and research be conducted to determine the actual and potential employment benefits from forests.

Demand for Forest Products, Consumption Patterns and Marketing: A special paper noted that forest sector policies are influenced by macroeconomic policies and hence SFM is not dependent solely on forest management practices. Other special papers emphasized that high urbanization rates in the future will create an increased demand for sophisticated wood-based products, and described market trends in Korea, underscoring the increase in softwoods and recycled paper. Voluntary papers noted: the growth in demand for forest products in China; the need for change in infrastructure to make wood more available; the decrease in demand for species variety that accompanied an increase in income in Costa Rica; and the need to use lesser-known species.

The session recognized: the challenge posed by international environmental issues on forest products trade; that trade intervention is neither the most effective or efficient approach to resolving environmental problems; and that consumers know little about the attributes of competing products.

Forest Products Trade and Certification: A special paper on forest certification in Indonesia described certification as a method for correcting imperfect markets and an effective means for achieving sustainable development and market competitiveness. It concluded that certification creates prospects for a niche market, long-term business profitability and public relations value. Voluntary papers addressed: eco-labeling of timber in Costa Rica; forest products trade and certification in Nigeria; C&I and certification of forests in France; an economic assessment of certification's market impact; and life-cycle assessment of forestry as the basis for an ecological evaluation of forest products.

The session concluded that certification is still in the formative stage and that considerable work, improved information and negotiation will be required before wide acceptance of certification is feasible.

The Role of the Private Sector, Economies in Transition and Issues of Privatization in Forestry: A special paper on forests in countries with economies in transition focused on recent revisions of policy and legal frameworks, changes of forest ownership and areas of assistance and capacity-building needs. Another special paper detailed the private sector's role in sustainable management of humid tropical forests. Voluntary papers examined: private European forests and sustainable development; small forestry plots in southern Europe; and financing of private forests.

The session's recommendations included: provision of international assistance to economies in transition; differentiation of what should be privatized and what should remain under state control; internationally facilitated cooperation between countries in transition to exchange experiences between research institutions and forest owners; action to prevent excessive fragmentation of forestry management due to privatization; and retention of state forest administration in situations where forests are managed through concessions or privatization of management services.

Valuation of Forest Goods and Services and Incorporation into National Accounts: A special paper outlined mechanisms to measure and capture the multiple values of forests and to transmit this information to decision-makers. One voluntary paper suggested that tropical forestry may not be financially viable based on timber production alone but can be economically viable if social values are taken into account. Other papers discussed: spatial benefits of intensive forestry; the contribution of appropriate forest pricing policies to SFM; charging of beneficiaries for the various

functions of forests; cost-effectiveness analysis of woodland ecosystem creation; indirect incentives for improved forest management; and a simplified approach to timber valuation.

The meeting noted a growing interest in incorporating changes in forest quality and quantity into national income and product accounts and suggested the use of satellite accounts as an initial approach; stressed the need to balance consideration of the full range of forest outputs, methods available to measure these values, and the timelines within which this information can contribute to decision-making; and suggested that mechanisms be developed to ensure that decisions reflect the value of positive externalities and the cost of negative externalities.

SOCIAL DIMENSIONS OF FORESTRY'S CONTRIBUTION TO SUSTAINABLE DEVELOPMENT

The position paper stated that the focus of social forestry is on participation in forest management and identification of what people want and get and who controls forest resources. It noted that there are patterns of change in forest dependency, and interventions regarding forest management should recognize and incorporate this change.

Forests, Quality of Life and Livelihoods: A special paper outlined the various forest services and emphasized recreation, tourism and NWFPs as increasingly important in maintaining sustainable livelihoods of forest dwellers. Another special paper used the example of the Netherlands to highlight the complexity of forest management in densely populated areas. Voluntary papers addressed: the impact of social pressure on spatial planning; cultural heritage preservation in historic forest reserves; a method for determining natural areas for national park status; and difficulties experienced by rural women in the Black Sea region in maintaining their livelihoods when men migrate to urban areas seeking employment.

The meeting recommended that: mechanisms and procedures for multi-functional forest management be developed; policy-makers identify and implement ways of measuring the range of non-material goods and services from forest areas in economic terms; and developed countries and countries with economies in transition learn from the participatory approaches and methodologies for natural resource management used in the South.

The Vision and Role of Community Forestry in Sustainable Development: A special paper outlined challenges to the process of linking conservation with rural development. A guest presentation provided an overview of forest policy in Indonesia. Another special paper on forest policy in Nepal documented a change towards community empowerment. Voluntary papers were presented on: community forestry in Gambia, Turkey, Mozambique, Indonesia and Nepal; research into municipal forests in Sweden; wasteland afforestation in India; community butterfly conservation in Papua New Guinea; joint forest management in India; market pressures on community forestry in India; and regional forest agreements in Australia.

The session concluded that: community forestry policy should be placed within the national and international context; the impact of global economic trends on nations and communities should be recognized; and a holistic rather than a sectoral approach should be applied to address the impact of high population growth rates on natural resources.

Better Addressing Conflicts in Natural Resource Use through the Promotion of Participatory Management from Community to Policy Level: A special paper on community conflicts suggested that conflict was an opportunity for change. Conflicts often arise from gaps between government policies and their implementation. Voluntary papers were presented on: conflict resolution through development; conflict leading to community participation in Mali; an inter-regional project on community participation; and urban forest use in Turkey.

The session recognized the need to develop means to implement the principles and guidelines outlined in the report of the satellite meeting on integrating conflict considerations into national policy frameworks and to reiterate the importance of conflict management training.

The Role of NGOs and Special Groups: A special paper suggested that the work of NGOs has evolved from wilderness protection to a solution-based approach. It concluded that the influ-

ence of NGOs is likely to increase. A special report on the role of Turkish NGOs proposed 55 forest conservation principles. It urged governments to protect old growth forests, create protected areas and adopt timber certification. Voluntary papers were presented on: women's involvement in forestry in Bangladesh; the Latin American Forest Network's participation in international debates; women's participation in Indonesia; and NGO tree planting in Turkey.

The session recommended that: NGOs find a balance between an independent voice and integration into the forestry mainstream; forestry NGOs strike a balance between environmental activism and development efforts; NGOs realize that governments are often a necessary partner in SFM; and NGOs develop a better understanding of the positive roles they can play in SFM.

Forest Dwellers, Indigenous People, Women and Local Communities: A special paper discussed the negative impacts of forest policy on indigenous peoples, forest dwellers, women and local communities and emphasized the need to shift from centralized control to community ownership and control of forest resources. Another special paper addressed Canada's progress in improving aboriginal participation in SFM. Voluntary papers discussed: the interrelationship between political conflict and the status of natural resources in India; indigenous knowledge used for sustainable livelihood in India; the role of rural women in community forestry in Turkey; and Mexico's social forestry sector.

The meeting stressed the need to recognize traditional knowledge that enables sustainable management of local resources and highlighted the potentially positive role of local organizations in providing mechanisms to improve communities' access to external information and resources.

Communication Methods, Extension and Public Awareness Raising: A special paper on development communication proposed three roles for communication: increasing visibility; promoting public awareness; and facilitating a platform for stakeholder negotiation. Voluntary papers were presented on a cross-cultural approach to development communication and an environmental education plan in Venezuela.

The session concluded that: international and regional extension needs to be expanded; local knowledge should be incorporated into forestry extension; and the forestry profession must improve communication with politicians, journalists and the public.

POLICIES, INSTITUTIONS AND MEANS FOR SUSTAINABLE FORESTRY DEVELOPMENT

The position paper discussed: new trends in public forestry administration; formulation and implementation of forestry policies; sectoral forest planning; human resources development; priorities for international forestry research; and international cooperation and mobilization of resources for sustainable forest development. It suggested that forestry policy must address the political, social and economic problems of each country, and forestry scientists and professionals must be familiar with the socio-economic realities of forests.

New Trends in Public Forestry Administration: A special paper outlined external trends such as globalization, recent organizational arrangements and pros and cons of different models of forestry administration. Another special paper documented forestry administration reform in Slovenia. Voluntary papers covered: opportunities for activities implemented jointly in Costa Rica; the possible need for a world forestry organization; benefits of joint implementation for tropical forest management and international policy coordination; and trans-border forestry cooperation in Europe.

The session recommended: improvement of the capacity of forestry administrations to address the multiple roles of forests; creation and improvement of investment mechanisms to achieve SFM; restructuring of forestry administrations to respond to society's demands on forestry; available technologies and the influence of other sectors on forestry; and the creation of international mechanisms to coordinate organizational activities, provide good leadership and improve governance in world forestry.

Formulation, Analysis and Implementation of Forestry Policies: A special paper on formulation and implementation of forest policies highlighted legally-binding juridical tools, economic instruments and market-led measures, and stressed that the

optimum mix of policy tools must embody a balance between the different mechanisms and benefit local conditions. Another special paper presented a prototype expert system model that uses C&I to assess SFM policy. Voluntary papers addressed: use of criteria to implement a framework for sustainable public forest management in Quebec; adjustment to changes in forestry based on a landscape approach; the changing role of forest science in natural resource policy; WWF/IUCN's global forest conservation strategy; and comparison of ecosystem management with multiple-use, sustained-yield management.

The meeting recommended that: wider consultations take place to include social, economic, environmental and institutional considerations in policy formulation and implementation and to emphasize the inter-sectoral aspects of forestry policy; strategies be developed to improve policy implementation and coordination of different interests at all levels, including those of the public and private sectors; consideration be given to establishing a joint implementation mechanism for forestry activities; and ways be explored to coordinate the activities of various international organizations involved in forestry policy formation and to develop guidelines to support policy implementation.

Forestry Sector Planning: Voluntary papers considered: the use of a social accounting matrix to examine income distribution effects of alternative forest management regimes in the US Great Lakes; Pacific Rim wood fiber demand and supply prospects; scenario modeling as a tool for assessing C&I for SFM of European forests; and functional planning in the rational use of forest resources.

The meeting recommended that: greater emphasis be given to socio-economic aspects in forestry sector planning; forestry sector planning be integrated into national economic planning, taking cross-sectoral linkages into account; future levels of product substitution of traditional wood products with low-value forest products and NWFPs be taken into account; feed-back mechanisms be used to monitor the effects of implementation of forest plans and take appropriate follow-up actions; and corruption and irregular practices that hamper the implementation of SFM be addressed.

Human Resources Development, Education and Training: A special paper introduced the importance of education to address natural resource degradation through curricula that encompass: social, biological, economic and environmental factors and local knowledge; research; practical training; and technical cooperation. Another special paper emphasized restructuring forest science curricula to meet fundamental changes in forestry and labor markets. Voluntary papers documented: forestry education reform in Sudan; partnering of university, industry and government for forestry technology training in the US; and communication fora for human resources development in Indonesia.

Recommendations drawn from the session include: the development of an integrated interdisciplinary approach and curricula for forestry education programmes; the establishment of partnerships between educational institutions, governments, industry and NGOs on a national and international level; and increased flexibility and mobility in forestry education so that students can benefit from opportunities outside the traditional forestry discipline.

Research and Transfer of Technology: The special paper explored possibilities for improving the interface between research and policy-making in forestry, stressing the need for more credible, policy-oriented research, openness to research by policy-makers, and improved dialogue and institutional mechanisms. In this session, IUFRO Board Members and session participants engaged in a panel discussion. Speakers emphasized: limited research capacity in developing countries; lack of funding for forestry research, particularly on politically sensitive issues; the need for dialogue and mutual understanding between scientists and policy-makers; a mismatch between research priorities and policy needs; the different time horizons of science and politics; and targeting of lobbyists and the media to transmit research results. Voluntary papers were presented on: an information management system to support research and technology transfer in forest plantations; analysis for priority-setting in forestry research; and the need for mechanisms to facilitate dialogue between forestry scientists and policy-makers.

The meeting drew the following conclusions: the role and importance of research in policy-making processes will increase and research capacity is insufficient to meet the information needs of policy-makers, particularly in developing countries and countries with economies in transition. Improving interactions between the research community and the users of research results, utilizing existing information more efficiently and making forestry research more policy- and society-oriented will help, but will not resolve this basic problem.

International Cooperation and Resource Mobilization for Sustainable Forestry Development: This topic was addressed in a Plenary session on the penultimate day of the Congress, and is summarized in the preceding section of this report. The conclusions and recommendations note that the flow of funds for forestry development and research is inadequate, biased, badly prioritized and uncoordinated. Recommended measures include: innovative and effective mechanisms for generating funds; strong partnerships among all sectors and institutions; improved efficiency in utilizing available funds; a balance between environment and development in programmes and projects; discussions between donors and recipient countries on projects; national forest programme processes for building consensus; and regional coordination mechanisms.

ECO-REGIONAL REVIEW

Taking Stock of the Various SFM Processes: This topic was addressed in a Plenary session on the second day of the Congress, and the summary can be found in the preceding section.

Exchange of Experience and State of the Art in SFM by Eco-region: Boreal Forests: A special paper on the state of Russian boreal forests and the impact of natural processes and human activity examined the effects of fire, harvesting practices, pests, disease and atmospheric pollutants on Russian forests.

Participants noted that further research is needed to better understand the evolution and functioning of boreal forest ecosystems and recommended increased monitoring and management of anthropogenic influences such as harvesting and air pollution on ecosystems.

Temperate Forests: A special paper on perspectives on temperate forest management outlined the history of temperate forests. Another special paper was presented on SFM of privately-owned forests in Europe. A guest speaker, Kalevi Hemil, Minister of Environment of Finland, discussed: IPF follow-up; national forest programmes; C&I; and national implementation of SFM. Voluntary papers were presented on: reforestation; sustainable forest industry practices; and SFM in various countries.

The session recommended that: private forest owners be increasingly included in the national and international debate on SFM; techniques and methodologies for the production of wood and wood products be viewed as dynamic tools that should be further developed in light of increasing scientific knowledge; and incentives be created to encourage governments and private owners to actively pursue SFM as an investment in the present and the future.

Mediterranean Forests: A special paper highlighted conditions, constraints, policy orientations, implementation achievements and programmes in the Mediterranean eco-region. Voluntary papers discussed: strategies to recover degraded land and conserve water resources in Morocco; improvement of seedling establishment of native species in dry and semi-arid environments in Spain; and the rehabilitation of degraded areas in Cyprus. A report outlining the conclusions and recommendations of the 1997 Iberian Forestry Congress was presented.

The session concluded that: forest and watershed management projects should be integrated to overcome regional, social and economic constraints; intergovernmental cooperation on forestry is necessary; and ongoing research programmes in the Mediterranean should be promoted and harmonized. Participants recommended that the Congress give strong support to the Committee on Mediterranean Forestry Questions and called upon all countries of the region to join the Committee and actively participate in its sessions and activities.

Dry Tropical Forests: A special paper emphasized: the emergency situation in dry tropical areas and the need for forest protection; the use of the patrimonial approach; the importance of

training, research and aid and investment; and the use of journalism to bridge the gap between scientists and policy-makers. Voluntary papers highlighted: pilot initiatives for participatory forest management in Benin; the use of controlled fire and grazing in managing Sudano-Guinean dry forests; transfer of responsibility for forest stand management to waterside populations to improve fuelwood exploitation management in Niger; simplified management of silvo-pastoral land based on local knowledge in Mali; and the need for data-gathering and further research to address effective conservation and utilization of African dry forests.

The meeting recommended that: dry tropical forests be managed for multiple use at the local level; the need for dry zone forest management to respond to many uses be fully considered in the training and retraining of foresters in tropical drylands; the study of natural forest management in the dry tropics be translated and distributed; a second series of regionally focused studies be undertaken on SFM in dry tropical forests in Africa, Asia and Latin America; and cooperation be further promoted, especially in support of regional and sub-regional networks on dryland forest management and relevant research domains in the tropics.

Humid Tropical Forests: A special paper described primary forest functions, forests' contributions to sustainable development and factors influencing forestry policy, and compared forest management systems. Voluntary papers discussed: promotion of sustainable management systems in Indonesia; a model to determine current and optimal forest cover in Côte d'Ivoire; contributions of remote sensing to forestry inventory in Venezuela; and management of naturally unstable forests in Venezuela.

Participants recommended that: vigorous action be taken by tropical countries to adapt, test, further refine and implement integrated strategies for SFM at both national and forest management unit levels; evaluation of forest policies be intensified with due attention to national realities and feasibility of application and implementation; special attention be paid to ensuring that pricing and stumpage values accurately reflect forest values and the cost of SFM; efforts be made to evaluate, assess and monitor changes in biodiversity; and research on ecology, silviculture, management and functioning of these ecosystems be strengthened.

Mangroves and Other Coastal Forests: A special paper on the sustainable management of coastal mangrove forests highlighted the values of mangroves in fish and wildlife conservation, protection from wave action, erosion control and the prevention of salt water incursion. It noted the alarming rate of mangrove conversion to other uses.

The session recommended that: awareness programmes be expanded to create an understanding of the ecological and economic importance of mangrove systems; multi-disciplinary teams be employed for the management and conservation of mangroves; and inter-regional cooperation be developed to share experience in the management of mangroves.

ANTALYA DECLARATION

On the first day of the Congress, the Procedures and Nominations Committee nominated fourteen individuals to participate in a working group to draft the Antalya Declaration. These nominees were announced and approved by acclamation at the opening Plenary, and worked on drafting the Declaration throughout the course of the Congress. On the final morning of the Congress, a meeting was held in which a draft was circulated and amendments suggested. The only major amendment was in reference to a recommendation promoting the use of plantations; the contention was that not all countries need to reduce pressure on natural forests through the use of plantations.

The Declaration contains seven preambular paragraphs and seventeen recommendations. In the preamble, XI WFC participants: underscore that all types of forests provide crucial social, economic and environmental goods and services and that their sustainable management is essential for sustainable development; recall the Forest Principles and forest-related chapters of Agenda 21 adopted at UNCED; recognize the progress made since UNCED to assess the state of the world's forests and to better understand and advance SFM, but also recognize the need for further action within and outside the forest sector; emphasize that reversing the rapid rate of forest loss and degradation in many regions and achieving SFM depends on increased political will by all countries; note the IPF's

proposals for action; welcome the decision by UNGASS to establish the IFF to promote implementation of the IPF's action proposals and continue the international dialogue; and acknowledge the informal meeting of forestry ministers on 13 October.

The Declaration calls on:

- countries to demonstrate increased political will to overcome obstacles to SFM;
- forestry professionals to take the lead in adjusting education curricula, promoting participatory forest planning and decision-making processes, and enhancing training of forestry professionals, with particular attention to the role of women and youth;
- countries, international organizations and major groups to cooperate to implement the IPF's action proposals and ensure that further international forest policy dialogue is open and transparent;
- countries and the international donor community to more effectively contribute to and enhance the mobilization of domestic and international financial resources and environmentally sound and appropriate technology transfer, on preferential terms as mutually agreed, to build capacity in developing countries and economies in transition to better inventory, assess, monitor and manage forests for multiple benefits, including through the use of joint implementation programmes;
- countries and international organizations to adopt a cross-sectoral approach to national policies;
- countries, international organizations and forestry professionals to work in open and participatory partnership with all interested parties;
- countries and international organizations to further develop methodologies and mechanisms for valuation of forest goods and services and for facilitating the integration of non-traded forest benefits into markets and public decision-making processes;
- countries and research organizations to identify and undertake priority research activities in response to society's needs and to widely disseminate the results;
- countries to develop and apply national-level C&I for SFM;
- countries, international organizations, major groups, the private sector and other interested parties to promote greater public awareness of the roles and problems of forests and the work needed to improve their management;
- countries, international organizations and NGOs to foster community forestry and agroforestry programmes and enhance extension services to forest owners and users;
- countries and international organizations to recognize that, in many regions of the world, fast-growing tree plantations can contribute to SFM by meeting subsistence needs and can complement, and/or reduce pressure on, natural forests through increased supply of forest goods and services;
- countries to develop, implement and review policies, plans and management practices aimed at minimizing the destructive nature and extent of major wildfires on forest lands;
- countries to prepare and implement national forest programmes;
- countries and the international donor community to give increased attention to the rehabilitation of degraded forest land through elaboration and implementation of national plans for combating desertification;
- international organizations, academic institutions and forestry professionals to raise awareness of the importance of biodiversity, including conserving, enhancing and sustainably utilizing forest-related genetic resources; and
- forest industries to adopt and implement voluntary codes of conduct to contribute to SFM.

The Declaration was adopted by XI WFC delegates in the closing Plenary.

THINGS TO LOOK FOR**WORKSHOP ON IMPLEMENTATION OF ARTICLE 8(J) OF THE CONVENTION ON BIOLOGICAL DIVERSITY:**

The workshop on implementation of CBD Article 8(j) (indigenous knowledge) will take place from 24-28 November in Madrid, Spain. For information, contact the CBD Secretariat, World Trade Centre, 393 St. Jacques Street, Montreal, Quebec, Canada H2Y 1N9; tel: +1-514-288-2220; fax: +1-514-288-6588; e-mail: chm@biodiv.org; Internet: <http://www.biodiv.org>.

THIRD CONFERENCE OF PARTIES TO THE FRAMEWORK CONVENTION ON CLIMATE CHANGE:

COP-3 of the FCCC will take place in Kyoto, Japan from 1-10 December 1997. For information, contact the FCCC Secretariat in Bonn, Germany; tel: +49-228-815-1000; fax: +49-228-815-1999; e-mail: secretariat@unfccc.de; Internet: <http://www.unfccc.de>.

INTERNATIONAL TROPICAL TIMBER ORGANIZATION:

The 23rd session of the International Tropical Timber Council and associated sessions of the Permanent Committees will be held in Yokohama, Japan from 1-6 December 1997. The 24th session will be held in Libreville, Gabon from 20-28 May 1998. For information, contact the ITTO Secretariat in Yokohama, Japan; tel: +81-45-223-1110; fax: +81-45-223-1111; e-mail: itto@mail.itto-UNET.OCN.NE.JP; Internet: <http://www.itto.or.jp/>.

INTERGOVERNMENTAL FORUM ON FORESTS: The IFF will hold its second session in June/August 1998 in either Geneva or New York. The third session will be held in February/March 1999 in Geneva and the fourth session in February/March 2000 in a venue to be determined. For information, contact the IFF Secretariat, Two UN Plaza, 12th Floor, New York, NY 10017 USA; tel: +1 (212) 963-6208; fax: +1 (212) 963-3463. Internet: <http://www.un.org/dpscd/dsd/iff.htm>.

FOURTH CONFERENCE OF PARTIES TO THE CONVENTION ON BIOLOGICAL DIVERSITY: COP-4 is scheduled for 4-15 May 1998 in Bratislava, Slovakia. For information, contact the CBD Secretariat (see above).

SECOND CONFERENCE OF PARTIES TO THE CONVENTION TO COMBAT DESERTIFICATION: COP-2 will be held from 24 August - 4 September 1998 in Dakar, Senegal. For information, contact the CCD Secretariat, tel: +44 (22) 979-9419; fax: +44 (22) 979-9030; e-mail: secretariat@unccd.ch; Internet: <http://www.unccd.ch>.

EIGHTH SESSION OF THE FAO COMMISSION ON GENETIC RESOURCES FOR FOOD AND AGRICULTURE: The eighth session of the CGFRA will take place during the second half of April 1999. For information, contact FAO: Viale delle Terme di Caracalla, 00100 Rome, Italy; tel: +39-6-52251; Internet: <http://www.fao.org> or <http://web.icppgr.fao.org>.

A BRIEF ANALYSIS OF THE XI WFC

The high attendance rate and breadth of discussion at the XI World Forestry Congress indicated that it had considerable success in fulfilling its objectives of identifying actions, responding to challenges, and considering new directions to orient forestry towards sustainable development. Keynote speeches provided a useful overview of political and economic pressures facing the forestry sector, highlighted progress and outlined avenues for future action toward SFM as we move into the 21st century. The enthusiasm reflected by the number of papers submitted at technical sessions signals that the forestry sector is showing the will to rise to these enormous challenges.

The major outcome of the Congress, the Antalya Declaration, addresses important issues, *inter alia*, the international forest policy dialogue, financial resources, non-traded forest benefits, wildfires, desertification and biodiversity, and advocates the use of innovative approaches, including open and participatory partnerships, community forestry, cross-sectoral linkages, criteria and indicators and voluntary codes of conduct. The only major point of contention in the discussion of the Declaration, which revolved around differing perceptions of the roles of fast-growing tree plantations and natural forests in SFM, revealed a familiar divide among countries regarding the definition of problems and necessary solutions toward SFM that resonated of related debates from the IPF.

Congress participants picked up other familiar themes from the current international debate on forests, including international funding for forests, joint implementation, C&I and participation.

Participants highlighted the inadequacy of funding for the forestry sector and the ongoing need and desire for new and additional financial resources, possibly through an "international forestry fund." Ideas regarding the source of financing for such a fund, however, were not forthcoming. Though it was noted that the private sector is the major financial contributor to the forest sector, some participants pointed out that it is unlikely to sponsor infrastructure and human resource development or projects in poorer countries with low forest cover. As a result, funding needs for these critical aspects of SFM remain unfulfilled.

Joint implementation programmes were repeatedly suggested as a means of sequestering carbon in the forest sector and therefore contributing to efforts to combat global warming. While joint implementation may be an innovative means of funding and promoting cooperation for forest protection, as suggested by a number of participants, this optimism may be premature as the modalities for initiating joint implementation have yet to be determined under the climate change convention.

Presentations on the various regional processes associated with criteria and indicators revealed substantial progress toward a global acceptance of the concept. This is clearly an area where the technical and scientific research that went into preparation of papers for the Congress and that will likely be inspired by the Congress will be able to make a significant contribution to tackling the challenges to SFM.

The importance of participation emerged as a strong theme throughout the Congress. As many participants remarked, SFM is only achievable with effective participation of all interested parties, and the realization of this goal is part of a learning process. Activities and discussions undertaken at the Congress, including special Plenaries on women and youth in forestry, a satellite meeting on community forestry and a number of technical sessions that addressed the issue, seem to suggest that this process is well underway. In addition, the Antalya Declaration calls for participatory approaches in a number of its recommendations; however, some participants noted that the process of formulating the Declaration was not as participatory as it might have been.

It was an accomplishment that such a large number of participants came together and engaged in discussions on a wide range of topics related to forests, although some participants felt that there was limited opportunity for synthesis and analysis of some of the key unresolved issues in the forestry debate. Overall, however, the Congress provided a forum for much-needed dialogue between forestry practitioners, scientists and policy-makers and brought together an unprecedented number of participants to share an impressive array of research and ideas about implementing SFM on the ground. This interchange will undoubtedly bear the fruit of further research and collaboration and improved understanding of ecosystems and techniques towards implementation of forestry for sustainable development in the 21st century.