



Forestry Department

Food and Agriculture Organization of the United Nations

GLOBAL FOREST RESOURCES ASSESSMENT 2005

Forest Resources Assessment 2005:
Regional review of national reports for English speaking
Caribbean countries

24-28 February 2005
Kingston, Jamaica



The Forest Resources Assessment Programme

Forests are crucial for the well being of humanity. They provide foundations for life on earth through ecological functions, by regulating the climate and water resources and by serving as habitats for plants and animals. Forests also furnish a wide range of essential goods such as wood, food, fodder and medicines, in addition to opportunities for recreation, spiritual renewal and other services.

Today, forests are under pressure from increasing demands of land-based products and services, which frequently leads to the conversion or degradation of forests into unsustainable forms of land use. When forests are lost or severely degraded, their capacity to function as regulators of the environment is also lost, increasing flood and erosion hazards, reducing soil fertility and contributing to the loss of plant and animal life. As a result, the sustainable provision of goods and services from forests is jeopardized.

FAO, at the request of the member nations and the world community, regularly monitors the world's forests through the Forest Resources Assessment Programme. The Global Forest Resources Assessment 2000 (FRA 2000) reviewed the forest situation by the end of the millennium. FRA 2000 included country-level information based on existing forest inventory data, regional investigations of land-cover change processes and a number of global studies focusing on the interaction between people and forests. The FRA 2000 Main report is published in print and is available on the World Wide Web.

The Global Forest Resources Assessment update 2005 (FRA 2005) has been requested by the FAO Committee on Forestry in 2003. The FRA 2005 will use common thematic areas of the Criteria for Sustainable Forest Management as a reporting framework. FRA 2005 will also focus on the specific conditions and issues in each country.

The Forest Resources Assessment Programme is organized under the Forest Resources Division at FAO headquarters in Rome. The contact person for matters related to FRA 2005 is:

Mette Løyche Wilkie, Senior Forestry Officer (FRA) Mette.LoycheWilkie@fao.org

or use the e-mail address: fra@fao.org

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Global Forest Resources Assessment 2005

Regional review of national reports for English speaking Caribbean countries

24-28 January 2005 Kingston, Jamaica

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Global Forest Resources Assessment 2005

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1. Background

The Global Forest Resources Assessment Update 2005 was specially mandated by the Committee on Forestry (COFO) during its meeting in 2003, where member countries endorsed recommendations from an Expert Consultation held in the Kotka, Finland in 2002 (Kotka IV). For this purpose all countries have been requested to provide national reports to FAO during 2004.

As in previous global assessments, FRA 2005 relies on contributions by countries and a network of National Correspondents to FRA has been established. According to the FRA 2000, it was recognised that poor data quality – or a complete lack of data in some cases – of information in the Caribbean Region. The Commission recommended that FAO provide assistance to countries in order to strengthen their capacities to update national inventories through technical workshops; harmonise their approaches; and to share understanding on forest terminology and methods of resources assessment.

Accordingly, FAO organised a training course for national correspondents on Assessing and Monitoring Forest Land Use and Changes at FAO Headquarters in Rome, Italy, 17-21 November 2003. This has been followed by a series of regional workshops worldwide. The workshop in Kingston, Jamaica, which was aimed primarily at English-speaking Caribbean countries, has been part of a sequence of different regional workshops in other regions, two in Africa, one in Asia and South Pacific, Latin American countries and Spanish speaking Caribbean countries, and Russian speaking countries. Fifteen NCs from 21 countries some of them representing more than one country participated in this workshop, hosted by Forestry Department of Jamaica/. The agenda of the workshop is found in Appendix 1 and a list of participants in Appendix 2. A list of background documents for the workshop can be found in Appendix 3.

2. FAO support on country capacity building

The workshop provides the opportunity of getting together all National correspondents from the Caribbean region to revise, acquire information, knowledge and revise the process of country reports to FRA 2005. The main objective of the workshop was to build and strengthen the capacity of the National Correspondents with respect to compilation of country reports for FRA 2005 and to inform them of FAO's approach to planning and undertaking national forest assessments (NFA).

The country reports to FRA 2005 will have two major components:

Fifteen globally standardized tables based on data provided by countries and, thematic report, based on 6 themes related to the Criteria and Indicator processes, that complements the global tables by providing more specific and unique information for each country.

The Guidelines for country reporting to FRA 2005, Specification of the sixteen global tables, the Terms and definitions to be used in FRA 2005 and Template for country reporting was distributed to the CC, as soon as they were officially nominated by their countries. These documents were also available during the meeting, together with the a print version of the frequently asked questions to FRA 2005.

The following were the objectives of the workshop and they were all achieved:

- Review of the fifteen reporting tables for FRA 2005;
- Address problems that countries were experiencing with respect to compiling country reports according to the FRA 2005 guidelines for reporting;
- Identify information gaps;
- Draft a time table for the final submission of the country reports; and
- Formulate conclusions and recommendations for future FRA activities

National Forest Assessment component of the FRA programme includes the creation of an information base for national and international reporting obligations, as well as the setting up of a long term resource monitoring system for policy making and planning processes. This approach uses field data from a low-intensity sampling at national level. The field sampling can be supplemented by mapping as proposed under the present application. Through this approach, a range of biophysical and socio-economic variables, with an emphasis on management, use and users of the resources, will be covered. The approach also aims at strengthening the capability of the forestry administration and related institutions and organisations for collecting information on forests and trees resources to enable planning for sustainable forest management.

Land cover classification and definitions pose great challenges to most Caribbean countries and the NFA approach has the potential to align existing national land cover/land use classifications with the global classification thereby harmonising different reporting processes. Guidance was also given to participants on how to develop projects to support the implementation of NFA programmes. Some basic parameters were suggested for:

Type of projects: either national project designed for separate countries or regional projects with national components.

Preconditions: commitment of each country to invest in forest resources monitoring, capacity building and maintenance, and information management, and to work together in a regional approach when requested.

Participants were advised to:

- Consider the use of trust funds using national funding sources
- Cost-sharing arrangements through multilateral cooperation
- Submit draft Technical Cooperation Programme requests to FAO following the TCP guidelines and incorporating cost sharing by the country;

3. The Status of FRA 2005 country reports

- Complete country reports are available for Belize and Jamaica.
- Most of the countries informed that they are in a position of reporting table 1, 3, 4.
- French Guiana has good information for table 2.
- Difficulties are presented on reporting tables 5, 6, 7, 10
- Non wood forest products information tables will be also difficult to report, but countries recognize the importance of these products in local economies.
- Most of the countries had information on employment.

For the section of thematic reports, participants showed interesting to report on the reduction of consuming charcoal and fuel wood in the region; ownership of forest and trees; impact of hurricanes in forest areas; visitors in protected areas.

In relation to the thematic studies, participants were informed about the existing thematic studies carried out by FAO: mangroves, plantations; pest and diseases; ownership; mountains and water; forest fires.

4. Main issues and reporting problems addressed

4.1 Review of the reporting template

Fifteen reporting tables have been developed for FRA 2005 covering the following topics:

Table number	Title
T1	Extent of Forest and Other wooded land
T2	Ownership of Forest and Other wooded land
T3	Designated functions of Forest and Other wooded land
T4	Characteristics of Forest and Other wooded Land
T5	Growing stock
T6	Biomass stock
T7	Carbon stock
T8	Disturbances affecting health and vitality
T9	Diversity of tree species
T10	Growing stock composition
T11	Wood removal
T12	Value of wood removal
T13	Non wood forest product removal
T14	Value of non wood forest product removal
T15	Employment in forestry

Jamaican country report was projected in plenary, and discussed, comments and suggestions were given by the participants of the meeting. After finalizing the Jamaica table by table report, each country presented their own status, share the findings, their existing and gaps of information to compile each table. Questions and answers were given in relation to the process of analysis of the national data: references and source of information, national classes, original data, analysis of data, calibration, estimation, forecasting and reclassification.

Specific problems and difficulties faced during the analysis or the compilation of the draft report were discussed, special attention was given to consistency among related reporting tables.

After the revision of the fifteen tables, a planning of submission of final drafts of national reports was established. It was agreed that all countries will submit complete table number one by the end of the month, so that the FRA Secretariat may have the information before the COFO meeting. The complete report is to be delivered in March.

4.2 National data coverage and quality

- French Guiana, Suriname, Guyana, Puerto Rico, US Virgin Islands and Jamaica. he have rather accurate forest cover information based on satellite vegetation information and was generated after 1995.
- Many of the smaller Islands: Dominica, St. Lucia, St. Vincent and the Grenadines, Grenada have forest inventories or at least forest cover maps prepared in the mid 1990.
- For some countries there is no recent forest cover information available, this includes Trinidad and Tobago (from 1981), Barbados, Montserrat and St. Kitts and Nevis.
- Information may be held by other sector ministries and access to such data may be difficult because the NCs do not have formal mandates to request inter-sector collaboration.
- FRA activities are seen as additional burdens on Ministries' normal work programmes, thus causing conflict for staff time, logistics and resources, this is the constraint for country reporting.
- Several countries had changed nominations of their NC for participation in this meeting, thus causing those individuals to be delayed on the preparation of country reports.

4.2.1 Frequently asked questions

Questions were raised by the participants during the meeting. Most of them were already made during other meetings, therefore the answer was easily address in plenary; a set of frequently asked questions were distributed during the meeting. (See appendix number 3)

Some new issues were brought out to the attention and presented as follows:

How should a “bauxite reserve” needs to be re-classified

Bauxite reserves should be classified taking into consideration the actual vegetation cover and land use of the area. This means that if the area is cover by forest, it should be classified as forest without considering the future use of the land. Land use of the area will change, when the bauxite is exploited.

How to be considered abandoned plantations?

Abandoned plantations should be classified as forest.

Hurricanes are devastating events, to report them in a five year period reduce the level of impact of the event, how to report in order to highlight the real negative impact they have?

Five year averages are important for seeing the long term trends. Countries should report annual data under the section of original data. That also shows the annual differences. If there is additional quality information that CC consider relevant to inform, please include it on the section of comments.

Where to report on visitors to protected areas, as there is a high percentage of income for the country?

Countries can report on visitors to protected areas as a thematic report.

How to re-classified “Taungya” systems, where land area is designated for plantation but before the trees reach certain high the land is used for agricultural purposes?

Agroforestry systems always constitute a difficult grey zone between Forest and Other land. Sometimes the forestry component is dominating, sometimes the agriculture component is the most important. The Taungya system is an example where forestry usually is the main objective/land use and the land is only used during a relatively short period for growing crops or fodder. So in the case of Taungya agroforestry systems is to be re-classified as forest.

When a forest area was affected by fires, but the trees were not damaged, are these areas to be reported in table 8?

If the forest area (and trees) were not damage, these areas should not be included.

4.3 Other issues related to FRA 2005 reporting process

Most of the countries have information that refers to land ownership and it is not divided between forest and other wooded land. Participants were advised to report on forest and other wooded land with a note saying that it is impossible to divide the information.

In relation to forest fires, there was confusion as some CC reported on fires (in agriculture land). CC were advised to report on forest fires areas, or forest fires/other wooded land fires, other land category should be excluded. Other disturbances that affected forest areas in the Caribbean are mudslides, these should be reported in other disturbances.

Several countries informed that IUCN list are not compatible with national list. CC were advice to report IUCN data, and include national list in the comments sections.

Caribbean countries have very low consumptions of charcoal and fuel wood, as kerosene fuel is used in the country side. CC find FRA 2005 report an opportunity to update FAO statistics with this new information.

Most of the countries informed that it is possible to report on wood removal from state forest, but there is no information on private owned land. CCs were advised to make a note informing that information refers just to state owned forests.

Countries have good information in relation to visitors in protected areas, ecotourism, wildlife specially birds information, botanic information, forest management, they will provide this information in the section of thematic reports as it is relevant for their national economy.

5. Other presentations

Presentations on different initiatives to reduce information gaps in the region were given. (See appendix 4)

A presentation on “Adapting the US Forest Inventory and Analysis program to Puerto Rico and the US Virgin Islands” was done by Thomas Brandeis. Speaker presented the history, challenges, sampling design, data collection, coordination and logistics, and data processing.

A second presentation made by John Donnegan, regarding forest inventories in the South Pacific, that is combined system using a vegetation cover map with a terrestrial system of systematically distributed sample plots. Information is mainly use for watershed management actions.

Rodrigo Rodas, presented the design and results coming from the National Forestry Inventory of Guatemala. The inventory was designed according to the National Forest Assessment component of FRA programme (see section 2 of this report). Information regarding the national classifications, sampling plots, data collected: biophysical, use and users of forest, personnel, were discussed.

The Forestry Inventory of Jamaica was presented by Owen Evelyn and personnel from the Forestry Department of Jamaica. Mr. Evelyn gave detailed information regarding the planning, mapping, sampling plots, collection of data, personnel, cost and use of the collected data coming from the inventory. The Forestry Department of Jamaica presented its combined system of a Landsat based analysis of the vegetation types combined with a more detailed watershed based analysis using aerial photos to identify more specific vegetation with stratified terrestrial samples. His presentation was later complemented by a field work visit a permanent sampling plots, where more details regarding the collection, and organization of data was provided.

Margaret Austin presented a low cost approach of using mapmaker software to produce a forest cover map for Barbados (forest cover study for a pilot area).

The Caribbean vegetation mapping initiative from IITF and TNC produced landsat based vegetation cover information for Dominica, Jamaica, and Puerto Rico was presented by Ms. Eileen Helmer. Draft maps and forest cover data are currently presented to the national forest administrations for validation for:

- St. Kitts and Nevis
- St. Lucia
- St. Vincent and the Grenadines
- Grenada

These maps and the forest cover data are expected to be ready in May-June 2005.

6. Summary of discussion for future national forest resources assessment initiative

Three main issues were identified to facilitate the discussion among CCs

- Agency for forest information
- Forest data at national level versus management level information
- Methodological approach to forest assessment: remote sensing and or terrestrial inventories

Agency for forest information

Three basic models were discussed and evaluated if:

1. The capacity to produce forest cover maps and collect forest information should be responsibility of the forestry department;
2. Forest cover maps and forest data should they be done by other government agencies like for example the central planning unit;
3. The preparation of forest cover maps and collection of forest information data, should be outsourced to private entities or companies.

The general consensus was that the capacity to produce forest cover maps and collect forest data should done by the forestry departments. It was widely felt that other government agencies would not have the interest to prepare, maintain and collect this information and prepare the maps. The need to be able to prepare forest cover maps and to conduct forest assessments was clearly presented by the island representatives.

The model presented by Jamaica with a well equipped forest mapping and inventory unit within the Departments was considered to be the ideal scenario.

NGOs can contribute to the gathering and preparation of forest related information but it was pointed out very clearly from the representative from Belize that their information system serves a specific purpose. In general the focus of their information gathering is more on biodiversity and to a lesser extent on the economic functions of the forest.

In French Guiana the preparation of a detailed forest vegetation map, a map of national biodiversity and mapping of the interface between forest to urban development areas was considered a task for universities or research institutions while the preparation of forest inventories and forest cover maps for forest production was considered to be the main task of the National forest administration (ONF).

- Forest data at national level and or management level information

Forest data at national level was considered to be important mainly to fulfil the reporting obligation with regards to international conventions. Especially the smaller and medium size island countries emphasised the need to be able to expand national data on forest cover into forest information system at the management level. The investment into a national information system was considered to be justifiable only if the same information system could be expanded into an inventory system for the management units.

With regards to Suriname, Guyana and Belize the approach is somehow different from the islands. In the continental countries the forestry departments would set standards for forest management related information systems while the information gathering and compilations would be left to the concession holder.

- Regional collaboration for the preparation of forest cover maps and forestry inventories

The preparation of a forest cover or vegetation cover map together with terrestrial inventory is considered to be important in the Caribbean Region. A limiting factor is the funding. Most of the countries will be interested in the development of forestry inventories for management purposes, but it was clear that are very costly. A low sampling inventory together with forest cover maps and vegetations was looked as a more realistic option for the sub-region.

Increased regional collaboration was considered to be important. This collaboration should focus on the preparation of national forest cover maps and perhaps the development of an forest inventory system which could be standardised throughout the Caribbean.

Countries potential interested in such a regional approach are St. Kitts and Nevis, Montserrat, Dominica, St. Lucia, St. Vincent and the Grenadines, Grenada and Trinidad and Tobago. The preparation of a forest cover maps for management purposes could be based on the vegetation cover map prepared from the Caribbean mapping initiative from IITF and TNC or could be based on the preparation of forest cover maps using the mapmaker approach.

National Forest Assessment component of the FRA programme could be an alternative for developing national forestry inventories with low sampling plots. An ultimate goal for increased regional collaboration could be the establishment of a network of permanent sample plots to monitor forest growth and dynamics.

7. Conclusions

- Country correspondents recognize the importance of FRA 2005 reporting process, specially the importance of been able to track back the information sent, for futures FRA reports and other international reporting commitments in the Caribbean countries.
- The country correspondent fro San Vincent pointed out that FRA 2005 is a crosswalk up to FRA 2010, reports should be developed in a professional way, and the process strength the national existing reporting capacities, so as the reporting mechanism of the Forestry Department.
- Forestry information should be linked to other sectors, including social information.
- Harmonization of data is requested so it can be used by other national agencies for planning and management decision in the forestry sector and other related sectors.
- The CARICON integration process in the region, is requesting natural resources information for appropriate management.
- FRA 2005 is giving the opportunity to have a state of the art of existing and missing information.
- In some countries, institutional breakdown have meant no activity and loss of data in a number of countries. FRA process can be a mechanism to sort and gather national information in a systematic way.
- Still a problem to be solved is the official nomination of country correspondents, and the guarantee that the same person will attend FRA meetings and trainings.
- There was an expression of interest for linking the efforts of between the Caribbean region and the South Pacific region, as their needs may be similar one may benefit from the other experience.
- There are still some questions to be answered, how to assess biodiversity? how to produce a vegetation map when there are more thousands of tree species, most of them non identified?
- Information gap still remains as problem in the Caribbean Region. Vegetation maps, and national forest assessment were identified as a possible alternative to reduce this gap. Forestry inventories for management purposes is the ideal scenario but restricted to fund availability.

Appendix 1: List of participants

Regional review of country reports to Forest Resources Assessment 2005 English Speaking Caribbean Countries

Ms Margaret Austin

Intern-Trainee
FAO Sub-Regional Office for the Caribbean
P.O. Box 631-C
Bridgetown, Barbados
Tel.: (246) 426-7111
Fax.: (246) 427-6075
E-mail mlamars@hotmail.com

Mr. Percival Cho

Forest Officer
Sustainable Forest Management Program
23/25 Unity Boulevard
Belmopan Belize
Belize, CA
Telephone 501 8 221524 5
Fax 501 8 221523
E-mail foresterbze@alumni.clemson.edu
frpm@mnrei@gov.bz

Mr. Eric Hypolite

Director
Forestry, Wildlife and Parks Division
Botanical Gardens
Roseau, Dominica
Telephone 1767 4482401
Fax 1767 44 87999
E-mail forestry@cwdom.dm

Mr. Julien Demenois

Leader Project
Office national des forets
Réserve de Montabo, BP 7002, F-97307
Cayenne
Cedex French Guiana
Telephone..00 33 594 594 25 53 70.
Fax: 00 33 594 594 31 99 33
E-mail address: julien.demenois@onf.fr
DR.guyane@onf.f

Mr. Owen Evelyn

National Project Manager
Trees for Tomorrow
173 Constant Spring Road
Kingston 8, Jamaica
Telephone 1 876 9242125
Fax 1 876 9242626
E-mail oevelyn@forestry.gov.jm

Mr. Upton Dowards

GTS Mapping office
Forestry Department Jamaica
173 Constant Spring Road
Kingston 8, Jamaica
Telephone 876 922667-8 876 8425609
E-mail UEwalds@forestry.gov.jam

Mr. Alli Morgan

Acts. Technical Director
Forestry Department
173 Constant Spring Road
Kingston 8 Jamaica
Telephone 876 92 42667-8
E-mail amoragan@forestry.gov.jm

Mr Norbert Debroize

Forest Officer
Office National des Forêts – Direction
Régionale
Jardin Botanique, BP 648, 97109
Basse-Terre cedex. Guadeloupe (FWI)
Guadeloupe & Martinique (French West
Indies)
Email: norbert.debroize@onf.fr

Mr Rodrigo Rodas

Instituto Nacional de Bosques -INAB-
7 ave 12-90 zona 13
Guatemala Ciudad, Guatemala
Teléfono +502 3 340805
Fax +502 3 618070
E-mail joserodrigorodas@hotmail.com
estadistica@inab.gob.gt

Ms Anna Mohase

Guyana Forestry Commission
1 Water Street
Georgetown, Guyana
Telephone number 592 2 267271/4
Fax number 592 22 68956
Email MDO@forestry.gov.gy

Mr. Lloyd Martin,

Forestry Technician
Ministry of Agriculture, Land, Housing and
the Environment
P.O Bos 272 Brades Montserrat
West Indies
Telephone 6 644912546/2075
Fax 1664 4919275
E-mail lloydie27@hotmail.com.

Ms Ilis Watts

Forestry Officer
Fruit Tree and Forestry
Ministry of Housing, Agriculture, Fisheries
and Consumer Affairs
P.O. Box 39
La Guerite
Saint Kitts & Nevis
Telephone 1 869 4652938
Fax 1 869 4652635
Email ilisp@hotmail.com

Mr Edgardo González,

Director of Forest Service
State Forester, Dept. of Environment and
Natural Resources,
P.O. Box 00906-6600,
Puerta de Tierra, San Juan,
Telephone (787) 724-3647
Fax (787) 721-5984,
E-mail sfpr@caribe.net

Mr. Enrique Santos Irizarry

Forestry Biologist
State Forester, Dept. of Environment and
Natural Resources,
P.O. Box 00906-6600,
Puerta de Tierra, San Juan,
Telephone (787) 724-3647
Fax (787) 721-5984,
E-mail sfpr@caribe.net

Mr Cornelius A. Richards

Senior Forestry Supervisor
Forestry Department
Ministry of Agriculture Forestry and
Fisheries
Telephone number +1 784 4578594
Fax number +1 784 4578502
Campden Park
Saint Vincent/Grenadines
Email forestrysvg@vincysurf.com;
amazonhome@yahoo.com ;
cornierich@yahoo.com

Mr Rene Somopawiro

Planning and Development Manager
Foundation for Forest Management and
Production Control
Ministry of Natural Resources
Dr Martin Luther Kingweg perc. 283
Paramaribo, Suriname
Telephone (59 7) 483764 and 483131
Fax (59 7) 483051
Email sbbsur@sr.net

Mr Cornelius Isaac
Assistant Chief Forestry Officer
Forestry Department Ministry of Agriculture
Forestry, Fisheries and the Environment
Sir Stamlans James Building
The Waterfront Saint Lucia
Telephone number +1 758 4502231
Fax number +1 758 4502287
Email chiefforest@slumaffe.org;
Corneliusi@hotmail.com

Mr Seeperad Ramnarine
Director of NRRP
Forestry Division
P. O. Bag 30 St. James
Port of Spain
Trinidad and Tobago
Telephone 001 1868 622 5658
Fax 001 1868 6285503
E-mail forestry@tstt.net.tt

Mr Thomas J. Brandeis
USDA Forest Service, SRS-FIA
4700 Old Kingston Pike
Knoxville, TN 37919
Telephone: (865) 862-2030
Fax: (865) 862-0262
E-mail tjbrandeis@fs.fed.us

Mr Claus Eckelmann
Forestry Officer from the Caribbean
PO Box 631 C
Bridgetown Barbados
Telephone 1 246 4267110
Fax 1 246 4276075
E-mail Claus.Eckelmann@fao.org

Mr. Evan Notman,
AAAS Science Policy Fellow
US Forest Service
Science Policy, Planning, Inventory &
Information
1601 N. Kent St. 4th Floor, RP-C
Arlington VA 22209
Telephone + 703 605-4192
E-mail enotman@fs.fed.us

Ms Eileen Helmer
United States Forest Service
International Institute of Tropical Forestry
PO Box 25000 Rio Piedras PR 00928-5000
Tel: 970-2215888
E-mail ehelmer@fs.fed.us

Mr Joseph Donnegan
USDA Forest Service
Forest Inventory and Analysis
620 SW Main Street, #400
Portland, OR 97205
Telephone: (503) 808-2053
Fax (503) 808-2020
E-mail jdonnegan@fs.fed.us

Ms. Hivy Ortiz Chour
Forestry Officer
FRA FORM
Room C 368
Viale delle Termi di Caracalla
Roma, Italy
Telephone 39 06 570 54811
Fax 39 06 570 55825
E-mail Hivy.OrtizChour@fao.org

Appendix 2: Agenda



Regional Review and Training Workshop for English Speaking Caribbean

Forest Resource Assessment 2005, FAO

24rd to 28th January 2005

ANNOTATED AGENDA

Monday 24rd January 2005 Arrival day of the participants.		
17:00-18:00	Item 1	Opening ceremony FAO representative and national authorities welcome the participants
		Followed by welcome cocktail
Tuesday 25th January 2005		
Time	Agenda Item	Agenda Notes
07:30-08:00		Registration of Participants
08:00-8:15		Introduction – Participants and Resource Persons Participants and resource persons introduce themselves
08:15-08:30		FAO Forestry Activities in Caribbean a Region Mr.Claus Eckelmann, Forestry Officer will inform the participants about the linkages between FRA activities and other forestry activities in the Latin America and Caribbean region
08:30-08:45		Organization of the Meeting Mr. C. Eckelmann and Jamaica country correspondent will present the participants the agenda and the local logistics.
08:45-09:00	Item 2	FRA 2005 and Regional Review of FRA 2005 Country Reports FRA representative will address the participants and inform them about the country reporting to FRA 2005 in general and about the “Review of Country Reports” in particular. The five days workshop will aim the following <ul style="list-style-type: none"> • Ensuring correct application of methods • Improving consistency among different tables • Identifying problems and data gaps and suggesting ways to address them • Assessing country capacity building needs implementing “National Forest Assessments” to fill their data gaps and to improve the quality • Seeking clarifications and additional information from countries • Introducing the “Thematic studies” component of FRA to the NCs
09:00-9:30	Item 3	FRA 2005 overview H. Ortiz Chour will briefly inform the NCs, the background information of the

		FRA 2005 process Review of methodology for country reporting FRA secretariat will briefly go over the methodology for country reporting which is common for all 15 National reporting table, including format, process, consistency
9:30-10:00	Item 4	Thematic Studies in FRA 2005 H. Ortiz Chour will inform the participants about the thematic studies in FRA 2005 and their information needs. In this session the NCs will review the contents of Tables . Discussion.
10:00-10:30	Tea- Coffee Break	
10:00-11:45	Item 5	Identification of country report status and problems: Tables, 1, 2, 3, 4, 5, 7 and 10 This plenary session will identify the problems, that are common in developing country reports to FRA 2005., by table. Using the Country Report of Jamaica, table by table was discussed, and key issues, problems, method, were clarify. Once finalized the different steps to conclude a reporting table, each participant presented the reporting status of the discussed table, problems, questions, etc.
11:45-12:00		Cont.... Tables, 1, 2, 3, 4, 5, 7 and 10
12:00-12:30		Cont.... Tables, 1, 2, 3, 4, 5, 7 and 10
12:30-13:30	Lunch break	
13:30-14:30	Item 6	Cont... Tables, 1, 2, 3, 4, 5, 7 and 10
15:30-15:45	Tea – Coffee Break	
15:45-16:00	Item 6	Cont..... Tables, 1, 2, 3, 4, 5, 7 and 10
16:00-17:00		
Wednesday 26th January 2005		
Time	Agenda Item	Agenda Notes
08:00-10:00	Item 6	Cont... Table 8, 9, 11, 12, 13, 14, 15
10:00-10:30	Tea – Coffee Break	
10:30-10:45	Item 7	Concluding Session – Summary of issues This session will compile (table by table) the issues relating to FRA 2005 that need to be addressed either by FAO or by countries according to the results of the first day discussions and the group session work.
10:45-11:00	Item 8	Concluding Session – Way Ahead – Future Plan of Action This session will develop future plan of action till submission of final report by the countries to FRA 2005.
11:00-11:30	Item 9	Adapting the US Forest Inventory and Analysis program to Puerto Rico and the US Virgin Islands Thomas Brandis
11:30 -12:00	Item 10	Experiences and lessons learned from forest inventory and data analysis work in the Pacific Islands , Joseph Donnegan
12:00-13:00	Lunch break	
13:30-14:00	Item 10	Support to National Forest Resource Assessment Inform about the FAO programmes to “Support to National Forest Assessment” as a critical component to the FRA programme Hivy Ortiz Chour
14:00-15:00	Item 11	Presentation of the National Forest Assessment in Guatemala, Methods, results and use of the results in the policy making process. Mr. Rodrigo Rodas
15:00-15:30	Tea – Coffee Break	
15:30-16:30	Item 12	Jamaican forestry inventory Mr. O. Evelyn
16:30-17:00	Item 13	Summery of the day Mr. Claus Eckelmann

Thursday 27th January 2005		
Time		
08:00	Item 11	Field visit and discussion on practical aspects of forest inventories
17:00		Back to the hotel
Friday 28th January 2004		
Time	Agenda Item	Agenda Notes
08:00-8:30	Item 13	Lessons learned from forest mapping and inventory practices in Jamaica, Mr. Evelyn Owen
8:30 – 9:00	Item 14	Caribbean initiatives to forest mapping and inventory , Introduction to the theme, Mr. Claus Eckelmann
9:00 – 9:30	Item 15	Using Mapmaker software and Aerial Photos to prepare a forest cover map, A practical case study from Barbados Ms. Margaret Austin
9:30 – 10:00	Item 16	Preliminary results and experiences of the Caribbean Vegetation Mapping Project based on satellite imagery interpretation, Ms. Eileen Helmer
10:00 – 10:30	Coffee Break	
10:30 – 10:45	Item 15	Summary of issues for discussion Mr. Claus Eckelmann
10:45 – 11:15	Item 16	Discussion on national forest data requirements and components for a regional project proposal for forest assessment. Plenary session
11:15 – 12:00	Item 17	Discussion on national forest data requirements and components for a regional project proposal for forest assessment. Plenary session
12:00 – 12:30	Item 18	Closure of the meeting
12:00 – 13:00	Lunch	
Saturday 29th January		Participants return to their home countries

Appendix 3: Frequently asked questions

General Questions

Q1 How do I report when data are missing or weak?

A1 Refer to page 13 in the Guidelines for country reporting to FRA 2005.

Q2 How do I undertake calibration/estimation/forecasting/reclassification of data?

A2 Refer to the explanations and examples provided in the Guidelines for country reporting to FRA 2005.

Table T1

Q1 How should areas that are under multiple land use (agroforestry, forest grazing, etc.) be classified in a consistent way, particularly in cases when no land use is significantly more important than the others.

A1 Agroforestry systems where crops are grown under tree cover are generally classified as Other land, however some agroforestry systems such as the Taungya system where crops are grown only during the first years of the forest rotation should be classified as Forest. In the case of forest grazing, there is an explanatory note under the definition of Other land that says: "If a country has areas with meadows and pastures that are difficult to classify whether they should belong to Forest/Other wooded land or to Other land, the country should explain the criteria used and how this classification is done." The general rule is to include the forest pastures in the area of Forest/Other wooded land, unless the grazing is so intensive so it becomes the predominant land use, in case of which the land should be classified as Other land.

Q2 Where should line be drawn between Forest on one hand and Agricultural tree crops (fruit plantations, rubber plantations, etc.) on the other hand. For example: How to classify a plantation of Pinus pinea with the main objective of harvesting pine nuts? Is it an agricultural tree crop or is it a forest where NWFP are harvested?

A2 Rubber plantations should be classified as forest (see explanatory note 4 under the definition of Forest). Fruit plantations should be classified as Other land (with tree cover). The general rule is that if the plantation is made up of forest tree species, it should be classified as Forest. The case of the Pinus pinea plantation for pine nut production should therefore be classified as Forest and the harvested pine nuts are NWFP.

Q3 National forest inventories sometimes distinguish woodlots less than 0.5 ha. Should these be included when reporting the area of Forest??

A3 The general definition of Forest in FRA is "Land spanning more than 0.5 hectares..." and this should be the base for country reporting whenever it is possible to obtain this figure from the national data sources. However, sometimes the national data sources do not allow to obtain estimates with exactly this size limit. In such cases the countries should report to whatever size limit that is available and clearly document the size limit used. Countries that can report according to the FRA specification but also have additional information on woodlots of sizes below 0.5 hectare are encouraged to include these figures in the country report where national data are presented, although they will not form part of the figures in the final reporting table for table T1.

Q4 How can sub-national level information on forest area be used to improve/generate national level estimates?

A4 If boundaries of the sub-national units are consistent and definitions compatible, sub-national level information can be aggregated to generate a composite national level estimate through addition of the sub-national figures. Where definitions/classifications differ, harmonization of national classes or reclassification to the FAR 2005 categories should be done prior to adding the various estimates.

Q5 How does one address the problem of different reference years for sub-national level figures used to generate an aggregated national estimate?

A5 First bring the different estimates to a common reference year through inter/extrapolation, then add the sub-national figures.

Q6 Since mangroves are found below the tidal level and are not part of the total land area, how should they be accounted for in Table T1?

A6 Most mangroves are located in the inter-tidal zone i.e. above the daily low tide, but below the high water mark. The boundaries of a national territory may or may not include the inter-tidal zone. In some countries, the inter-tidal zone forms part of the "surface water" area of the country rather than the "total land area".

To be consistent, we recommend that all mangroves, which meet the criteria of forest or other wooded land (area, canopy cover, height and dominant land use), should be included in Table 1, regardless of whether they are found in areas not forming part of "total land area" according to the national definition of land area.

It should be noted that in the UNSD/UNEP Questionnaire 2004 on Environment Statistics sent to all countries except those that are covered by the joint OECD/Eurostat Questionnaire, the definitions of forest and other wooded land (sourced from FAO) include the following note: "Please include mangroves and forests on wetlands according to the above height and canopy coverage."

Q7 What estimate should I use for 1990? Our estimate at the time or an estimate projected back from the latest inventory?

A7 The estimate for 1990 should be based on the most accurate information available, not simply a repetition of a previous estimate or the result of an inventory/assessment undertaken in or just prior to 1990. Where a time series is available, the estimate for 1990 can be calculated by simple interpolation. If the latest inventory is considered more accurate than earlier inventories, then this should be taken into account and an attempt made to project the results back in time.

Q8 In the document: Specification of National Reporting Tables for FRA 2005, bamboo and palms are included both under "Forest" and under "Other land", so I am not sure where I should include them.

A8 Provided that the criteria for "Forest" (area, canopy cover, height and dominant land use), are met, bamboo and palms should be included under "Forest".

The most critical criterion is often the land use. Some palm plantations, established for other purposes than wood (i.e. oil palm and coconut plantations) should be classified as "Other land" and "Other land with tree cover" as these areas are considered to be under agricultural land use.

Because of their increasing significance as a supply of fibre to the wood industries sector, rubber (*Hevea brasiliensis*) plantations are included as “Forest”.

The explanatory notes for “Other land” stating: “Includes areas with bamboo and palms provided that height and canopy cover criteria are reached” is a mistake and should be deleted. An erratum note was issued with this document to this effect.

Q9 How should forest fallows/temporarily abandoned land (shifting cultivation areas) be classified?

A9 Assuming that the individual areas are relatively small and are expected to regenerate as forest, they should be included as “forest”. If the main use of the area is considered to be agriculture, the areas should be classified as “other land with tree cover”.

Q10 Should areas with Christmas trees be included as “forest”?

A10 Yes

Q11 When national data on inland water is highly different from the FAO-STAT data, how should this be handled?

A11 Specific problems will be analysed on a country by country basis, as was done as part of FRA 2000. The differences will be checked with the FAO-STAT Division, and, where needed, a procedure for making changes to the official UN statistics will be provided to the national correspondent.

Q12 How should “young forests” be classified?

A12 Young forest should be classified as “forest” if the primary use of the land area is forestry and the trees are capable of reaching 5 m in height.

Q13 I have problems distinguishing between forest and other wooded land. Could you give some additional guidance/examples?

A13 There are two main differences between “forest” and “other wooded land”. One pertains to the canopy cover, the other to the vegetation cover. Typical examples of other wooded land are those areas where: The canopy cover is between 5 and 10 percent and trees are higher than 5 metres or the canopy cover is more than 10 percent but the vegetation is a combination of shrubs and bushes with some trees present.

Table T2

Q1 In many countries the ownership of land and the ownership of trees is different. How should this be considered in the reporting table??

A1 The FRA 2005 deals with the ownership of land, although we are well aware that it does not give a complete picture of the ownership situation. A thematic study for FRA 2005 on ownership is being planned, and for this study a selected group of countries will be asked to provide complementary information on this issue. If a country wish to report on ownership in more detail, there is an opportunity to do so in the section on thematic reporting in the country report.

Q2 There are some areas where overlapping of land property may occur. How should these be classified?

A2 Such areas should be classified as “other ownership” and a note included as part of the comments to the table.

Q3 There may be “land ownership” locally recognized but without a land title. How should such areas be classified?

A3 Where it is impossible to classify such areas as either public or private ownership, they should be included in “other ownership”. The national definitions should specify this fact, as there countries or regions, where “no titles” means communal land, so please specify particular cases. National definitions and additional clarifications should be given in the section for comments to the table.

Note also that FAO is conducting a specific thematic study on forest ownership.

Table T3

Q1 How the designated function should be classified when a government has established an overall policy that all forest will be managed for multiple purposes, but the management plan designates specific functions such as production or conservation?

A1 Functions can be designated a different level (e.g. national level, management unit level, etc.) and as a general rule, the lowest level of designation should be used. In the example above, functions designated at management unit level overrides the national level designations. However, when functions have not been designated at lower levels, the nation-wide designations should be used.

Q2 How should I estimate the area of forest/other wooded land designated for recreation? (Part of the area of forest designated for the provision of social services). Often, only a small part of the forest (picnic area and paths) is actually used and managed primarily for recreation, whereas the rest of the forest may be designated for other purposes. Do I just estimate the picnic areas, paths etc? If not, how much of the forest should be included?

The same may be true for the area of forest designated for the protection of soil and water (confined to river banks and steep slopes within a larger forested area).

A2 If the recreational use is not the primary function of the area, the whole area can be listed under its primary function and the same area listed under social services in the column on “total area with function” to show that the area is dedicated to more than one function, but with one of these being significantly more important than the other. The same applies if the recreational use is significantly more important than the other, secondary use(s).

Where recreation is the primary function, but only for part of the area, one solution would be to multiply the number of recreational “sites” (picnic areas, visitor centres, public parking lots in/next to forests etc) with an estimated average number of hectares per site. Countries using this option should indicate the assumptions in the comments to the table.

Q3 What about areas where the designation change over time? (Areas planted primarily for timber changing to multipurpose use)

A3 The latest available information should be used for this table regardless of whether the forest was previously

designated for another primary function.

Q4 How should “scientific research” areas be classified?

A4 As “social services”, unless the area has been specifically designated to research of conservation of biodiversity, in which case it should be classified as conservation of biodiversity.

Table T4

Q1 How “clearly visible indication of human activities” should be interpreted in order to distinguish between Primary and Modified natural Forest/OWL?

A1 Almost all forests have been affected one way or another by human activities for commercial or for subsistence purposes by logging and/or collection of non-wood forest products. The general rule is that if the activities have been of such a low impact that the ecological processes have not been disturbed, the forest should be classified as Primary. This would allow for including activities such as a non-destructive collection of NWFP. Likewise it may include areas where a few trees have been extracted as long as this happened long time ago and where no visible signs of this extraction remain.

Q2 For FRA 2000, the industrialized temperate/boreal countries used only three classes: Forests/other wooded land undisturbed by man; semi-natural forests and plantations. Why does FRA 2005 include 5 classes and what is the difference between the old and the new classification system?

A2 For FRA 2000, developing countries were asked to classify natural forests into three classes: Undisturbed natural forest; Natural forest disturbed by man; and Semi-natural forest. Countries were also asked to provide information on the area of forest plantations established for productive and for “other” purposes. T4 builds on the tables developed for developing countries for FRA 2000.

The use of 3 classes for natural forests (primary = undisturbed; modified natural = natural forests disturbed by man; and semi-natural forests) stems from the wish to be able to sub-classify the degree of modification of the forest structure and composition and the intensity of management, which may have an effect on the potential wood supply.

The distinction is thus made between those natural forests where evidence exist of past/present use of the forest (wood and/or non-wood forest product harvesting), but where no efforts have been undertaken to regenerate the forest (modified natural forests) and those natural forests, which are more intensively managed including efforts to influence the future species composition through either assisted natural regeneration, enrichment planting, seeding or planting of desired, primarily native, species (semi-natural forests).

Typical examples of modified natural forests include:

- (Tropical) natural forests which have been selectively logged with no post-harvesting activities to facilitate natural regeneration and no enrichment planting. Ranges from selectively logged primary forests to forests which have been degraded due to over-exploitation or illegal logging.
- Areas regenerating naturally following past agricultural use or extensive damage by fire, floods, hurricanes etc. (often dominated by pioneer species in the early stages of succession)

Typical examples of semi-natural forests include:

- Most intensively managed forests e.g. in Europe, where emphasis is placed on securing a future stand comprised of desirable species through assisted natural regeneration, seeding or planting.

As regards plantations, productive plantations are often characterized by fewer species and shorter rotations than protective plantations and are mostly clear-felled and re-planted, whereas protective plantations may be kept under continuous forest cover and less intensive management.

Q3 I have problems distinguishing between semi-natural forests and plantations. Could you give some additional guidance/examples?

A3 There are some grey areas, notably as concerns native species which are variably referred to as semi-natural forests or planted forests, but not necessarily as forest plantations. In general, the following can be used as a guide:

1. If the stands consist of introduced species which have been planted or seeded, then they should be classified as plantations.
2. If the stands consist of introduced species, which have regenerated naturally – or through assisted natural regeneration, they are classified as semi-natural forests.
3. If the stands consist of native species which have been established through assisted natural regeneration, they are classified as semi-natural forests.
4. If the stands consist of native species which have been planted or seeded and which are characterized by few species, straight tree lines and even-aged trees, they should be classified as plantation forest.
5. If the stands consist of planted/seeded native species, perhaps including some naturally regenerated introduced species, and are characterized by multiple species and age classes and irregular spacing, then they should be classified as semi-natural forest.

Tables T5, T6 and T7

Q1 When making the calibration with FAO-STAT total land area, there will be changes in the total land area. These differences will also have implications on estimations of carbon. Therefore the data reported to FRA may be different from the ones sent to the IPCC.

A1 IPCC and FAO-STAT use the same land area. However, it is important to clarify that the FRA 2005 data on carbon may be different from the one reported to IPCC, because FAO classes and definitions of forest are different. For example, FAO does not request information on managed forests as IPCC does.

Conceptually IPCC is requesting information on forest where significant changes are taking places. It assumes that no changes are taking place in unmanaged forests. Therefore, as an exception, if there are any significant changes in "unmanaged forest" then countries are encouraged to report on that as well. However, generally speaking IPCC limits the reporting requirements on carbon stock to managed forests only.

Q2 What about the biomass/carbon stock of shrubs and bushes? Should they be included or excluded?

A2 In cases where forest understorey is a relatively small component of the above ground biomass carbon pool, it is acceptable to exclude it, provided this is done in a consistent manner throughout the inventory time series.

Table T8

Q1 How should "human induced disturbances" such as war, refugee camps, settlements, etc. be classified?

A1 Disturbances are only reported for land classified as Forest or Other wooded land. If such disturbances have

caused a change in land use to Other land it should not be included. In case that the land still is considered to be Forest/OWL, then the disturbances can be classified as “Other disturbance” with a note that specifies the type of disturbance.

Q2 Should invasive species be considered to be a disturbance?

A2 Yes, and they should be classified as Other disturbance with a note that specifies the type of disturbance.

Q3 How should “an impact that significantly affects the health and vitality...” be interpreted?

A3 There is no general rule. Each country should specify the criteria used for their classification.

Q4 Should the area damaged be the area affected within a given year or the area in which the effects of the disturbance is present/visible?

A4 The figure reported should, where possible, be the annually affected area, so the area in which damage occurs within a given year. Since there may be considerable variations in the area affected over the years, countries are requested to report the annually affected area as a 5-year average.

Q5 Some areas are affected both by fire and by diseases or pests. How do we handle this?

A5 The four categories in this table are not exclusive. Hence an area of forest/other wooded land that has been affected by different disturbances simultaneously, each of which significantly affects the health and vitality of the forest/other wooded land, should be counted once for each disturbance category.

Q6 Some areas are affected by more than one pest or more than one disease. How do we handle this?

A6 The total area within each category should be the accumulated area without double-counting. If this is not possible with the existing data collection methods, then this should be clearly noted in the comments to the table. Note that only areas where the disturbance results in a significant effect on the health and vitality of the forest/other wooded land should be included in the table.

Q7 What is meant by an impact which “significantly” affects the health and vitality of the forest/other wooded land?

A7 It may often be difficult to define whether a disturbance should be considered to have a significant impact on the health, vitality and/or productive capacity and thus be included in Table T8. Countries should use existing thresholds/criteria where available and list these in the comments to the table. Note that the disturbance should cover at least an area of 0.5 hectares in order to be included.

Q8 Should factors like “over exploitation”, “selective logging”, and “degradation” be included in this table?

A8 No, these factors should not be included here. This table aims to highlight only the areas damaged by environmental fluctuation and/or destructive events (fire, insects, diseases, climatic events). Human interventions should not be included in this table.

Table T9

Q1 How do we deal with species that are not native but were introduced long time ago (several generations back)? Should these be considered as native?

A1 Such species are not native, rather naturalized, and should not be included in this table.

Q2 Should bamboo, palms and rattan be considered as tree species for the purpose of table T9?

A2 Bamboo and palms can be considered as tree species, as long as they fulfill the general criteria for trees, which is being able to reach the height of 5 m at maturity in situ. Rattan is not considered to be a tree species.

Q3 Why are only tree species included in the assessment of biodiversity. Biodiversity of forests include much more than only tree species.

A3 This is a first attempt to address the very complex issue of forest biodiversity assessment within the FRA framework. Trees is the groups for which we believe it to be most viable to get global data at the moment. Based on experiences from FRA 2005, this reporting table will be further refined for FRA 2010.

Q4 How does one determine which of the plants in the IUCN list are “tree” species according to the FAO definition of a tree? Does it have to be able to grow to 5 m?

A4 The definition of a “tree” for the purposes of FRA 2005 is as follows: “A woody perennial with a single main stem, or in the case of coppice with several stems, having a more or less definite crown. Includes: bamboos, palms and other woody plants meeting the above criterion.”

A tree should under normal conditions be able to reach the height of 5 m at maturity in situ, although this limit must be interpreted with flexibility.

If a country has its own definition or list of tree species, then that can be used, as long as this is explained in the notes to the table.

Q5 When there are national lists of vulnerable and in danger species that may be different from the IUCN list, should these species be included in the reporting table?

A5 No. The number of species in the table should refer to those on the IUCN list. If national lists exist and these differ from the IUCN list, these should be provided in the section on comments to the table. These lists will then be forwarded to IUCN for information and to aid in the revision of the existing lists.

Q6 Some species are reported by IUCN by region, and may not exist in a specific country, what should be done?

A6 These species should be listed in the comments section.

Table T10

Q1 Does Table T 10 on growing stock composition refer to natural/native forests only?

A1 No. All the FRA 2005 tables refer to both natural and planted forests of both native and introduced species as implied by the definition of forests provided for Table 1.

Q2 In Table 10, do "species" mean individual species or generic species [genus such as *Quercus*]?

A2 Both parameters would provide some useful information. However, for FRA 2005, we're asking for the information by species rather than genera, where this information is available. However, please note that: "Countries may report on genera instead of species if their inventory data do not allow the distinction of individual species within certain species groups." (See Note to Table T10 in Specification of National Reporting Tables for FRA 2005.)

Q3 If diversity is part of the intent of the measure for Table T 10, should it be numbers of trees or volume?

A3 Although part of the reasoning behind Table T 10 is to get an idea of species diversity, we're asking for the information in terms of volume/growing stock rather than the number of trees. The reason being that this would give a better picture of the structure of the forests in individual countries.

Q4 Should the ranking of species be by volume, area or number of trees?

A4 By volume (growing stock).

Q5 How is the growing stock related to biodiversity?

A5 This variable (growing stock composition) is one among many potential variables linked to biological diversity. It aims to provide information on the composition of forests and the trends over time may help highlight important changes in the composition including over-exploitation of certain species.

Q6 Is it possible to provide information by groups of species when the number of species is too big?

A6 Yes. Countries may report on genera (or groups) instead of species, if their inventory data do not allow the distinction of individual species within certain species groups.

Table T12 and T14

Q1 What exchange rate should be used for the estimated value of wood and non-wood forest products for 2005?

A1 For all values in Tables 12 and 14, the exchange rates in Appendix 4 of the Guidelines for country reporting to FRA 2005 should be used. For the projections for 2005, the exchange rate for 2003 should be used.

Q2 The value may change dramatically simply due to fluctuations in the dollar exchange rate between reporting years. How is that accounted for?

A2 Yes. By asking for information both on the value and the quantity, it will be possible to explain extreme value fluctuations caused by a fluctuating exchange rate.

Q3 Why are the data in FAO's Yearbook of Forest Products different from the data sent by the countries in reply to the joint FAO/ITTO/EUROSTAT questionnaire?

A3 There is no general answer to this question. This should be analysed on a country by country basis. Please send any specific queries you may have to your FRA focal point.

Q4 It is difficult to quantify subsistence products including fuel wood, is it possible to report estimations?

A4 Yes, country correspondents may report an estimated figure, as long as they specify the assumptions and methods that were used.

Q5 Fuel wood value depends on the species. How to quantify?

A5 The value should be estimated by group of species and all figures should be added and reported as the total. Country correspondent may provide clarification in the comments section if needed.

Table T13

Q1 How does one determine the cut-off point between NWFPs from forests and domesticated/ cultivated NWFPs?

A1 For some products and in some countries, it will be difficult to estimate how much of a particular non-wood forest product derives from the forest and how much is cultivated. Where agricultural statistics or other information sources can help estimate the percentage from forests, these should be used and the assumptions documented.

Q2 Should Christmas trees be included as NWFPs?

A2 Yes.

Q3 Data only exist for those products that are sold in the formal market. Products used for subsistence are not recorded. How to report?

A3 Where this is the case, country correspondents are requested to make a note of this in the comments section. If it is possible to estimate subsistence use of forest products, please provide information on the method and assumptions used.

Q4 Are animals which are produced inside the forest considered NWFP?

A4 No. Domesticated animals should not be included as NWFP.

Q5 If traditional measuring units are used and these are incompatible what can be done?

A5 Please use the best conversion factor available, and specify it in the comments section. Convert the traditional measurement to the one requested in the table using this conversion factor, and calculate the total.

Table T15

Q1 How should the term Employment be interpreted when we deal with communities where forestry activities are part of every day life and mixed with subsistence activities related to collection of wood and NWFP. Many people work without a salary (either as self-employed or working for the community) and sometimes under traditional but not formalized agreements.

A1 The term Employment refers to formal employment, where the employee receives a remuneration that can be in cash or in kind. The definition specifically excludes "work performed by individuals or communities for which no employment contract has been established, independently whether for household, subsistence or commercial

purposes”.

Q2 How to report employment when the labour is carried out by the forest owner himself?

A2 Self-employment is, as a general rule, not considered as employment. Only in those cases where a contracting company has been hired to perform some forestry activities and the owner of this contracting company carries out the work (although he is self-employed within his own contracting company).

Q3 Forestry sector employment may be included in the “agriculture statistics”. How should it be reported?

A3 If at all possible, estimate the percentage of the total employment which is related to the forestry sector. If this is not possible and the reporting data includes information from other sectors, please make a note under the comments section.

Q4 There are some cases where the sawmills are located inside the forest area, or people work inside the forest, and in the sawmills as well, how should it be reported?

A4 If it is possible to calculate/estimate the hours/months allocated to each activity, then please do so. If not, please provide the total and make a note in the comments section.

Q5 Should employment related to other wooded land be included?

A5 If it is possible to distinguish between employment related to forests and to other wooded land, please provide both figures in the comments section and the total in Table 15.

Q6 Should employment in this table exclude haulage, processing and other non-forest work?

A6 Yes. Only the employment (and the related administration) within the forest should be included.

For further questions please contact: fra@fao.org

Appendix 4: Presentations

(not included in this version of proceedings)