Assessing and reporting forest carbon stock changes: a concerted effort?

D. Schoene

At the United Nations Conference on Environment and Development in June 1992, 154 heads of State and representatives signed the United Nations Framework Convention on Climate Change (UNFCCC). It entered into force in March 1994. By 2001, 186 countries and the European Community had ratified or acceded. Parties eventually decided that the developed countries’ original aim of returning to 1990 emission levels by 2000 was inadequate. In 1997, parties meeting in Kyoto, Japan consented on a protocol under which industrialized countries would reduce their combined greenhouse gas emissions by at least 5 percent below 1990 levels during the period 2008 to 2012. Countries may fulfill their individual commitments by reducing emissions from sources, e.g. smokestacks, or by recapturing carbon dioxide (CO2) in sinks, e.g. forests and soils. As of 1 August 2002, 76 countries had ratified the Kyoto Protocol, among them 22 from the industrialized countries. These 22 countries accounted for 36 percent of the industrialized countries’ 1990 emissions. This percentage must reach 55 for the Kyoto Protocol to enter into force.

Following four years of negotiations since the initial agreement on the Kyoto Protocol, parties to UNFCCC set a new landmark in their efforts to arrest climate change with the Marrakesh Accord in November 2001 (UNFCCC, 2002). Previously, parties had acknowledged the three major roles of forests in climate change:

Information from the Global Forest Resources Assessment 2000 has been used in climate change negotiations, but coordination is necessary to prevent future discrepancies with information reported by countries to the United Nations Framework Convention on Climate Change.

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forests are a source of CO₂ when destroyed or degraded;
• forests react sensitively to a changing climate;
• sustainably managed forests provide a unique environmental service by removing CO₂ from the atmosphere and by offering an alternative to fossil fuels.

In Marrakesh, parties capitalized on the last of the three, the climate change mitigation function of forests. As a result, forests in industrialized countries and reforestation projects in developing countries may contribute the lion’s share of parties’ current CO₂ reduction commitments.

The Global Forest Resources Assessment 2000 (FRA 2000) contributed to climate change negotiations by providing objective quantified information on forests. In crafting rules and modalities for forests in climate change mitigation, negotiators often resorted to information from FRA 2000 (FAO, 2001), and in particular to information for the developed countries (UNECE/FAO, 2000). FRA 2000 data on forest carbon stocks and annual carbon balances served as substitutes when industrialized countries failed before negotiations to estimate their forests’ carbon sequestration capacity.

The Kyoto Protocol established 1990 as the threshold for forestry activities to qualify for carbon credits. For almost all industrialized countries, FRA 2000 data offered an estimate of carbon sequestration resulting from forest management that took place before 1990. As a consequence, country allowances for carbon credits from forest management listed in the Marrakesh Accord, with some notable exceptions (e.g. Canada, Japan and the Russian Federation), reflect FRA 2000 data on annual carbon stock changes, reduced by 85 percent to account for those effects not caused by direct human activity since 1990 (Figure 1).

Many other facets of FRA 2000 also helped advance the discussions, e.g. definitions and information on forest areas, age structure, annual afforestation, deforestation, harvest and its economic value, fires and natural losses.

FUTURE ROLES OF THE GLOBAL FOREST RESOURCES ASSESSMENT IN A CLIMATE CHANGE REGIME

FRA 2000 will continue to provide information for the negotiations on the role of forests for the second and subsequent commitment periods, due to start in 2005. However, some discrepancies have been observed between recent reports by some European countries to UNFCCC on forest carbon stock changes (Löwe, Seufert and Raes, 2000) and data in FRA 2000 (UNECE/FAO, 2000) (Figure 2). Similar incongruities sometimes appear in reports by developing nations on carbon emissions from deforested lands (Herold, 2001).

Confusion is conceivable, and even likely, if country reporting on forest carbon stock changes for UNFCCC and the Kyoto Protocol on the one hand, and for the Global Forest Resources Assessment process on the other hand, proceeds without coordination and produces conflicting information on a forest environmental service for which markets and market prices may emerge in the future.
the near future. Furthermore, coordination of reporting would present a unique opportunity for reducing country reporting burdens and for improving the quality of assessment and reporting.

FAO forest resources assessments rely on and use information provided by countries. In past assessments FAO has complemented country sources with models and additional information, and it aids countries through support to national forest assessments (FAO, 2001). Many developing nations face serious problems in carrying out and reporting forest carbon inventories (Herold, 2001). For these countries, information acquired by FAO for the Global Forest Resources Assessment could support coordinated carbon reporting. Developing and developed countries alike should recognize the advantages of assessing carbon stock changes reliably and reporting consistently and efficiently for multiple purposes.

Assessing forest carbon stocks and their changes is still a fledgling art. It usually entails expanding timber volume from forest inventories via so-called biomass expansion factors to estimate tree biomass, roughly 50 percent of which is carbon. Discrepancies between biomass and carbon changes reported by countries to UNFCCC and FRA 2000 assessment of carbon stock changes result partly from differing definitions for forest area, timber volume and volume growth. Ill-defined, inconsistently applied and poorly known biomass expansion factors are the predominant cause for the divergence (Figure 3).

Biomass expansion factors differ as a function of many variables, such as species, age, stand structure and site, and different factors apply to growing stock, growth and harvest (Fang and Wang, 2001; Schoene and Schulte, 1999; Brown, 2001). They have not yet been determined for the full range of variables.

OVERLAPPING REPORTING OBLIGATIONS

Parties to UNFCCC must submit National Communications at certain intervals. These contain, as capacities permit, a national inventory of anthropogenic emissions by sources and removals by sinks, including forests (OECD, 1999). Since 1996, all countries listed in Annex I of the convention, i.e. industrialized countries and countries in transition to a market economy, must also provide annual national inventories of their greenhouse gas sources and sinks, again including forests (UNFCCC, 2000).

The Kyoto Protocol and the Marrakesh Accord (UNFCCC, 2002) require reporting of “supplementary information” on sinks, beginning with the first year of the commitment period, 2008. They also set stringent consequences for not meeting these reporting obligations; for example, offending parties could be excluded from trading of emissions allowances or the Clean Development Mechanism, an instrument of the Kyoto Protocol that allows industrialized countries to offset some of their domestic CO2 emissions by sponsoring afforestation projects in developing countries. Some of the supplemental information demanded may overlap with Global Forest Resources Assessment information. Examples are data on afforestation, reforestation and deforestation since 1990. Countries whose carbon removal through afforestation and
reforestation cannot compensate for emissions from deforestation (during the first commitment period) can avoid carbon debts if they can prove that their entire managed forest offsets the net deficit. Global Forest Resources Assessment figures could perhaps be used for this purpose.

Parties only report carbon stock changes for their managed forests. The definitions of terms such as “forest” and “forest management” in the Marrakesh Accord are not identical to those used in FRA 2000, but they are comparable; harmonization and adjustment appear to be feasible.

**ASSESSING FOREST CARBON STOCK CHANGES FOR UNFCCC AND THE KYOTO PROTOCOL**

The Kyoto Protocol obligates Annex I Parties to have in place by 2007 a national system for estimation of greenhouse gas emissions and removals. Guidance for such national systems remains to be developed. However, Annex I parties must prepare their annual inventories through the first commitment period following the so-called “1996 Revised IPCC Guidelines” (IPCC/OECD/IEA, 1996), prepared by the Intergovernmental Panel on Climate Change (IPCC). IPCC is currently updating these guidelines, which also cover forests, and is elaborating Good Practice Guidance for carrying out and reporting national carbon stock change assessments for forests and other land uses. Scheduled for completion by 2003, the Good Practice Guidance will offer a set of methods, arranged in tiers of increasing reliability and data needs, for national carbon stock change assessments in forests.

Basically, Annex I parties are bound to compute annual carbon stock changes in forests by the formula

\[ \Delta C = (A \times i) - H, \]

where

- \( \Delta C \) is current annual carbon stock change of the managed forest in tonnes;
- \( A \) is managed forest area in hectares;
- \( i \) is current annual carbon sequestration in tonnes per hectare of the managed forest;
- \( H \) is annual fellings on the managed forest in tonnes carbon.

In the lowest tiers, default values provided in the Good Practice Guidance or other applicable sources – frequently FAO data – may be used. In the higher tiers, more recent national data, e.g. from forest inventories, may be applied instead for greater accuracy.

Actual forest timber and carbon increment over a commitment period may differ considerably from default values, yield tables or computer models as a result of age structure and ageing of a forest, normal climatic variability and climate change, natural calamities, management and silviculture, harvesting, fruiting, atmospheric pollution and elevated CO2 concentrations (Kramer, 1988; Hasenauer, 2000; Assmann, 1961). Moreover, biomass expansion factors for timber growth, which differ from those applicable to growing stock (Scarascia-Mugnozza et al., 2000), are rarely known.

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### Biomass expansion factors

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Biomass expansion factors (in tonnes dry weight of biomass per cubic metre) used by some European countries in reporting to UNFCCC versus those used by the same countries in reporting biomass to FRA 2000.
Annual harvest volume is highly uncertain in most cases, and sometimes based on simple estimates, particularly where small private ownership prevails. The FAO Yearbook of Forest Products is frequently used as a source, but it often reflects uncertain country data. Converting harvest data to biomass and carbon introduces further error: biomass expansion factors for harvest volumes differ from those applicable to growing stock, since the age distribution of harvested trees may deviate from the age distribution of all trees in the forest, and because stumps and root systems remain in the forest. Calculating forest carbon stock changes as the difference between forest growth and harvest, both highly uncertain variables, compounds the uncertainty.

FRA 2000 provided data for changes in forest growing stock between two successive assessments, as well as data on growth and fellings, allowing an exploratory assessment of the reliability to be expected from the IPCC method described above. In principle, the average annual change in growing stock, estimated from two successive inventories, should match the average difference between annual increment and harvest. Actually, large discrepancies occur (Figure 4) for the reasons cited above. Similar errors are to be expected for carbon stock change estimates during a commitment period, as long as net carbon change is estimated based on uncertain increment and harvest data. More reliable, but more expensive, estimates could be obtained by holding two successive inventories, which would ideally be synchronized with the commitment period.

SUMMARY AND CONCLUSIONS

UNFCCC, the Kyoto Protocol and the Marrakesh Accord grant a significant role to forests in climate change mitigation. The agreements establish strict reporting obligations which also cover forests and the procedures for carbon stock change assessment. Country reports on carbon stocks in forests and their changes overlap with information contained in FAO’s forest resources assessments; discrepancies between these sources of information have already emerged and could cause confusion in the future. Divergence currently results from ill-defined terms and inconsistent country reporting, as well as from inadequate knowledge of and methodologies for carbon stock change assessments.

FAO, together with IPCC, the International Union of Forestry Research Organizations (IUFRO), the United Nations Environment Programme (UNEP) and the Center for International Forestry Research (CIFOR), has recently initiated a process
of harmonizing forest-related definitions for use by various stakeholders (FAO, 2002). Terms related to carbon and biomass assessments will be considered.

Countries should coordinate their reporting on forests to FAO and UNFCCC, as well as to other international bodies and conventions. The exigencies of carbon stock change reporting and accounting might spawn better forest inventories and timber harvest data. A central, easily accessible collection of biomass expansion factors, with related tree, stand and site parameters, could support carbon assessment.

Closing gaps in knowledge and methodology; harmonizing definitions; and cooperation within and among countries, UNFCCC, IPCC and FAO – these are crucial and urgent prerequisites for good forest carbon stock change estimates and consistent, efficient reporting.

Bibliography


Outlet of the Expert Consultation on Forest Resources Assessment – Kotka IV

Recommendations for the future of national forest assessments, global assessments and linkages between the two.

As recommended in 2001 by the FAO Committee on Forestry (COFO), the statutory body of member countries that advises FAO on issues and activities in forestry, FAO will continue to emphasize forest resources assessment as a priority activity, and will continue to assist national capacity building in this area. To refine the process for future global assessments, FAO brought together its many partners at an expert consultation entitled “Global Forest Resources Assessments – Linking National and International Efforts”.

The meeting, organized by FAO in collaboration with the United Nations Environment Programme (UNEP) and the United Nations Economic Commission for Europe (UNECE) and with support from the Government of Finland, was held in Kotka, Finland from 1 to 5 July 2002. It was attended by 57 experts from all regions. It was the fourth expert consultation held in this location on the subject of global forest resources assessment, and is thus referred to in short as “Kotka IV”.

The meeting confirmed the importance of national forest assessments:
- to contribute to the development of national policies and laws (including national forest programmes) and to guide their implementation;
- to fulfill international reporting commitments, for instance with regard to international environmental conventions and agreements and in relation to indicators of sustainable forest management and sustainable development;
- to respond to concern expressed nationally and internationally about im-

NATIONAL FOREST ASSESSMENTS

For the discussions at Kotka IV, a national forest assessment was defined as a national process that collects, manages, makes available and analyses information on forest resources, their management and use, covering the entire country; it also includes analyses, evaluations and scenario development for use in policy processes. A national forest inventory is the principal activity for collecting data within a national forest assessment; it is based on systematic field sampling and can be complemented by remote-sensing components.

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and considering future reporting requirements at the international level. This article summarizes the conclusions and recommendations of the meeting, focusing on the three main areas discussed.

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Forest assessments are generally expanding in scope to address all aspects of forest resources. Assessments may include information on physical quantities and qualitative aspects as well as estimates of values of forest products and services. Assessments provide important and relevant information to the forestry sector and also to other economic sectors and policy processes, including agriculture and energy.

FRA 2000 identified significant gaps in information and timeliness of information for many countries. Potential reasons include low priorities and awareness at the national level, low national capacities and lack of financial resources. As a consequence of the information gaps, there is also a lack of experience in presenting and using information from national forest inventories to support policy development, and thus a lack of awareness of the utility of good forest information. Without such awareness, countries may not give priority to national forest inventories.

It was concluded that national forest inventories and assessments, and the capacity to implement these over time, will only be maintained if the information demand originates from national forest policy processes.

Kotka IV recommended that countries needing external assistance to implement national forest assessments seek help from FAO, for example through the National Forest Programme Facility. The consultation also recommended that FAO work more closely with countries and other institutions to build national capacity for implementing national forest assessment and to raise the awareness needed to maintain this capacity and to ensure the inclusion of forest resources monitoring in national policies.

The proposal to support national forest assessments based on low-intensity permanent field sampling (described in the article by Thuresson in this issue) was considered relevant and feasible for countries lacking effective national forest inventory capacities. The approach should include strengthening of information management and analysis; of evaluating and reporting on data reliability; and of capacity for reporting to international processes.

GLOBAL FOREST RESOURCES ASSESSMENT

The Global Forest Resources Assessment, led by FAO and involving all countries and other partners, reports on the worldwide status and trends of forest resources, their management and uses. The Global Forest Resources Assessment has many functions including:

- providing a picture of the status and trends of forest resources worldwide that is as accurate and quality-rated as possible to facilitate improved forest and forest management policies;
- enabling countries to view their forest sector within regional and global environmental and socio-economic contexts;
- contributing some of the validated and harmonized data required for monitoring and assessment functions of international processes;
- providing data that can be used in scientific and technical studies;
- providing data to support investment decisions and private-sector development;
- presenting information on forests to wider communities, including other sectors, non-governmental organizations and the general public.

The meeting noted that the Global Forest Resources Assessment can best serve the needs of many users by providing information that is as consistent over time and space, reliable and accurate as possible, including information about data quality and gaps. It should also contribute to improvement of concepts, definitions and methods related to forest resources assessments.

Following the recommendations of COFO 2001, the Global Forest Resources Assessment should continue to include information on all aspects of forest resources. Its overall conceptual framework should be guided by criteria used by the various ecoregional processes on criteria and indicators for sustainable forest management, i.e.:

- extent of forest resources and global carbon cycle;
- forest ecosystem health and vitality;
- biological diversity;
- productive functions;
- protective functions;
- socio-economic functions.

Within this framework FAO, in consultation with countries, should identify key parameters related to forest resources, and should maintain and publish validated and harmonized national, regional and global data for these key parameters. FAO should gather, harmonize and validate the data for a core set of global variables, while data for the other parameters may be collected by regional FRA initiatives or other partners and should be made available through links.

Most of the data are provided by countries through national correspondents who are responsible for the data provided. Some Global Forest Resources Assessment data sets may originate from other sources, for instance remote-sensing surveys. Countries should validate national data before they are published.

The Global Forest Resources Assessment serves as a source of official, defined and validated information which may be used by international processes and may help reduce the reporting burden on countries. In defining the parameters for data collection, the reporting requirements of differ-
ent processes and agreements should be taken into account. International processes are expected to support and promote the Global Forest Resources Assessment as an important mechanism to facilitate data supply from countries, and as the major contributor of information on sustainable forest management at the global level.

The participants recommended that the medium-term (five-year) emphasis should be to consolidate the progress made in the Global Forest Resources Assessment 2000 (FRA 2000) towards achieving a broad assessment. This implies that for nationally reported data (in order of priority):

- the accuracy, completeness, timeliness, reliability and comparability of data and parameters reported on in FRA 2000 should be increased;
- reporting formats for parameters reported on in FRA 2000 should be refined;
- new parameters should be included as feasible in relation to countries’ priorities and capacities.

A procedure should be established for updating the global database as soon as possible when new national data become available. An intermediate global report should be issued around 2005. A comprehensive global assessment should be published around 2010.

Regional initiatives related to forest resources assessment should continue to contribute to the global assessment and should be coordinated with it, notably in relation to concepts, definitions and core parameters. FAO’s Regional Forestry Commissions have an important role in increasing political support for country involvement in forest resources assessment. Kotka IV recognized the benefits of the regional effort coordinated by the UNECE/FAO secretariat in Geneva for the temperate and boreal countries in FRA 2000, which incorporated additional information specific to regional needs. Participation in such regional initiatives should be determined by the countries themselves.

It was recommended that FAO establish an advisory group to the Global Forest Resources Assessment, which should advise FAO and its partners on the implementation of the assessment and on its concepts, classifications, definitions, methods, organization, timing and communication of results. The group should meet approximately annually. The global assessment process should also include periodic consultation with users and national correspondents. FAO should carry out a wide-ranging user demand survey, trying to reach all potential types of users, to clarify their data requirements and to define priorities for the development of the contents of the assessment. The survey should also investigate users’ willingness and ability to pay for the information required.

The participants recommended that FAO carry out a feasibility study for a remote-sensing study of land cover and land use changes to complement national reporting (see article by Tomppo and Czaplewski in this issue). Objectives of a remote-sensing study would be:

- to improve accuracy and precision in countries with poor data;
- to provide regional-level and global-level estimates of state and change;
- to provide a global forest map.

The feasibility study should include options for global coverage as well as possible partnerships for implementation of the remote-sensing study. The study should address the field sampling necessary to validate the remote-sensing output. Countries should be consulted when options are considered that may result in national-level estimates.

**LINKAGES BETWEEN NATIONAL AND GLOBAL ASSESSMENTS**

FAO should continue to develop the linkages with countries and regional partner institutions and to inform them about recent developments in the Global Forest Resources Assessment.

Countries should take into account international reporting requirements when designing national forest inventories and should, to the extent possible, collect data suitable for reporting against agreed international definitions for inclusion in the Global Forest Resources Assessment. FAO should advise countries in this respect.

The incorporation of national information into the Global Forest Resources Assessment should be undertaken collaboratively between countries and FAO, and should be transparent and documented to ensure credibility and consistency in the global database. It is expected that this approach will over time reduce the effort required to maintain the database.

**CONCLUSIONS**

Kotka IV made a number of recommendations that will guide the Global Forest Resources Assessment for the years to come. In particular, the important relationship with countries was emphasized. The consultation established that the role of the Global Forest Resources Assessment in relation to other international processes should be neutral and facilitating.

The major obstacle in meeting international (and national) information requirements is the continued lack of basic data. Without the establishment of field-sampling-based inventories, it will be impossible to monitor progress towards sustainable forest management and to refine forest-related policies. The Kotka IV recommendations support FAO’s approach of addressing this issue through support to national forest assessments.
The African Forestry and Wildlife Commission (AFWC), established by the FAO Conference in 1959, provides a policy and technical forum for African countries to discuss and address forest issues on a regional basis, and advises FAO accordingly.

The 13th session of the AFWC was held in Libreville, Gabon from 25 to 29 March 2002. The session was attended by 107 participants including representatives from 16 member and observer countries and observers from international intergovernmental and non-governmental organizations.

Areas highlighted by the Commission for attention and possible FAO assistance included the following:
• the relationship of food security and poverty alleviation to deforestation and forest degradation;
• curriculum revision for better adaptation to the needs of the forestry sector;
• information on the National Forest Programme Facility;
• the participation of regional and subregional organizations in the implementation of FAO’s Forestry Outlook Study for Africa (FOSA);
• availability of pertinent information to enable effective participation of African countries in the United Nations Forum on Forests.

Background documentation and the full report of the session are available on the Internet (www.fao.org/forestry/Forestry.asp) or can be obtained through the Meetings Officer, Forestry Department, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy (e-mail: becky.ortiz@fao.org).

**Silva Mediterranea gears up for change**

The African Forestry and Wildlife Commission, European Forestry Commission and Near East Forestry Commission (AFWC/EFC/NEFC) Committee on Mediterranean Forestry Questions – Silva Mediterranea is a forum for regional cooperation in the sustainable development and management of Mediterranean forests. Its mission is to examine trends in forest and land use, identify priorities for forestry research and identity and implement studies and surveys. The committee’s membership includes 26 countries and the European Union. Non-member countries and organizations are invited as observers to the sessions of the committee.

At the committee’s 18th session, held at FAO headquarters in Rome from 2 to 5 April 2002, the future of Silva Mediterranea was the main topic on the agenda. Based on an external review of Silva Mediterranea and its networks, carried out as recommended by the committee’s previous session in Antalya, Turkey in October 1997, a number of changes were recommended to reinvigorate Silva Mediterranea.

The committee proposed that the research networks be phased out and replaced by working groups with a specific mandate and clear objectives, outputs and time frames. Silva Mediterranea should also establish more effective alliances with other institutions working in the Mediterranean region.

The meeting suggested that Silva Mediterranea should address in future: the finalization of past work that holds potential for delivering important and useful output; activities leading to the sustainable management of Mediterranean forests and woodlands; and the contribution of Silva Mediterranea to sustainable development in general. Silva Mediterranea should approach forest issues in the region in ways consistent with new paradigms and developments emerging both in the Mediterranean region and in the international policy dialogue on forests.

The participants noted that Silva Mediterranea should be more responsive to the needs of countries, particular in the following areas:
• improving the responses and contribution of the forest sector to the well-being and socio-economic advancement of the population, including poverty alleviation and food security;
• the contribution of the forest sector to the implementation of the international conventions on biological diversity, climate change and desertification control;
• forest sector planning through national forest programmes;
• achieving sustainable forest management.

The Secretariat will further elaborate and organize these proposals into a structured programme of work to be finalized through consultation with the member countries.

Background documentation and the full report of the session are available on the Internet: www.fao.org/forestry/FO/STATBOD/Technical/Silvamed/silvamed-e.stm

**FAO Advisory Committee on Paper and Wood Products**

The FAO Advisory Committee on Paper and Wood Products (ACPWP), one of FAO’s technical statutory bodies, provides direct
communication with the private sector and allows the Organization to ensure that its activities in the forest products sector are of relevance to the private and public forest industry.

The ACPWP held its 43rd session at FAO headquarters in Rome on 25 and 26 April 2002. The session was attended by 60 participants from 24 countries and five international organizations. The main items on the agenda were illegal logging, certification, forests and climate change, and the status of forest industries in countries with economies in transition.

Key areas in which FAO was urged to concentrate its work include the following:

• facilitating discussions on mutual recognition of national sustainable forest management certification schemes, and supporting the development of such schemes in countries where they do not currently exist;
• advising the Intergovernmental Panel on Climate Change (IPCC) on definitions, measurements and reporting for issues such as carbon sequestration, carbon sinks and the Clean Development Mechanism (CDM), taking forest industry expertise into account;
• emphasizing the key and positive role of forestry in poverty eradication and sustainable development, particularly in the context of the United Nations Forum on Forests (UNFF) and the World Summit for Sustainable Development;
• working with industry experts to communicate the results of an FAO report on environmental advantages of wood products compared with competing materials derived from non-renewable raw materials.

In addition, various recommendations were made for collaboration between FAO and the newly formed International Council of Forest and Paper Associations (ICFPA).

Background documentation and the full report of the 43rd session may be obtained by writing to the Chief, Wood and Non-wood Products Utilization Branch, Forestry Department, FAO, Viale delle Terme di Caracalla, 00100, Rome, Italy. Both are also available on the Internet:


EC-FAO Partnership Programme in South and Southeast Asia – second workshop
The European Commission (EC)-FAO Partnership Programme on Information and Analysis for Sustainable Forest Management: Linking National and International Efforts in South Asia and Southeast Asia is designed to enhance country capacities to collect, analyse and disseminate up-to-date information on forestry and to make this information more readily available for strategic decision-making.

Thirteen countries in South and Southeast Asia (Bangladesh, Bhutan, Cambodia, India, Indonesia, the Lao People’s Democratic Republic, Malaysia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand and Viet Nam) participate in the programme. Operating under the guidance of the Asia-Pacific Forestry Commission (APFC) Working Group on Statistics and Information, the EC-funded initiative is implemented by FAO in close partnership with experts from participating countries. It draws on experience gained from similar EC-FAO efforts in Africa and Latin America and the Caribbean.

The second workshop for the programme, entitled Forest Policy and Forest Policy Reviews, was held in Kuala Lumpur, Malaysia from 22 to 24 January 2002. The workshop was designed as a forum for discussing arrangements for establishing a regional network of statistical correspondents and for conducting in-depth forest policy studies.

The proceedings of the workshop, as well as background information on the EC-FAO Partnership Programme, are available on the Internet:
Second session of the United Nations Forum on Forests

The second session of the United Nations Forum on Forests (UNFF-2) was held at United Nations headquarters in New York from 4 to 15 March 2002. In accordance with the UNFF programme of work, participants reviewed progress in implementing the proposals for action of the Ad hoc Intergovernmental Panel on Forests (IPF) and the Intergovernmental Forum on Forests (IFF) related to:

- combating deforestation and forest degradation;
- forest conservation and protection of unique types of forests and fragile ecosystems;
- rehabilitation and conservation strategies for low forest cover countries;
- rehabilitation and restoration of degraded lands and promotion of natural and planted forests;
- concepts, terms and definitions.

UNFF-2 also reached agreement on criteria by which the effectiveness of the international arrangement on forests would be reviewed in 2005.

Despite best efforts, however, terms of reference were not finalized for three ad hoc expert groups on monitoring, assessment and reporting; finance and transfer of environmentally sound technologies; and the parameters of a mandate for developing a legal framework on all types of forests. Discussions will continue at UNFF-3 in 2003.

A high-level segment took place at which ministers underscored the role of UNFF as the primary forum for international forest policy deliberations. They also engaged in separate dialogues with heads of members of the Collaborative Partnership on Forests (CPF) and with varied stakeholders to discuss respective contributions to implementing the IPF/IFF proposals for action.

The outcomes of UNFF-2 included a Ministerial Declaration and a Message to the World Summit on Sustainable Development.

The third session of UNFF will be held from 26 May to 6 June 2003 in Geneva, Switzerland. Items on the agenda include forest health and productivity, economic aspects of forests and maintaining forest cover to meet present and future needs. In addition to holding a multistakeholder dialogue, UNFF-3 will also address standard agenda items such as country experiences and lessons, national forest programmes and trade.

Update on XII World Forestry Congress

From 21 to 28 September 2003, the international forestry community will meet in Québec City, Canada, for the XII World Forestry Congress. For seven days, participants as individuals and from education, research and private and non-governmental organizations will gather to analyse and discuss forest issues in...
the largest and most important forestry meeting worldwide. The XII World Forestry Congress will be an open forum where discussion will focus on individuals, communities and forests under the theme “Forests, source of life”.

Individuals are invited to submit voluntary papers and posters that express new ideas and provide information on practical experiences, conceptual models and interesting initiatives. All papers will be reviewed and considered for publication in the Congress Proceedings and posting on the Congress Web site. The deadline for submitting papers (each with an abstract) or abstracts for posters to the FAO Forestry Department is 15 November 2002.

For more information visit www.wfc2003.org or contact the Documentation Officer, XII World Forestry Congress, Forestry Department, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy. Tel: (+39) 06 5705 5879; Fax: (+39) 06 5705 2151; E-mail: WFC-XII@fao.org

Recent events keep up the pace of the International Year of Mountains – 2002

As the International Year of Mountains – 2002 (IYM) reached its midpoint, the momentum of events continued to build. Three important events in June 2002 produced declarations calling for long-term concerted actions to support sustainable mountain development.

On 13 June 2002, a special side event on sustainable mountain development held during the World Food Summit: five years later, organized by FAO in Rome, recognized that a disproportionately high number of the world’s hungriest and chronically malnourished people reside in mountain regions. The event attracted about 120 delegates from United Nations agencies, non-governmental organizations and national governments. The 15 countries of the IYM Focus Group (Austria, Bhutan, Bolivia, Ethiopia, France, Guatemala, Iceland, Italy, Jamaica, Kyrgyzstan, the Lao People’s Democratic Republic, Lesotho, Peru, Slovenia and Switzerland) presented a declaration and appealed to other countries to support it.

The Second International Meeting of Mountain Ecosystems: Peru, Country of Mountains Towards 2020: Water, Life and Production brought together about 300 participants from 16 countries in Huaraz, Peru from 12 to 14 June 2002. The Huaraz Declaration on the Sustainable Development of Mountain Ecosystems draws particular attention to water resources, biological and cultural diversity and development of production processes in mountain ecosystems.

From 16 to 20 June 2002, 200 representatives of mountain people, governments, international organizations and civil society from about 50 countries participated in the International Conference on Sustainable Agriculture and Rural Development (SARD) in Mountains in Adelboden, Switzerland. The conference was organized by the Swiss Federal Office of Agriculture in close cooperation with FAO. The Adelboden Declaration on SARD Mountains asserts that mountain people should have better access to markets and financial services and should receive fair compensation for environmental and other goods and services.

Other important IYM events in June included:
• the fourth International Consultation on Mountain Forests: Lessons Learned, Societal Changes and Vision Beyond 2002, held 26 to 28 June 2002 in Pamplona, Spain, organized by the European Observatory for Mountain Forests (EOFM) and the Governments of Spain and France;
• the Alpine Experience – an Approach for Other Mountain Regions, held 27 June to 3 July in Berchtesgaden, Germany, a conference organized by the International Alpine Protection Commission (CIPRA) in cooperation with the United Nations Environment Programme (UNEP), the German Government and the German Agency for Technical Cooperation (GTZ).

For a complete calendar of IYM events, consult www.mountains2002.org/events/
Evolution in forest legislation


Recent years have witnessed a significant acceleration in the revision of forest laws around the world. The environmental importance of forests is more and more explicitly reflected in forest legislation, particularly since the United Nations Conference on Environment and Development (UNCED). Forest law increasingly recognizes the multiple interests involved in or affected by forest management, with greater attention given to the environmental and social roles of forest resources and to their sustainable management and use. In addition, renewed emphasis is being placed on the involvement of a wider range of public and private actors. Issues in which forest laws have been reoriented include local and private forest management, the environmental functions of forests, forest management planning and forest utilization contracts. This study is the second of two volumes identifying the main trends observable in forest legislation on a regional basis. The present publication covers a sample of forest laws from Europe and Africa. The previous volume (FAO Legislative Study No. 66, 1998) covered Latin America, North America and Asia.

Forest fire guidelines for the Mediterranean


Forest fires represent a true calamity for Mediterranean forests. Every year, an estimated 50 000 fires ravage more than 600 000 ha in the Mediterranean region. Protection des forêts contre l’incendie is a set of practical, complete and up-to-date guidelines for the prevention and control of forest fires, prepared by the French agricultural and environmental research institute Cemagref at the request of the Network on Forest Fire Management of FAO’s Committee on Mediterranean Forestry Questions – Silva Mediterranea. The guidelines, published by FAO with financial support from France, are intended to strengthen training in the prevention of and fight against forest fires. They will be valuable for all countries in the region.

Concepts and issues of public participation


Twenty-three specialists on participation in forestry – managers, researchers, practitioners and advisers to policy, private forestry and non-governmental organizations – collaborated on this publication to clarify the concept of “participation” and to develop a conceptual framework for participatory forest management involving the public. The team of specialists was established by FAO, the Economic Commission for Europe (ECE) and the International Labour Organization (ILO) to integrate the concept of public participation more fully and transparently into forest policy making and management.
This comparative study examined specific wood product end uses in which wood faces substitution pressure or can replace non-renewable raw materials. The focus was on building materials, specifically the following product groups:

- single-family houses;
- simple large buildings;
- window frames;
- flooring materials.

The authors conducted a literature review on environmental and energy balances related to the selected end uses and analysed the main reasons for substitution. They compared selected products based on the literature review.

To compare the environmental impact associated with different materials and products, the study employed life cycle assessment, one of the most comprehensive of the different methods developed for measuring environmental impact in the past two decades. This method measures the environmental impact of products during their entire life cycle.

The analysis demonstrates the ecological advantages of wood as a building material and its benefits to the environment, including the thermal utilization at the end of the product life cycle. It provides scientifically based information for policy-makers, producers, consumers and other interested groups. The data provided clarify the reasons for selection and/or substitution of wood for specified end uses on the basis of environmental criteria. Measures to reduce substitution are recommended. The publication also presents potential topics for further research.
Consultation and a summary of the discussions.

The report is organized according to the four thematic areas considered by the consultation: resources, uses and present action programmes; country reports on the status of rattan resources and uses in Africa and Asia; review of policy, institutional and socio-economic aspects governing the rattan sector; and required actions to enhance the sustainable development of the rattan sector. The 20 background papers give a comprehensive overview of the situation and prospects for the development of the rattan sector in Asia and Africa.

Monitoring international activities for environment and development


The Yearbook of International Co-operation on Environment and Development, compiled by the Fridtjof Nansen Institute in Norway, first appeared in 1992 in connection with the United Nations Conference on Environment and Development (UNCED). Its aim is to describe international positions on specific environment and development problems, the main obstacles to effective international solutions and proposals for how to overcome them.

The “Current issues and key themes” section contains articles assessing achievements and limitations of various efforts to manage specific environmental problems. A section entitled “Agreements on environment and development” presents extensive information from and about the most important international agreements, including information on each instrument’s objectives, scope, time and place of establishment, entry into force, status of participation, affiliated instruments and organizations, major activities, secretariat, finance, rules and standards, monitoring and implementation, decision-making bodies, key publications and Web sites.

This edition also provides updated summaries on intergovernmental organizations, including United Nations specialized agencies and international non-governmental organizations. New comprehensive profiles are presented for many countries, describing their main commitments and performance. The profiles introduced in this edition include all 29 member countries of the Organisation for Economic Co-operation and Development (OECD) in addition to ten non-OECD countries (Argentina, Brazil, China, India, Indonesia, Malaysia, Nigeria, the Russian Federation, South Africa and Thailand).

A large part of the Yearbook of International Co-operation on Environment and Development is also available on the Internet (www.greenyearbook.org/).
Report on costs and efforts to assess carbon stocks for FSC certified forests and recommendations to include FSC forest practices under leading carbon standards. Contact. Feel free to contact us if you wish to engage or learn more about this project Forest Carbon Accounting: Overview & Principles. Executive Summary Forests play an important role in the global carbon balance. As both carbon sources and sinks, they have the potential to form an important component in efforts to combat global climate change. This report reinforces UNDP’s capacity building efforts by presenting the main principles, practices and challenges of carbon accounting in the forestry sector. Forest carbon accounting can be divided into three forms. Stock accounting assesses the magnitude of carbon stored in forest ecosystems at a single point in time. Emissions accounting assesses the net greenhouse gas emissions to the atmosphere resulting from forests. This effort should lead to a better utilization of the data from the European NFI programs and improve the European greenhouse gas reporting. Preparing emission reporting from forests: use of National Forest Inventories in European countries.