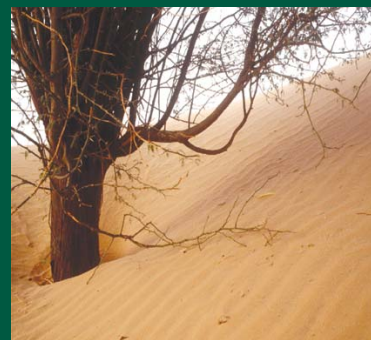




PROCEEDINGS

THIRD EXPERT MEETING ON HARMONIZING FOREST-RELATED DEFINITIONS FOR USE BY VARIOUS STAKEHOLDERS

Rome, 17-19 JANUARY 2005



INTERGOVERNMENTAL PANEL
ON CLIMATE CHANGE
(IPCC)



PROCEEDINGS

THIRD EXPERT MEETING ON HARMONIZING FOREST-RELATED DEFINITIONS FOR USE BY VARIOUS STAKEHOLDERS

Rome, 17-19 January 2005

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Rome, 2005

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

All rights reserved. Reproduction and dissemination of material in this information product for educational or other non-commercial purposes are authorized without any prior written permission from the copyright holders provided the source is fully acknowledged. Reproduction of material in this information product for resale or other commercial purposes is prohibited without written permission of the copyright holders. Applications for such permission should be addressed to the Chief, Publishing Management Service, Information Division, FAO, Viale delle Terme di Caracalla, 00100 Rome, Italy or by e-mail to copyright@fao.org

© FAO 2005

FOREWORD

The Third Expert Meeting on Harmonizing Forest-related Definitions for Use by Various Stakeholders was held in Rome from 17 to 19 January 2005 and attended by 56 external experts and 14 FAO staff members. It was a follow-up to two previous Expert Meetings held in 2002. It also responded to the UNFF resolution of May 2004, which aptly expressed the objectives of the meeting:

“...invites the Food and Agriculture Organization of the United Nations, other partnership members and countries to enhance efforts to harmonize forest-related definitions in order to facilitate national progress towards sustainable forest management, clarify reporting requests, minimize inconsistencies in information provided and reduce reporting burdens, and urges Member States to support that work, including by convening expert consultations.”

Harmonization identifies not only differences, incompatibilities and inconsistencies, but also common elements between existing definitions of related terms. It recognizes and respects the different objectives underlying the varying uses of a given term, and establishes linkages, as well as qualitative and quantitative relationships.

The key terms discussed at the meeting were *natural forest*, *planted forest*, *forest plantation*, *trees outside forests*, as well as *managed* and *unmanaged forest*. Going further than just harmonizing definitions, general agreement was also reached on the working definitions of some terms, such as *natural forest*, *forest plantation* and *managed forest*. Due to the complex nature of the underlying issues, and the differing objectives of the international processes that are underway, further discussion and continued efforts will be necessary. In addition to discussing the core terms as above, work on multilingual aspects was started at the meeting and is expected to continue.

I take this opportunity to express my appreciation to CIFOR, IPCC, ITTO, IUFRO and UNEP for their partnership and solid support in organizing the meeting. The harmonization process falls under the umbrella of the Collaborative Partnership on Forests (CPF) and I was delighted to welcome participants from other CPF members, such as UNFCCC, CBD and UNFF. I also wish to thank all the participants very much for their enthusiastic engagement in the discussions. The meeting itself can be seen as a process; it provided us all with a better understanding of the issues involved. Let us build up on this and on the previous two meetings in order to further the process on harmonizing forest-related terms for the benefit of forestry and forests worldwide.



Wulf Killmann
Chairperson, Interdepartmental Working Group on Climate Change
Director, Forest Products and Economics Division

CONTENTS

Foreword		iii
Contents		v
Acronyms and abbreviations		vii
Summary Report		ix
Introduction		1
Stock-taking of achievements		3
Conclusions		3
Recommendations		9
Comparative matrix of recommendations		11
Background paper		
“Definitions Related to classifications of forests and their management status”		18
 Annex		
Annex I	List of participants	51
Annex II	Meeting agenda	61
Annex III	Opening speeches	65
	Wulf Killmann FAO	67
	Peter Mayer IUFRO	69
	Markku Kanninen CIFOR	71
	Alastair Sarre ITTO	72
	Jinhua Zhang UNEP	73
Annex IV	Presentations	75
	Peter Holmgren FAO	77
	Markku Simula FAO consultant	81
	Renate Prüller IUFRO	86
Annex V	Group work results	89
	Working Group 1A and 1B: Definitions of terms related to origin and composition of forests	91
	Working Group 1C and 1D: Definitions of terms related to managed and unmanaged forests	92
	Working Group 2A: French	93
	Working Group 2B: Spanish	94
	Working Group 2C: Russian	95
	Working Group 2D: Chinese	105
	Working Group 2E: Arabic	107
	Working Group 3: Trees Outside Forest	108
Annex VI	Relevant information paper	109
	1 “A hierarchical terminology for more or less natural forests in relation to sustainable management and biodiversity conservation” (Erik Buchwald)	111
	2 “Propositions for the harmonization of terms and definitions concerning natural forests, planted forests and plantations” (Georgiy Bondaruk)	128
	3 “Overview presentation on multilingual aspects” (Renate Prüller)	134

ACRONYMS AND ABBREVIATIONS

a	acre
AHTEG	Ad Hoc Technical Expert Group on Forest Biological Diversity
AOSIS	Alliance of Small Island States
ARD	afforestation, reforestation, deforestation
C	carbon
C&I	Criteria and Indicators
CBD	Convention on Biological Diversity
CDM	Clean Development Mechanism
CIFOR	Centre for International Forestry Research
CMSF	Controlled Managed Secondary Forest
CO ₂	carbon dioxide
COFO	Committee on Forestry
COP	Conference of the Parties
CP	Conference Paper
CPF	Collaborative Partnership on Forests
CSCE	Commission on Security and Cooperation in Europe
dbh	diameter at breast height
DG	Directorate General
ECE	Economic Commission for Europe
EFTA	European Free Trade Association
EU	European Union
FAO	Food and Agriculture Organization of the United Nations
FMU	Forest Management Unit
FRA	Forest Resources Assessment
GEZ	global ecological zone/zoning
GIS	geographical information system
GPG	Good Practice Guidance
h	height
ha	hectare
IFF	Intergovernmental Forum on Forests
ILO	International Labour Organization
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
ITTA	International Timber Trade Agreement
ITTC	International Tropical Timber Council
ITTO	International Tropical Timber Organization
IUCN	World Conservation Union
IUFRO	International Union of Forestry Research Organizations
km ²	square kilometres
KP	Kyoto Protocol
LFC	Low Forest Cover
LFCC	Low Forest Cover Countries
LCCS	Land Cover Classification System
LULUCF	Land use, Land-use change and forestry
m	metre
MA	Marrakesh Accord
NTFP	non-timber forest products
NWFP	non-wood forest products
SADC	Southern African Development Community
SBSTA	Subsidiary Body for Scientific and Technical Advice
SBSTTA	Subsidiary Body for Scientific, Technical and Technological Advice
SFM	sustainable forest management

TBFRA	Temperate and Boreal Forest Resources Assessment
ToF	Trees outside forests
ToR	Terms of reference
UMSF	Uncontrolled Managed Secondary Forest
US	United States
UN	United Nations
UNCCD	United Nations Convention of Combating Desertification
UNCED	United Nations Conference on Environment and Development
UN-ECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFCCC	United Nations Framework Convention for Climate Change
UNFF	United Nations Forum on Forests
USDA	United States Department of Agriculture
USFS	United States Forest Service
WB	World Bank
WCMC	World Conservation Monitoring Centre
WFC	World Forestry Congress
WWF	World Wide Fund for Nature
%	percent

SUMMARY REPORT

INTRODUCTION

Background

The Third Expert Meeting on Harmonizing Forest-related Definitions for Use by Various Stakeholders was organized by the Food and Agriculture Organization of the United Nations (FAO) in collaboration with the Center for International Forestry Research (CIFOR), the Intergovernmental Panel on Climate Change (IPCC), the International Union of Forest Research Organizations (IUFRO), the International Tropical Timber Organization (ITTO) and the United Nations Environment Programme (UNEP) at FAO Headquarters in Rome, from 17 to 19 January 2005. The meeting was a follow-up to the Second Meeting, organized by the same bodies in Rome from 11 to 13 September 2002.

The meeting was organized as a response to the resolution made by the United Nations Forum on Forests (UNFF) at its Fourth Session in May 2004, which stated:

“invites the Food and Agriculture Organization of the United Nations, other partnership members and countries to enhance efforts to harmonize forest-related definitions in order to facilitate national progress towards sustainable forest management, clarify reporting requests, minimize inconsistencies in information provided and reduce reporting burdens, and urges member States to support that work, including by convening expert consultations”

Objective

The overall objective of the meeting was to contribute to improved communication and information on forest-related issues. Specifically, the objectives of the meeting were (i) to take stock of developments in forest-related reporting processes since the Second Expert Meeting, and (ii) to contribute to harmonization of definitions related to biophysical constitutions of forest resources and human interventions to manage forests for various purposes. The key terms discussed in the Meeting were: **natural forests, planted forests, forest plantations, trees outside forests as well as managed forests and human interventions in forests which may take into consideration definitions of protected areas and various designated functions of forests.**

It was recognized that harmonization is a process which identifies differences, incompatibilities, and inconsistencies, but also common elements between existing definitions of related terms. Harmonization recognizes and respects the different objectives underlying the varying uses of a given term, and establishes linkages as well as qualitative and quantitative relationships.
--

Documentation

The background document “Definitions Related to Classification of Forests and their Management Status” was prepared and shared with the participants before the meeting. A number of technical documents were distributed to the participants during the meeting which are included in Annex VI.

Participants and Agenda

The participants (Annex I) included a total of 70 experts, resource persons and observers. The experts were selected on the basis of their specialized knowledge and familiarity with the ongoing work on forest-related definitions in various international forums, including UNFCCC, CBD, ITTO, UNCCD and UNFF. Participants served in their personal capacity and not as representatives of their governments or organizations. In addition, resource people from each of the co-sponsoring and collaborating agencies attended the meeting.

The Meeting agenda is shown as Annex II.

Opening

On behalf of Mr M. Hosny El-Lakany, Assistant Director-General of the FAO Forestry Department, Mr Wulf Killmann, Director of the Forest Products and Economics Division, opened the meeting. Mr Peter Mayer of IUFRO, Ms Thelma Krug of IPCC; Mr Markku Kanninen of CIFOR, Mr Alastair Sarre of ITTO and Mr Jinhua Zhang of UNEP made statements on behalf of the partner Organizations on the relevance of the Meeting's work to their organizations and action taken to implement the recommendations of the Second Meeting as shown in Annex III.

Organization of Work

The meeting was chaired by Mr Wulf Killmann and moderated by Mr Markku Simula. Most of the meeting was conducted in the form of group sessions.

Initially, four groups focused their work on ways and means to harmonize the core terms and definitions related to forest origin and composition of forests, and managed and unmanaged forests. The first two groups, which dealt with issues related to forest origin and composition were chaired by Mr Ewald Rametsteiner and Mr Thang Hooi Chiew while Mr Brian Haddon and Ms Saskia Ozinga acted as rapporteurs. The two groups working on the definitions related to managed and unmanaged forests were chaired by Mr Ralph Ridder/Mr Alastair Sarre and Mr Aquiles Neuenschwander, and Mr Peter Csoka acted as rapporteur. These four groups were merged into two during the third day to achieve coherence and consistency of outputs.

During the third day, five smaller working groups were established to analyze problems related to the multilingual aspects of forest-related definitions (French, Spanish, Arabic, Russian and Chinese). The groups were chaired by Mr Claude Vidal, Mr Carlos Bahamondez, Mr Talat Abdel-Hamid Omran, Mr Anatoly Shvidenko and Mr Jinhua Zhang, respectively. A sixth group, chaired by Mr Majid Seyfollahian, worked on the term "Trees outside Forests" (ToF).

After the opening statements, Mr Peter Holmgren, FAO Forest Resources Division, gave a presentation on the progress in terms and definitions among the Forest Resources Assessment (FRA) stakeholders since the previous meeting, including multilingual aspects. The moderator then summarized the main achievements of the previous Expert Meetings and presented the highlights of the background paper. The work was broken down into groups and two plenary sessions were held during the second day to take stock of progress and to create interaction between groups. Group work involved elaboration of a comparative analytical framework for the core terms and preparation of proposed options for harmonization including action to be taken by stakeholders. In the afternoon of the second day, Ms Renate Prüller, IUFRO, gave a brief overview presentation on multilingual aspects. It served as a starting point for the subsequent group discussions in the morning sessions of the third day. The results of the working groups were presented and discussed in two plenary sessions on the third day.

After the meeting, a draft report was distributed to the participants, whose comments were taken into account in the preparation of this final report.

The presentations made in the workshop are reproduced in Annex IV and the reports of Group Work in Annex V.

Closing

In his closing remarks the Chairman recalled the mandate of the Meeting which had been given by the UNFF. While the harmonization process on forest-related definitions is targeted at facilitating reporting by countries to various international processes, it is also aimed at facilitating better understanding of forestry issues by all stakeholder groups. The CPF and their governing bodies will be informed of the results and they will decide on the follow-up of the harmonization process.

STOCK-TAKING OF ACHIEVEMENTS

Many of the recommendations of the Second Expert Meeting have been implemented by the involved parties. The Task Force on Inventory of Greenhouse Gases (GHG) has recently completed the Good Practice Guidance for Land-Use, Land-Use Change in Forestry (LULUCF) and a report on approaches to address forest degradation and devegetation of other vegetation types, which were adopted by IPCC in 2003. The Task Force is presently conducting a review of the IPCC Guidelines for GHG Inventories, which cover sources and removals by sinks and changes in carbon stocks associated with forestry and other land uses. The UNFCCC process is starting to discuss its post-2012 arrangements where several current definitions are likely to be reviewed. In this context, one task will be to consider biome-based definitions related to forests which were discussed in the First Expert Meeting. The results of the international harmonization work are duly considered in these processes.

Both FAO's Forest Resource Assessment (FRA) and ITTO reported that they have already implemented most of the relevant recommendations regarding their own definitions. The FRA 2005, due to be completed by the end of the year, serves policy decisions which ultimately concern all forest benefits and beneficiaries. Reliable information on trends is therefore vital. Efforts have been made to improve harmonization with the IPCC Good Practice Guidance, the UN Millennium Development Goal Indicators, the FAO/UNECE/Eurostat/ITTO Joint Questionnaire, the IUCN Protected Areas Categories and Redbook, the nine regional C&I processes, the work of ILO and the UN Statistics Division, and the CPF initiative to streamline reporting. Multilingual aspects are necessary for implementation of FRA as the focus is on collecting and using data at country level. Data availability and documentation have proved to be more critical than global definitions and consistency over time more important than consistency among countries.

ITTO has recently revised its Criteria and Indicators for Sustainable Management of Natural Tropical Forests and is in the process of revising its Guidelines on the Conservation of Biological Diversity in Tropical Production Forests. Harmonization of definitions is also related to ITTO's on-going work on reporting on the status of tropical forest management.

IUFRO has continued its work on multilingual forest terminology (SilvaVoc project) including and a web-based glossary on forest-related carbon terminology available from the SilvaVoc website.

It was noted that the CPF has presently three closely linked initiatives: harmonization of forest-related definitions, streamlining reporting and global forest information service.

CONCLUSIONS

Objectives of Harmonization

The meeting reiterated the need for harmonization for various purposes. The overall goal is to improve communication and understanding of forests among stakeholders and to foster unambiguous use of definitions in various international processes. Improved definitions will help countries in rationalizing their reporting efforts. The purpose of the harmonization process is therefore to identify opportunities and provide options for better consistency and compatibility of international and country level definitions. In spite of the positive developments mentioned above, inconsistencies and incompatibilities continue to prevail, which unnecessarily increases the reporting burden of countries.

There is a particular need to improve communication on the role and potential of forests to contribute to poverty alleviation and sustainable development, and the clarity and consistency of terms and definitions is important in these efforts. There is also a need to obtain comprehensive information on the environmental services of forests.

Forests and related issues are viewed and perceived differently by various stakeholders who have different objectives. The terms and definitions used are targeted at these purposes. Therefore, the same terms and definitions will in some cases continue to be used for different purposes. The harmonization process can make these differences transparent, thereby improving understanding and facilitating reporting and other uses of definitions while respecting the legitimacy of the objectives of various stakeholders.

Harmonization is not standardization, i.e. the purpose is not necessarily to achieve common definitions but to improve consistency, compatibility and comparability. In improving the definitions, their rationale should be made clear. It is necessary to understand the context and objectives in order to avoid misinterpretation of forest-related definitions, as many of them are context specific.

Definitions, which are outcomes of international policy processes, are difficult to change and their modification can take time. Definitions that are scientific and technical by nature are easier to improve. The scope and approaches needed for improving these different types of definitions are likely to be different.

Forest-related Definitions of the Climate Change Negotiations

Under the UNFCCC, there are two levels of reporting: national reporting on greenhouse gas (GHG) emissions under the Convention proper, and on activities defined by the Kyoto Protocol (KP). Common to both levels is that all the changes in carbon stocks to be reported have to be anthropogenic by nature. In the national GHG reporting, the UNFCCC encourages countries to use the same definition of forest that they have applied in their reporting to FRA.

Under the Climate Change Regime, there are two reporting obligations: National Greenhouse Gas (GHG) Inventories and National Communications to be prepared under the UNFCCC proper, and supplementary reporting of information on activities, definitions, methods and parameters under articles 3.3, 3.4, 6 and 12 of the Kyoto Protocol (KP). In both reporting procedures, carbon stocks to be reported should be predominantly human-induced.

For national GHG Inventories, the Convention does not define “forest”, “managed forest”, or “forest management”. However, the 2003 IPCC Good Practice Guidance (GPG) cites recommendations of the Second Expert Meeting on Harmonizing Forest-related Definitions (FAO 2003) and states that “a managed forest is a forest subject to forest management. Forest management is the process of planning and implementing practices for stewardship and use of forests aimed at fulfilling relevant ecological, economic and social functions of the forest.”(IPCC 2003:3.13). If any activity or change in carbon stocks occurs on “managed” land, including forest, it has to be reported. “Unmanaged “forests (e.g. some primary forests) are left out of the reporting system. For the purpose of reporting under the Convention, countries will therefore have to split their forest lands into “managed” and “unmanaged”.

Under the KP, article 3.3 obliges Parties to report on and account for carbon stock changes due to afforestation, reforestation and deforestation, terms defined in the Marrakech Accords. These accords also provide definitions for “forest management”, “cropland management”, “grazing land management” and “revegetation”, should a country choose to account for these eligible activities under article 3.4.

In our context, countries that elect “forest management” have to report which lands are subject to “forest management”. These areas are not necessarily identical to the country’s “managed forests”, as reported under the UNFCCC. Lands subject to “forest management” could conceivably be larger than, identical, or only a subset of “managed forests”, as reported under the UNFCCC. However, the 2003 IPCC GPG considers it good practice to define the national criteria for the identification of land subject to “forest management” so that there is broad agreement between the area of “managed forest” as reported under the UNFCCC and the area of forest subject to “forest management”.

Under the KP, all changes in the carbon stock on lands subject to forest management have to be reported, even if they are not strictly “human- induced” (wildfire, windthrow, etc.). However, if those changes occur on “unmanaged” land, or on areas not subject to “forest management”, no reporting is required under the applicable agreement.

The definitions of the UNFCCC and KP are highly context specific, and have been devised to serve their respective objectives, i.e., to avoid anthropogenic interference with the climate system, or to relate to a set of provisions and mechanisms to the implementation of the Convention.

Biophysical Characteristics of Forests

There are several criteria governing how biophysical characteristics can be used to classify forests. These include the degree of naturalness, which encompasses a whole range of dimensions such as method of stand establishment, origin of tree species, the structure of the forest, and various ecosystem functions and the characteristics that maintain those functions. Practices and intensity of forest management have an influence on these characteristics and therefore the respective definitions are closely interrelated.

The comparison of the definitions of various international processes revealed important similarities: (i) all apply a continuum in a three or four class structure, (ii) all have a category separating “primary/undisturbed” from the rest of “natural” forest, and (iii) all include plantations (except UNFCCC and ITTO). On the other hand, they differ in emphasis on human intervention rather than origin of tree species. In addition, UNFCCC has an entirely different classification, due to the specific objectives of the definitions of the Convention.

Various dimensions can be applied to describe forest characteristics and a hierarchy between them may be developed. In addition, management objective (intensity) is often associated with various forest characteristics but it was considered a lower level concept than, for example, those related to naturalness.

The definitions refer to stand level, which was considered appropriate. The origin of species is classified into native and non-native or exotic. “Native” was deemed more appropriate a term than its synonym “indigenous” which is usually associated with the concept of indigenous people.

Information on the various characteristics of forest is used by FRA to assess how much forest is in primary state and what kind of wood supply can be expected from the world’s forests. For this purpose, forests have been classified into five groups which have not, however, been tied with the concepts of secondary and planted forests due to difficulties in reporting on these categories. As an example, modified natural forest is an important group for tropical countries, to differentiate it from primary forest.

Flexibility is necessary for interpretation of the reported data, as classification practices between countries tend to differ. However, other users of information than FRA can have different priorities, making full harmonization impractical. There may, therefore, be no need for a strict hierarchy between classification criteria, such as establishment method, origin of tree species, primary/other state of the forest, etc.

Natural and Planted Forests

The meeting agreed upon the following working definition (by which to guide further harmonization work of stakeholders) of natural forest:

- **Natural forest:** forest stands composed predominantly of native tree species established naturally. This can include assisted natural regeneration, excluding stands that are visibly offspring/descendants of planted trees.

In regional and national contexts, different terms are often used for possible subcategories of natural forests such as modified natural forest and semi-natural forest. These concepts may involve different intensities of management. Further work would be needed to define what “predominantly” means in varying forest situations.

The meeting used the following interim working definition of planted forest:

- **Planted forest:** *Forest stand in which trees have predominantly been established by planting, deliberate seeding or coppicing, where the coppicing is of previously planted trees.*

Explanatory note: includes all stands established by planting or seeding of both native and non-native species.

Planted forest can be divided into forest plantation and other planted forest. There was agreement on a working definition for forest plantation, which is

- **Forest Plantation:** *Forest stand in which trees have been established by planting or/and deliberate seeding or coppicing (where the coppicing is of previously planted trees) with either native species or non-native species that meet all the following criteria:*
 - one or two or a few species;
 - even-aged;
 - regular spacing.

The term plantation forest, which in essence denotes the same as forest plantation, should preferably be replaced by the term forest plantation.

It was recognized that some forest stands can show features of both natural forest and planted forest, or do not match any of these two categories, e.g. self-sown forests of invasive tree species. In the same vein, it was discussed whether planted forest should be a main category, with forest plantation being a sub-category, juxtaposed against natural forest. A possibility and appropriateness of creating a third category between natural forest and planted forest was touched upon but time was not sufficient to discuss this issue fully. Further work would be needed to harmonize the intermediate class(es) between natural forest and planted forest based on forest biophysical characteristics.

Forest Management and Managed Forests

Forest management is a broadly used term in different contexts, which influences how it is defined. Forest management is part of human interventions in the forest, and this has implications for definitions by some international processes. It was noted that human intervention and forest use are often difficult to separate but they are different concepts.

Forest management has several dimensions, which have implications for harmonization. These include degree of human intervention and levels of intervention and impacts. Human interventions vary from taking an intentional decision on the objectives or designation of a forest for a particular use (which may not necessarily include any action on the ground) to forests which are managed with high intensity. Many protected or inaccessible areas typically fall into the first category while planted forests with exotic species are often highly intensively managed. Different objectives and intensities of forest management tend to be reflected in changes in forest dynamics, composition and structure.

The meeting agreed on the following working definition for forest management :

- **Forest Management** *is the formal or informal process of planning and implementing practices aimed at fulfilling relevant environmental, economic, social and/or cultural functions of the forest and meeting defined objectives*

Explanatory note: Further detailed definitions, such as those in terms of time-frame, intensity, impacts, management level and resource requirements can be applied, depending on the purposes, such as reporting, forest resources assessment, policy formulation or resource allocation.

Forest management practices are a subset of those human interactions with, or interventions in, forest that can impact on forest functions, structure or services.

Further work would be needed on the definition to clarify what informal process means in practice. This is important for community and small-scale forest owners who do not often have formal planning and implementation procedures. These ownership groups are significant, including in the tropics, and their importance is increasing.

Practices of forest management cover information and data gathering and planning, and a whole range of interventions on the ground, including stand establishment (by different methods) silvicultural, conservation and protection measures, and those related to multiple uses of forests.

The meeting discussed a tentative inexhaustive list of forest management practices which can be used as a reference for further work. In this connection, it was noted that the forestry community has traditionally used the terms afforestation and reforestation in a broader way than how they are defined by Article 3.3 of the Kyoto Protocol. This inconsistency appears difficult to reconcile without changing terms and it remains a potential cause of confusion among users. The definitions of afforestation and reforestation were analyzed in the First and Second Expert Meetings on Harmonizing Forest-related Definitions, which also discussed “natural expansion of forest” and “forest improvement”.

Another issue is that, compared to the broad use of the term “forest management” by the forestry community, the UNFCCC definition only refers to forest lands defined by countries as “managed” (see p.5) .

Common thresholds for individual practices are difficult or impossible to identify due to the heterogeneity of forests. It was also recognized that “doing nothing” on the ground can be considered a forest management practice if it was conceived through a process as defined above.

In applying the working definition of forest management, due consideration should be given to the level of management, which can be (i) normative (ii) strategic, (iii) tactical or (iv) operational. Typical interventions, geographic scope, actors and impacts on forests can be different on different levels. These factors, in addition to management intensity and time horizon, affect interpretation of the working definition agreed by the Meeting in different contexts.

The meeting agreed on the following working definition of managed forest:

- ***Managed forest*** is a forest subject to forest management

The above working definitions of forest management and managed forest are closely interrelated and should be used in conjunction with each other to avoid misunderstanding.

The meeting agreed that the definition of unmanaged forest can consequently be *forest which is not subject to forest management*. Nonetheless, since unmanaged forest covers a wide range of situations, there may be a need to explore later a definition commonly applicable to them.

As regards designation of forest functions (production, protection, etc.), the definitions of FRA 2005 were acknowledged as adequate. It is important to recognize the various levels of forest management within which designated functions are defined. Designation itself is not necessarily part of management.

Quality and impacts of forest management are important aspects, as information on the outcomes in the forest is increasingly needed for policy making and other purposes. Quality is closely linked with the objectives of forest management (e.g., sustainability). Further work would be needed to elaborate appropriate definitions, which could be elaborated within the framework of C&I.

Established ownership does not mean that a forest is managed although tenure is closely linked to management objectives.

Trees outside Forests

Trees outside Forests (ToF) is a relatively new concept applied in FRA. It is used to assess tree-based resources outside forest and other woodland (i.e., on “other land”). FRA provides a good basic definition for ToF: “Trees on land not defined as forest and other wooded land”. These lands include built-on areas, agricultural land, and barren lands. TOF includes isolated and grouped trees; they can be found in rural and urban areas. ToF involves a range of concepts such as tree systems, trees and shrubs, and forest and fruit trees. These resources are managed under a diversity of systems.

Problems related to the ToF definition are linked to how forest, forest land and other wooded land are defined. Problem areas include forest fallows, shelterbelts, fruit trees, and structures of various tree systems (isolated trees, linear tree lines, etc.). At a national level, sectoral responsibilities for the management for ToF resources are often unclear and improved intersectoral coordination is needed. ToF should also be better addressed in policy-making, building technical capacity in assessment and management, training and information exchange.

With regard to harmonization, the definitions of UNFCCC and other processes have not always duly considered this category of tree systems. In addition, the CBD refers to “agroforest” only. Further harmonization efforts should involve representatives from the agriculture and other relevant sectors.

Multilingual Aspects of Forest Definitions

As data collection and reporting for international processes take place at country level, multilingual aspects are important for correct use and interpretation of agreed definitions. There are a number of problems, which could be addressed through collaborative actions at international and country levels. Within the same language, there are regional/national differences in the use of some terms. There are different interpretations of some concepts in various languages. There may not be any equivalent term in the local language or the local term may only partly cover the internationally used term (or vice versa). If definitions are used without a proper description of the context, their interpretation is difficult. Other problems include quality of translations and shortage of reference documents in some languages. Proliferation of terms is an additional challenge. The reports of the four Working Groups are shown in Annex V.

RECOMMENDATIONS

The meeting made the following recommendations:

CPF

- CPF should continue to provide the framework for the process of harmonizing forest-related terms and definitions.

UNFCCC/KP

- For the KP, consider adopting a different terminology to reduce confusion (e.g. forest subject to forest management under the KP) for the second commitment period.
- For the 2006 IPCC Guidelines for the UNFCCC, consider including clearer descriptions of forest-related definitions, taking into account the general definition for forest management as agreed to by the meeting.

CBD

- Apply the current definition for “plantation forest” to “forest plantation” and use the latter term only.

FAO

- In FRA, for the term “planted forest” include provision for deliberate seeding.
- Together with IUFRO, carry out follow-up work to improve multilingual harmonization of definitions used at international, regional and national levels.

ITTO

- In the definition of “planted forest” consider removing reference to enrichment planting at this level of definition as it is too prescriptive.

IUFRO

- Consider bringing its definition of “forest management” in line with the one proposed by the meeting.

All Stakeholders

- Invite governing bodies to take note of outputs from relevant expert level meetings in their efforts towards harmonization and synergies.
- Use the term “forest plantation” instead of “plantation forest” as they are synonyms.
- Facilitate the use and interpretation of international definitions in various languages through the following actions.
 - use English in this process as the reference basis for international definitions
 - avoid creating new terms and using unnecessary synonyms
 - use the existing terms whenever possible

- use the existing terms whenever possible
- keep definitions simple and easily understandable
- provide explanations
- use “indigenous” as synonymous with “native” (reference to Spanish language working group)
- when interpreting definitions in local contexts (often involving reclassifying national data), avoid bias in the reported information
- involve national experts in validating translations and involve multidisciplinary teams in the work.

The updated matrix of action recommendations by parties for core terms is given below.

Comparative Matrix of Recommendations

Recommendations from the Third Meeting are in bold fonts

CONVENTIONS, BODIES AND PROCESSES MAY TAKE INTO CONSIDERATION THE FOLLOWING OPTIONS SUGGESTED FOR HARMONIZATION							
TERM	CBD	FRA/ FAO	ITTO	UNFCCC/KP	COUNTRIES	CPF	ALL
Forest	include "temporarily unstocked" areas (13)	clarify term "predominantly forestry" (24)	include reference to an established definition of forest (24)		adopt same threshold parameters for UNFCCC/KP and FRA reporting (1)		explore need to add additional parameters, supporting terms
		report separately areas that are "temporarily unstocked" (17)					replace in all contexts the terms "forest land" and "forested land"
Non-forest Land		discuss with other bodies possible introduction of subclasses					replace through the term "non-forest"
Other Land		clarify method of land classification with combined land uses clarify possible subdivision of term in subclasses					
Afforestation		further harmonization between UNFCCC and FAO required include assisted generation not involving direct seeding or planting (16)		remove the requirement for 50-year non-forest condition from second commitment period onwards (30) further harmonization between UNFCCC and FAO required			
Reforestation				discard the term reforestation (30)			
Deforestation		further harmonization between UNFCCC and FAO required		further harmonization between UNFCCC and FAO required			

TERM	CBD	FRA/ FAO	ITTO	UNFCCC/KP	COUNTRIES	CPF	ALL
Natural Expansion			add definition of natural expansion to set of definitions (25)				
Forest Improvement							Adopt definition : The process of increasing the capacity of forest to provide goods and services (opposite to forest degradation) (3)
Forest Degradation	Adopt definition: Forest degradation is the reduction of the capacity of a forest to provide goods and services (6); clarify, if this and the related definitions need qualifiers: ECOSYSTEM FUNCTION	Adopt definition: Forest degradation is the reduction of the capacity of a forest to provide goods and services (6) clarify, if qualifiers are needed	Adopt definition: Forest degradation is the reduction of the capacity of a forest to provide goods and services (6)	Exchange terms: distinguish "stock reduction" from "forest degradation". It is still possible to use the same generic definition for degradation and to add qualifiers for monitoring purposes (31)			
Forest Fragmentation	clarify if certain aspects like habitat fragmentation are adequately covered						Adopt CBD definition: Forest fragmentation refers to any process that results in the conversion of formerly continuous forest into patches of forest separated by non-forest (lands).

TERM	CBD	FRA/ FAO	ITTO	UNFCCC/KP	COUNTRIES	CPF	ALL
Forest Management		Adopt definition: <i>FM is the process of planning and implementing practices for stewardship and use of the forest aimed at fulfilling ecological, economic and social functions of forest (19)</i> develop a typology for management objectives (18)					Adopt a working definition: Forest management is the formal or informal process of planning and implementing practices aimed at fulfilling relevant environmental, economic, social and/or cultural functions of the forest and meeting defined objectives
Managed forest				For the KP consider adopting a different terminology to reduce confusion (e.g. forest subject to forest management under the Kyoto Protocol) for the second commitment period. For the 2006 IPCC Guidelines for the UNFCCC, consider including clearer forest-related definitions, taking into account the general definition for forest management as agreed to by the meeting			Adopt a working definition: Managed forest is a forest subject to forest management
Unmanaged forest							<i>clarify, if term unmanaged is not superfluous, since there are hardly any unmanaged forests</i>

TERM	CBD	FRA/ FAO	ITTO	UNFCCC/KP	COUNTRIES	CPF	ALL
Natural Forest	Clarify whether the definition should rather refer to "forest stand" than to "forest".	Clarify whether the definition should rather refer to "forest stand" than to "forest" Refer to the natural regeneration of forests and discard the wording "not planted"(20)	Clarify whether the definition should rather refer to "forest stand" than to "forest"				Adopt a working definition: Forest stands composed predominantly of native tree species established naturally. This can include assisted natural regeneration, excluding stands that are visibly offspring/descendants of planted trees.
Primary Forest	Clarify, whether attribute "indigenous" is necessary, whether "native" (CBD) is fully consistent with term "indigenous" (FRA)	Clarify, whether "native" (CBD) is fully consistent with term "indigenous" (FRA)	Clarify, whether "native" (CBD) is fully consistent with term "indigenous" (FRA),				Use "native" instead of "indigenous"
	Consider ITTO's definition of "primary forest" (12) clarify, whether the disturbance by non-native animals should be explicitly addressed		delete in definition of "degraded primary forest" references to primary, old-growth (28)				
Old-growth Forest	clarify if only limited to primary forest, or includes also secondary and semi-natural forest	clarify if only limited to primary forest, or includes also secondary and semi-natural forest	clarify if only limited to primary forest, or includes also secondary and semi-natural forest		clarify if only limited to primary forest, or includes also secondary and semi-natural forest		
Secondary Forest	clarify if definition should refer to species composition		develop ITTO definition further: "Woody vegetation regenerated naturally on land that was cleared of its previous forest vegetation" (26)				clarify if definition should include notion of forest condition resulting from suppression of natural fire regime;

TERM	CBD	FRA/ FAO	ITTO	UNFCCC/KP	COUNTRIES	CPF	ALL
Planted Forest	include "planted forest" as a separate category (7) discard the attribute secondary in "plantation forest" (11)	include "planted forest" as a separate category (7) clarify if subclasses are needed to reflect the management objectives and/or whether the species planted occur naturally on the site	include "planted forest" as a separate category (7) adjust definition to "forest that has been established by planting or seeding" (27)				Adopt a working definition: Forest stand in which trees have predominantly been established by planting, deliberate seeding or coppicing, where the coppicing is of previously planted trees.
		The term "planted forest" to include provision for deliberate seeding	In the definition of "planted forest" consider removing reference to enrichment planting at this level of definition as it is too prescriptive				
Plantation forest	Apply the current definition for "plantation forest" to "forest plantation" and use the latter term only						Use the term "forest plantation" instead of "plantation forest" as they are synonyms Adopt a working definition: Forest stand in which trees have established by planting and/or deliberate seeding or coppicing (where the coppicing is of previously planted trees) with either native species or non-native species that meet all the following criteria: 1) one or two or a few species, 2) even-aged, and 3) regular spacing.

TERM	CBD	FRA/ FAO	ITTO	UNFCCC/KP	COUNTRIES	CPF	ALL
General matters						Should consider to act as a custodian for the various forest-related terms and definitions used for reporting to international processes in order to facilitate their harmonization and consistent use	Consider outputs from relevant expert level meetings in their efforts towards harmonization and synergies
Multilingual aspects		Together with IUFRO, carry out follow-up work to improve multilingual harmonization of definitions used at international, regional and national levels					In this process use English as the reference basis for international definitions; Avoid creating new terms and using unnecessary synonyms; Keep definitions simple and easily understandable; Provide explanations; When interpreting definitions in local contexts, avoid bias in the reported information; Involve national experts in validating translations and involve multidisciplinary teams in the work

TERM	CBD	FRA/ FAO	ITTO	UNFCCC/KP	COUNTRIES	CPF	ALL
Trees outside forests	UNFCCC and other processes have not always duly considered this category of trees						Further harmonization efforts are needed and should involve representatives of agriculture and other relevant sectors
	Note: CBD refers to "agroforests" only.			Note: UNFCCC doesn't duly consider this category of tree systems.			

DEFINITIONS RELATED TO CLASSIFICATIONS OF FORESTS AND THEIR MANAGEMENT STATUS

Esa Puustjärvi and Markku Simula

January 2005

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	ii
1. INTRODUCTION	23
1.1 Background	23
1.2 Uses of Definitions	24
2. OBJECTIVES AND APPROACH	25
2.1 Objectives	25
2.2 Approach	25
3. FRAMEWORK FOR ANALYSIS	26
4. HUMAN INTERVENTIONS	28
5. MANAGED AND UNMANAGED FORESTS	29
5.1 Existing Definitions	29
5.2 Opportunities for Harmonization	31
5.3 Harmonization of Definitions of Managed Forests	32
6. FOREST ORIGIN AND COMPOSITION	33
6.1 Underlying Concepts	33
6.2 Existing definitions	34
6.3 Forests With Limited Human Intervention	34
6.4 Forests Significantly Affected by Human Intervention	35
6.5 Planted Forests and Plantations	38
6.6 Introduced or Native Species	40
6.7 Opportunities for Harmonization	42
7. TREES OUTSIDE FORESTS	42
8. CONCLUSIONS	45
9. ISSUES FOR DISCUSSION	46
List of Tables	
Table 3.1 Comparative matrix of the definitions of ‘managed forest’ of UNFCCC and MCPFE	28
Table 4.1 Conceptual levels of forest management	29
Table 6.1 Sets of definitions used to describe the continuum of forest origin and composition in the different processes:	34
Table 8.1 Definitions related to naturalness and human intervention	45
List of Figures	
Figure 3.1 Alternative approaches to harmonizing a continuum of classes	27
List of Boxes	
Box 1.1 UNFF statement on harmonization of forest-related definitions	24
Box 5.1 Definitions related to managed forests	30
Box 6.1 Concept of forest authenticity	34
Box 6.2 Definitions of forest with limited human intervention	36
Box 6.3 Definitions of forests significantly affected by human intervention	37
Box 6.4 Definitions of planted forests and plantations	39
Box 6.5 Definitions of introduced and native species	41
Box 7.1 Definitions of trees outside forest and related terms	44
Annex	
Annex 1 Alternative classification of various definitions related to naturalness of forest	49

ABBREVIATIONS AND ACRONYMS

CBD	Convention on Biological Diversity
CIFOR	Center for International Forestry Research
COFO	Committee on Forestry (of the FAO)
EEA	European Environmental Agency
FAO	Food and Agriculture Organization of the United Nations
FRA	Forest Resources Assessment
FSC	Forest Stewardship Council
IFF	Intergovernmental Forum on Forests
IIED	International Institute for Environment and Development
IPCC	Intergovernmental Panel on Climate Change
IPF	Intergovernmental Panel on Forests
ITTO	International Tropical Timber Organization
IUCN	World Conservation Union
IUFRO	International Union of Forest Research Organizations
KP	Kyoto Protocol
LFCC	Low Forest Cover Countries
LULUCF	Land Use, Land-Use Change and Forestry
MCPFE	Ministerial Conference on the Protection of Forests in Europe
OWL	Other Wooded Land
SBSTA	Subsidiary Body for Scientific and Technological Advice (of the UNFCCC)
TBFRA	Temperate and Boreal Forest Resources Assessment
TOF	Trees Outside Forests
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UNEP-WCMC	World Conservation and Monitoring Centre
WWF	World Wide Fund for Nature

1. INTRODUCTION

1.1 Background

There is currently heightened awareness of the need to harmonize forest-related definitions.

Harmonization facilitates comparisons between existing definitions of related terms. It collects existing definitions, establishes linkages, identifies common elements, differences, incompatibilities and inconsistencies, as well as qualitative and, if possible, quantitative relationships. It may result in recommendations for modifications to one or several definitions which make them more compatible, consistent or even congruent.

The goals of harmonization consist in fostering unambiguous use of definitions and promoting informed, deliberate choice of definitions in any new context.

Harmonization of existing definitions occurs *ex post*. It must not be confused with standardization, which defines a term, *a priori*, top down for all subsequent applications.

Several complementary processes are underway including efforts made by the Food and Agricultural Organization (FAO), the Intergovernmental Panel on Climate Change (IPCC), the Centre for International Forestry Research (CIFOR), the International Union of Forest Research Organizations (IUFRO) and the United Nations Environment Programme (UNEP). These processes have improved the understanding of different forest-related definitions, but further harmonization is needed to facilitate comparability of data across processes and across international instruments related to forests. The effort should enable minimization of inconsistencies in information, and reduction of the reporting burden.

In 2002, FAO hosted two *Expert Meetings on Harmonizing Forest-related Definitions for Use by Various Stakeholders*, which were jointly organized with IPCC, CIFOR, UNEP and IUFRO. Over 50 experts, some from these organizations and others from countries, UNESCO, CBD, UNFCCC, the private sector and NGOs, came together to discuss an analytical framework on forest-related definitions, develop options for harmonizing core forest-related definitions, and discuss follow-up actions. When presenting the recommendations of the process to UNFF, SBSTA UNFCCC, CBD and COFO, FAO and its partners were requested to continue the process of harmonizing forest-related definitions. The recommended next steps included, *inter alia*, clarifying terms related to naturalness of forests and planted forests (FAO 2002a).

The need for further work on definitions of planted forests was highlighted in discussions at the United Nations Forum on Forests Intersessional Experts' Meeting on the Role of Planted Forests in Sustainable Forest Management, held in Wellington, New Zealand, from 25 to 27 March 2003. The meeting recognized that lack of consistent definitions and reliable data has proven problematic in quantifying various natural forests and planted forest resources in both developed and developing countries (UNFF 2003).

Incomplete, inconsistent and unreliable data on planted forests has proven to be a significant impediment to analyzing status and trends for outlook studies, policy-making, planning and forecasting impacts on raw material supplies and other social, environmental and economic values. The Experts' Meeting encouraged FAO, IPCC, CIFOR, CBD, IUFRO, UNEP and other relevant stakeholders to urgently build upon the harmonization of forest-related definitions in particular encompassing planted forests (UNFF 2003).

Harmonization of forest-related definitions was included in the IFF/IPF proposals for action and their recommendations have been followed up by the United Nations Forum on Forests (UNFF). The fourth UNFF session held in Geneva in 2004 gave strong support to further efforts to harmonize forest-related definitions. The members of the Collaborative Partnership of Forests were urged to contribute to the development of forest related definitions and to take advantage of the achievements to-date (Box 1.1).

Box 1.1 UNFF statement on harmonization of forest-related definitions

United Nations Forum on Forests in its fourth session in Geneva, 3-14 May 2004 made a special reference to the need to continue harmonization of definitions when reviewing the progress in implementation of activities related to monitoring, assessment and reporting, concepts, terminology and definitions.

The Report of the Secretary-General (UNFF 2004b) stated that the process to harmonize forest-related definitions of the Food and Agriculture Organization of the United Nations, the Intergovernmental Panel on Climate Change, the Centre for International Forestry Research, the International Union of Forest Research Organizations and the United Nations Environment Programme, and work on definitions in the global Forest Resources Assessment process are complementary and are gathering momentum. Collaborators and stakeholders, including intergovernmental organizations, country experts, academics, scientists and international non-governmental organizations, are strongly supporting efforts to resolve difficulties associated with forest-related definitions that have posed difficulties to foresters and planners for decades. Such work would merit the endorsement of the United Nations Forum on Forests and could serve as a catalyst for Governments to send consistent messages to different governing bodies on the use of definitions.

The Report proposed that the UNFF would

Urge the Member States and invite Collaborative Partnership on Forests members to support and strengthen the definitions harmonization process under way under the Collaborative Partnership on Forests;

Urge governing bodies of Collaborative Partnership on Forests members to take note and take advantage of the work being done on definitions, make wider use of existing definitions, to the extent possible, and to refrain from creating new definitions unless they are justified and created in a manner that permits adjustments or conversions to be made with ease.

Source: UNFF (2004b)

To respond to these calls FAO, IPCC, IUFRO, CIFOR, ITTO and UNEP will organize a further expert meeting for the harmonization of forest-related definitions related to natural and managed forests, planted forests and trees outside of forests in January 2005. The discussions will incorporate the interests of stakeholders such as forest managers, international bodies working in the fields of biodiversity, climate change and desertification, as well as non-governmental organizations and the private sector. The work will be undertaken cognizant of, and drawing on, the above-mentioned processes as well as related activities such as:

- the FAO/ITTO Expert Consultation on Criteria and Indicators for Sustainable Forest Management, organized in Cebu City, the Philippines, in March 2004
- Development of plantation typology by CIFOR/World Wildlife Fund (WWF) and World Conservation Union (IUCN) (CIFOR 2002).
- establishment and maintenance of multilingual terminological database by IUFRO (Silva Term) (IUFRO 2004)
- Establishment and maintenance of multilingual environmental glossary by European Environmental Agency (EEA 2004)
- FRA Global Meeting in November 2003; and
- the two earlier meetings on harmonizing forest-related definitions

The list above indicates that many organizations are in the process of developing forest-related definitions for their own purposes. Each stakeholder has its own objectives and the definitions should serve designing and implementing measures to achieve them and assessing progress made. With the approach of harmonization instead of standardization, a balance can be struck between the identified needs and priorities of each stakeholder and possibilities to rationalize data collection and reporting for different purposes with minimum costs.

1.2 Uses of Definitions

The development and refinement of forest-related definitions is a continuous process driven by various needs of the participating stakeholders. These varying needs also partly explain why definitions differ (cf. Buchwald 2002). Some of the main purposes for which definitions are used include

- Monitoring of and reporting on forest status and trends;
- Assessing effectiveness of forest related policies and forest or conservation management;
- Providing a basis for allocation of resources;
- Providing a common ground for discussions in the international forest dialogue.

With respect to monitoring and reporting, definitions are needed to allow for consistency of data. Harmonized definitions would enable comparison between countries. Consistency is particularly important when monitoring changes over time. A typical example of a situation where consistent definitions are critically needed is the discussion on the development of the area of natural forests and plantations.

Forest related policies are also vitally dependent on definitions. Policy-level decision-making and assessment cannot be effective unless there is a clear agreement on the variables that policies attempt to influence on. Policy focus and impact are crucially dependent on how these variables are defined. For instance, the policies related to climate change aim to restrict their scope to human-induced changes in forest. Thus, the definition of human intervention in forest becomes a key policy ingredient.

Similarly, definitions influence the allocation of resources for various forest-related activities. For instance, maintaining naturalness of forest has in recent years become a hot policy issue and the need to allocate resources for maintaining or restoring natural forest status would depend on what definitions of natural and semi-natural forests are applied.

Most of the existing sets of definitions are used for several purposes but there is some difference in emphasis. The FAO/FRA, ITTO and WCMC/CIFOR definitions are typically applied to monitoring and reporting. In addition, the FAO/FRA definitions have also found use in international policy dialogue. The UNFCCC/IPCC definitions are clearly focused on facilitating policy-making, i.e. guiding actions, related to climate change. However, at the same time they constitute a basis for monitoring and decisions on resource allocation. For the latter purpose, the definitions of the Kyoto Protocol are critical. The CBD definitions are applied both to policy-making and monitoring. The definitions adopted by ITTO, MCPFE and Montreal Process are an integral part of the tool of criteria and indicators for sustainable forest management developed by these processes. As such they contribute both to monitoring and policy development.

Harmonization of definitions aims above all to improve communication and dialogue between processes. Agreement on consistent and comparable definitions would greatly enhance the quality of international policy development by reducing confusion and providing a common basis for dialogue. Another main purpose of harmonized definitions is to reduce the reporting burden of individual countries. Substantial cost savings could be achieved in data collection and reporting were the existing procedures integrated and streamlined to rationalize data collection for several purposes at the same time.

2. OBJECTIVES AND APPROACH

2.1 Objectives

As a follow-up to the previous work on terms dealing with forest land and related change processes, this discussion paper addresses definitions of the following terms with the purpose of providing a basis for their harmonization:

- (i) natural forests, planted forests, forest plantations, trees outside forests and related terms addressing the biophysical constitution of forest resources;
- (ii) managed forests and related terms, addressing human intervention in forests, which may include or take into consideration definitions of protected areas, management plans and designated functions of forests;

The discussion paper aims to harmonize the definitions listed above. Again: The aim is not to propose new formulations, but to analyse, contrast and relate them and where possible, point out practical opportunities for modifications that enhance consistency, comparability, and transformations.

2.2 Approach

The present discussion paper draws on the analytical framework developed for the second definition meeting (in FAO 2002a) as well as the results achieved during the earlier phases of the international harmonization process. The approach can be considered an extension and elaboration of the work made at the UNFF Intersessional Experts' Meeting on the Role of Planted Forests in Sustainable Forest Management held in New Zealand in 2003. The meeting concluded that the definitions [for the terms under discussion here] should be based upon designated forest management objectives (purpose) and characteristics reflected by degree of naturalness

(intensity of forest management) to describe and report on the continuum from natural forests, modified natural forests, semi-natural forests and planted forests.

The approach in this study was designed taking into account the Meeting's observation that it is not always possible to distinguish a plantation forest from a natural forest, particularly in temperate and boreal regions, when it is of mixed species, mixed age, or when it consists of endemic species grown in long rotation. The distinction between plantation forests and natural forests is clearer in plantings of single species, uniform planting densities, even age classes, and stands with short rotation periods and/or intensive management, as often found in tropical and subtropical regions (UNFF 2003). While we know that we are dealing with a continuum of different forest types, there remains the need to capture, characterize and define certain sections along this continuum. Various existing definitions have achieved this differently.

Unless indicated otherwise the definitions were taken from the following documents:

- FRA 2005 Terms and Definitions (FAO 2004a)
- Report of the Ad Hoc Technical Expert Group on Forest Biological Diversity. (UNEP/CBD/SBSTTA 2004)
- IPCC Good Practice Guidance for LULUCF (IPCC 2003)
- ITTO guidelines for the restoration, management and rehabilitation of degraded and secondary tropical forests (ITTO 2002). Parallel definitions provided in "Criteria and Indicators for Sustainable Management of Natural Tropical Forests Reporting Questionnaire for Indicators at the National Level" (ITTO 2001) and "ITTO Guidelines for The Establishment and Sustainable Management of Planted Tropical Forests (ITTO 1993) are referred to.
- Relevant Definitions Used - MCPFE Advisory Group Recommendations for Improved Pan-European Indicators for Sustainable Forest Management (MCPFE 2002)
- The Marrakesh Accords (UNFCCC 2001)
- WCMC-CIFOR terminology included in the Global Overview of Forest Conservation (Iremonger et al. 1997)
- The Montreal Process Glossary of Terms (Montreal Process 2000)

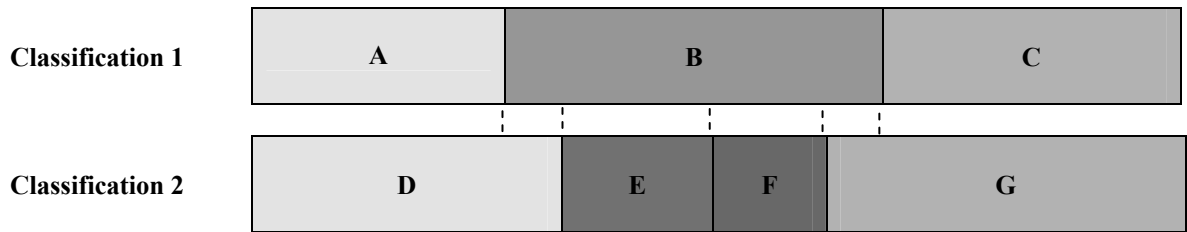
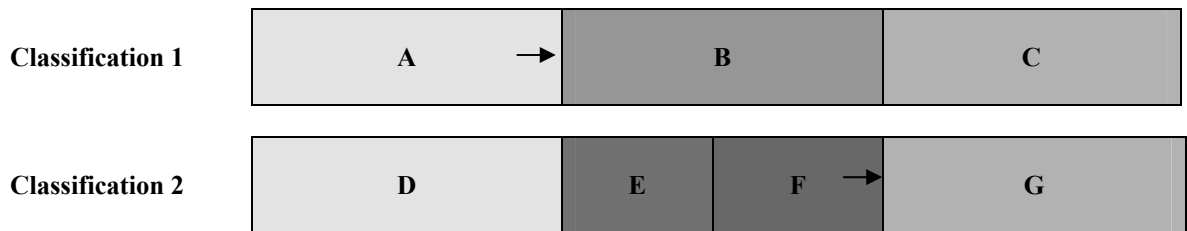
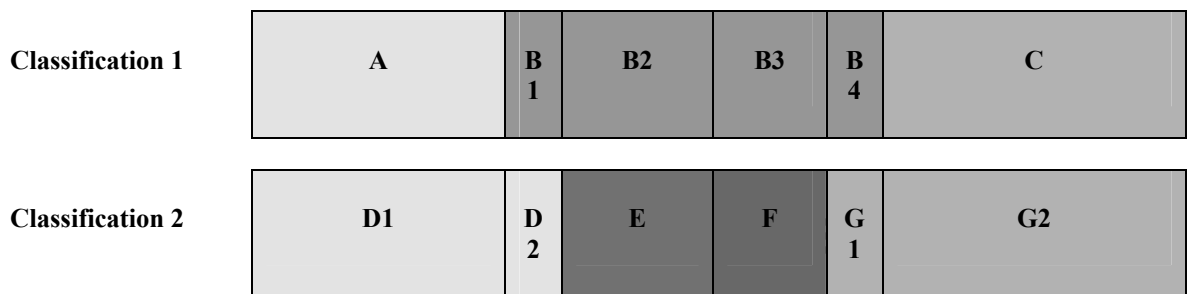
Complementary terms developed under these processes were referred to as necessary. It should be noted that the MFPFE glossary is drawing heavily on the definitions applied in TBFA 2000.

The related terms included in IUFRO's Silva Term database (IUFRO 2004) and European Environmental Agency's multilingual environmental glossary (EEA 2004) were reviewed. However, their purpose is to offer a quick reference to definitions developed by various entities, in addition to presenting comprehensive and meaningful multilingual terminological information. In fact, many of the definitions included in these data sets relate and cross-reference to the above-mentioned definition sets.

3. FRAMEWORK FOR ANALYSIS

There are various ways to harmonize different classifications. Two main approaches analyzed in this document are (i) modification of the existing forest categories or classes in various definitions so that the transition points between them coincide, and (ii) sub-division of relevant definitions to make their relationships explicit and establish their compatibility.

These approaches are particularly relevant when dealing with a continuum of classes moving along a gradient of forest characteristics (e.g. with respect to naturalness) (cf. Buchwald 2002). The two options to harmonization of the provisions of alternative definitions for a single attribute are illustrated in Figure 3.1 in sections II and III. The first alternative (II) represents a situation where the transition or cut-off points of the two original classifications have been adjusted so that they have become harmonized. In this illustrative example adjustments have been made in both classifications. This option standardizes the provisions for the selected attribute present in various definitions in relation to each other. In the second alternative (III) the original definitions of the two set of classifications have been decomposed into subclasses to allow their comparability and mutual consistency. In this illustrative example decomposition was made in both definitions to enable two-way comparisons of data. In practice, one-way comparison could often be sufficient in which case decomposition in only one of the sets would be sufficient.

Figure 3.1 Alternative approaches to harmonizing a continuum of classes**I. ORIGINAL CLASSIFICATIONS****II. CLASSIFICATION WITH MODIFIED TRANSITION POINTS BETWEEN CLASSES****III. SUB-DIVIDED CLASSIFICATIONS**

The benefit of the first alternative of modifying transition points regarding the selected attribute to be harmonized is that the degree of detail in existing classifications does not change. The downside is that adjustment of transition points requires changes in data collection and analytical methods as well as special procedures to ensure that new data are compatible with older data. With the second alternative of sub-division, the compatibility of new and old data can be achieved rather easily. The disadvantage is that the number of classes increases encumbering data collection and processing.

Figure 3.1 deals with the harmonization problem only in a single attribute context. In practice, forest-related definitions tend to incorporate several qualitative characteristics. This was highlighted in the Discussion Paper prepared for the Second Expert Meeting on Harmonizing Forest –Related Definitions for Use by Various Stakeholders (Puustjärvi & Simula 2002) where the presence of various attributes (parameters) in different definition sets were analyzed. An example of such an approach is given in Table 3.1 where, for illustrative purposes of such an approach, two definitions for managed forest (UNFCC and MCPFE) have been analyzed. Qualitative comparisons over all attributes and how they have been defined would allow full harmonization between definitions. This would often be an ambitious target and may not even be needed. In this report we have used the approach where the focus of analysis is a set of key attributes which influence data collection and/or on which stakeholders have divergent views. Such key attributes are naturalness of the forest related to forest origin and composition, and type and degree of intervention related to the concepts of managed and unmanaged forest. A number of additional attributes have, however, been discussed as well.

Table 3.1 Comparative matrix of the definitions of ‘managed forest’ of UNFCCC and MCPFE

Attribute	UNFCC	MCPFE
Land	Forest (defined according to the Kyoto Protocol)	Forest (FAO/FRA definition)
Conceptual framework	System of practices	Plan (informal or formal)
Implementation	Practices implemented	Operations carried out
Area unit	Forest	Stand
Goals of management	Stewardship and use fulfilling relevant ecological, economic and social functions	(not mentioned)
Scope of management	Sustainable forest management	(not mentioned)
Time frame	(not mentioned)	Sufficiently long period (five years or more)

We are not making recommendations on which approach should be adopted when trying to increase the degree of consistency and comparability of alternative definitions. The two basic approaches (and their variants) are not mutually exclusive and even their combination may sometimes be feasible.

In the following sections we explore the targeted terms within the broad concepts of human interventions in forests (chapter 5), and forest origin and composition (chapter 6). Both are closely interrelated as human interventions influence forest characteristics while the latter define the frame conditions for eventual management interventions.

4. HUMAN INTERVENTIONS

Forest management is an act undertaken by humans but not all acts in the forest undertaken by humans are forest management. The essential feature qualifying an act as forest management measure is that it is purposeful and that it has an impact on the forest as a whole. A typical example of a purposeful act that cannot be considered forest management is illegal logging. Extracting logs is a purpose, but since it is pursued without broader planning or heed to the impact on the forest as a whole it can hardly be considered forest management.

This chapter focuses on the terminology related to purposeful forest management interventions in forests. They are targeted at one or more explicit objectives and they can be grouped under an overarching concept of forest management¹. Under some definitions the range of interventions is broad comprising all sorts of purposeful interventions, sometimes “forest management” is used to describe a more restricted subset of intervention. This circumstance was the basis for bringing terms related to forest management, managed forests, forest management plans, protected areas and designated forest functions to the 3rd meeting on forest-related definitions

Forest management is a concept that can be applied to planning, implementation, monitoring and control at the national, sub-national, forest management unit and stand levels. Table 4.1 below may provide a useful framework to relate existing terms and definitions to each other.

Related concepts, approaches and even terms used may differ in different parts of the world. They also depend on the management objective(s), which may include production of wood and/or non-wood forest products, watershed protection, soil stabilization, recreation and conservation.

The Second Expert Meeting (FAO 2002a) discussed the terms related to forest management. This analysis draws on their findings but it incorporates also recent development work, especially the efforts undertaken by FAO/FRA 2005.

¹ Forest conversion into other land uses may also be a purposeful intervention, but it is not discussed here

Table 4.1 Conceptual levels of forest management

Forest management level	Typical interventions	Typical actors	Impact on forest resources
Normative	Legislation, policy formulation	Governments	Indirect
Strategic	Strategic multiple goal formulations, assessment/monitoring (NFI) evaluation of options, agreement on strategy, designation of land	Government, Government agencies, major stakeholders (industry, major organizations)	Indirect
Tactical	Translation of strategic goal to local context, assessment/monitoring and evaluation of options at local level (management plans), cross-sectoral planning	Land owners, local communities and stakeholders	Mainly indirect, but e.g. demarcations or infrastructure development may have direct impacts
Operational	Implementation of management plan, adjustments for site/time specific considerations, realization of forest benefits (logging, collection, use of services)	Landowners, usufruct right owners, general public.	Direct impact from forest operations (or the protection from such operations)

Source: Various research literature and Holmgren (unpublished):

5. MANAGED AND UNMANAGED FORESTS

5.1 Existing Definitions

The concept of forest management is underpinned by the notion that management is something brought about by human intervention to achieve a specific goal. Definitions dealing with this aspect include those related to forest management, management functions and protected areas. There are two key issues where the approaches of defining forest management differ (i) what is the minimum human intervention that qualifies as forest management, and (ii) whether the definition should include a reference to a) a management plan and b) the quality of management (e.g. sustainability) (Box 5.1).

The UNFCCC definition of forest management emphasizes that management actions have to be purposeful and that management is sustainable. Management actions as such have not been defined in the definition but the requirement that they should be human-induced is inherent to the Kyoto Protocol. The earlier IPCC definition was more specific identifying a range of activities: Forest management is the application of biological, physical, quantitative, managerial, social, and policy principles to the regeneration, tending, utilization, and conservation of forests to meet specified goals and objectives while maintaining forest productivity. Management intensity straddles from wilderness set-asides to short-rotation woody cropping systems. Forest management encompasses the full cycle of regeneration, tending, protection, harvest, utilization, and access (IPCC 2003).

Forest, as defined by the Marrakesh Accords, relates to the physical characteristics of forests. An area subject to forest management is subsequently determined as an area upon which particular management practices are undertaken, consistent with the KP Article 3.4 and the Marrakesh Accords. Forest management lands can include all managed forests according to the IPCC Guidelines. However, this situation may not always apply, because (i) countries could use different thresholds for defining forests for Kyoto Protocol as opposed to UNFCCC reporting, (ii) Article 3.4 as well as the Marrakesh Accords require that the activity took place since 1990, and (iii) the Marrakesh Accord's definition of forest management contains additional criteria in stewardship. Land subject to "forest management" as defined by the Marrakesh Accords is not therefore necessarily the same area as "managed forest" in the context of the IPCC Guidelines used for UNFCCC reporting. The latter includes all forests under direct human influence, including forests that may not meet the requirements of the Marrakesh Accords. Most of the forest area that is subject to forest management under the KP Article 3.4 would also be included in the area of "managed forests" of a party (IPCCC2003). The specific purposes of the terms under UNFCCC and Kyoto Protocol explain why their definitions differ from the other processes.

The definition of managed forests adopted by MCPFE stresses the existence of a formal and informal management plan and the regularity of interventions over a sufficiently long period.

The reference to operations in individual forest stands implies “active” management even though no qualifier for these operations is given. Nor is there any minimum requirement with respect to the quality of management.

The ITTO definition of managed primary forest is the one that most explicitly requires “active” management. Managed forests are those where harvesting has changed the forest structure and species composition from the original primary forest. They also have to be managed sustainably.

The IPCC’s reference to natural, unmanaged forests is strict in the sense that it excludes any human activity in the forest. Even if human activities are not purposeful (e.g. based on “plans”, “systems”, “functions” etc.), a forest affected by human activities can be considered managed.

The FAO/FRA system of definitions has recently been revised and there is no explicit reference to forest management in FRA 2005. Instead, there is a definition for intensive forest management as well as forests with designated management functions. The definition for intensive forest management, which refers to semi-natural forests, is similar to the ITTO definition in that it refers to “active” management; forest management defines the composition and structure of the forest (as opposed to natural processes). Similarly to the MCPFE definition, the existence of a formal or informal forest management plan is mentioned.

The designated management functions in the FAO/FRA 2005 set of definitions include production, conservation, protection of soil and water and provision of social services or combination of these (multiple purpose forests). Forests with no designated function are also defined as a separate category. The only management “activity”, however, is the designation of a function.

Box 5.1 Definitions related to managed forests

Managed forest

UNFCCC

Forest management is a system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological (including biological diversity), economic and social functions of the forest in a sustainable manner.

IPCC

Managed forest. All forests subject to some kind of human interaction (notable commercial management, harvest of industrial round-wood (logs) and fuelwood, production and use of wood commodities, and forest managed for amenity value or environmental protection if specified by the country), with defined geographical boundaries. (IPCC 2004).

Natural, unmanaged (for wood products) forests are not considered to be either an anthropogenic source or sink, and are excluded from calculations. They can be excluded from woody biomass stocks accounting only, if there is no significant current interaction with these forests. If they are being used as a source of fuelwood, or are being affected in other ways by ongoing human activities, they should be accounted for. (IPCC 1996)

IUFRO

Forest management is a practical application of biological, physical, quantitative, managerial, economic, social and policy principles to the regeneration, utilization, and conservation of forests to meet specified goals and objectives (while maintaining the productivity of the forest). The Dictionary of Forestry by SAF (Society of American Foresters) adds in a note that: ...forest management includes management for aesthetics, fish, recreation, urban values, water, wilderness, wildlife, wood products, and forest resource values.

MCPFE

Managed forest/other wood land: Forest and other wooded land which is managed in accordance with a formal or an informal plan applied regularly over a sufficiently long period (five years or more). The management operations include the tasks to be accomplished in individual forest stands (e.g. compartments) during the given period (TBFRA 2000).

ITTO

Managed primary forest: primary forest in which sustainable wood and non-wood harvesting (e.g. through integrated harvesting and silvicultural treatments), wildlife management and other uses have changed the forest structure and species composition from the original primary forest. All major goods and services are maintained;

Box 5.1 (cont'd)**FAO/FRA 2005*****Intensive forest management***

Definition: A regime of forest management, where silvicultural practices define the structure and composition of forest stands. Formal or informal forest management plan exists.

Explanatory note

A forest is not under intensive management, if mainly natural ecological processes define the structure and composition of stands. (FAO 2004a)

Management functions**FAO/FRA 2005*****Production Forest / Other Wooded Land***

Definition: Forest/Other wooded land designated for production and extraction of forest goods, including both wood and non-wood forest products.

Conservation Forest/Other Wooded Land

Definition: Forest/Other wooded land designated for conservation of biological diversity.

Protection of Soil and Water (Designated Function of Forest/Other Wooded Land)

Definition: Forest/Other wooded land designated for protection of soil and water.

Social Service Forest/Other Wooded Land

Definition: Forest/Other wooded land designated for the provision of social services.

Multiple Purpose Forest/Other Wooded Land

Definition: Forest/Other wooded land designated to any combination of: production of goods, protection of soil and water, conservation of biodiversity and provision of social services and where none of these alone can be considered as being significantly more important than the others.

No or Unknown Function (of Forest/Other Wooded Land)

Definition: Forest/Other wooded land for which a specific function has not been designated or where designated function is unknown.

Designated Function (of Forest and Other Wooded Land)

Definition: Designated function refers to the function or purpose assigned to a piece of land either by legal prescriptions or by decision of the land owner/manager. It applies on land classified as "Forest" and "Other wooded land" and relates to the common thematic areas of the Criteria and Indicator processes that has been adopted as a reporting framework for FRA.

Protected areas**CBD**

Protected area: a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives. (Source: CBD 2004)

4th World Congress on National Parks and Protected Areas

Protected area: areas of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means. (Source: CBD 2004)

The Global Biodiversity Strategy

Protected area: a legally established land or water area under either public or private ownership that is regulated and managed to achieve specific conservation goals. (Source: CBD 2004)

5.2 Opportunities for Harmonization

The five definitions related to managed forests are rather diverse, although some common elements can be identified. All but the IPCC definition are based on the approach that management comprises purposeful actions with the goal of fulfilling specific objectives or functions. The IPCC definition for unmanaged forest implies that any human interaction with forests would be considered management. It is worth noting that this interaction can be indirect. For instance, boundary demarcation may affect the degree of interaction and management decisions made outside an area may also impact on it (e.g. clearing of forest in watershed area may change the water balance). The ITTO definition of primary managed forests and the FAO/FRA 2005 definition of intensive forest management are based on the notion that forests are managed in a way which generally results in changes in forest structure and species composition. The UNFCCC and MCPFE definitions do not make any assumptions in this regard but they imply that a conscious decision regarding management objectives should have been made. The UNFCCC definition makes an additional reference to sustainability of forest management.

The ITTO definition of primary managed forest and FAO/FRA 2005 definition of intensive forest management have been designed for specific purposes, and the need for harmonization appears limited. The ITTO definition has been formulated to identify forest status or the quality of outcome of forest management, not on whether the forest is managed or not. Similarly, the FAO/FRA 2005 definition aims to distinguish between degrees of management intensity, not between managed or unmanaged forests.

Other definitions show more potential for harmonization. The UNFCCC definition was formulated to identify forests that are managed and whether that management is sustainable. Both features derive from the special character of the UNFCCC. While its interest is limited to human-induced activities, it is also necessary to identify areas where forest management is sustainable owing to the fact that only sustainable activities are credited.

Developing a more detailed definition of sustainability of forest management is a broader question, which cannot be dealt with here. Suffice to say that it is usually not assessed based on a single definition but applying a broader set of criteria and indicators for sustainable forest management such as the criteria and indicators developed at national or regional level (see e.g. IIED 2003) or certification standards such as the FSC.

The MCPFE definition serves to identify any managed forests, be their management sustainable or not. There is a reference to a management plan but having a plan is, of course, not a sufficient indicator for the sustainability of forest management. Adding an explicit reference to sustainability in the MCPFE definition would make it more compatible with the UNFCCC definitions but it is unclear whether this is necessary considering the purposes for which this definition has been designed.

The FAO/FRA definitions regarding forests with designated functions (production, conservation, soil protection, provision of social services) do not directly deal with forest management. The common point with the UNFCCC and MCPFE definitions is the question whether designation of a function can be considered forest management. Similarly, the various definitions for protected areas do not explicitly deal with the issue of management; the wordings only imply what is considered management.

Based on the above, if harmonization should be attempted, the area where common ground could be found is the definitions for managed and unmanaged forests (or forest management). The issue has relevance with respect to the UNFCCC and MCPFE definitions, the FAO/FRA definitions of forests with designated functions and the various definitions of protected areas. The available opportunities for harmonization will be analyzed in more detail in the following chapter.

5.3 Harmonization of Definitions of Managed Forests

The Second Expert Meeting stated that the term “unmanaged forest” can have different meanings, but generally relates to the concept that neither any management decision nor any management planning or management interventions have been implemented. The term “unmanaged” may not be needed at all, since it has been argued that there are hardly any forests left that are not affected in one way or another by human intervention or where humans have made a deliberate decision not to intervene with natural processes, except in some remote, inaccessible areas. Lack of formal management does not necessarily mean that a forest is unmanaged or dealt with in an unsustainable manner (FAO 2002).

This interpretation is rather broad. Accordingly, forests managed based on any type of management objectives would qualify as managed. Even limited interventions, such as boundary demarcation or fire protection would be part of management. In fact, a mere decision not to intervene in an area could be considered forest management, i.e. making a conscious choice would be the key element of forest management. Unmanaged forests would be restricted to inaccessible areas, where “active” management is not an option, no management can be practiced and, consequently, no choices can be made. *De facto* open access areas could also be included.

This approach would be in line with the FAO/FRA 2005 concept of forests with designated functions. Forests for which a designated function has been assigned would be considered managed and forests with no or unknown function would be considered unmanaged.

On the other hand, the definitions of protected areas differentiate “designation”, “dedication” and “legal establishment” from management. In other words, a mere decision to declare an area as protected would not be regarded as management. The MCPFE and UNFCCC definitions are less clear on this aspect but the wording can be interpreted in a similar manner (except for the qualifier on sustainability in the UNFCCC definition). Still, the

notion of forest management underlying the MCPFE and UNFCCC definitions appears more “active” than a mere decision to manage or not to manage. This is, however, not clearly spelt out.

This aspect of the UNFCCC definition, in particular, has significance for two countries, Russia and Canada, which have vast areas outside formal management. The size of the managed forest that Canada reports to the UNFCCC will significantly affect the carbon stock calculations. Canada’s 2000 SBSTA submission defines the managed forest as the accessible managed forest lands of Canada or approximately 134 million ha. Including inaccessible forests could increase the land base to more than 243 million ha. The inaccessible forests are typically younger as they are in remote northern areas where wildfires are a common occurrence and little is done to control the spread of these fires. Being relatively young these forests can be a net sink with a recent reference year like 1990 even in the absence of any physical management (cf. Burnham & Redhead, undated). The question is whether a decision to designate them (or similar areas anywhere) a management function (e.g. declaring them protected) would make them managed, and if not, what minimum measures (e.g. formal or informal management plan, minimum intervention) would be required to have them qualify as managed.

The question whether designation of a function can be considered management is particularly relevant in protected areas where management is often of low intensity. The available definitions tend to differentiate between these concepts. In the CBD definition (1992) a protected area is a geographically defined area which is *designated* or *regulated and managed*. The MCPFE applies also this definition. The definition of the 4th World Congress on National Parks and Protected Areas (1992) states that they are areas of land and/or sea especially *dedicated* to biodiversity conservation and *managed*. The Global Biodiversity Strategy defines a protected area as a *legally established* land or water area that is *regulated and managed* (Box 5.1). In other words, designation and management of protected areas are intimately intertwined, but a mere declaration of a protected area would not qualify as management according to these definitions. This definition has been adopted by IUCN as well.

Finding a generic definition of forest management may be difficult, were it to cover all possible situations and purposes. Regarding production forest and most protected areas, it would probably be relatively easy to agree on a definition that goes beyond the designation of a function. The minimum physical interventions required for management could be tailored according to the management objective.

In some protected areas, however, allowing the forest evolve in natural succession may indeed be the desired course of development. Any physical intervention would be in conflict with the management objective and the only management intervention needed would be to designate them as protected areas. However, since such areas are rather limited in size, it is questionable whether the basic concept should be based on such a specific case.

6. FOREST ORIGIN AND COMPOSITION

6.1 Underlying Concepts

This chapter focuses on the origin of forest, how it was established, and the degree of human intervention. These three elements are reflected in such aspects as composition of tree species, structure of stands in terms of age and size of trees, and method of stand establishment.

Most existing sets of definitions are more or less directly based on the concept of a continuum in the degree of naturalness (cf. Buchwald 2002). The New Webster Dictionary (1965) defines naturalness as *the state of being natural, conformity to nature*. In the case of forests, naturalness encompasses a whole range of dimensions, which go beyond species composition, stand structure or type, or method of regeneration. These include various ecosystem functions and thereby the characteristics of a forest area that maintain those functions. This represents an additional complexity as the assessment of ecosystem functions cannot be limited to stand level as some of them are created and maintained in a larger geographical context (forest landscape).

In practice, a simplified approach has been necessary as typical indicators for naturalness applied in the various definition sets include the method of stand (re-) establishment, species composition, and degree of human intervention. Naturalness is seen as a function of divergence of stand characteristics from those of a stand developed under entirely natural conditions, including even serious natural disturbances on the same forest site. These concepts are underpinning variations of the terms “natural forest”, “planted forests” and “plantations”. With respect to the method of stand establishment the different classes of naturalness from high to low include (i) natural regeneration, (ii) assisted natural regeneration, (iii) enrichment planting, (iv) direct seeding, and (iv) planting. Coppicing has not been distinguished as a separate class but it could fall under (i) or (ii) depending on

the case (whether unassisted or assisted) like many other natural regeneration methods which can be assisted to improve their effectiveness.

Regarding species, naturalness shifts from high to low if the stands consist of (i) native ecosystem or site specific species, or (ii) introduced species. In some cases, a mixture of native and introduced species can be found. Native species can also be considered ‘artificial’ if it is planted on ‘wrong’ sites or monocultures y using them are created which are not occurring naturally, but the existing definitions do not consider such cases.

Authenticity is a concept related to naturalness. However, measuring the various components of authenticity presents a considerable challenge. What is understood by “a balanced ecology” and “a full range of species” would need further definition in order to make this term operational. The complexity of the concept makes it difficult to use it when developing definitions, which for practical reasons have to be relatively simple (Box 6.1)

Box 6.1 Concept of forest authenticity

Authenticity reflects the extent to which an existing forest has a balanced ecology and a full range of species. A definition of a fully authentic forest is a forest in which all the expected ecosystem functions can continue to operate indefinitely. The following general components of authenticity have been identified

- (i) Composition: of species, ecosystems and genetic variability,
- (ii) Pattern: variation of trees with respect to age and size,
- (iii) Functioning: continuity, proportion and type of dead timber etc.,
- (iv) Process: disturbance patterns, life cycles,
- (v) Area: size, connection to other ecosystems, and

Resilience: health of the ecosystem, presence of invasive species, pollution etc.

Source: IUCN and WWF International 1999

6.2 Existing Definitions

Relevant definitions have been developed by FAO/FRA, CBD, ITTO, MCPFE, UNFCCC/ IPCC, WCMC/CIFOR and the Montreal Process. The classifications applied under various definition sets are presented schematically in Table 6.1. All sets are based on a continuum in the degree of “naturalness” of forest. The FAO/FRA, WCMC/CIFOR and UNFCCC/IPCC definitions comprise four classes, those under the Montreal process only one (implicitly two) while the rest have three classes.

Table 6.1 Sets of definitions used to describe the continuum of forest origin and composition in the different processes

FAO / FRA	Primary forest – Modified natural forest – Seminatural forest – Plantation
CBD	Primary forest – Secondary forest – Plantation forest
ITTO	Primary forest – Modified natural forest – Planted forest
Montreal process	Plantation forest
MCPFE	Forest undisturbed by man – Seminatural forest – Plantation
UNFCCC/IPCC	Forest land (unmanaged) – Forest land (managed) – Forest land (afforested/reforested)
WCMC/CIFOR	Natural undisturbed forest – Disturbed natural forest – Native species plantation – Exotic species plantation

6.3 Forests With Limited Human Intervention

The definitions for primary forest under FAO/FRA, CBD, and ITTO (2002)² classifications as well as forest undisturbed by man defined by MCPFE and WCMC-CIFOR are largely compatible with each other. Absence of all human disturbances is not assumed; areas with restricted human intervention such as limited collection of non-wood products and removal or a few trees qualify under these definitions. It is also important to note that e.g. protected areas can be under considerable human “intervention” in the form of protective measures but still fall in the “primary/undisturbed” category. (Box 6.2).

The attributes defining restricted human intervention include “no clearly visible signs” (FAO/FRA), “inconsequential” (CBD), “not exceeding the elastic capacity of the ecosystem” (ITTO), and “shows natural

² ITTO has three related definitions (ITTO 1993, 2001 and 2002) but the available documentation does not indicate which one is currently valid. In this analysis the most recent definitions from the year 2002 are used as the main reference. It may be noted that the two definitions of primary forest from 1993 and 2002 differ only marginally, but the definition of natural forest (ITTO 2001) is a broader concept covering all forests that are not planted.

forest dynamics” (MCPFE). While all of these are subject to interpretation, ITTO’s reference to “elasticity” is broadest³. However, no definition of elasticity was offered but it can be taken to denote capacity to recover from damage. Tropical (and many other) forests are often robust and possess high degree of elasticity, resistance and resilience and have a high restoration capacity (ITTO 2002). The degree of human disturbance tolerated with the ITTO definition may therefore exceed the degree defined under the other definitions.

In addition, the CBD definition makes a reference to Europe making it depart from the general globally applicable framework. In Europe in certain cases planted forests, i.e. forests established through human intervention, may also qualify as primary forest. This is an anomaly and an overlap with other definitions and it is difficult to make it compatible with the other definitions; the definition itself mentions the possibility that in Europe secondary forests may also be considered primary.

The UNFCCC does not have definitions related to naturally regenerated areas as they fall outside the concept of afforestation and reforestation.

6.4 Forests Significantly Affected by Human Intervention

Nearly all sets of definitions have a distinct class for forests where the degree of naturalness ranges between those where no human intervention has occurred in the recent past and those which are referred to as plantations or planted forests. CBD, ITTO, MCPFE, WCMC-CIFOR have a single class (secondary, modified, semi-natural, natural forest disturbed by humans) for this “middle” class forests, while FRA/FAO has two (modified and semi-natural).

As indicated in chapter 5, the various definitions for forests where no human intervention has occurred are rather similar and clear, and distinguishing them is rather easy. However, the point where this “middle” class changes to plantations or planted forests is set differently in each set of definitions which may give rise to confusion (Box 6.3).

The CBD definition for secondary forests⁴ includes forests that have been logged and which have regenerated either naturally or through planting. Some stands established through planting go under this definition but the borderline with plantations is not clearly defined. The transition point where planted secondary forest changes into plantations is somewhere along a gradient towards “less natural” forest but there is no definition of this point.

³ Elasticity was introduced in the definition of primary forest from year 2002. The definition from 1993 did not have a reference to it.

⁴ There are many other definitions of secondary forests but since they do not belong to the definition sets analyzed in this report they are not discussed here

Box 6.2 Definitions related to forest with limited human intervention

FAO/FRA 2005

Primary Forest/Other wooded land

Definition: Forest/Other wooded land of native species, where there are no clearly visible indications of human activities and the ecological processes are not significantly disturbed.

Explanatory note

Includes areas where collection of non-wood forest products occurs, provided the human impact is small. Some trees may have been removed.

CBD

Primary forest: A primary forest is a forest that has never been logged and has developed following natural disturbances and under natural processes, regardless of its age. It is referred to "direct human disturbance" as the intentional clearing of forest by any means (including fire) to manage or alter them for human use. Also included as primary, are forests that are used inconsequentially by indigenous and local communities living traditional lifestyles relevant for the conservation and sustainable use of biological diversity. In much of Europe, primary forest has a different connotation and refers to an area of forest land which has probably been continuously wooded at least throughout historical times (e.g., the last thousand years). It has not been completely cleared or converted to another land use for any period of time. However traditional human disturbances such as patch felling for shifting cultivation, coppicing, burning and also, more recently, selective/partial logging may have occurred, as well as natural disturbances. The present cover is normally relatively close to the natural composition and has arisen (predominantly) through natural regeneration, but planted stands can also be found. However, the suggested definition above would include other forests, such as secondary forests

ITTO (2002)

Primary Forest: Forest which has never been subject to human disturbance, or has been so little affected by hunting, gathering and tree-cutting that its natural structure, functions and dynamics have not undergone any changes that exceed the elastic capacity of the ecosystem.

ITTO (2001)

Natural Forest: Forest land composed of indigenous trees, not planted by man, which is further classified using the criteria of forest formation (or type), degree of human disturbance or modification, and human interference.

ITTO (1993)

Primary Forest (synonyms pristine, virgin, or old growth forest). In this category, the forest has never been subject to human disturbance, or has been so little affected by hunting and gathering that its natural structure, functions and dynamics are not significantly altered.

MCPFE

Forest/other wooded land undisturbed by man: Forest/other wooded land which shows natural forest dynamics, such as natural tree composition, occurrence of dead wood, natural age structure and natural regeneration processes, the area of which is large enough to maintain its natural characteristics and where there has been no known significant human intervention or where the last significant human intervention was long enough ago to have allowed the natural species composition and processes to have become re-established (TBFA 2000).

WCMC-CIFOR

Natural undisturbed forest: All categories of forest except exotic species plantations, native species plantations and disturbed natural forest.

Box 6.3 Definitions related to forests significantly affected by human intervention

FAO/FRA 2005

Modified natural Forest/Other wooded land

Definition:

Forest/Other wooded land of naturally regenerated native species where there are clearly visible indications of human activities.

Explanatory notes

Includes, but is not limited to: Selectively logged-over areas, areas regenerating following agricultural land use, areas recovering from human-induced fires, etc.

Includes areas where it is not possible to distinguish whether the regeneration has been natural or assisted.

Semi-natural Forest/Other wooded land

Definition:

Forest/Other wooded land of native species, established through planting, seeding or assisted natural regeneration.

Explanatory notes

Includes areas under intensive management where native species are used.

Naturally regenerated trees from other species than those planted/seeded may be present.

May include areas with naturally regenerated trees of introduced species.

Intensive forest management

Definition:

A regime of forest management, where silvicultural practices define the structure and composition of forest stands. Formal or informal forest management plan exists.

Explanatory note

A forest is not under intensive management, if mainly natural ecological processes define the structure and composition of stands.

Assisted natural regeneration

Definition: The natural regeneration with human assistance through removal of external pressures, such as weeds and biotic interference and sometimes application of controlled disturbances to trigger germination of native species such as mosaic and or ecological burns or preparation of the germination site, enables the inherent resilience of the site to naturally regenerate the native species.

CBD

Secondary forest: A secondary forest is a forest that has been logged and has recovered naturally or artificially. Not all secondary forests provide the same value to sustaining biological diversity, or goods and services, as did primary forest in the same location. In Europe, secondary forest is forest land where there has been a period of complete clearance by humans with or without a period of conversion to another land use. Forest cover has regenerated naturally or artificially through planting.

ITTO (2002)

Modified Natural Forest: Primary forests managed or exploited for wood and/or non-wood forest products, wildlife or other purposes. The more intensive the use, the more the structure and composition is altered from that of primary forests. Ecologically, the alteration often represents a shift to an earlier successional stage.

ITTO (1993)

Modified Forest (part syn. logged-over forest, manipulated forest): the forest cover has been retained but has been affected by uncontrolled timber exploitations or controlled timber harvesting (creaming, selective logging, selective-silvicultural management and other systems), or by such intensity of harvesting of non-timber products (tapping of latex, collecting of cane, fruits etc. including elimination, reduction or introduction of tree and other useful species) that its structure, functions and dynamics are noticeably altered.

Secondary Forest (syn. pioneer forest): Forest which has developed by secondary succession on deforested land, such as land abandoned after shifting or settled agriculture, or after pasture.

MCPFE

Semi-natural forest/other wooded land: Forest/other wooded land which is neither “forest/other wooded land undisturbed by man” nor “plantation” as defined separately (TBFRA 2000).

WCMC-CIFOR

Disturbed natural forest: Any [natural] forest type that has in its interior significant areas of disturbance by people, including clearing, felling for wood extraction, anthropogenic fires, road construction, etc.

The ITTO definition for modified natural forests⁵ refers to forests, which are managed or exploited for production of a wide range of forest products or services. The reference to primary forests may imply that the definition includes only naturally regenerated forests but it is unclear since the “Guidelines on the Restoration, Management and Rehabilitation of Degraded and Secondary Tropical Forests” define enrichment planting as “planting of desired tree species in modified natural forests or secondary forests or woodland”. The Guidelines also define secondary forest as “woody vegetation regrowing on land that was largely cleared of its original forest cover”. Secondary forests commonly develop naturally on land abandoned after shifting cultivation, settled agriculture, pasture, or failed tree plantations.

The MCPFE concept of semi-natural forests is defined through other concepts. Semi-natural forest is neither forest/other wooded land undisturbed by man nor plantation. In practice, the forests falling between these two definitions are rather close to the CBD definition of secondary forests. However, MCPFE has a more detailed definition for plantations (Box 6.4), which makes the distinction to plantations less ambiguous than in the CBD set of definitions.

The FAO/FRA 2005 concepts include modified natural forest and semi-natural forest. FAO (2002) has also an agreed definition of secondary forest which is not a FRA definition *per se* at this point but the FRA definitions have taken it into consideration. Combined, the FRA’s modified natural and seminatural forests are close to CBD’s definition of secondary forests. Forests under these definitions are essentially forests which are regenerated either naturally (modified natural forest) or through planting, seeding, or assisted regeneration (semi-natural forests). If it is not possible to distinguish whether regeneration has been natural or artificial, the concept of modified natural forest applies.

The definition of modified natural forest of FAO/FRA comprises only naturally regenerated forests. Forests established through planting and seeding are semi-natural. However, there is one exception. If the species with which natural regeneration takes place is introduced, the forest is classified as semi-natural. Other definitions do not make this distinction.

The explanatory note of the FAO/FRA definition of semi-natural forests mentions that it includes even intensively managed stands, if they consist of native species. Intensively managed stands are those where silvicultural practices and not ecological processes define the structure and composition of the stand.

The UNFCCC definitions applicable to describing degrees of naturalness (i.e. those related to methods of stand establishment) apply only to forests that have been engendered through human intervention. This is due to the logic underpinning of the Convention; only human-induced activities are credited. Apart from planting and seeding, assisted natural regeneration (promotion of regeneration from natural seed sources) is considered a human-induced activity. This approach is in line with the FAO/FRA’s definition of semi-natural forests. However, since the degree of naturalness in the forest is not of great interest to the Convention, more fine-tuned definitions are lacking.

The WCMC-CIFOR definition of natural forest disturbed by humans refers to significant human influence. The term natural is not clearly defined but since the WCMC-CIFOR definition of plantations (Box 6.4) considers only stands that have been established through planting, natural forest could also include stands that have been established through assisted natural regeneration, enrichment planting or seeding.

6.5 Planted Forests and Plantations

The span of definitions related to planted forests and plantations is wide, and highly differing interpretations are applied. Differences relate to treatment of native/introduced species, stand structure and type of regeneration (Box 6.4).

The FAO/FRA 2005 definition of productive and protective plantations includes forests which have been established through planting or seeding. They have also been established for specific purposes such as production of wood and non-wood goods or provision of services.

⁵ The definition referred to here is the one from year 2002 (ITTO 2002). Modified natural forest was also included in earlier definitions (ITTO 1993) where it was a sub-class of natural forest. Natural forest, however, does not exist in the classification from 2002. The earlier set included also a definition of secondary forests, which were a sub-class under forests created as a result of human activities at the same level with modified natural forest. The definitions from year 2002 have a definition of secondary forests as well but in this set they are considered a sub-class of modified natural forest.

Box 6.4 Definitions of planted forests and plantations

FAO/FRA 2005

Productive plantation (in Forest/Other wooded land)

Definition: Forest/Other wooded land of introduced species, and in some cases native species, established through planting or seeding mainly for production of wood or non wood goods.

Explanatory notes

Includes all stands of introduced species established for production of wood or non-wood goods.

May include areas of native species characterized by few species, straight tree lines and/or even-aged stands.

Protective plantation (in Forest/Other wooded land)

Definition: Forest/Other wooded land of native or introduced species, established through planting or seeding mainly for provision of services.

Explanatory note

Includes all stands of introduced species established for provision of services, such as soil and water protection, pest control and conservation of (habitat) biological diversity.

Includes areas of native species characterized by few species, straight tree lines and even-aged stands

CBD

Plantation forest: A plantation forest may be afforested land or a secondary forest established by planting or direct seeding. A gradient exists among plantation forests from even-aged, single species monocultures of exotic species with a fibre production objective to mixed species, native to the site with both fibre and biodiversity objectives. This gradient will probably also reflect the capability of the plantation forest to maintain "normal" local biological diversity.

ITTO (2002)

Planted Forest: A forest stand that has been established by planting or seeding [including afforestation, reforestation and enrichment planting]:

Enrichment planting (assisted regeneration, complementary regeneration): the planting of desired tree species in a modified natural forest or secondary forest or woodland with the objective of creating a high forest dominated by desirable (ie local and/or high-value) species.

ITTO (2001)

Plantation Forest: Forest stands established by planting or/and seeding in the process of afforestation or reforestation which are either of introduced species (all planted stands) or intensively managed stands of indigenous species, which meet all the following criteria: one or two species, even aged, regular spacing.

ITTO (1993)

Planted Forests have been established by planting or sowing on (i) barren land, (ii) grassland, (iii) land cleared of secondary forest or scrub, or (iv) land cleared of primary or modified forest.

MONTREAL PROCESS

Plantation Forest: Forest stands established by planting, or deliberately sowing seed. Additional considerations in classifying a stand as a plantation may include, but are not necessarily limited to purpose of the planting or seeding, site preparation, intensity of management. Forests that fall outside this classification are not necessarily natural forests.

MCPFE

Plantation(s): Forest stands established by planting or/and seeding in the process of afforestation or reforestation. They are either:

- of introduced species (all planted stands), or
- intensively managed stands of indigenous species which meet all the following criteria: one or two species at plantation, even age class, regular spacing.

Excludes: Stands which were established as plantations but which have been without intensive management for a significant period of time. These should be considered semi-natural (TBFRA 2000).

WCMC-CIFOR

Exotic species plantation: Intensively managed forests with > 30% canopy cover, which have been planted by people with species not naturally occurring in that country.

Native species plantation: Intensively managed forests with > 30% canopy cover, which have been planted by people with species that occur naturally in that country.

Compared to semi-natural stands there is a clear distinction with respect to introduced species; all stands established by planting or seeding of introduced species are considered plantations (NB! if natural regeneration takes place with introduced species, the forest may be considered semi-natural under this definition). Plantations may, however, also include specified areas of native species or a mixture of native and introduced species if the stands are characterized by one or two species, straight tree lines and/or even-aged structure.

The FAO/FRA 2005 distinction between protective and productive plantations is justified to facilitate classification under the various situations of reporting that exist in responding countries. From the strict viewpoint, however, the management objective is secondary in this context. The references to protection and production are related to management objectives and do not necessarily imply a difference in naturalness although there might be differences in terms of the number of species used, age structure, degree of undergrowth and presence of other indigenous plant and animal species. Management of protective plantations may be similar to that of productive plantations; high management intensities may be applied in both cases.

The CBD definition of plantations is also a broad concept. It is restricted to forests that have been established through planting or seeding but it covers a wide range of stand characteristics from even-aged, single species monocultures of exotic species with a fibre production objective to mixed species, to species native to the site with multiple objectives. The transition from plantations to secondary forests is fluid in the sense that at one end of the range the resemblance to secondary forest is high. In some cases, making a distinction between these two classes may be difficult.

The ITTO definition of planted forests is among the broadest concepts⁶. It comprises all forests established by planting or direct seeding. Compared to the FAO/FRA and CBD definitions, it covers both plantations as well as part of semi-natural forests and secondary forests.

The FAO/FRA 2005 definition of plantations excludes those with assisted natural regeneration but they are included in the ITTO definition of planted forest, as part of the definition of enrichment planting.

The ITTO definition of planted forests includes also stands where enrichment planting has taken place. It is also referred to as assisted regeneration or complementary regeneration. According to the definition enrichment planting takes place in modified natural forest. However, the definition is placed under planted forests which implies that enrichment planting transforms modified natural forest into planted forests, although no cut-off limit is given. Other definition sets do not define or refer to enrichment planting. The FAO/FRA set does not have a definition for enrichment planting or assisted regeneration but there is a definition of assisted natural regeneration (see Box 6.3). There is no overlap, however, since the FAO/FRA definition implies that enrichment planting is excluded.

The WCMC-CIFOR definitions of plantations distinguish between native and exotic species plantations. By setting the minimum canopy cover at 30 per cent it also differs from other definitions. The other sets do not define this threshold but it is implied that they apply the FAO minimum canopy cover of 10 per cent.

The definition adopted by the Montreal Process for plantation forests includes only stands that have been established by planting or by deliberately sowing seed. It is essentially the same as ITTO's concept of planted forest and differs from the FAO/FRA 2005 definition of planted forests only for native species.

In addition to those definitions referred to above, several other organizations have also proposed definitions for planted forest and plantations. These tend to be associated with specific objectives to which the definitions are related⁷.

6.6 Introduced or Native Species

The concepts of introduced and native species are often central to the definitions of natural forest and plantations as they indicate the degree of naturalness. Relevant definitions are provided by the FAO/FRA, CBD, MCPFE, and Montreal Process (Box 6.5).

⁶ The definition referred to here is the one from year 2002 (ITTO 2002). The definition from year 1993 differs only marginally from this definition, but the definition of plantation forest from year 2001 is a more narrow concept comprising only intensively managed forests (Box 6.4).

⁷ E.g., the Forest Stewardship Council (FSC) as a certification scheme has defined plantations as forest areas lacking most of the principal characteristics and key elements of native ecosystems as defined by FSC-approved national and regional standards of forest stewardship, which result from the human activities of either planting, sowing or intensive silvicultural treatments. This is the broadest concept of plantations being highly similar to ITTO's definition of planted forests. However, while FSC's plantation principle applies mainly to forests that have been established by artificial regeneration (seeds, seedlings or cuttings), the definition can include naturally regenerating forests that have been simplified or degraded by silviculture, losing the key elements of the native forest ecosystem (FSC 2003). This is a major difference to any other set of definitions. The distinctive feature of FSC's definition is that the main indicator is the degree of intervention. All stands where the key elements of native ecosystems have been lost are classified as plantations even if they may have been regenerated naturally.

Box 6.5 Definitions of introduced and native species

FAO/FRA

Native species

Definition:

A species known to have existed at a given location, or in a particular ecosystem, prior to the influence of humans.

Introduced species

Definition:

A species introduced outside of its normal past and current distribution.

Explanatory note

Its synonyms are "alien species" and "exotic species".

CBD

Native species: A native species is one which naturally exists at a given location or in a particular ecosystem, i.e. it has not been moved there by humans.

Endemic species: An endemic species is a native species restricted to a particular geographic region owing to factors such as isolation or in response to soil or climatic conditions

Alien species: An alien species is a species, sub-species or member of a lower taxon that has been introduced outside its normal past and present distribution; the definition includes the gametes, seeds, eggs, propagules or any other part of such species that might survive and subsequently reproduce.

MONTREAL PROCESS

Exotic species: Any species growing or living outside its natural range of occurrence. Normally this refers to species purposely or accidentally introduced into countries or regions where they do not historically occur.

MCPFE

Indigenous tree species (synonyms: native species, autochthonous species): Tree species which have evolved in the same area, region or biotope where the forest stand is growing and are adapted to the specific ecological conditions predominant at the time of the establishment of the stand (TBFRA 2000).

Introduced tree species (synonyms: non-indigenous species, exotic species): Tree species occurring outside their natural vegetation zone, area or region. Includes: Hybrids (TBFRA 2000).

The concept of introduced species is paralleled by other concepts such as exotic species, alien species and non-indigenous species. Similarly, the concept of native species is close to indigenous species and autochthonous species. These concepts are often used as synonyms and interchangeably. Still, some minor differences can be identified.

The CBD definition refers to native species as ones that naturally occur in a region or in a particular ecosystem. The wording suggests that naturally occurring species are those found in a particular location or at least would be found if human influence had not made them disappear. On the other hand, to qualify as “native”, a species cannot have been moved to a

location through human intervention. The MCPFE definition of indigenous species is essentially the same; evolution of the particular species in the region and adaptation to the ecological conditions at the time of stand establishment are the key criteria. The FAO/FRA definition refers to species that are known to have existed at a given location or in a particular ecosystem. This, in principle could mean that species that have naturally become extinct in a given location could still be considered native species, if re-introduced. In practice, however, this difference may have limited relevance.

The same observations apply to definitions of introduced species. The MCPFE definition refers to species outside their natural vegetation zone while FAO/FRA, CBD and Montreal Process emphasize occurrence outside the normal past and present distribution area. Essentially, these definitions are the same. It may be noted, however, that past occurrence is probably intended to refer to species that have disappeared because of human influence. It could also comprise species that have become naturally extinct, e.g. because of climatic changes. If such species were re-introduced to the area, they would not be considered introduced species, which may not be the intention of the definition. Again, such an inconsistency may have little significance in practice.

CBD defines endemic species as different of native species using it as an additional qualifier for naturally occurring species. The difference in that endemic species is restricted to a particular geographic region owing to factors such as isolation or in response to soil or climatic conditions while native species are not. Such a restriction is probably unnecessary when defining the degree of naturalness in tree stands and the present practice of referring to natural occurrence rather than endemic appears appropriate.

The FAO/IUFRO multilingual glossary of forest genetic resources also includes relevant definitions on native and introduced species.

6.7 Opportunities for Harmonization

From the above sections, a number of conclusions can be drawn:

- The range of terms from Primary forest to Plantations is similar in all cases, with only choice of words that differ. The terms express mainly degrees of naturalness, and (in some cases) additionally degree of forest production potential.
- Tree species origin (native or introduced) is an important classifier in most cases
- The stand establishment method is used to separate classes, however with larger differences between the processes compared to species origin
- FAO/FRA, CBD and IPCC are the sets that attempt a global coverage, whereas the other focus on application within their respective regions.

The main opportunity for harmonization lies in subdivision of terms in cases where a finer distinction is used by other processes, e.g. for CBD secondary forests or MCPFE semi-natural forests. It should be noted that in most cases compatibility through decomposition remains approximate. If full harmonization between different systems is considered necessary and desirable, some adjustment of the wordings in the definitions of the various systems would be necessary.

The term enrichment planting would become more applicable, if the definition were more precise. ITTO has a definition but it does not clearly distinguish between enrichment planting and other planting. The IUFRO SilvaTerm includes a definition on enrichment planting: the improvement of the percentage of desirable species or genotypes or increasing biodiversity in a forest by interplanting. An approach where the cut-off point would be defined as ratio between planted seedlings and existing naturally regenerated seedlings or planted area or total area could be considered.

Coppicing is a form of regeneration that few of the definition sets explicitly include or define. While coppice regeneration is natural in the sense that it is unassisted, coppices sprout from trees that often have distinct characters of plantations (e.g. straight tree lines). The IUFRO SilvaTerm includes a definition on coppice forest: woodland which has been regenerated from shoots formed at the stumps of the previous crop trees, root suckers, or both, i.e., by vegetative means, normally grown in a short rotation for small material, but sometimes, e.g., some eucalypt species, to a substantial size.

7. TREES OUTSIDE FORESTS

The Second Expert Meeting made the statement that Trees outside Forests (TOF) play a large and significant role particularly in low forest cover conditions. Therefore, special attention should be given to the inclusion of them in national forest inventories and assessments. Failing to do so would give an incomplete picture of the importance of woody vegetation in terms of energy, biological diversity, carbon sequestration, contribution to sustainable livelihoods, etc. (FAO 2002).

The relationship between the terms TOF applied by FAO/FRA and revegetation used by UNFCCC was discussed at length in the background document to the Second Expert Meeting (Puustjärvi and Simula 2002). The following analysis focuses on the internal consistency of the FAO/FRA definitions with respect to TOF and other related terms as well as their relationship with the definition of agroforestry applied by the CBD (Box 7.1).

The FAO/FRA definition of ToF refers to all trees outside the two land classes Forest and Other Wooded Land (OWL), i.e. trees on land classified as “other land”. Thus Forests, OWL and ToF encompasses all trees in a given area in a mutually exclusive manner (each tree is accounted for once). Further, the use of the term “forest resources” in FRA includes Forests, OWL and ToF. This generic construction is used as a framework to all-inclusive attempts to forest resources assessments at different scale levels.

According to the FAO/FRA definition, ToF can be planted or have regenerated naturally. They can appear scattered in the landscape, in narrow strips, stands that are smaller than the forest classification threshold (0.5

ha). Consistently with the FAO/FRA definitions of forest and OWL, trees occurring in areas where agricultural or urban land use predominate, are always ToF even if the stand size and crown cover are above the forest threshold.

In the FRA 2005 reporting, ToF are not explicitly included, however an area category for “Other land with tree cover” has been introduced. These refer to areas where the tree cover is above the size, density and height thresholds for forests, but where other land uses are predominant. The purpose is to better describe the overall tree cover in countries, however as the parameter is new, the response rate from countries may not be high.

The CBD definition of agroforest takes land use as the basis for its definition. Where treed areas occur in land that is broadly characterized as agricultural or as an agro-ecosystem, they are considered agroforests. The definition does not set limits related to size of area, canopy cover or tree height. Therefore, in principle all FAO/FRA definitions that related to land predominantly under agricultural or urban land use are covered by the CBD definition (see above). If deemed necessary, a more detailed classification including sub-classes of agroforest could be introduced to CBD.

Box 7.1 Definitions of trees outside forest and related terms

FAO/FRA 2005

Trees outside forests

Definition: Trees outside forests are trees and tree environments on land not defined as forest or other wooded land.

Explanatory note:

Trees outside forests (ToF) include: (a) groups of trees covering an area of less than 0.5 ha, including lines and shelterbelts along infrastructure features and agricultural fields; (b) scattered trees in agricultural landscapes; (c) tree plantations mainly for other purposes than wood, such as fruit orchards and palm plantations; and (d) trees in parks and gardens and around buildings. ToF are not assigned an area in the overall land use classification, but occurs inside Other wooded land and Other land. Although the definition of ToF is based on the trees, the concept includes also the site and other vegetation at the location. (FAO 2004b)

Tree

Definition: A woody perennial with a single stem, or in the case of coppice with several stems, having more or less definite crown.

Other land with tree cover

Definition: Land classified as “Other land”, spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity.

Explanatory notes

Includes groups of trees and scattered trees in agricultural landscapes, parks, gardens and around buildings, provided that the canopy cover criteria is met.

Other land

Definition: All land that is not classified as “Forest” or “Other Wooded Land”.

Explanatory notes

Includes agricultural land, meadows and pastures, build-on areas, barren land, etc.

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.

Includes areas classified under the sub-category “Other land with tree cover”.

Other wooded land

Definition: Land not classified as “Forest”, spanning more than 0.5 hectares; with trees higher than 5 meters and a canopy cover of 5-10 percent, or trees able to reach these thresholds *in situ*; or with a combined cover of shrubs, bushes and trees above 10 percent. It does not include land that is predominantly under agricultural or urban land use.

Forest

Definition: Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds *in situ*. It does not include land that is predominantly under agricultural or urban land use.

Explanatory notes

Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters *in situ*. Areas under reforestation that have not yet but are expected to reach a canopy cover of 10 percent and tree height of 5 m are included, as are temporarily unstocked areas, resulting from human intervention or natural causes that are expected to regenerate.

Includes areas with bamboo and palms provided that height and canopy cover criteria are reached.

Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific scientific, historical, cultural or spiritual interest.

Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 ha and width of more than 20 m.

Includes plantations primarily used for forestry or protection purposes, such as rubber-wood plantations and cork oak stands.

Excludes tree stands in agricultural production systems, for example in fruit plantations and agroforestry systems. The term also excludes trees in urban parks and gardens.

CBD

Agroforest: An agro-forest is a complex of treed areas within an area that is broadly characterised as agricultural or as an agro-ecosystem.

8. CONCLUSIONS

The previous analysis of the degree of naturalness and human intervention has been summarized in Table 8.1 in the context of the concepts applied by different international classifications. Classifications of the degree of human intervention are highly varied but for analytical purposes, the following generic classes were identified and applied when compiling the above-mentioned table:

- (i) no intervention where stands show natural forest dynamics with respect to species composition, age structure, etc.
- (ii) low-intensity interventions where stands retain certain characteristics of the natural dynamics
- (iii) high-intensity intervention where stands have lost the key elements of natural dynamics and may be characterized by a limited number of species or monocultures, straight tree lines and even-aged stands.

Introducing the degree of human intervention to the two naturalness indicators (stand establishment method and origin of species) allows us to capture the key elements appearing in different classifications (cf. Buchwald 2002). It is recognized, however, that Table 8.1 is an interpretation subject to validation by the respective institutions. Classifications can be established in various ways; an alternative approach is presented in annex 1.

Table 8.1 Definitions related to naturalness and human intervention

Degree of human intervention	Stand establishment	Species	FAO/FRA	CBD	ITTO	Montreal Process	MCPFE	UNFCCC/IPCC	WCMC-CIFOR
No intervention	Natural regeneration	Native	Primary forest	Primary forest	Primary forest	N/A	Forest undisturbed by man	Forest land (unmanaged)	Natural undisturbed forest
Low-intensity intervention	Natural regeneration	Native	Modified primary forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest land (managed)	Disturbed natural forest
		Introduced	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest land (managed)	Disturbed natural forest
	Assisted nat. regeneration or enrichment planting	Native	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest land/afforested/reforested	Disturbed natural forest
		Introduced	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest land/afforested/reforested	Disturbed natural forest
	Planting or seeding	Native	Semi-natural forest	Secondary forest	Planted forest	Plantation forest	Semi-natural forest	Forest land/afforested/reforested	Native species plantation
		Introduced	Production/Protective Plantation	Secondary forest	Planted forest	Plantation forest	Plantation	Forest land/afforested/reforested	Exotic species plantation
High-intensity intervention	Natural regeneration	Native	(Modified natural forest)	(Secondary forest)	(Modified natural forest)	N/A	Semi-natural forest	Forest land (managed)	Disturbed natural forest
		Introduced	Semi-natural forest	(Secondary forest)	(Modified natural forest)	N/A	Semi-natural forest	Forest land (managed)	Disturbed natural forest
	Assisted nat. regeneration or enrichment planting	Native	Semi-natural forest	(Secondary forest)	(Modified natural forest)	N/A	Semi-natural forest	Forest land/afforested/reforested	Disturbed natural forest
		Introduced	Semi-natural forest	(Secondary forest)	(Modified natural forest)	N/A	Semi-natural forest	Forest land/afforested/reforested	Disturbed natural forest
	Planting or seeding	Native	Production/Protective Plantation	Plantation forest	Planted forest	Plantation forest	Plantation	Forest land/afforested/reforested	Native species plantation
		Introduced	Production/Protective Plantation	Plantation forest	Planted forest	Plantation forest	Plantation	Forest land/afforested/reforested	Exotic species plantation

Most definition sets involving terms natural forest, planted forest, plantations etc. consist of a *continuum of definitions* attempting to capture various degrees of naturalness of forest. The main differences between the sets are the number of classes and the transition points between classes. There is also some divergence with respect to the attributes present in different definitions and the value or degree of detail in parameters. However, the differences are not insurmountable and there is good potential to move towards further harmonization of various sets whenever it is considered desirable.

One potential approach is to *adjust transition points* between existing classes in various sets so that they coincide. In some cases this would require changes in the current data collection and analytical methods. Another possibility is to *create sub-classes*. In this case, the existing transition points between classes can be maintained; harmonization is achieved by splitting the larger classes into sub-classes so that the respective

transition points coincide. This same strategy was proposed for harmonization of definitions of afforestation and reforestation (FAO 2002). The present methods of data collection and analysis could be maintained but increased level of detail could increase the workload.

In practice, a combination of these approaches could be considered. By creating sub-classes the original objectives and functions of each definition set can be secured. However, development of sub-classes entails a cost, against which the benefit has to be weighed. Some of the existing definitions could probably be reformulated without compromising the original objectives or causing significant loss of information. When this seems to be the case, the applicability of an alternative approach, adjustment of transition points could be explored.

With respect to *degree of human intervention* (managed forests, unmanaged forests, forest management etc.), there are three main points where existing definitions differ (i) minimum level of action qualifying as forest management, (ii) existence of a management plan, and (iii) inclusion/exclusion of a parameter regarding the quality of forest management, usually in terms of sustainability. The latter issue appears too broad to be captured by a single definition, and highly conflicting views are likely to emerge. The greatest potential for harmonization is therefore seen in agreeing on the definition of minimum activities required of forest management. In the existing definitions the main difference is whether mere designation of a management objective (normative or strategic decision) can be considered management, or whether some more “active” measures are required. This will be particularly important for assessment of carbon pools under the Kyoto Protocol.

The definitions of *trees outside forest* and related terms involved in FAO/FRA system of definition are largely consistent and logical; some minor adjustment may be needed to ensure full coverage of various situations. The CBD has a related definition on agroforestry. There are no major problems with compatibility but the CBD definition is rather broad and harmonization could be attempted by creating a number of sub-classes corresponding to respective classes in the FAO/FRA system.

Another approach targeted at comprehensive harmonization between definitions would be to use the analytical matrix approach (cf. Table 3.1). All the definitions would be systematically compared in terms of all their elements (attributes), both qualitative and quantitative, and necessary adjustments would then be made. This would raise the issue of hierarchical dependence between individual terms in different definition sets (e.g. harmonizing ‘managed’ would also need harmonizing ‘forest’). Such an approach would therefore probably have to be comprehensive addressing at the same time all the terms which are related to each other.

9. ISSUES FOR DISCUSSION

For further action it is recommended that the Third Expert Meeting scheduled for January 2005 takes up the key points referred to above and attempts to forge a broad consensus with respect to the harmonization approach (options 1 or 2, their combination or another approach). The key question is whether the existing definitions can be modified so that they better match with each other or whether the differences should be dealt with by creating new sub-classes in each definition set.

There are also a number of detailed issues which merit further discussion:

Natural forests, planted forests, plantations

- agree on the approach to be adopted in harmonization (modification of definitions vs. decomposition of classes);
- review the need for harmonization by each set of definitions for which harmonization is considered desirable;
- agree on the approach to defining enrichment planting and the approach to distinguishing it from other methods of regeneration;
- agree on classifying coppicing as a stand establishment method.

Managed/unmanaged forests

- agree on the basic concept of forest management assessing in particular the option that would include a minimum level of “active” measures to be undertaken for a specific purpose and/or the existence of a management plan

- apply the basic concept to adjustment and harmonization of the UNFCCC and MPFCE definitions
- consider developing a separate definition of forest management for the FAO/FRA set of definitions (i.e. other than “intensive forest management” which has been designed for different purpose). The definitions of forests with designated functions are useful in their own right, but may not adequately capture the concept of forest management.
- review the various definitions of protected areas to assess whether they should be adjusted to cover circumstances where no active management is required or should be undertaken.

Trees outside forest

- consider dividing the CBD definition of agroforest into sub-classes in order to increase comparability with related FAO/FRA terms

References:

- Buchwald, Erik.** 2002. A Hierarchical Terminology for More or Less Natural Forests in Relation to Sustainable Management and Biodiversity Conservation. Second Expert Meeting on Harmonizing Forest-related Definitions. Rome. September 2002
- Burnham, Carol D., and Redhead, Robert J.,** undated. Will Canada's Forest Be a Net Sink During the First Reporting Period. Executive Summary
- Carle, Jim and Holmgren, Peter.** 2003. Definitions Related to Planted Forests. UNFF Intersessional Experts Meeting on the Role of Planted Forests in Sustainable Forest Management, 24-30 March 2003, New Zealand.
- CBD.** 2004. Homepage for protected areas viewed on 28 June 2004 at www.biodiv.org/programmes/cross-cutting/protected/
- CIFOR.** 2002. Typology of Planted Forests. CIFOR Infobrief presented at UNFF 2, UN Headquarters, 4-15 March 2002
- EEA.** 2004. EEA Multilingual Environmental Glossary viewed on 29 June 2004 at <http://glossary.eea.eu.int/EEAGlossary>
- FAO.** 2000. Global Forest Resources Assessment 2000 - Main Report - FRA 2000, Forestry Paper 140.
- FAO.** 2002a. Proceedings of Second Expert Meeting on Harmonizing Forest-Related Definitions for Use by Various Stakeholders held in Rome, Italy from 11 to 13 September 2002.
- FAO.** 2002b. Towards Sustainable Management and Development of Tropical Secondary Forests in Anglophone Africa. The Nairobi Proposal for Action. Derived from the Results of the Workshop on Tropical Secondary Forest Management in Africa: Reality and Perspectives. Nairobi, Kenya, 09 -13 December 2002, Rome, Italy
- FAO.** 2004a. FRA 2005 Terms and Definitions viewed on 28 June at www.fao.org/forestry/site/fra2005-terms/en
- FAO.** 2004b. Trees Outside Forests viewed on 28 June at www.fao.org/forestry/site/tof/en
- FSC.** undated. FSC glossary of terms.
- FSC.** 2003. Forest Plantations – Fact sheet
- IIED.** 2003. Summary of the International Conference on the Contribution of Criteria and Indicators for Sustainable Forest Management: The Way Forward: 3-7 February 2003 viewed on 1 July 2004 at www.iisd.ca/sd/forest/cici/
- IPCC.** 1996. Revised 1996 Guidelines for National Greenhouse Gas Inventories. Reference Manual (Volume 3).

- IPCC.** 2000. Special Report on Land Use, Land Use Change and Forestry.
- IPCC.** 2003. Good Practice Guidance for Land Use, Land-use Change and Forestry.
- Iremonger, S., C. Ravilious and T. Quinton.** 1997. A Statistical Analysis of Global Forest Conservation. In: Iremonger, S., C. Ravilious and T. Quinton (Eds.) A Global Overview of Forest Conservation. Including: GIS files of forests and protected areas, version 2. CD-ROM. CIFOR and WCMC, Cambridge, U.K viewed on 30 June 2004 at www.unep-wcmc.org/forest/data/cdrom2/text2.htm
- IUCN and WWF International.** 1999. Forest Quality – an introductory booklet.
- ITTO.** 1993. ITTO Guidelines for the Establishment and Sustainable Management of Planted Tropical Forests
- ITTO.** 2001. Criteria and Indicators for Sustainable Management of Natural Tropical Forests Reporting Questionnaire for Indicators at the National Level
- ITTO.** 2002. ITTO Guidelines for the Restoration, Management and Rehabilitation of Degraded and Secondary Tropical Forests. ITTO Policy Development Series No 13
- IUFRO.** 2004. SilvaTerm Database viewed on 28 June 2004 at www.iufro.org
- MCPFE.** 2002. Relevant Definitions Used. MCPFE Advisory Group Recommendations for Improved Pan-European Indicators for Sustainable Forest Management (Supplement 2 to ELM June 02 (E Document 8) MCPFE Expert Level Meeting 10 -11 June 2002, Vienna, Austria.
- Montreal Process.** 2002. Glossary of Terms. Criteria and Indicators for the Conservation and Sustainable Management of Temperate and Boreal Forests. Montréal Process Technical Notes November 12, 2000. Approved at the 12th meeting of the Working Group Beijing, People's Republic of China
- Puustjärvi, Esa and Simula, Markku.** 2002. Development of Common Framework for Forest-Related Definitions. Discussion Paper prepared for the Second Expert Meeting on Harmonizing Forest-Related Definitions for Use by Various Stakeholders Held in Rome, Italy from 11 To 13 September 2002
- TBFRA.** 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. (industrialized temperate/boreal countries) Main Report. UN-ECE/FAO Contribution to the Global Forest Resources Assessment 2000
- The New Webster Dictionary of the English Language.** 1965. Processing & Brooks, Inc.
- UNEP/CBD/SBSTTA.** 2001. Main Theme: Forest Biological Diversity. Report of the Ad Hoc Technical Expert Group on Forest Biological Diversity. Subsidiary Body for Scientific, Technical and Technological Advice, Seventh Meeting, Montreal, 12-16 November 2001. (NB! definitions viewed on 28 June 2004 at www.biodiv.org/programmes/areas/forest/definitions.asp
- UNFCCC.** 2001. Report of the Conference of the Parties on its Seventh Session, Held at Marrakesh From 29 October to 10 November 2001, Addendum Part Two: Action Taken by the Conference of the Parties, Volume I
- UNFF.** 2003. The Role of Planted Forests in Sustainable Forest Management Report of The UNFF Intersessional Experts Meeting 25 – 27 March, 2003 Wellington, New Zealand
- UNFF.** 2004a. Criteria and Indicators of Sustainable Forest Management Report of the Secretary-General E/CN.18/2004/11. United Nations Forum on Forests Fourth session Geneva, 3-14 May 2004
- UNFF.** 2004b. Monitoring, Assessment and Reporting, Concepts, Terminology and Definitions Report of the Secretary-General E/CN.18/2004/10 United Nations Forum on Forests Fourth session Geneva, 3-14 May 2004
- UNFF.** 2004c. Report of the Ad Hoc Expert Group on Approaches and Mechanisms for Monitoring, Assessment and Reporting E/CN.18/2004/2. United Nations Forum on Forests Fourth session Geneva, 3-14 May 2004

Annex 1

Alternative classification of various definitions related to naturalness of forest

The table below provides an approximate comparison of terms using the common classifiers *forest disturbance*, *stand establishment*, *time since site was forested* and *species origin*.

<i>Stand establishment</i>	<i>Time since site forested</i>	<i>Species</i>	FAO/FRA	CBD	ITTO	Montreal Process	MCPFE	UNFCCC/IPCC	WCMC-CIFOR
Forests without disturbances									
<i>Natural regeneration</i>	> 50 years	<i>Native</i>	Primary forest	Primary forest	Primary forest	N/A	Forest undisturbed by man	Forest (unmanaged)	Natural undisturbed forest
	< 50 yrs and > 10 yrs	<i>Native</i>	Primary forest	Primary forest	Primary forest	N/A	Forest undisturbed by man	Forest (unmanaged)	Natural undisturbed forest
	< 10 years	<i>Native</i>	Primary forest	Primary forest	Primary forest	N/A	Forest undisturbed by man	Forest (unmanaged)	Natural undisturbed forest
Forests with disturbances									
<i>Natural regeneration</i>	> 50 years	<i>Native</i>	Modified natural forest	Secondary	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	< 50 yrs and > 10 yrs	<i>Native</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	< 10 years	<i>Native</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	> 50 years	<i>Mixed</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	< 50 yrs and > 10 yrs	<i>Mixed</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	< 10 years	<i>Mixed</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	> 50 years	<i>Introduced</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	> 50 yrs and < 10 yrs	<i>Introduced</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	< 10 years	<i>Introduced</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest

<i>Stand establishment</i>	<i>Time since site forested</i>	<i>Species</i>	<i>FAO/FRA</i>	<i>CBD</i>	<i>ITTO</i>	<i>Montreal Process</i>	<i>MCPFE</i>	<i>UNFCCC/ IPCC</i>	<i>WCMC-CIFOR</i>
<i>Assisted nat. regeneration or enrichment planting</i>	<i>> 50 years</i>	<i>Native</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest afforested	Disturbed natural forest
	<i>< 50 yrs and > 10 yrs</i>	<i>Native</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest reforested	Disturbed natural forest
	<i>< 10 years</i>	<i>Native</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	<i>> 50 years</i>	<i>Mixed</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest afforested	Disturbed natural forest
	<i>< 50 yrs and > 10 yrs</i>	<i>Mixed</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest reforested	Disturbed natural forest
	<i>< 10 years</i>	<i>Mixed</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
	<i>> 50 years</i>	<i>Introduced</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest afforested	Disturbed natural forest
	<i>< 50 yrs and > 10 yrs</i>	<i>Introduced</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest reforested	Disturbed natural forest
	<i>< 10 years</i>	<i>Introduced</i>	Semi-natural forest	Secondary forest	Modified natural forest	N/A	Semi-natural forest	Forest (managed)	Disturbed natural forest
<i>Planting or seeding</i>	<i>> 50 years</i>	<i>Native</i>	Semi-natural forest ¹	Secondary forest/plantation forest	Planted forest	Plantation forest	Semi-natural forest	Forest afforested	Native species plantation
	<i>< 50 yrs and < 10 yrs</i>	<i>Native</i>	Semi-natural forest ¹	Secondary forest/plantation forest	Planted forest	Plantation forest	Semi-natural forest	Forest reforested	Native species plantation
	<i>< 10 years</i>	<i>Native</i>	Semi-natural forest ¹	Secondary forest/plantation forest	Planted forest	Plantation forest	Semi-natural forest	Forest (managed)	Native species plantation
	<i>> 50 years</i>	<i>Mixed</i>	Plantation	Secondary forest	Planted forest	Plantation forest	Plantation	Forest afforested	Exotic species plantation
	<i>< 50 yrs and > 10 yrs</i>	<i>Mixed</i>	Plantation	Secondary forest	Planted forest	Plantation forest	Plantation	Forest reforested	Exotic species plantation
	<i>< 10 years</i>	<i>Mixed</i>	Plantation	Secondary forest	Planted forest	Plantation forest	Plantation	Forest (managed)	Exotic species plantation
	<i>> 50 years</i>	<i>Introduced</i>	Plantation	Secondary forest	Planted forest	Plantation forest	Plantation	Forest afforested	Exotic species plantation
	<i>< 50 yrs and > 10 yrs</i>	<i>Introduced</i>	Plantation	Secondary forest	Planted forest	Plantation forest	Plantation	Forest reforested	Exotic species plantation
	<i>< 10 years</i>	<i>Introduced</i>	Plantation	Secondary forest	Planted forest	Plantation forest	Plantation	Forest (managed)	Exotic species plantation

ANNEX I

LIST OF PARTICIPANTS

List of Participants

Abdelkader Allali Principal Engineer Researcher Ministry of Agriculture and Rural Development B.P. 1387 Rabat Morocco Tel: 212 65.601170 Email: allali@mailcity.com	Carlos Bahamondez Chief of Project Instituto Forestal (INFOR) Casilla 385 Valdivia Chile Tel: 56.63.211476 Email: cbahamon@infor.cl
Georgiy Bondaruk Forest Certification Project Leader Ukrainian Research Institute of Forestry and Forest Melioration Pushkinska, 86 Kharkiv 61024 Ukraine Tel: 380-57-7078043 /7078001 Email: bondaruk_georgiy@list.ru	Erik Buchwald Division of Sea and Habitats, Danish Forest & Nature Agency Ministry of the Environment Haraldsgade 53 Copenhagen O DK-2100 Denmark Tel: 45.39.472918 Email: ecb@sns.dk
Luiz Antonio Cornacchioni Planning, Research & Development Suzano Bahia Sul Papel e Celulose s.a. Av. Brigadeiro Faria Lima, 1355- 8th floor São Paulo SP 01452-919 Brazil Tel: 55-11 3037-9235 Email: lcornacchioni@suzano.com.br	David Cruz Choque Vice-Minister Ministry of Environment, Natural Res. And Forestry Development P.O. Box 5546 La Paz Bolivia Tel: 591.2.2200206 Email: dcruz@mds.gov.bo / davidcruzchoque@yahoo.com.ar
Peter Csoka Secretariat of the UN Forum on Forests (UNFF) One UN Plaza, DC1-1238 New York, N.Y. 10017 United States of America Tel: 1-212 963 3264 Email: csoka@un.org	Paul Drichi Coordinator Inventory & Surveys National Forestry Authority P.O. Box 70863 Kampala Uganda Tel: 256 31-264 035 Email: pauld@nfa.org.ug / pdrichi@yahoo.com

Sandro Federici Researcher European commission Viale Giulio de Julus, 50 Rieti 02100 Italy Tel: 329-5910481 Email: sfederici@unitus.it	Robert Fledderman Manager, Environment and Regulatory Assurance Mead Westvaco P.O. Box 1950 Summerville, SC 29484 United States of America Tel: 843.851.4680 Email: roert.fledderman@meadwestvaco.com
Rubens Garlipp Superintendent SBS-Brazilian Society of Silviculture Av. Martin Luther King 2228, Vila São Francisco San Paolo SP 05352-020 Brazil Tel: +55.19.37191771 Email: sbs@sbs.org.br	Alberto Goetzl Consulting Economist American Forest & Paper Association 111 16th St, NW Suite 800 Washington DC 20036 United States of America Tel: 202-463-2713 Email: alberto-goetzl@afandpa.org / agoetzl@sencreek.com
Manuel Guariguata Environmental Affairs Officer Secretariat of the Convention on Biological Diversity (CBD) 413 Saint Jacques Street, Suite 800 Montreal (QC) H2Y 1N9 Canada Tel: +514 2882220 Email: manuel.guariguata@biodiv.org	Souleymane Gueye Head, Afforestation and Soil Conservation Division/Direction of Forestry Ministry of Environment and Nature Protection DFCCS B.P. 1831 Dakar 1831 Senegal Tel: 221.634.7594 Email: soujugueye@hotmail.com
Brian Haddon Manager, Statistical Services Natural Resources Canada 580 Booth Street, 7th floor Ottawa, Ontario K1A 0E4 Canada Tel: 1.613.947.9065 Email: bhaddon@nrcan.gc.ca	Nils Häger Manager, Forest Management and Certification Forest for Life Programme, WWF international Avenue du Mont-Blanc Gland 1196 Switzerland Tel: +41 22 364 9507 Email: nhager@wwfint.org
Mathew Hansen Co-Director, South Dakota State University 213 NFA Brookings, SD 57006 United States of America Tel: 00605 697 8055 Email: mathew.hansen@sdstate.edu	Taka Hiraishi Co-Chair, IPCC Task Force Bureau Inst. For Global Environmental Strategies 2108-11 Kamiyamaguchi, Hayama Kanagawa 240-0115 Japan Tel: 81 46 855 3750 Email: hiraishi@iges.or.jp

Samuel Kainja Project Manager, Partnership for African Water Dev. Project Malawi Water Partnership Box X56, Crossroads Lilongwe Malawi Tel: 265 9 918582 Email: skainja@malawi.net	Markku Kanninen Director, Environmental Services and Sustainable Use of Forests Center for International Forestry Research (CIFOR) Bogor Indonesia Tel: 62 251 622622 Email: m.kanninen@cgiar.org
Rodney Keenan Principal Research Scientist, Bureau of Rural Sciences Dept. of Agriculture, Fisheries & Forestry P.O. Box 858 Canberra ACT 2605 Australia Tel: 61 2 6272 5582 Email: rodney.keenan@brs.gov.au	Alexander.V. Korotkov Economic Affairs Officer UN Economic Commission for Europe UNECE - Palais des Nations Avenue de la Paix 8-14 CH-1211 Geneva 10, Switzerland Tel: 41 22 917 2879 Email: alexander.korotkov@unece.org
Thelma Krug Senior Researcher, National Inst. for Space Research Ministry of Science and Technology Avenidas dos Astronautas 1758 San José dos Campos 12297-010 Brazil Tel: 55-12-3945-6895 Email: thelma@dir.iai.int	Maxim Lobovikov Program Manager, Director CFC ICB International Network for Bamboo and Rattan (INBAR) 8 Futong Dong Dajie Beijing 100102 China Tel: +86-139-1069-4219 Email: mlobovikov@inbar.int
Henri-Félix Maître Chargé de mission Centre de coopération internationale en recherche agronomique pour le développement (CIRAD) TA 10/B Campus Int. de Baillarguet Montpellier, Cedex 5 34398 France Tel: 33-467 593736 Email: henri-felix.maitre@cirad.fr	Angelo Mariano Senior Forestry Officer Ministry of Agriculture Via Carducci, 5 Rome 00182 Italy Tel: 0039 06 4665 7234 Email: a.mariano@corpoforestale.it
Peter Mayer Executive Secretary International Union of Forest Research Organizations (IUFRO) Hauptstrasse 7 A-1140 Vienna-Hadersdorf Austria Tel: 43.1.8770151-12 Email: mayer@iufro.org	Björn Merckell International Coordinator National board of Forestry Jönköping S-55183 Sweden Tel: +46.36.155730 Email: bjorn.merkell@svo.se

Roman Michalak Ministerial Conference on Protection of Forests in Europe Liaison Unit Warsaw ul. Bitwy Warszawskiej 1920r. Nr.3 Warsaw 00973 Poland Tel: 48-22331 7031 Email: r.michalak@lu-warsaw.pl	Aquiles Neuenschwander Forest Advisor Fundación para la Inovación Agraria Avda. Santa Maria 2120, Providencia Santiago Chile Tel: 56.2.4313052 Email: aquilesn@fia.gob.cl
Talat Omran Professor of Forestry, Faculty of Agriculture, Alexandria University Aflaton Str. El-Shatby Alexandria 21545 Egypt Tel: 20 3 5921954 Email:	Syphan Ouk Deputy Head Forestry Administration No. 40 Bvd. Preah Norodom Phnom Penh Cambodia Tel: 855.986460 Email: tes.258@camintel.com
Saskia Ozinga Director FERN IC Fosseyway Business Centre, Stratford Road Moreton in Marsh GL56 9NQ United Kingdom Tel: +44 1608 652895 Email: saskia@fern.org	Jaap Paasman National Reference Centre Ministry of Agriculture, Nature and Food Quality Postbus 482 BL Ede 6710 Netherlands Tel: 0318 -822 938 Email: j.m.paasman@minlnv.nl
Renate Prüller Coordinator SilvaVoc International Union of Forest Research Organizations (IUFRO) Hauptstrasse 7 A-1140 Vienna-Hadersdorf Austria Tel: +43 1 8770151-17 Email: pruellerr@iufro.org	Zoltan Rakonczay Forest Policy Officer European Commission BU-9 04/65, Brussels BE-1049 Belgium Tel: 32 2 295 7522 Email: zoltan.rakonczay@cec.eu.int
Ewald Rametsteiner Universität für Bodenkultur Institute of Forest Economics Gregor Mendel Str. 33 Vienna A-1180 Austria Tel: 43.1.47654.4403 Email: ramet@edv1.boku.ac.at	Jagdish K. Rawatra Addl. Pr. Chief Cons. of Forest Indian Forest Service Addl. PCCF (Haryana), Van Bhavan Sector 6 Panchkula 134109 India Tel: Email: me_renurawat@yahoo.com

David Rhodes Manager, Policy Information & Regions Group Ministry of Agriculture and Forestry P.O. Box 2526 Wellington New Zealand Tel: +64 4 4989829 Email: David.Rhodes@maf.govt.nz	Ralph Ridder Acting Director, Global Forest Watch World Resources Institute 10 G Street, NE Washington DC 20002 United States of America Tel: +202 729 7704 Email: ralph@wri.org
Harry Santoso Director of Watershed Management and Land Rehabilitation Ministry of Forestry, DG of LRSF Manggala Wanabakti Building 13rd floor, Jl. Gatot Subroto Senayan, Jakarta 10270 Indonesia Tel: 62.21.5730166 Email: barryst@cbn.net.id	Alastair Sarre Editor and Communications Manager International Tropical Timber Organization (ITTO) 1-1-1, Pacifico-Yokohama, Minato-mirai Nishi-ku Yokohama 220-0012 Japan Tel: +81 45 223 1110 Email: editor@itto.or.jp
Majid Seyfollahian Member of High Council for forest, Range and Soil Forest and Range Organization of Iran Lashkank road - Forestry Organization Tehran Iran (Islamic Republic of) Tel: +98-21-244 6505 Email: majid_seifollahian@frw.ir / majid_seifollahian@yahoo.com	Obote Shakacite Chief Forestry Officer Ministry of Tourism, Environment & Nat. Resources P.O. Box 50042 Lusaka Zambia Tel: 260.1.229.420 - 260.1.226945 Email: phirim@zamnet.zm
Anatoly Shvidenko Senior Research Scientist International Institute for Applied Systems Analysis (IIASA) Schlossplatz 1 Laxenburg A2361 Austria Tel: 43.22360.807497 Email: shvidenk@iiasa.ac.at	Brad Smith Forest Inventory Assoc. National Program Leader USDA Forest Service 1601 N. Kent Street, Suite 4113A Arlington VA 22209 United States of America Tel: 1.703.605.4190 Email: bsmith12@fs.fed.us
Akira Tanooka Managing Director Japan Overseas Plantation Center for Pulpwood (JOPP) Ginza Yamamamoto Bldg, 6-16-11 Ginza, Chuo-ku Tokio 104-0061, Japan Tel: +81 3 3546-3690 Email: tanooka@jopp.or.jp	Hooi Chiew Thang Deputy Director-General of Forestry Forestry Department Headquarters Jalan Sultan Salahuddin Kuala Lumpur 50660 Malaysia Tel: 603 26962408 Email: hcthang@forestry.gov.my

Jaroslav Tymrāk PEFC Council 17 Rue des Girondins Hollerich L-1626 Luxembourg Tel: +352 26 259059 Email: pefc@pt.lu	Claude Vidal Director National Forest Inventory Chateau des Barres Nogent S. Nernission F-45290 France Tel: 0033-2-3828-1808 Email: cvidal@ifn.fr
Gulusa Vildanova Forestry Officer Ministry of Agriculture and Water Resources Katartal Street 21 Tashkent Uzbekistan Tel: 998 71 1734386 Email: gvildanova@yahoo.com	Jenny L.P. Wong Programme Officer Climate Change Secretariat Martin-Luther-King Strasse 8, P.O. Box 260124 Bonn D-53153 Germany Tel: 49-228 815-1601 Email: jwong@unfccc.int
Yves Zanatta Forestry Statistics, Unit E3 (Fisheries, Rural Dev & Forestry) European Commission Bech Building, 5 rue Alphonse Weicker Luxembourg L-2721 Luxembourg Tel: 00352- 4301 33405 Email: yves.zanatta@ece.eu.int	Jinhua Zhang Regional Coordinator, DEWA-Asia/Pacific UNEP - Asian Institute of Technology 3rd floor, Outreach Building, Klongluang Pathumthani 12120 Thailand Tel: 66-2-5245390 Email: jinhua.zhang@rrcap.unep.org
Xiaoquan Zhang Research Professor Chinese Academy of Forestry Wan Shou Shan Beijing 100091 China Tel: 86.10.6288.9512 Email: xiaoquan@fee.forestry.ac.cn	
FOOD AND AGRICULTURE ORGANIZATION	
José Antonio Prado Director Forest Resources Division (FORD) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57055978 Email: joseantonio.prado@fao.org	Wulf Killmann Director Forest Products and Economics Division (FOPD) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57053221 Email: wulf.killmann@fao.org

Peter Holmgren Chief Forest Resources Development Service (FORM) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57052714 Email: peter.holmgren@fao.org	Hikojiro Katsuhisa Chief Forest Products Service (FOPP) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57054824 Email: hikojiro.katsuhisa@fao.org
Jim Carle Senior Forestry Officer Forest Resources Development Service (FORM) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57055296 Email: jim.carle@fao.org	Mette Loyche-Wilkie Senior Forestry Officer Forest Resources Development Service (FORM) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57052091 Email: mette.loychewilkie@fao.org
Michelle Gauthier Forestry Officer Forest Conservation Service (FORC) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57053692 Email: michelle.gauthier@fao.org	Petteri Antti Vuorinen Forestry Officer Forest Resources Development Service (FORM) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57055508 Email: petteri.vuorinen@fao.org
Markku Simula Consultant Forest Products and Economics Division (FOPD)	Tiina Vahanen Forestry Officer Forest Economics Service (FOPE) FAO Viale delle Terme di Caracalla 00100 Rome Italy Tel: (39 06) 57053743 Email: tiina.vahanen@fao.org
Serena Fortuna Consultant Forest Resources Development Service (FORM)	Monica Garzuglia Consultant Forest Resources Development Service (FORM)
Federica Urbani Consultant Forest Resources Development Service (FORM)	Kailash Govil Consultant Forest Resources Development Service (FORM)

ANNEX II

MEETING AGENDA

Meeting Agenda

MONDAY, 17 JANUARY 2005		
08.00 - 09.00	Registration of participants	
09.00 - 09.30	Welcome, Objectives, scope, expected results of meeting and further steps	Wulf Killmann
	Short statements on process by	
	IUFRO	Peter Mayer
	IPCC	Thelma Krug
	CIFOR	Markku Kanninen
	ITTO	Alastair Sarre
	UNEP	Jinhua Zhang
9.30 - 9.50	Progress in terms and definitions among FRA stakeholders since the previous meeting, including multilingual aspects	Peter Holmgren
9.50 - 10.20	Coffee break	
10.20 - 10.40	Introduction to Draft Analytical Framework.	Markku Simula
10.40 - 10.50	Explanation on group work	Markku Simula
11.00 - 12.00	Start of group work 1	
12.00 - 13.30	Lunch	
13.30 - 15.00	Group work 1	
15.00 - 15.30	Coffee break	
15.30 - 17.30	Group work 1	
TUESDAY, 18 JANUARY 2005		
08.00 - 09.00	Review of progress of group work (plenary)	Markku Simula
09.00 - 10.00	Group work 1	
10.00 - 10.30	Coffee break	
10.30 - 12.00	Group work 1	
12.00 - 13.30	Lunch	
13.30 - 15.00	Stocktaking and interchange of Group work 1 (plenary)	
15.00 - 15.30	Coffee break	
15.30 - 17.30	Overview presentation on multilingual aspects Introduction of Group work 2 and 3 Group work 1 continues Start of group work 2 (Multilingual aspects) and 3 (Trees Outside Forests)	Renate Pruller
20.00	Dinner @ Da Franco ar vicoletto	

WEDNESDAY, 19 JANUARY 2005		
08.30 - 10.00	Group work 1, 2, 3	
10.00 - 10.30	Coffee break	
10.30 - 12.00	Presentation and discussion of group work (Plenary)	Markku Simula
12.00 - 13.30	Lunch	
13.30 - 15.00	Presentation and discussion of group work (Plenary)	Markku Simula
15.00 - 15.30	Coffee break	
15.30 - 16.30	Presentation and discussion of group work (Plenary)	Markku Simula
16.30 - 17.00	Results and further steps	Markku Simula
	Closing	Wulf Killmann

Group work 1

Group A, B: definitions of terms related to forest origin and composition of forests

Group C, D: definitions of terms related to managed and unmanaged forests

Group work 2 (multilingual aspects)

Short group work on multilingual aspects of terms and definitions. Groups are expected to come up with conclusions and recommendations on:

- validity of existing translations of terms;
- proposals for improving multilingualism in forest-related terms and definitions.

French Working group suggested: S. Gueye, H.F. Maître, C. Vidal

Spanish Working group suggested: C. Bahamondez, D.C. Cruz, J.A. Prado

Arabic Working group suggested: T.A.H. Omran, A. Abdelkader,

Russian Working group suggested: A. Shvidenko, M. Lobovikov, G. Bondaruk

Group work 3 (Trees Outside Forest)

A small group consisting of interested participants to come up with issues that need to be addressed and a path forward.

Suggested: M. Seyfollahian (Iran), G. Vildanova, S. Gueye, D. Pattie (UNCCD)

ANNEX III

OPENING SPEECHES

Wulf Killmann
Director
Forest Products and Economics Division
FAO Forestry Department

Ladies and Gentlemen, Dear Colleagues,

It is a great pleasure to welcome you, on behalf of Mr El-Lakany, the Assistant Director General for Forestry of the Food and Agriculture Organization of the United Nations, and on behalf of all my colleagues in the house, to Rome, to FAO, and to this Third Expert Consultation on Harmonizing Forest-Related Definitions.

The process of harmonizing forest-related definitions is a joint effort by the Centre for International Forestry Research (CIFOR), the Food and Agriculture Organization of the United Nations (FAO), the Intergovernmental Panel on Climate Change (IPCC), the International Tropical Timber Organization (ITTO), the International Union of Forest Research Organizations (IUFRO) and the United Nations Environmental Programme (UNEP). The process falls under the umbrella of the Collaborative Partnership on Forests (CPF). We are thus delighted also to welcome today participants from other CPF members like the UNFCCC, CBD, UNCCD and UNFF Secretariats.

A special welcome goes also to the representatives of the private sector and from NGOs such as WWF and FERN.

Colleagues, what do we understand by “harmonization”?

Harmonization identifies differences, incompatibilities and inconsistencies, but also common elements between existing definitions of related terms. It recognizes and respects the different objectives underlying the varying uses of a given term, and establishes linkages, as well as qualitative and quantitative relationships. Harmonization occurs *ex post*, and thus differs from standardization, a process to “fix” a common meaning for a specific term.

The terms we want to discuss during the next three days are those for natural forests, planted forests, forest plantations, trees outside forests, and related terms addressing the biophysical constitution of forest resources. We also want to address managed forests and human interventions in forests, which may take into consideration definitions of protected areas and designated functions of forests.

In our deliberations we will build upon the background document distributed. This document takes into account results of the two previous meetings on harmonizing forest-related definitions. There we addressed core forest-related terms, such as forest, deforestation, reforestation, and also began discussions on some of the terms we will take up during this meeting.

In this connection, I am pleased to inform you that the Collaborative Partnership on Forests (CPF) is working on a related task, namely streamlining forest-related reporting. Together with our joint work on harmonizing definitions, this initiative aims at reducing reporting burdens on countries and making national reporting easier and more effective. The small CPF task force on streamlining forest reporting met just yesterday and to take the first steps towards developing a joint CPF information framework for forest reporting. For those interested, further information can be provided during this meeting.

What do we want to achieve during these three days?

The overall goal is to improve communication and information on natural and planted forests. To achieve this, we aim to relate the definitions applied for the terms mentioned above and to highlight

opportunities for enhancing consistency, comparability and simplification. We may at least come up with a comparative matrix and make proposals for next steps towards harmonization of the definitions used.

As before, we will work in groups which at intervals report to the plenary. We will have two groups each working on definitions of terms related to forest origin and composition and on those related to managed and unmanaged forests.

On the last day, we will have undergroups looking into the term trees outside forest, and into multilingual aspects. More details on these will be shared with you later.

As in the previous meetings, Mr. Markku Simula will accompany us as moderator. Our Master of Ceremonies will be Mr. Hiko Katsuhisa, Chief, Forest Products service. For any technical issues, kindly contact him, or Mrs. Carla Tomalino, his assistant.

Ladies and Gentlemen, once again I would like to thank you for having come to Rome and I wish us success in our ambitious endeavour.

Thank you.

Peter Mayer
Executive Secretary
International Union of Forest Research Organizations (IUFRO)

Dear colleagues,
ladies and gentlemen,

It is with great pleasure and satisfaction that I participate in this third Expert Meeting on Harmonizing Forest-related Definitions for Use by Various Stakeholders.

The International Union of Forest Research Organizations (IUFRO) has been strongly involved in international processes during the last years - most recently as member of the Collaborative Partnership on Forests and in leading the joint CPF initiative on the Global Forest Information Service (GFIS).

Moreover, IUFRO has a tradition in international terminology work. Consequently, IUFRO has been not only participating but also a partner in the Process on harmonising forest-related definitions although it is not among the Conventions or Processes that are in direct need of forest-related definitions for accounting or reporting purposes. However, IUFRO as a global network of research organisations and forest scientists is continuously involved in producing and coining terms and definitions in forestry and related fields.

IUFRO continues to be a partner and taking an active part in this Process of harmonizing forest-related definitions, because we believe that it fulfils the ambition of ensuring better understanding of the use of forest-related terms and definitions through harmonisation. This time we will also see how harmonisation is applied and is valid in a multilingual environment. IUFRO has always underlined the importance of giving a platform to definitions work also in other languages. Therefore we are glad to see that this Expert Meeting is taking care also of this important aspect.

In this sense IUFRO's role is to contribute with its expertise. We see ourselves as facilitator and promoter through IUFRO's network of more than 15,000 scientists in almost 700 Member Organizations and thanks to our terminology infrastructure as a bridge providing access to the definitions.

Since the last Expert Meeting IUFRO has contributed to give visibility to this Process on harmonising forest-related definitions mainly through

- its SilvaVoc Project on Multilingual Forest Terminology,
- its Web site with pertinent information on the outcomes of the past Expert meetings, and
- by raising awareness of the importance of comparative knowledge on forest definitions as used by the several Conventions and Processes; and
- in cooperation with experts IUFRO has produced a multilingual on-line glossary of forest-related carbon terminology.

Ladies and gentlemen,

In August 2005 IUFRO will celebrate its XXII World Congress in Brisbane, Australia. This is the occasion for more than 2 000 scientists to meet, present and discuss the most pressing issues in forestry and to reach out their scientific findings to the international science community and society at large. I am pleased to inform you that we have made provision for a session on the *Added value of work on forest terminology* including information on the work and the outcomes of this joint

process. It will be a great pleasure for IUFRO to welcome many of you at our World Congress in Brisbane.

In concluding, I would like to thank FAO for being our host and Markku Simula and his collaborators for drafting the background document for this Expert Meeting. It will give us an excellent basis for the discussions. I wish this Expert Meeting success and fruitful discussions.

Markku Kanninen

Director, Environmental Services and Sustainable use of forests
Center for International Forestry Research (CIFOR)

Mr. Chairman, ladies and gentlemen, colleagues

CIFOR, jointly with CPF partners FAO, IPCC, UNEP and IUFRO, has organized expert meetings on Harmonizing Forest- related Definitions for Use by Various Stakeholders since 2002.

Since the beginning of this process, CIFOR has been committed to achieving the goals of this process, i.e. in fostering unambiguous use of definitions and promoting informed, deliberate choice of definitions in any new context. To facilitate the process, CIFOR, jointly with World Wildlife Fund (WWF) and World Conservation Union (IUCN) developed a typology of planted forests in 2002.

The clarity of concepts and definitions is a cornerstone of the scientific work carried out by CIFOR and many other research organizations. This is also important for many international, regional and national processes dealing with trees, forests and forest resources.

In CIFOR, we feel that it is very important for all the actors of the processes mentioned above to be able to communicate the importance of forests in the context of the Millennium Development Goals and to alleviating poverty, and to demonstrate the potential that good management of forests can offer in achieving these goals. Unambiguous use of definitions and promoting informed, deliberate choice of definitions is part of this strategy.

Thank you very much.

Alastair Sarre

*Editor and Communications Manager
International Tropical Timber Organization (ITTO)*

It is a pleasure to be representing ITTO at this meeting, in which our Organization has a keen interest.

ITTO has developed numerous definitions in the course of its policy work. Most of these are contained in a series of policy documents, of which there are now 14. These include guidelines on the restoration, rehabilitation and management of degraded and secondary tropical forests, guidelines on the sustainable management of natural tropical forests, criteria and indicators for the sustainable management of natural tropical forests, guidelines on the conservation of biological diversity in tropical forests, and so on.

One of the recommendations of the previous meeting on the harmonization of forest definitions was that ITTO should ensure that the definitions used in its guidelines on restoration were harmonized with other definitions developed here. I'm pleased to report that we did so in producing the guidelines.

ITTO is now undertaking three new policy initiatives that may have some bearing on this meeting, or vice versa. One is a decision taken by our Council last December to review and revise the ITTO guidelines on the conservation of biological diversity in production forests. This process will take place this year in collaboration with our partner organizations.

Also last December, the Council adopted a revised edition of the ITTO Criteria and Indicators for the Sustainable Management of Natural Tropical Forests. This new edition should be published within a couple of months.

And this year we will be publishing a 'status of tropical forest management report', a comprehensive assessment of progress towards sustainable forest management in tropical production and protection forests.

In addition to these initiatives, ITTO is starting to fund projects aimed at making use of the CDM and other carbon credit schemes, where the definitions to be discussed this week will play an important role.

So ITTO has a critical interest in the process of forest-related definitions and in the harmonization of these definitions, particularly to reduce the reporting burden on countries, which is already quite large. We are very keen to work with our partner organizations in the Collaborative Partnership on Forests as well as other institutions and I'm looking forward to the discussions that will take place this week and the perspectives that I'll be able to take back to the ITTO Executive Director and, through him, to the ITTO membership.

In concluding I'd like to thank FAO for hosting this meeting, and Markku Simula and his co-author for the clear background paper, which certainly helped me to prepare for this meeting.

Thank you.

Jinhua Zhang
Regional Coordinator, DEWA-Asia/Pacific
UNEP - Asian Institute of Technology

Good morning, Ladies and Gentlemen,

On behalf of UNEP, I would like to welcome you to the Third Expert Meeting on harmonizing forest related definitions for use by various stakeholders.

Sustainable forest management has been an integral part of UNEP's programme of work, as witnessed by the partnership with FAO on the 1980 Tropical Forest Resource Assessment, a milestone in quantifying the status of tropical forest resources, to the contribution to the collaborative partnership on forests to support IPF/IFF/UNFF.

To have common understanding of definitions and terms related to forests will greatly facilitate

- The international policy dialogue on forests and sustainable forest management; and
- The exchange knowledge, experience and information on sustainable forest management; and
- The comprehension of the environmental goods and services forest ecosystems provide to the human society.

In this context, I would like to mention that there are preliminary reports and observations that mangrove forest ecosystems along the Indian Ocean coast absorbed the impacts of the recent Tsunami and energy of waves in some areas in several Asian countries, thus saved lives and properties.

Finally, I would like to thank Mr. Wulf Killmann and other FAO colleagues for the excellent preparation and organization of this meeting, and Mr. Markku Smula for your continued intellectual contribution to this noble process since the very beginning.

Ladies and gentlemen, UNEP looks forward to your recommendations what should be the next step jointly by partners in this process.

Thank you.

ANNEX IV PRESENTATIONS

**“Progress in terms and definitions among
FRA stakeholders since the previous
meeting, including multilingual aspects”
(Peter Holmgren, FAO)**

**“Setting the Scene”
(Markku Simula, FAO consultant)**

**“Multilingual Aspects: Points for discussion,
a few answers and suggestions”
(Renate Prüler, IUFRO)**

Progress in terms and definitions among FRA stakeholders since the previous meeting, including multilingual aspects

“Progress in terms and definitions among FRA stakeholders since the previous meeting, including multilingual aspects”

Peter Holmgren

- ☞ Review of FRA Process
- ☞ Terms and Definitions development
- ☞ Conclusions and Issues

The FRA Process

FRA history

- Since 1947
- Originally timber supply
- Broader coverage over time
- Deforestation in 1980

The FRA Process

History – continued

- FRA 1990 – more advanced
- FRA 2000 – back to basics
- Reduced deforestation (?)
- Information gaps
- What was the question?

The FRA Process

(Re)defining FRA:

- FRA's support policy decisions;
- All benefits and beneficiaries;
- Policies are concerned with trends;
- Cross-sectoral context, e.g.:
 - UN Millenium Development Goals
 - Role of forest sector in economy

The FRA Process

So, FRA's should look into:

- All Forest Benefits,
- For all Beneficiaries,
- Over Time,
- For a given Area

$$U = \sum_B \sum_P \sum_T u_{b,p,t} \cdot w_{b,p,t}$$

FRA 2005 Framework (SFM)

1. Extent
2. Health
3. Biodiversity
4. Production
5. Protection
6. Socio-economics
7. Institutions & Policy

Focus
on
TRENDS

FRA 2005 pillars

- Kotka IV expert consultation 2002
- FAO Committee on Forestry 2003
- FRA Advisory group 2002->
- National correspondents (171 today)
- Links to C&I and other international processes and bodies
- Country reporting
- FAO specialists and infrastructure

FRA 2005 Harmonization efforts

- IPCC Good Practice Guidance
- UN Millennium Development Indicators
- FAO/UNECE/Eurostat/ITTO Joint Questionnaire
- ILO and UN Statistics Division
- IUCN Protected Areas Categories and Redbook
- The 9 C&I processes on SFM
- CPF initiative to streamline reporting

FRA 2005 timetable

- Nov 2003: Global meeting of correspondents
- 2004: regional work meetings on national reports
- TODAY: 110 national reports submitted
- 2005: validation of national reports
- 2nd half of 2005: FRA 2005 report

FRA 2005 Terms and Definitions

- Close collaboration with stakeholders
- Stability over time
- Adjustments to fit SFM framework
- Inputs from eg Definitions meetings
- Multilingual
- Focus on delivery

15 Global Tables

Forest extent	Tree species diversity
Ownership	Tree species composition
Designation	Wood removal
Forest characteristics	Value of wood removal
Growing stock	NWFP removal
Biomass	Value of NWFP removal
Carbon stock	Employment
Disturbances	

**“Progress in terms and definitions
among FRA stakeholders since the
previous meeting, including
multilingual aspects”**

Peter Holmgren

- ☞ Review of FRA Process
- ☞ Terms and Definitions development
- ☞ Conclusions and Issues

The FRA Process

FRA history

- Since 1947
- Originally timber supply
- Broader coverage over time
- Deforestation in 1980

The FRA Process

History – continued

- FRA 1990 – more advanced
- FRA 2000 – back to basics
- Reduced deforestation (?)
- Information gaps
- What was the question?



The FRA Process

(Re)defining FRA:

- FRA's support policy decisions;
- All benefits and beneficiaries;
- Policies are concerned with trends;
- Cross-sectoral context, e.g.:
 - UN Millenium Development Goals
 - Role of forest sector in economy

The FRA Process

So, FRA's should look into:

- All Forest Benefits,
- For all Beneficiaries,
- Over Time,
- For a given Area

$$U = \sum_B \sum_P \sum_T u_{b,p,t} \cdot w_{b,p,t}$$

Conclusions - process

1. Feedback and Utility at country level in focus;
2. Direct country involvement necessary;
3. Multilinguality necessary for any global reporting process.

Conclusions - definitions

4. Data availability and documentation more critical than global definitions;
5. Consistency over time more important than consistency between countries;
6. There will always be inconsistencies – also with stable definitions;

Thank you!



Setting the Scene

3rd Expert Meeting on Forest-related Definitions

Rome, 17-19 January 2005

Setting the Scene

Markku Simula

[Jump to first page](#) 

Harmonization of Definitions

- Harmonization facilitates comparisons between existing definitions of related terms. It collects existing definitions, establishes linkages, identifies common elements, differences, incompatibilities and inconsistencies, as well as qualitative and, if possible, quantitative relationships. It may result in recommendations for modifications to one or several definitions which make them more compatible, consistent or even congruent.
- The goals of harmonization consist in fostering unambiguous use of definitions and promoting informed, deliberate choice of definitions in any new context.

[Jump to first page](#) 

Meeting Objectives

1. Take stock of developments in forest-related reporting processes since the 2nd meeting
2. Harmonize definitions related to
 - ◆ biophysical constitutions of forest resources
 - ◆ human interventions to manage forests for various purposes.

[Jump to first page](#) 

Part I

Review of Progress

[Jump to first page](#) 

Progress Achieved - First Meeting

- Desirable characteristics of definitions
- State and change processes
- Forest as a land-use class
- Forest, afforestation, reforestation and deforestation
- Forest degradation
- Biome-specific definitions

[Jump to first page](#) 

Progress Achieved - 2nd Meeting

- Forest and change processes between land classes (thresholds, parameters, plantations, environmental services)
- Degradation and change processes within forest
- Managed, unmanaged forests, forest condition (natural, primary and planted forests)
- Forest classification and international processes
- Special needs of LFCC countries

[Jump to first page](#) 

Recommendations of 2nd Meeting

- Countries reporting
- International processes and organizations
- CBD
- FAO and FRA
- ITTO
- Tehran Process
- UNFCCC/IPCC

[Jump to first page](#) 

Key Points

- Disaggregated data collection to allow compilation for different purposes
- Original country data to be used
- Common first order forest classification system
- Common use of key terms (forest, forest land, forested land)
- Planted forests to be clarified as a separate category
- Further work needed on biomass and carbon related terms

[Jump to first page](#) 

Follow-up of Recommendations

- No assessment made on action taken
- Parties are invited to comment on follow-up in the Meeting

[Jump to first page](#) 

UNFF-4 Outcome

- Urge the Member States and invite CPF members to **support and strengthen the definitions harmonization process** under way under the CPF
- Urge governing bodies of CPF members to take note and take advantage of the work being done on definitions, **make wider use of existing definitions**, to the extent possible, and to **refrain from creating new definitions** unless they are justified and created in a manner that permits adjustments or conversions to be made with ease.

[Jump to first page](#) 

Methodological Approach

- Harmonization is seen as a process to improve comparability, compatibility and consistency between definitions and establishment and description of linkages and relationships
- Matrix where definitions of terms are described, compared and related to different uses
 - ◆ presence or absence of elements or parameters
 - ◆ quantified threshold parameters
- Core terms as the focus

[Jump to first page](#) 

Part II

Highlights of the Background Paper on Classifications of Forests and Their Management Status

[Jump to first page](#) 

Uses of Definitions

- Monitoring of and reporting on forest status and trends;
- Assessing effectiveness of forest related policies and forest or conservation management;
- Providing a basis for allocation of resources;
- Providing a common ground for discussions in the international forest dialogue

[Jump to first page](#) 

Objectives of the Background Paper

- Explore options for harmonizing definitions for
- natural forests, planted forests, forest plantations, trees outside forests and related terms addressing the biophysical constitution of forest resources;
 - managed forests and related terms, addressing human intervention in forests, which may include or take into consideration definitions of protected areas, management plans and designated functions of forests;

[Jump to first page](#) 

Focal Aspects of Analysis

- Human interventions (managed/unmanaged forests, degree and nature of interventions)
- Forest origin and composition

[Jump to first page](#) 

Methodology

- Analytical framework developed for the 2nd Meeting
- Focus on forest management objectives, characteristics related to the degree of naturalness
- Continuum of natural forests, modified natural forest, semi-natural forest and planted forests
- Main material of comparison: FRA, UNEP/CBD/SBSTTA, IPCC, ITTO, MCPFE, UNFCCC, WCMC-CIFOR, Montreal Process

[Jump to first page](#) 

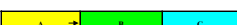
Alternative Approaches to Harmonization

I. ORIGINAL CLASSIFICATIONS

Classification 1 

Classification 2 

II. CLASSIFICATION WITH MODIFIED TRANSITION POINTS BETWEEN CLASSES

Classification 1 

Classification 2 

III. SUB-DIVIDED CLASSIFICATIONS

Classification 1 

Classification 2 

Note: This is a single attribute case

[Jump to first page](#) 

Example of Attribute-based Comparison

Attribute	UNFCCC	MCPFE
Land	Forest (defined according to the Kyoto Protocol)	Forest (FAO/FRA definition)
Conceptual framework	System of practices	Plan (informal or formal)
Implementation	Practices implemented	Operations carried out
Area unit	Forest	Stand
Goals of management	Stewardship and use fulfilling relevant ecological, economic and social functions	(not mentioned)
Scope of management	Sustainable forest management	(not mentioned)
Time frame	(not mentioned)	Sufficiently long period (five years or more)

[Jump to first page](#) 

Critical Points of Human Intervention

- (i) **minimum level of action** qualifying as forest management (borderline between managed and unmanaged forest),
- (ii) existence of a **management plan**, and
- (iii) inclusion/exclusion of a parameter regarding the **quality** of forest management, usually in terms of sustainability.

[Jump to first page](#) 

Degree of Human Interventions

- (i) **no** intervention where stands show natural forest dynamics with respect to species composition, age structure, etc.
- (ii) **low-intensity** interventions where stands retain certain characteristics of the natural dynamics (limited intervention)
- (iii) **high-intensity** intervention where stands have lost the key elements of natural dynamics and may be characterized by a limited number of species or monocultures, straight tree lines and even-aged stands (significantly affected by human intervention)

[Jump to first page](#) 

Human Interventions and Impacts

Forest management level	Typical interventions	Typical actors	Impact on forest resources
Normative	Legislation, policy formulation	Governments	Indirect
Strategic	Strategic multiple goal formulations, assessment/monitoring (NFI) evaluation of options, agreement on strategy, designation of land	Government, Government agencies, major stakeholders (industry, major organizations)	Indirect
Tactical	Translation of strategic goal to local context, assessment/monitoring and evaluation of options at local level (management plans), cross-sectoral planning	Land owners, local communities and stakeholders	Mainly indirect, but e.g. demarcations or infrastructure development may have direct impacts
Operational	Implementation of management plan, adjustments for site/time specific considerations, realization of forest benefits (logging, collection, use of services)	Landowners, usufruct right owners, general public	Direct impact from forest operations (or the protection from such operations)

Source: Various research literature and Holmgren FAO (unpublished):

[Jump to first page](#) 

Forest Origin and Composition - Degree of Naturalness

- **Naturalness is the state of being natural, conformity to nature** (Webster)
- In the case of forests, naturalness encompasses a whole range of dimensions,
 - ◆ species composition
 - ◆ stand structure or
 - ◆ type or method of regeneration
 - ◆ various ecosystem functions and the characteristics of a forest area that maintain those functions

[Jump to first page](#) 

Harmonization Opportunities

- The range of terms from **primary forest** to **plantations** is similar in all cases, with only choice of words that differ. The terms express mainly degrees of naturalness, and (in some cases) additionally degree of forest production potential.
- Tree **species origin** (native or introduced) is an important classifier in most cases
- The **stand establishment method** is used to separate classes, however with larger differences between the processes compared to species origin

[Jump to first page](#) 

Part III

Tentative Conclusions

[Jump to first page](#) 

Classification Variables

The following parameters can capture all the differing definitions into a comparative framework:

1. Stand establishment (natural, assisted natural, planting/seeding)
 2. Time since site forested (10/50 years)
 3. Species (native, mixed, introduced)
- = degree of human intervention and two naturalness indicators

[Jump to first page](#) 

Continuum of Definitions

- Most sets of definitions rely on the degree of naturalness
 - Main differences are in the number of classes and their transition points
 - Some divergence in the attributes used
- There is good potential for further harmonization if deemed desirable

[Jump to first page](#) 

Approaches for Harmonization

1. Adjust transition points
2. Create sub-classes
3. Combination of the two

Further analysis could be carried out using the analytical matrix approach covering all the relevant attributes (quantitative and qualitative)

[Jump to first page](#) 

Issues for Discussion

- Can the present definitions by parties modified?
- Detailed issues to be clarified on
 - ◆ Natural forests, planted forests, plantations
 - ◆ Managed/unmanaged forests
 - ◆ Trees outside forests

[Jump to first page](#) 

Multilingual Aspects: Points for discussion, a few answers and suggestions

Multilingual Aspects
Points for discussion, a few answers and suggestions

by Renate Prüller
 IUFRO-SilvaVoc Project on
 Multilingual Forest Terminology

Harmonization

... [H]armonization facilitates comparisons between existing definitions of related terms. It collects existing definitions, establishes linkages, identifies common elements, differences, incompatibilities and inconsistencies, as well as qualitative and, if possible, quantitative relationships.

Why multilingual?

- > mandate: official languages
- > better understanding
- > worldwide communication
- > cultural diversity
- > diversity of thinking

What more than a translation?

□□ □
 □□ □

- > deforestation – déforestation ?
- > no (visible) difference
- > look behind terms

Is there a need to start from scratch in each language?

- > English = reference language
- > no repetition of work, but independent work
- > comparison of terms in use between languages

Multilingual terminology work in a nutshell

Concept/realisation of an object

sign denoting object / Term

Object

Semiotic triangle (Arntz, Picht, Mayer, 2002)

Multilingual terminology work in a nutshell
cont'd

-> **Equivalence:** concepts correspond completely and exactly in the languages

-> **Partial equivalence:** concepts in different languages correspond only partially. It is essential to determine the extent to which the term of the English (=source language) can be rendered by the term in the target language

Multilingual terminology work in a nutshell
cont'd

-> **No equivalence or terminological gap:** do not try to *force* a concept into other languages.

-> **Collaboration of native-speaker** subject specialists and the use of a corpus of original texts: the establishment of multilingual equivalents and their authority strongly relies on teamwork.

How to proceed?

-> **First step:**
determine whether the terms are

- denoting the same concept,
- synonyms in one language and equivalents to the English term,
- full or partial equivalents to the English

How to proceed?
cont'd

-> **Second step:**
suitable definitions in the working languages may be:

- existing translations,
- improved translations or
- newly formulated definitions

How to proceed?
cont'd

Tables -> English key terms and equivalents in:
< French and < Spanish
compiled from Websites and documents

Good luck!

ANNEX V

GROUP WORK RESULTS

Working Group 1A & 1B

**Definitions of terms related to forest origin
and composition of forests**

Working Group 1C & 1D

**Definitions of terms related to managed and
unmanaged forests**

Working Group 2

Multilingual aspects

Working Group 3

Trees outside forests

Working Group 1A & 1B

Groups 1A & 1B

Plenary Session
January 19, 2005

Natural Forests

- Forest stands composed predominantly of native trees established naturally. This can include assisted natural regeneration, excluding stands that are visibly offspring/descendants of planted trees.

Transitional Forest

Forest stands showing features of both natural and planted forest.

Including inter alia:

- Forest stands of mixed origin either visibly derived from planted stands/trees by natural regeneration, or
- Non-planted stands predominately of non-native tree species, or
- A stand with a mixture of planted and naturally regenerated trees

Planted Forest

Forest stand in which trees have predominantly been established by planting, deliberate seeding or coppicing, where the coppicing is of previously planted trees].

Explanatory note: includes all stands established by planting or seeding of both native and introduced species

Forest Plantation

Forest stands in which trees have been established by planting or/and deliberate seeding or coppicing (where the coppicing is of previously planted trees) with either native species or non-native species that meet all the following criteria:

- one or two or a few species;
- even-aged;
- regular spacing.

Working Group 1C & 1D

Group Work 1, Group C-D, Session 1 „MANAGED AND UNMANAGED FORESTS Co-Chairs: Aquiles Neuenschwander, Alastair Sarre

- **Forest management is the formal or informal process of planning and implementing practices aimed at fulfilling relevant environmental, economic, social and/or cultural functions of the forest and meeting defined objectives**
 - Further detailed definitions, such as those in terms of time-frame, intensity, impacts, management level and resource requirements can be applied, depending on the purposes, such as reporting, forest resource assessment, policy formulation or resource allocation
 - Forest management practices are a subset of those human interactions with or interventions in forest that can impact on forest functions, structure or services

The meeting agreed on the following:

- **Managed forest:** forest subject to forest management
- **Unmanaged:** forest not subject to forest management
- Not necessary to define (deductible from the above two definitions)
- Designation of functions of forest according to FRA2005 was acknowledged by the group

The meeting agreed on the following:

- **The following indicative list of practices – as elements of forest management – was compiled:**
 - Reforestation
 - Afforestation
 - Rehabilitation of forest
 - Harvesting (incl. control of illegal logging)
 - Protection of soil and water
 - Thinning/pruning/fertilization
 - Information/data gathering and research, including mapping and remote sensing
 - Defining and establishing boundaries
 - Conservation of traditional use
 - Fire prevention and use
 - Grazing
 - Recreation control
 - Wildlife (control/protection)
 - do nothing on purpose

The meeting agreed on the following:

- **The group concluded that further elaboration of such a list of practices could be useful to work towards more detailed definitions of forest management as referred to in the footnote of the definition.**
- **Globally applicable thresholds are difficult to set for the elements of the above list – better to use YES/NO (occurs or not)**
- **Note: “do nothing” was considered as a valid practice if it was conceived through forest management process as defined above.**

Elements deemed useful	UNFCCC	IUFRO	IPCC	MCPE/ FRA 2000	ITTO	SFM (ITTO)	FRA 2005	Forest management (def group C-D)
Overall planning								
- Objectives	*	*				*	*	*
- Management plan		*		*				*
- Duration		*		*				*
- Commitment	*	*		*		*		*
- Silviculture		*		*	*	*		*
Quality of management								
- Evaluate plan results against objectives	*	*			*	*		*
- Implementation	*	*		*	*	*		*
Attributes								
- Naturalness					*			
- Use	*	*	*		*	*		
- Human intervention	*	*	*			*		*
- Defined boundaries			*					

CONVENTIONS, BODIES AND PROCESSES MAY TAKE INTO CONSIDERATION THE FOLLOWING OPTIONS SUGGESTED FOR HARMONIZATION							
TERM	CBD	FRA/FAO	ITTO	UNFCCC/PPC	IUFRO	COUNTRIES	ALL
Forest Management					Consider bringing its definition in line with the definition proposed by the group		Invites governing bodies to consider outputs from relevant expert level meetings in their effort towards harmonisation and synergies
Managed Forest				consider adopting a different term to reduce confusion (e.g. forest subject to human intervention)			
Unmanaged Forest							
Human Intervention							
Other terms to be defined							

Working Group 2

Summary of French Group

3rd Expert Meeting on
Forest-related Definitions

Rome, 17-19 January 2005

Group Work 2 – Multilingual Aspects

French Group

[Jump to first page](#) 

General Approach

- 1. **Identify** the original concept in its context (forest)
- 2. **Find** a "French equivalent" to express this concept
- 3. **Don't always use** the same "French equivalent" because a word-to-word translation is not always the best solution

[Jump to first page](#) 

Illustrative examples

Stewardship

1. Identify the original concept in its context (forest)
Implies responsibility, competency & wise management
2. Find a "French equivalent" to express this concept
"Responsabilité"
3. Don't always use the same "French equivalent" because a word-to-word translation is not always the best solution
...stewardship & use... = ...gestion responsable...

[Jump to first page](#) 

Illustrative examples

Reforestation

1. Identify the original concept in its context (forest)
Creation of a new forest on a former one
2. Find a "French equivalent" to express this concept
"Reboisement"
3. Don't always use the same "French equivalent" because a word-to-word translation is not always the best solution

[Jump to first page](#) 

Illustrative examples

Forest Management

1. Identify the original concept in its context (forest)
Implies planning & implementation
2. Find a "French equivalent" to express this concept
**planning = "Aménagement" [strategical]
Implementation = "Gestion" [tactical]**
3. Don't always use the same "French equivalent" because a word-to-word translation is not always the best solution

[Jump to first page](#) 

Other problems

Forest improvement

1. Identify the original concept in its context (forest)
Positive changes inside a forest
2. Find a "French equivalent" to express this concept
"Amélioration forestière"
3. Don't always use the same "French equivalent" because a word-to-word translation is not always the best solution

[Jump to first page](#) 

Other problems

Bois

1. Identify the original concept in its context (forest)

Could be wood or a small forest

2. Find a "French equivalent" to express this concept

Recommended to be used only for wood

[Jump to first page](#) 

Working Group 2 Summary of Spanish Group

Methodological approach:

Rationale: given we are in harmonizing definitions we should take into consideration the terms related to these several processes definitions.

Practical approach:

Moving around the several processes definitions and checking specifics terms for detecting key problems on translation.

Contextual issues

In the Latin-American countries there are regional differences and meaning in wording, should be taken in consideration for translations.

Key Terms

Some key terms related to translation to Spanish are:

1. Management –Ordenacion/Manejo (in the forestry community some people consider these word as a Synonymous and other do not)
2. Stewardship.
3. Sustainability (Sustainable) (Sustentar/**Sostenible**)
4. Wilderness (area estado natural)
5. Commodities (is has been adopted by Spanish language as it is)
6. Amenity (Esparcimiento)
7. Function & Designation (function involves designation)
8. Management function (designated function? Box 5.1)
9. Indigenous (native)
10. Natural Forest (native forest)
11. Semi-natural (definition)
12. Creaming

Proposal for action

Based on existent English terminology and taken into consideration the IUFRO work performed on this issues, we do recommend FAO ask from different Ibero-American forest related institutions to further deliver the Spanish equivalent terms for the English terminology. We do recommend these task be asked on all the forest related terms and not only for the above listed terms. Based on the answer given by the above mentioned forest related institutions the sub regional differences and diversity will be highlighted.

Working Group 2 Summary of Russian Group

Chaired by Professor Anatoly Z. Shvidenko

Rapporteur: Mr. Alexander V. Korotkov

Members: Mr. Maxim Lobovikov, Mr. Georgy Bondaruk

Objective and Expected Outcome

- To review the validity of existing translations of forest-related terms and definitions;
- To identify key problems related to translation of terms and definitions;
- To come up with proposals for improving (harmonizing) forest-related terms and definitions in Russian.

Background, Organisation of Discussion

The Russian Working Group (WG2-Rus) discussed the linguistic and other relevant aspects of the forest-related terms and definitions on the basis of analysis of some existing translations from English into Russian. The following key FRA 2005 terms (and their definitions) were reviewed, analysed and commented in details: Forest, Modified natural (*Forest/Other wooded land*), Semi-natural (*Forest/ Other wooded land*), Tree, Other land, Other land with tree cover, Trees outside forests, Native species, Protective plantation, Assisted natural regeneration, Designated functions (*of Forest and Other wooded land*), Unknown function, Conservation of biodiversity. The concept and systems of definitions used by FRA-2000 and FRA-2005 were discussed as a background of the entire process of harmonization of forest-related definitions.

The WG2-Rus participants have found the discussion as a very interesting and useful scientific and professional exercise. The review of translated terms and definitions has highlighted not only quality of the translation (taking into account that the above terms/definitions were initially translated by translator(s) who are not professional forestry experts), but presented an interesting material for discussion of professional meaning, logical consistency and clarity of current Russian corresponding definitions and classification schemes.

The discussion has allowed to come up not only with a number of practical suggestions for corrections/ revision/ improvements of the discussed definitions in Russian, but also to identify some gaps (or disputable formulations) in the original English text of terms and definitions. The WG pointed out that the permanent character of the current process of harmonization of forest-related definitions and orientation towards a long-term consistent system, which would allow constant improvements and “self-education”, are extremely important in order to achieve eventual goals of the process.

Annex I contains a recommended version of translation of the above terms and definitions. However, the Group considered as very important further discussions on the problem and related issues what could help to improve both - Russian and internationally accepted systems of terms and definitions in order to make the systems more comprehensive, open and transparent and to provide more effective links of the national level with global forestry and forest sector.

General Remarks and Comments

Multilingual aspects play an important role in achieving almost all major goals of the process of harmonizing forest related definitions for use by different stakeholders including the most important: (1) conceptually consistent and correct reporting to international conventions and bodies,

in particular to global Forest Resource Assessments, and (2) improving national systems of definitions and classification schemes based on the feedback of this process to the national level.

Conceptual unification, logical consistency and definitions' clarity of the primary (global) system of terms and definitions are the most important prerequisites of any success of the entire process. The impressive progress has been achieved in this field during the last decade. However, the global system is inevitable based on compromises that sometimes can be hardly compatible with national specifics and generate some conceptual problems in translation and implementation of globally accepted definitions. Used by FRA-2000 and FRA-2005, the system of three major definitions – *forest*, *other wooded land* and *trees outside forest* – presents probably an optimal decision.

However, the recommended consideration of temporarily treeless territories (burnt area, dead stands, clear-cuts, etc.) as “forest” generates ambiguity in reporting and could lead to wrong conclusions, in particular for boreal forests including Russia. For example, Russia had in 1961 and 1993 about 50 and 30 million ha of burnt areas (i.e. closed forests killed by fire), respectively. This process of improvement of Russian forests in 1961-1993 cannot be identified by using the current definition of “forest”.

In order to present proper dynamics of forests, Russia uses three relevant terms – forest fund (all territories managed by forest authorities, 1,179 million ha in 2003), forest land (areas designated for forests, included temporarily treeless areas, 883 million ha), and forested area (areas actually covered by forests, 776 million ha). Evidently, any reconsideration of major global definitions is not relevant. However, this example clearly demonstrates the feedback, which national systems of definitions and classifications have to provide on the system of reporting and analysing global forest resources' data.

Another example deals with a new term introduced by FRA-2005 “*other land with tree cover*” (FAO 2004). In essence, this definition practically repeats the basic definition of forest. The difference is only in the reference to “agricultural landscapes”. Goals of introduction of such a definition are clear and relevant, in particular it allows to distinguish *planted forests* of temperate and boreal zones and *plantations* of tropics. However, from the logical point of view this definition is a subset of the general definition that can generate ambiguities in reporting the total area of forests. Probably, another decision could be a simple introduction of a new category as a specific part of *forest*.

Finally, some global definitions are not perfective enough. For example, recommended by IPCC (IPCC 2003) definition of above ground biomass is “All living biomass above the soil including stem, stump, branches, bark, seeds and foliage” (see also FAO 2004, page 7). However, in all assessments and applications “all living biomass” completely include stem and bark which (at least for woody plants) have both – living and dead cells. Thus, a more accurate formulation would be “Biomass of all *living plants* above the soil...”

The above examples as well as analysis of existing translations of forest related definitions in Russian allow to conclude that the translation should be provided by forestry professionals, or at least, with a close involvement of forestry professionals into the translation process. Sometimes, with the purpose to get the professionally correct translation, the process of “reclassification” of existing national categories into required international classes, could be needed to avoid the unintentional “insertion of a bias”. Such a reclassification requires availability of formally strict and as a rule quantitative decision roots.

The qualified forest professionals' editorial work could substantially improve the quality of existing translations of Forest- and Forestry-related terms. In particular, this is extremely important for Russia for which national classifications, terms and definitions are often different from those used in the global context. It could bring substantial problems and misunderstanding in reporting the

data. (e.g., the discussed above specifics of the global definition of “forest”; similar problems can arise with use of minimal thresholds of some indicators, in particular if one indicator is replaced by another, e.g., many countries (including Russia) do not use “canopy closure” but “relative stocking” what is not the same for many forest types.

From a linguistic point of view, there could be a conflict between “accurate” and “beautiful” interpretation of the text under process of translation (i.e. “beautiful” is not always correct in this case). The evident preference of “accurate” over “beautiful” has been clearly supported by forest professionals of the Working Group.

There are some professionally established terms, e.g. like “Assisted natural regeneration” – “Содействие естественному возобновлению”, which are nationally specific. They could generate problems for translators, and could bring non-professional equivalents, which are linguistically correct, but do not correspond to historical practice of professional use. The Group has pointed out that the process of harmonization of forest-related definitions should avoid any introduction of new terms at the national level, if appropriate terms still exist.

An important point is the interrelation between terms, which are being used in national and international scientific/ research publications, and those, which are used in official (legislative) documents. The latter are usually more stable and conservative, and often do not satisfy new demands. Harmonization of such “unofficial” definitions supports the international unification of terms and definitions and might impact the national level in a clearly positive way.

National systems of terms, definitions and classifications are an important component of forest management and a prerequisite of transition to sustainable forest management. Thus, complete and operative information about the process of harmonization of forest-related definitions should be available for forest communities of countries. It seems relevant if translated versions of documents after reviewing those by independent specialists, were presented to national forest authorities for information, consideration and possible decision-making.

Specific Remarks and Comments

With respect to the reviewed translation of forest- related terms and definitions, the WG2-Rus noted the three possible situations:

- terms in Russian are exact equivalents of the English version;
- terms could be translated on the basis of existing terms in Russian;
- there is a need for applying new terms (or notions), sometimes using a different concept.

A thorough analysis of the translated text allows to evaluate carefully the validity of the applied classification/ system (also in the original language), to identify gaps, etc. It seems very useful to discuss the translated system of terms and definitions among professionals with a special emphasis to national linkages and possible consequences at the national level. As an ideal case, such a discussion would be particularly productive before the global terms/definitions are accepted in the original language.

The importance and specific role of Explanatory notes was noted and discussed by the Working Group. The sense (meaning) and essence of some English terms could be accurately translated often only with the explanation of details. There are many evidences that “word-to-word” translation can be not a best solution. Sometimes an additional explanation, which is not presented in the English equivalent, is required. It might make the translated definition less “elegant” and (what is usual for Russian language) longer, but more accurate in terms of expression of meaning. For example this is the case with the translation of “Designated functions” (of Forest and Other wooded land). At the same time, it should be kept in mind that additional explanatory notes in the translated text might create a new concept, which should be carefully analysed.

There exist a number of glossaries and dictionaries of the forest- related terms and notions, which provide a professional translation of corresponding words/terms into Russian (especially from English equivalents). Still, this quite rich reference material should be used with consciousness, i.e. taking into account the context and application of the translated text, national specifics and polysemantic meaning of many words in any language. There are examples when failure of this brings substantial “biases ” in the real meaning of terms and definitions.

The concept and meaning of the term Stewardship in Russian was briefly discussed. The direct translation from the English equivalent of the word Stewardship (management - управление) does not provide the real meaning of the Russian term. Fortunately, in the Russian language, there exist the word, which very closely reflects the concept, sense and the real meaning of the term Stewardship, namely the word «Попечительство».

The correct use of this word could be demonstrated in the translation of the notion FSC (*Forest Stewardship Council*), which sounds in Russian as «Лесной Попечительский Совет». Thus, the WG-2 Rus does not see any problems with using this widely accepted word in international documents. (By the way, the direct “back” translation of the Russian word «Попечительство» into English mean *Trusteeship*, or *Guardianship*).

Reference:

FAO. 2004. Terms and Definitions (Final version). Food and Agricultural Organization of the United Nation. Working Paper 83/E, Rome, 34 pp.

Attachment: Annex I - Review of Existing Russian Translation of some Forest-related Terms and Definitions.

Review of Existing Russian Translation of Some Forest-related Terms and Definitions (Rome, 18-19 January 2005)

Conservation of biodiversity Forest/Other wooded land designated for conservation of biological diversity. Explanatory note 1. Includes, but is not limited to, Protected Areas.	Сохранение биоразнообразия Леса / Другие участки земли, покрытые лесной растительностью, предназначенные для сохранения биологического разнообразия. <u>Пояснительное примечание:</u> 1. Включает, помимо прочего, Охраняемые Территории.
Unknown function Forest/Other wooded land for which a specific function has not been designated or where the designated function is unknown.	Функция не определена или неизвестна Леса / Другие участки земли, покрытые лесной растительностью, конкретная функция которых не определена или неизвестна.
Designated functions (of Forest and Other Wooded Land) For the purpose of FRA 2005 the designated function refers to the function or purpose assigned to a piece of land either by legal prescriptions or by decision of the land owner/manager. It applies to land classified as "Forest" and as "Other wooded land".	Функциональное назначение (Леса и Других участков земли, покрытых лесной растительностью) В рамках ОЛР 2005, термин «Функциональное назначение» ("Выполняемая функция") означает ту функцию или цель, которую тот или иной участок земли выполняет в соответствии с законом или по распоряжению владельца или управляющего этим участком земли. Он относится к участкам земли, классифицируемым как "Леса" и "Другие участки земли, покрытые лесной растительностью".
Modified natural Forest/Other Wooded Land Forest/Other wooded land of naturally regenerated native species where there are clearly visible indications of human activities. Explanatory notes 1. Includes, but is not limited to: selectively logged-over areas, areas naturally regenerating following agricultural land use, areas recovering from human-induced fires, etc. 2. Includes areas where it is not possible to distinguish whether the regeneration has been natural or assisted.	Видоизмененные естественные Леса / Другие участки земли, покрытые лесной растительностью Леса / Другие участки земли, покрытые лесной растительностью естественного возобновления местных пород, в которых имеются явные свидетельства человеческой деятельности. <u>Пояснительные примечания:</u> 1. Включает, помимо других, следующие категории: территории выборочной вырубki, территории на стадии естественного возобновления после сельскохозяйственного использования земель, территории на стадии восстановления после пожаров, вызванных человеком, и т.д. 2. Включает территории, в отношении которых невозможно определить, является ли возобновление естественным или осуществляется при участии человека.

Semi-natural Forest/Other wooded land Forest/Other wooded land of native species, established through planting, seeding or assisted natural regeneration. Explanatory notes 1. Includes areas under intensive management where native species are used and deliberate efforts are made to increase/optimize the proportion of desirable species, thus leading to changes in the structure and composition of the forest. 2. Naturally regenerated trees from other species than those planted/seeded may be present. 3. May include areas with naturally regenerated trees of introduced species. 4. Includes areas under intensive management where deliberate efforts, such as thinning or fertilizing, are made to improve or optimise desirable functions of the forest. These efforts may lead to changes in the structure and composition of the forest.	Полуестественные Леса / Другие участки земли, покрытые лесной растительностью Леса / Другие участки земли, покрытые лесной растительностью местных пород, сформировавшиеся в результате создания лесных культур посадкой или посевом или мер содействия естественному возобновлению . <u>Пояснительные примечания:</u> 1. Включает территории, являющиеся объектами интенсивного хозяйствования, в процессе которого активно используются местные виды, и где прилагаются преднамеренные усилия с целью увеличения/ оптимизации доли желаемых пород, приводящие тем самым к изменениям в структуре и породном составе лесов. 2. Могут присутствовать деревья других пород, возобновившиеся естественным путем, то есть не тех, которые были посажены или посеяны. 3. Может включать территории, на которых произрастают деревья интродуцированных пород, возобновляющиеся естественным путем. 4. Включает территории, являющиеся объектами интенсивного лесного хозяйства, направленного на улучшение или оптимизацию желаемых функций леса, например, путем рубки ухода или удобрений. Эти усилия могут приводить к изменениям в структуре и составе (композиции) леса.
Assisted natural regeneration Natural regeneration of forest/other wooded land with deliberate human intervention aimed at enhancing the ability of desired species to regenerate. Explanatory notes 1. Interventions may include removal of external pressures, such as weeds and biotic interference; the application of controlled disturbances to trigger germination of native species such as mosaic and or ecological burns; or the preparation of the germination site e.g. through scarification. 2. The source of seed or vegetative reproduction is limited to the site and its immediate surroundings and may comprise both native and introduced species.	Содействие естественному возобновлению Естественное возобновление леса / других участков земли, покрытых лесной растительностью с преднамеренным вмешательством человека, направленным на усиление способности желаемых пород к возобновлению. <u>Пояснительные примечания:</u> 1. Вмешательство человека может включать защиту от внешних воздействий, таких как сорняки или биотические влияющие факторы; применение контролируемых воздействий с целью способствовать прорастанию местных пород, например, в виде контролируемых выжиганий; или подготовка почвы для проращивания семян, например путем ее минерализации. 2. Источник семенного или вегетативного материала ограничен данным участком и близко к нему прилегающей территорией, и может включать как местные так и интродуцированные породы.

Protective plantation (in Forest/Other wooded land) Forest/Other wooded land of native or introduced species, established through planting or seeding mainly for provision of services. Explanatory notes 1. Includes all stands of introduced species established for provision of environmental services, such as soil and water protection, pest control and conservation of habitats to biological diversity. 2. Includes areas of native species characterized by few species, straight tree lines and even-aged stands.	Защитные лесонасаждения (Леса / Другие участки земли, покрытые лесной растительностью) Леса / Другие участки земли, покрытые лесной растительностью, которые были созданы в результате посадки или посева преимущественно в целях выполнения экологических, средоохранительных и социальных функций лесов. <u>Пояснительные примечания:</u> 1. Включают все насаждения интродуцированных пород, созданные с природоохранительными целями, такими как защита почвы и воды, борьба с вредителями и сохранение ареалов биологического разнообразия. 2. Включают участки произрастания местных видов деревьев, характеризующиеся наличием нескольких пород, рядовым размещением деревьев, и одновозрастными древостоями.
Native species A native species is one which naturally exists at a given location or in a particular ecosystem, i.e. it has not been moved there by humans. (CBD web site: http://www.biodiv.org/programmes/areas/forest/definitions.asp) The term Native species is synonymous with Indigenous species.	Местный вид породы Местная порода это такой вид, который существует в определенной местности, или в некоторой экосистеме, то есть он не был привнесен человеком. (См. Интернет, Веб-страницу Конвенции по Биологическому Разнообразию: http://www.biodiv.org/programmes/areas/forest/definitions.asp) Термин Местная порода является синонимом коренной породы.
Trees outside forests Trees outside forests include all trees found outside forests and outside other wooded lands: stands smaller than 0.5 ha; tree cover in agricultural land, e.g. agroforestry systems, homegardens, orchards; trees in urban environments; along roads and scattered in the landscape. (web: http://www.fao.org/forestry/site/tof/en)	Деревья, произрастающие вне лесов Деревья произрастающие вне лесов включают все деревья находящиеся за пределами леса и других участков земли, покрытых лесной растительностью, т.е.: - насаждения площадью меньше 0.5 га; - древесный покров на сельскохозяйственных землях, например агролесные системы, приусадебные сады, фруктовые сады; - - деревья в городской среде; - деревья вдоль дорог, и разбросанные по ландшафту. (Страница Интернета: http://www.fao.org/forestry/site/tof/en)

Tree A woody perennial with a single main stem, or in the case of coppice with several stems, having a more or less definite crown. Explanatory note 1. Includes bamboos, palms, and other woody plants meeting the above criteria. (FAO. 2001. Global Forest Resources Assessment FRA 2000 – Main report. Rome)	Дерево Древесное многолетнее растение с единым главным стволом или, в случае порослевого происхождения, с несколькими стволами, имеющими более или менее выраженную крону. <u>Пояснительное примечание:</u> 1. Включает бамбуки, пальмы, и другие древовидные растения, отвечающие этим критериям. (ФАО. 2001. Глобальная Оценка Лесных Ресурсов FRA 2000 – Главный доклад. Рим)
Other land with tree cover Land classified as Other land, spanning more than 0.5 hectares with a canopy cover of more than 10 percent of trees able to reach a height of 5 meters at maturity. Explanatory notes 1. Includes groups of trees and scattered trees in agricultural landscapes, parks, gardens and around buildings, provided that the area, height and canopy cover criteria are met. 2. Includes tree plantations established mainly for other purposes than wood, such as fruit orchards.	Прочие земли, покрытые древесной растительностью (деревьями) Участки земли, определяемые как “Прочие земли”, должны иметь площадь более 0,5 га и сомкнутость полога более 10 процентов для деревьев, способных в зрелом возрасте достичь высоты 5 метров. <u>Пояснительные примечания:</u> 1. Включает группы деревьев и растущие отдельно деревья в сельскохозяйственных ландшафтах, парках, садах, а также вокруг зданий, если они отвечают критериям, касающимся лесного покрова в части площади, высоты и покрова деревьев. 2. Включает плантации деревьев, высаживаемые преимущественно для целей, не связанных с производством древесины, например, такие как фруктовые сады.
Other land All land that is not classified as Forest or Other wooded land. Explanatory notes 1. Includes agricultural land, meadows and pastures, built-up areas, barren land, etc. 2. If a country has areas with meadows and pastures and it is difficult to determine whether they should be classified as Forest/Other wooded land or as Other land, the country should explain the criteria used and how this classification is done. 3. Includes areas classified under the sub-category Other land with tree cover.	Прочие земли Все земли, которые не отнесены к категориям “Леса” или “Другие участки земли, покрытые лесной растительностью”. <u>Пояснительные примечания</u> 1. Включает сельскохозяйственные земли, луга и пастбища, застроенные площади, пустоши и т.д. 2. Если в стране имеются территории, занятые лугами и пастбищами, по которым трудно судить, следует ли их относить к категории “Леса/Другие участки земли, покрытые лесной растительностью” или “Другие участки земли”, этой стране следует разъяснить используемый критерий для отнесения соответствующего участка к той или иной категории. 3. Включает территории, относящиеся к подкатегории “Другие участки земли, покрытые древесной растительностью (деревьями)”.

Forest	Леса
Land spanning more than 0.5 hectares with trees higher than 5 meters and a canopy cover of more than 10 percent, or trees able to reach these thresholds <i>in situ</i>. It does not include land that is predominantly under agricultural or urban land use.	Участки земли площадью более 0,5 га с деревьями высотой более 5 м и с лесным покровом свыше 10 процентов или деревьями, способными достичь этих пороговых значений <i>in situ</i>. К их числу не относятся участки земли, с лесной растительностью, предназначенные в основном для сельскохозяйственного или городского использования
Explanatory notes	<u>Пояснительные примечания</u>
1. Forest is determined both by the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 meters <i>in situ</i>. Areas under reforestation that have not yet reached but are expected to reach a canopy cover of 10 percent and a tree height of 5 m are included, as are temporarily unstocked areas, resulting from human intervention or natural causes, which are expected to regenerate. 2. Includes areas with bamboo and palms provided that height and canopy cover criteria are met. 3. Includes forest roads, firebreaks and other small open areas; forest in national parks, nature reserves and other protected areas such as those of specific scientific, historical, cultural or spiritual interest. 4. Includes windbreaks, shelterbelts and corridors of trees with an area of more than 0.5 ha and width of more than 20 m. 5. Includes plantations primarily used for forestry or protection purposes, such as rubber-wood plantations and cork oak stands. 6. Excludes tree stands in agricultural production systems, for example in fruit plantations and agroforestry systems. The term also excludes trees in urban parks and gardens.	1. Лес определяется как наличием деревьев так и отсутствием других основных видов землепользования. Деревья должны быть способны достигать минимальной высоты 5 м <i>in situ</i>. Участки, являющиеся объектом лесовосстановления, лесной покров которых еще не достиг, но должен достичь 10 процентов, с деревьями высотой 5 м, включены, так же как земли, временно безлесые в результате деятельности человека или естественных причин (стихийных бедствий), но которые со временем должны восстановиться. 2. Включает участки произрастания бамбука и пальм, если они отвечают критериям, касающимся высоты деревьев и лесного покрова. 3. Включает лесные дороги, противопожарные разрывы и другие небольшие открытые пространства; леса в национальных парках, природных заповедниках и на других охраняемых территориях, представляющих особый научное, историческое, культурное или духовное интерес. 4. Включает ветрозащитные полосы, лесозащитные полосы и лесные коридоры для миграции диких животных площадью более 0,5 га и шириной более 20 м. 5. Включает плантации, используемые преимущественно для целей лесного хозяйства или защиты, такие как плантации каучукового дерева и насаждения пробкового дуба. 6. Не включает деревья, входящие в системы сельскохозяйственного производства, например фруктовые плантации или агролесные системы. Этот термин не охватывает также деревья, произрастающие в городских парках и садах.

Working Group 2 Summary of Chinese Group

Problem Identified:

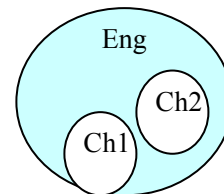
- Term in English includes **broader** meaning than Chinese

Example: **Other wooded lands:**

- ✓ **shrub lands**
- ✓ **open stands**
- ✓ **Urban forests**

Trees outside of forests

- ✓ **Open stands**
- ✓ **Scattering trees**
- ✓ **Urban forests**



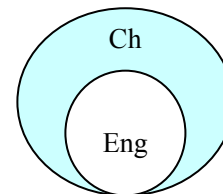
- Term in English include **narrower** meaning than Chinese

Example: **Afforestation**

Reforestation $\Rightarrow$ **Afforestation**

Restoration
Rehabilitation $\Rightarrow$ **Restoration**

Planted forest
Plantation forest $\Rightarrow$ **plantation**
Forest plantation



Resolution: Already created new terms for **Reforestation and Rehabilitation**

- No comparable term in Chinese

Example: **Old-growth forest**

Semi-natural forest

Devegetation

- Creation of new term is challenged and not easy to be accepted
- Not fully qualified translator: Translators usually have good English but lack technical expertise, and do not familiar with formal or widely accepted normal Chinese terms, resulting in many uncommon terms created for existed terms.
- Some words in defining a term are hard to be described or translated concisely in Chinese, example: “stewardship” in the definition of forest management

Recommendations

- Avoid creating new terms
- Allow translators to give explanation notes in addition to original texts

- Multi-disciplinary translation team, with not only good in English, but also standard Chinese and technical expertise.
- Request the translation team to consult national experts in using/creating new terms, to ensure wide acceptance and common understanding.
- Use words easily understood in the English text of definitions.

Working Group 2

Summary of Arabic Group

Arabic group

I. Key problems

The key problems in translation of forest related terms and definitions from English to Arabic are:

- Some dictionary and translation of terms does not correspond with the required meaning. Example: The translation of the term agro forestry is dictionary translation and does not fully reflect the meaning of the term.
- Translation of some terms is done using the local language of the translator not in the original Arabic text. This does not clarify the meaning to all the users in the Arabic countries due to the differences in the local languages between countries.

II. Harmonisation

- To improve harmonization between the two languages and among the users it is suggested to revise the existing translated terms and definitions and modifying or improving the translation when needed.
- A better equivalence could be obtained by translating the terms and the definitions from English to Arabic then from Arabic to Arabic throw modifying the structure and the coherence of the sentences to be sound and grammatically right.

Working Group 3

Trees outside Forests

A tree outside Forests (ToF) is a relatively new concept applied in FRA. It is applied to assess tree-based resources outside “forest and other wooded land” (i.e., on “other land”). FRA provides a good basic definition for ToF: “Trees on land not defined as forest and other wooded land”. These lands include built-on areas, agricultural land, and barren lands. In addition to individual trees, it involves a range of concepts such as tree systems, trees and shrubs, and forest and fruit trees. These resources are managed under a diversity of systems. (FAO and CIRAD, 2002)

Problems related to ToF definition are linked to how forest, forest land and other wooded land are defined. Major problems for the optimum integration of TOF for sustainable development originate from issues related to intersectoral harmonization at all level (policy and decision making, legal, economic and resource management).

With regard to harmonization between systems it was noted that the CBD refers to “agroforest” only. The definitions of UNFCCC and other processes have not always duly considered this category of trees. The simplified modalities and procedures for and facilitation of small-scale afforestation and reforestation projects under the Clean Development Mechanism opens up a new opportunity for improved management of ToF.

Further harmonization efforts should involve strong involvement of agriculture, environment, planning and the relevant sectors. At a national level, sectoral responsibilities for the management for these resources are often unclear and improved intersectoral coordination is often needed. ToF should also be better addressed in policy-making, building technical capacity in assessment and management, training and information exchange.

References:

- “**FRA**. 2001. – Trees outside forest (TOF) – Towards rural and urban integrated resources management”. Contribution to the Forest Resources Assessment 2000 Report. FAO, Rome, 2001. TC/D/Y1785E/1/10.01/1000. FRA Working papers on case studies. <http://www.fao.org/forestry/site/9536/en> (in EN/FR/SP)
- FAO and CIRAD**. 2002. “Trees outside forests – towards better awareness”. Conservation guide no. 35. FAO, Rome, 2002, 215 p. ISBN 92-5-104656-5. TC/M/Y2328E/1/11.21/1200 (in EN/FR/SP) <http://www.fao.org/forestry/site/9535/en> [in English, French and Spanish]
- FAO**. 2002. “Expert consultation on enhancing the contribution of trees outside forests to sustainable livelihoods – Proceedings. Rome, 26-28 November 2001”. FAO, Rome, 2002. 191 p. TC/D/Y4374E/1/12.02/1000 [in English]
- FAO**. 2003. “Training Manual on Inventory of Trees Outside Forests (TOF)”. Forestry Working paper. FAO, Rome. August 2003. 38 p. [in English]

ANNEX VI

RELEVANT INFORMATION PAPERS

A hierarchical terminology for more or less natural forests in relation to sustainable management and biodiversity conservation

Erik Buchwald
Danish Forest and Nature Agency

Abstract

Existing terminologies since the late 1980's are reviewed revealing gaps, inconsistencies and overlapping definitions. Many terms have been used very differently by different organisations with semi-natural forest being the worst example. It has variously been used for any kind of forest except exotic plantation. A new hierarchical terminology is proposed based on the work of many authors, persons and organisations working with this issue during the 1990's. Fourteen mutually exclusive levels of naturalness are delimited, defined, named and grouped, including virgin forest, old-growth, newly untouched forest, exploited natural forest, native plantation, exotic plantation and exotic self-sown forest. Consistent definitions for groups of levels and for qualifying features are also presented, e.g. for natural forest, planted forest, native forest, exotic forest, primary forest, minimum-intervention forest, ancient woodland and grazed forest. The definition of natural forest follows UNCED, FAO, EU and the World Bank. For other terms official sources like FAO's Forest Resources Assessment have been followed as far as possible.

Key words: Natural forest; Terminology; Management; Grazing; Conservation; Biodiversity; Old-Growth;

1. Introduction - the need for common terms

Especially since the UNCED Rio summit 1992 there has been much interest in protecting the natural qualities of forests including their biodiversity and ecological functions. This has led to many meetings and papers dealing with issues related to more or less natural forests and their biodiversity.

It has been clear in the political processes derived from UNCED that no commonly accepted terminology exists on forests relating to their management and conservation. This has given rise to lengthy debates about the words and long texts explaining local/regional definitions, most of which have no general acceptance. Some papers have not defined their words, paving the way for misunderstandings.

The lack of a generally accepted terminology is a problem both domestically in many countries and even more so internationally – especially in legal/political negotiations and in scientific work. Both inside and between continents there are problems with misunderstandings (IUFRO 1997 & 2002, COST E4 2000, Lund 2001, FAO 2002 a, FAO 2002 b).

In this paper I use forest as defined in FAO (2001b), and native tree species as defined in FAO (2001a) for indigenous tree species. When using "predominantly consisting of" about tree species ratios, I mean ratios of vertical crown projections. I focus on the terminologies used during the past ten years, including single works of major importance a few years older.

The main aim of this review is to improve understanding of existing terminologies and to suggest a possible consistent terminology – not to monopolise the terms. The general public often uses some of the words in a broad sense or with a different meaning than any published definition (Peterken 96). This cannot be avoided.

The choice of terms and definitions is affected by the objectives of the setting. If definitions are well-documented, logical and hierarchical it should be possible to translate and relate them to other objectives and

settings. First I explore some of the background for why inconsistencies develop, and then set out a new hierarchical approach.

1.1. Earlier attempts at a mutual terminology

Several authors have provided overviews of how the international terminology has been used (Broekmeyer & Vos 1993, Schuck et al. 1994, Peterken 1996, COST E4 2000, Lund 2001).

On the basis of these and other works, international attempts have been made to address the problem of a lacking mutual terminology. Precision is especially important in international research, statistics and political negotiations where definitions have therefore been elaborated (MCPF 1996, UN-ECE/FAO 1997 & 2000, FAO 2001a, IUFRO 2002).

1.2. Problems with the existing terminologies and definitions

Analysing the definitions of the commonly used terms referring to more or less natural forests reveals that one reason for the lack of mutual acceptance could be that most of the terms are not defined logically or precisely enough. Overlaps and gaps are common. It is often impossible from the published definitions to understand where the limits or even the typical range of the features in question are (Peterken 1996, Lund 2001).

A further general problem is that many sets of definitions are vague in places, and leave undefined gaps in others – see appendix 1.

There seems to be a need for a more stringent, logical and precise approach to defining a terminology. This might enable common use of terminology in international work in the future. It might also inspire national organisations to define national terminology more precisely. Improved terminology has for example been recommended in the Lisbon resolutions of the Ministerial Conference on Protection of Forests in Europe in 1998 (MCPF3 1998).

1.2.1. Etymology - are humans part of nature?

One set of problems arises around the concept of naturalness because humans have been an integral part of nature until some time in the past. However most people do not accept the major impacts of modern humans as natural - meaning as an integral part of nature.

Therefore we need to consider a level of impact where the transition happens from humans being a part of nature to being something apart from nature impacting on it. Unfortunately there is no simple logical way of discerning when or why human impact on (forest) ecosystems became too large to be accepted as natural.

The wordpairs nature <> culture and natural <> artificial are antonyms. The words are derived from Latin *natura* nature (from *natus* born), *cultura* cultivation of plants (from *colere* to till) and *arte factum* art work (Henderson 1979). These antonyms of general acceptance may help in deciding where to set logical limits compatible with the understanding of most people.

From these words it can be seen that some of the features which set humans definitely apart from nature are the *cultivation of plants* (tilling, sowing and planting) and the production of *art*. This is supported by the fact that no animals cultivate plants or produce art. From archaeological evidence the departure from nature can thus be taken as happening in the time period after the first art works and before Neolithic farming started. That would be between 5.000 and 25.000 years ago in much of the World depending on location.

Human activities such as hunting and the use of fire were already widespread ten thousands of years earlier. This indicates that humans had impacts on nature before ceasing to be part of it.

In reality it is not the artworks/artefacts themselves that disturb our notion of people as part of nature, but the escalated impacts on wildlife and landscape which often occurred more-or-less simultaneously. For example

evidence from isolated islands and continents shows a close correspondence between prehistoric human colonisation and extinctions of large animals (Stuart 1991, Bradshaw & Mitchell 1999). Extinctions especially hit megaherbivores, which are herbivorous animal species that grow larger than 1000 kg. In several continents these went extinct roughly 10-20.000 years ago. Megaherbivores have major influence on the dynamics of ecosystems and landscapes, and thus their disappearance must have had large impacts (Owen-Smith 1988).

In the light of such archaeological information it can be seen that the idea in the head of many people that forests until a few thousands of years ago were totally unimpacted by humans is a misconception.

This misconception is reflected in numerous published definitions of terms like primeval, pristine and virgin forest. These terms – and in a few cases also natural forest and old-growth (Lund 2001) - have often been defined in a way excluding any human impact ever (WWF/IUCN 1996, MCPF 1996, COST E4 2000). Such definitions are *a priori* problematical because humans have been present for hundreds of thousands of years with great potential impact already from the start of use of fire more than 200.000 years ago (Andersson & Appelquist 1990).

2. Developing a new hierarchical approach

A hierarchical logic is already partly inherent in many of the features covered by commonly used terms, without being appropriately incorporated or delimited in the published definitions.

The following fundamental forest features can be described in a hierarchical manner:

1. More or less natural *origin/genesis* >< More or less artificially created/regenerated
2. More or less natural *flora, fauna and genepool* >< More or less modified by human activities
3. More or less natural *processes and structures* >< More or less modified by human activities
4. Timespan of *continuity* of features >< History of change including human influence
5. Type and intensity of *management operations and utilisation*

In practice, although each of these features is a continuum, breaks in continual distribution tend to be present. The features are also interrelated and can be combined in a multi-dimensional matrix. From such a matrix sections can be grouped and identified to develop a logical hierarchic terminology.

2.1. Logical breaking points in the continual distribution of features

There is a logical breaking point in the continuum of **origin/genesis** when human action changes the existing /spontaneous vegetation of a site to an artificial stock of trees (by planting or seeding). This is also a breaking point in the continuum of the four other features and is therefore fundamental. The breaking point between natural and artificial regeneration can also occur when planted stands later regenerate naturally.

For **flora, fauna and genepool** there is a major breaking point in the continuum when native vegetation of a site loses its dominant role to non-native vegetation (e.g. to invasive non-native species). The fauna can be with or without key species of large wide-ranging animals. A usually prehistorical breaking point was at the first human-induced extinctions. It is not deemed feasible to incorporate breaking points relating to lower than species level, even though such impacts on the genepool can be of great importance.

Important breaking points in the continuum of **processes and structures** are presence/absence of significant native/aboriginal human modification and presence/absence of significant modern/western civilised human modification (e.g. logging). In sites with discontinued modification a breaking point in the reverse direction is when signs of the former human modification can no longer be seen/measured. Other breaking points relate to size (landscape-, forest- or stand-scale) and to seral stages of forest dynamics – which is especially relevant for old-growth versus younger seral stages. A last breaking point refers to presence/absence of a plantation-like structure.

A logical breaking point for **continuity** is when humans clear forest for other types of land-use, e.g. agriculture. Many hundreds of years of woodland continuity is of prime importance for many elements of flora and fauna (Peterken 1996, Graae 2000). Sites with forest continuity back to the oldest maps often also have continuity much further back in time.

Major logical breaking points in the continuum of **management** are if sites mainly serve industrial wood production purposes, are left untouched or have special management (e.g. old-time traditional management types, biodiversity protection, hunting estates, grazing, water protection or recreation).

2.2. Levels of naturalness

In order to overview the existing terminology I developed an array of levels of naturalness each with a corresponding definition labelled with a number instead of a name. For each new terminology reviewed, levels were added if necessary to incorporate details of definitions.

When the process was finished, 14 mutually exclusive levels emerged. The most logical and generally accepted parts of existing definitions were reused and incorporated in the definitions of levels. Amendments and adjustments were generally necessary in order to make the definitions more universally useful, consistent and without gaps. Appendix 1 shows the results of the review, while appendix 2 gives the level definitions. Level names have been added to both – see below.

In cases where the references use the words without defining them, there are uncertainties regarding the limits of terms, even though the context often gives a quite clear clue. In other cases definitions are vague or unprecise. Uncertainties are displayed with questionmarks in appendix 1.

Often it can be difficult to document historical and other features, e.g. whether a 200 years old forest stand is planted or not. I propose different solutions to such documentation problems at different levels, including the documentation topic in each relevant level definition. Any forest stand should be referable to the appropriate level by a field visit supplemented by general historical and biological knowledge of the area.

2.3. Names for the levels

I have tried to match the levels with the most commonly used and directly meaningful terms at hand in order to obtain logical hierarchy and best chances of communication with minimal misunderstandings. See fig. 1.

The words **primeval** and **virgin** have traditionally been connected to forest of an ultimately natural character – with some differentiation. **Primeval** bears in the word itself the reference to "the earliest ages (as of the world or human history)" (Lund 2001) making it useful for denoting the ultimately natural situation before human impacts (in most cases a very prehistoric situation).

The term **virgin** on the other hand denotes a situation that during the generations repeatedly can occur, but where the qualities cannot be restored once lost. It should be acceptable that virgin forest can still develop nowadays under certain ultimately natural conditions. This would be in line with the countries still claiming to have at least some virgin forest. Peterken (1996) supplements with Near-virgin Forest and World Resources Institute (1997) uses Frontier Forest which can be relevant in certain cases – see definitions of these in appendix 2.

For forest with a very high degree of naturalness but not as ultimate as the four abovementioned levels several continents use **Old-growth** – especially America, Australia and Asia (Russia) (Lund 2001). The term has been the issue of a separate working group to discuss definitions (IUFRO 1997). Many local definitions are very specific, but most can be encapsulated by the more generic definitions used at national scale in Russia, Australia, Canada and the US, which are fairly similar (Lund 2001). The main part of the level n6 definition is unchanged from the United States Forest Service 1989 definition of old-growth (via Lund 2001). An almost identical wording is used and recommended in Canada (Wells et al. 1998).

Figure 1

Size/ scale	Landscape	Forest	Landscape	Forest	Stand scale									
Tree species					Native species dominate									
Dominating stand origin					Self-sown									
	n10	n9	n8	n7	n6	n5	n4	n3	n2	n1	p4	p3	p2	p1
Level of naturalness	Primeval forest	Virgin forest	Frontier forest	Near-virgin forest	Old-growth forest	Long untouched forest	Newly untouched forest	Specially managed forest	Exploited natural forest	Plantation-like natural forest	Partly-natural planted f.	Native plantation	Exotic plantation	Self-sown exotic forest
Proposed names for levels														
	Natural forest													
Stand origin	Self-sown forest													
Genesis	Native forest													
Tree species origin	Primary forest													
Processes and structures	Forest managed mainly for conservation													
Management	Minimum-intervention forest													
Forestry activities	Secondary forest													
	Forest managed for various objectives													
	Mainly production forest													
	Man-made forest													
	Planted forest													
	Self-sown f.													
	Exotic forest													
	Forest plantation													
	Self-sown													
	Planted or artificially sown													
	Exotics dominate													
f. =	forest													

Alongside the abovementioned terms the following ones are sometimes defined almost identically as synonyms dealing with forests of ultimate to high degree of naturalness: Pristine, primary, antique, climax, ancient and natural forest (COST E4 2000, Lund 2001). These terms are less suited for these levels because they either have a very limited and not generally accepted use and/or do not communicate the correct/precise inherent meaning in them and/or have been used widely with other definitions better relating to the inherent meaning of the words.

This leaves us with the lower levels of naturalness, where it is not possible to find good and broadly accepted names or definitions. The terms Semi-natural Forest, Secondary forest, Modified Forest, Man-made Forest, Planted Forest, Plantation and Plantation Forest are much used, with definitions varying between authors and countries. They are often inconsistent (see Appendix 1). Artificial Forest is also sometimes used.

The range of forest naturalness between levels n6 and n1 is particularly important because such forests cover large areas in many countries. They often have a complex balance between conservation and use, and raise a lot of debate about sustainability. I have proposed names for the levels which as far as possible directly reflect their content. See figure 1 and appendix 2.

2.4. Names for groups of levels

On the basis of the analysis of the word **natural** (etymology and antonyms) and of the logical breaking points, I support the many organisations and authors who have used or defined Natural Forest rather broadly covering many levels of naturalness (e.g. UNCED 1992, EU 1996, Peterken 1996, COST E4 2000, Lund 2001, FAO 2001b, IUFRO SilvaVoc 2002). The minimum level of naturalness in these definitions is mostly at naturally regenerated native forest - regardless of intensity of human use.

Natural Forest should thus be used broadly for relatively to ultimately natural situations, encompassing a broad range of naturalness from level n1 through n10. This matches the international definitions of e.g. UNCED, FAO, IUFRO and World Bank (see appendix 1) and national definitions used in many countries e.g. China, Iran, Vietnam, New Zealand, Brasil (Lund 2001), Sweden (Selander 1969) and Japan (IUFRO 2002). See appendix 3 for definition.

Semi-natural Forest is used in Europe, especially Great Britain, about forests that are more or less natural or resemble such forests enough to make it difficult to tell the difference. Inventory and statistical purposes have been the main reasons for this rather unprecise term, e.g. for sites where it is difficult or impossible to find out if the stand was planted or not - maybe 200 years ago (Peterken 1996). Different works have set up quite different limits for what semi-natural forest is – see appendix 1.

The word semi-natural is more difficult to translate to other languages than most other terms and is not directly meaningful to most people. It has been used for any level of naturalness except p2, Exotic plantation (see appendix 1). I therefore recommend it used as little as possible in international work.

Care must also be taken in translation of the other terms to national tongues. In numerous cases a "direct" translation will give useless and confusing results. This problem has been known for years and will continue, no doubt.

See figure 1 and appendix 3 for other names for groups of levels of naturalness.

2.5. Qualifying features (continuity, grazing, protection status)

The breaking points of the fundamental features cover important divisions, but distinctions along another axis of the matrix can be worthwhile for some purposes. Qualifying features can be used to describe and rank sites in a more detailed manner or as determinants of management, when biodiversity is an important objective. Ellenberg (1988), Peterken (1996) and Vera (2000) can be consulted for details on the features.

I recommend the use of a terminology for continuity, grazing and protection regime in combination with the terminology outlined in appendix 2 and appendix 3, because of the importance and management implications of these qualifying features.

2.5.1 Continuity

Woodland continuity is of such prime importance for biodiversity, that it is worthwhile using it across the whole terminology, discerning between ancient woodland and recent woodland, see box 1. Further specification can be made, e.g. continuity of old trees, dead wood, tree species presence, undisturbed soil or of elements developed by grazing at moderate levels. Regardless of level there can be important differences in biodiversity between ancient and recent woodland. Sometimes the terms primary versus secondary forest are used to indicate if non-forest land-use has occurred, but this leads to confusion with another use of the same wordpair, see appendix 1 and figure 1.

Box 1 Terms on continuity of forest.

Ancient woodland – Forest sites which have been continuously wooded for several hundred years, at least since the time where reliable maps were first made (eg. 1600 or 1750 AD). Some may have continuity back to primeval forests whilst others arose as secondary woodland on ground cleared at some time in the far past. Continuity is not broken by felling, coppicing, planting nor any other forestry operation, provided that woodland of some kind regenerates immediately. Continuity is broken by an alternative land use, such as pasturage (unwooded) or agriculture/cultivation (after Peterken 1996).

Recent woodland – Forest sites which have shorter continuity than ancient woodland. (Peterken 1996).

2.5.2 Grazing regime

The original natural grazing pressure by wild animals in the Pleistocene and early Holocene is an issue of much debate (Vera 2000, Svenning 2002). Since those prehistoric times grazing levels have oscillated in complex manners with domesticated herbivores being very important in most continents for hundreds to thousands of years (Bradshaw & Mitchell 1999). Today, breaking points are presence/absence of fencing and of wild/domestic large herbivores (deer, antelope, kangaroo, beaver, buffalo, pigs, oxen, horses etc.) and whether grazing impact is significantly lower, higher or thought to be near the originally natural situation with intact wildlife. Absence of grazing by large herbivores is unnatural from a biodiversity and evolutionary point of view, while intensive domestic livestock grazing is also unnatural and detrimental to forest. See box 2 for proposed terminology.

2.5.3 Protection regime

The protection regime of forest reserves can take on three principally different forms: 1) Minimum-intervention, 2) Traditional Management or 3) Designed Management (NFNA 1994, Peterken 1996 & 2000), see box 3. A code of practice can detail the specific management principles and prescriptions of a reserve or of sub-types of the three forms (e.g. NFNA 1994). Minimum-intervention reserves are often called Strict Forest Reserves, Strictly Protected Forests or Scientific Forest Reserves (COST E4 2000).

Peterken (2000) has elaborated on Minimum-intervention, which he sub-divides into a) Non-intervention and b) Protective Intervention. Typically some human activities are accepted even in Non-intervention reserves, e.g. access, research, grazing regulation, recreation, restoration of natural hydrology or felling trees for security reasons along roads. In Protective Intervention non-native species are controlled also. Minimum-intervention as management prescription is synonymous with untouched forest as prescription (NFNA 1994).

IUCN codings of protected areas are not well suited for stand- or forest-scale assessments because the IUCN class definitions work at protected area scale. Very often at that scale there are multiple habitat types and/or levels of protection regimes, e.g. zones, which cannot be accounted for by the IUCN system (IUCN 1994, EUROPARC & IUCN 1999, COST E27 2001).

Box 2 Terms on grazing regime

Ungrazed forest - Woodland showing no structural signs of the presence of large herbivores. This can be because of very low herbivore density or because there are only small herbivores present. In many regions this is an unnatural situation for woodland seen from a biodiversity and evolutionary perspective (Owen-Smith 1988, Vera 2000). Roe deer (*Capreolus capreolus*) at c. 25 kg is here defined as a "small" herbivore, while all heavier species are defined as being "large".

Grazed forest – Woodland showing structural signs of the presence of large wild/non-domestic herbivores. The signs are often in the form of changes in flora composition and tree regeneration rates, but can also be wallow sites, trampling effects or large trees wounded or even killed by wildlife. The effects on the forest ecosystem are highly dependent on species composition of grazers and on grazing pressure. Roe deer (*Capreolus capreolus*) at c. 25 kg is here defined as a "small" herbivore, while all heavier species are defined as being "large". *Comment: Large herbivores were an important part of prehistoric and primeval natural woodland ecosystems. The herbivore composition was quite diverse in most continents including different megaherbivores with large potential impacts on the forest (Owen-Smith 1988). In many regions extant large herbivores have relict, patchy distributions, e.g. confined to national parks and other refuges (Buffalo, elephants etc.).*

Pasture forest – Woodland showing structural signs of being used for pasturage of domestic livestock either herded or fenced (cattle, horses, pigs, sheep, goats and similar). The forest structure often attains some of the characteristics of grasslands and can include flora and fauna elements from these.

Box 3 Terms on protection regime of forest

Minimum-intervention forest – Site specifically set aside by administrative or legal order as Minimum-intervention (=untouched) woodland from a specified time. Sub-types are Non-intervention and Protective Intervention. Protection and restoration of free dynamics and processes, ideally including natural hydrology, are top priorities. (NFNA 1994, Peterken 2000).

Traditional management – Site managed as it was in the past, preserving historic forms of interaction between people and nature. Due to prolongation of continuity this type often maintains a great diversity of species which would be threatened by a shift to other management or protection regimes. Important sub-types are coppice, wood-pasture and pre-industrial type selective cutting (NFNA 1994, Peterken 1996).

Designed management – Management is designed to meet some explicit nature conservation objective, such as maximising diversity, providing for a particular species, creating a mature stand or providing facilities for research and demonstration. (Peterken 1996).

Special management – Traditional and Designed Management can be grouped with similar low-intensity management types (e.g. for environmental protection) into Special Management. One purpose of this grouping is discerning these forest stands from stands with normal economically based forestry (NFNA 1994).

Gene-resource protection forest – Forest stands specifically designated for gene-resource protection of tree or shrub species. Management measures usually include buffer-zones in order to minimise risks of unwanted pollen incursion.

3. Discussion

3.1. The role of differing objectives

Many stakeholders use words regarding the naturalness of a forest in relation to their different objectives such as forest policy, statistics, research and biodiversity protection as well as to the general objective of sustainable development. Appendix 1 illustrates the many risks of misunderstandings brought about by different organisations using the same words differently.

Differing objectives can be the reason of some of the variation. But in many cases chance, tradition and historical background seem to be the main reasons, e.g. level n1–n10 being called native forest, natural forest and semi-natural forest in Australia, China and the UK respectively. Similarly, plantation, plantation forest and forest plantation are used synonymously for level p2–p4.

There are tendencies for there to be different "Schools" of terminology. The use of the word semi-natural has spread from the UK to European organisations (MCPF and UN-ECE/FAO), but not in a consistent manner. This may be because semi-natural has been used with differing definitions even inside the UK (Peterken 1996). In North America Canada and the US use more or less the same terminology, and from here the word "old-growth" has spread to other continents.

As can be seen in appendix 1, the World Bank, UNCED, IUFRO and FAO represent another school of terminology. It is of major importance, since it has been used internationally in many contexts both before and after the Rio summit in 1992, and because it is used in more or less legally binding documents of UNCED and EU regarding natural forests and primary forests.

3.2. Documentation problems

The genetic level of biodiversity has not been incorporated in the main terminology, mainly because it is almost never included in the reviewed terminologies, but also because inclusion would give rise to documentation problems. Pollen of trees mix over large and uncontrollable distances in a dynamic way. This makes definitions focused on "clean" local provenances and strains/races almost impossible to use in practice.

Dynamic evolution of species, strains and their distributions continues. This makes it necessary also to reflect on how native range is defined and on when species are deemed exotic. Native range should not be seen statically in relation to political boundaries, but dynamically in relation to soil, climate, dispersal barriers, rate of historical change, potential future changes etc.

Ideally Natural Forest might be defined as forest which has always been naturally regenerated and never artificially regenerated. Such a definition has been attempted (NFNA 1994) but has proven problematical because it is very difficult to know whether a generation preceding the extant stand was planted/sown, e.g. oak and beech forests where planting has been used for hundreds of years at least in Europe.

When a planted stand of native species has later regenerated naturally, the planted origin of the previous generation can usually only be determined by studies of archives or by genetic studies of the trees. Often archives do not exist and they cannot prove whether a pre-archive stand was planted or not. The other method is tedious and cannot give a certain answer either. This seems to be the reason why all other reviewed definitions which call levels n1–n10 natural forest, only employ features of the extant stand.

The abovementioned documentation problems have been attempted solved in the proposed terminology by incorporating different levels of necessary documentation at the various levels. This should be a help when referring a forest stand to a level, e.g. for inventory purposes.

3.3. Organisms as indicators

Ellenberg (1988) attempted to use field layer flora combined with forest management as determinants of a forest terminology. He found that his system works quite well in intensively investigated parts of Central

Europe, but not quite so well in southern and eastern parts of Central Europe where investigations of forest vegetation are somewhat fewer. The requirement for detailed knowledge on flora makes the system less useful internationally.

Even so, field layer flora can be of great importance as indicator of naturalness of forests by having certain plant species absent, present or common. Different indicators can be identified for different levels of naturalness. The same goes for other groups having indicator species for more or less natural forests (e.g. lichens, saproxylic fungi and insects). Sets of indicator species are necessarily local/regional, because of limited distributions of indicator species (Hermý et al 1999). Using all species matching specific forest-related traits as indicators instead of using just a few listed species, might be worthwhile in order to widen the geographical scope (Graae & Sunde 2000).

Certain sites at a specific level of naturalness can happen to have a more rare or typical biodiversity than some sites of a higher level. This can especially be the case when looking at limited sections of biodiversity and when comparing ancient woodland with recent woodland. For instance soil organisms and saproxylic organisms react very differently to forest management operations which break continuity of old trees and dead wood.

4. Recommendations - Conservation importance

The main use of terminologies on naturalness of forests relates to discussions of priorities relating to conservation of biodiversity. A sustainable balance between use and protection is an important factor in such discussions.

14 levels of forest naturalness have been identified in this review. Some levels, e.g. Primeval, Virgin and Old-growth Forest, are mainly retrospective and the appeal is to protect them. Other levels, e.g. Newly Untouched and Near-virgin Forest, have relevance in nature restoration activities and give hope for the future of biodiversity alongside wise management of the less natural levels. I find that it is of importance to understand all 14 levels when dealing with sustainable development and biodiversity protection, although aggregate levels will be enough for most reporting purposes.

Much work on forest conservation relates to the setting up of networks of protected areas. Site selection for conservation should benefit from using a stringent terminology and analysing which types of sites have high priority for inclusion in a reserve network. Many countries have so little forest with high levels of naturalness left that reserves need to be selected also in disturbed forests in order to represent ecological variation or just to reach adopted area targets. In such selection schemes Ancient Woodland should be given high priority because of the importance of continuity for biodiversity.

Other selection criteria for reserve networks include hydrological regime, which is very important for biodiversity. Sites with restored or intact natural hydrology should be ranked higher than sites with modified hydrology. Old stands and trees should be ranked higher than younger ones. In general sites with a rich, typical, unusual or fairly intact biodiversity should be ranked higher than sites with less well-developed biodiversity.

When sites are selected, protection regimes need to be settled. Continuity of management system can be very important for biodiversity, so that changing Specially Managed Forest, e.g. ancient coppice or wood pasture, to Untouched Forest can be detrimental to important parts of site biodiversity. For other site types, the flora and fauna – especially saproxylic species - can benefit by a change to untouched status. Restored or natural hydrology, natural species composition and wildlife including large herbivores are important for the natural structures and functions of the ecosystem to redevelop optimally (Peterken 1996, Vera 2000).

Recommendations on how much forest should be protected in reserves usually range below 10 – 15 % of the forest area. For the remaining at least 85 % of forest areas Natural Forests with forestry and Man-made Forests (levels n3 through p1) are highly relevant in discussions of sustainable management. All production

forests sustain some biodiversity. How much depends on how near-to-natural the management and the forest is. The proposed terminology can hopefully enhance and clarify discussions.

Acknowledgements

This review would have been much more difficult without the major work done by H. Gyde Lund and other referenced authors who have gathered and systemised many definitions and terminologies and made them accessible. I am indebted to Bent Aaby, Sten Asbirk, Richard Bradshaw, Jens Emborg, Hans Kampf, Keith Kirby, Peter Friis Møller, Bent Odgaard, Karsten Thomsen and Frans Vera for fruitful discussions, inspiration, material and for their work on natural forests during the years. The Danish Foreign Minister Per Stig Møller is thanked for ordering the Danish Natural Forest Strategy in 1991 while he was Minister of the Environment and for putting me in charge.

References

- Aird, P.L., 1992 (Foreword by J.S. Maini). Conservation for the Sustainable Development of all Types of Forests Worldwide: A Compendium of Concepts and Terms. Preliminary version of Aird (1994) circulated for the UNCED Rio Summit by the Canadian Delegation.
- Aird, P.L., 1994. Conservation for the Sustainable Development of Forests Worldwide: A Compendium of Concepts and Terms (in English, French and Spanish). *The Forestry Chronicle*, 70, 666-674. Revised version of Aird (1992).
http://www.forestry.utoronto.ca/ac_staff/emeritus/My%20Webs/english.htm
- Andersson, L., Appelquist, T., 1990. The influence of the pleistocene megafauna on the nemoral and boreonemoral ecosystems. A hypothesis with implications for nature conservation strategy. *Svensk Bot. Tidskr.* 84, 355-368. Lund.
- Bradshaw, R., Mitchell, F.J.G., 1999. The paleoecological approach to reconstructing former grazing-vegetation interactions. *Forest Ecology and Management* 120, 3-12.
- Broekmeyer, M.E.A., Vos, W., 1993. Forest reserves in Europe: A review. In: Broekmeyer, M.E.A., Vos, W. and Koop, H. (eds.), 1993: European forest reserves. Proceedings of the European forest reserves workshop. PUDOC-DLO, Wageningen, 306 pp.
- Chokkalingam, U., Jong, W.D., 2001. Secondary forest: a working definition and typology. *International Forestry Review* 3, 19-26.
- COST E27, 2001. Memorandum of understanding for the implementation of a European Concerted Research Action designated as COST Action E27 "Protected Forest Areas in Europe – Analysis and Harmonisation (PROFOR)". European COoperation in the field of Scientific and Technical research (COST). Secretariat, Bruxelles.
- COST E4, 2000. Forest Reserves Research Network in Europe. Mission, Goals, Outputs, Linkages, Recommendations and Partners. COST Action E4, Final report. With web glossary of international terms of natural forests and natural forest research at http://www.efi.fi/Database_Gateway/FRRN/howto/glossary.html. European COoperation in the field of Scientific and Technical research (COST). The Finnish Forest Research Institute, Joensuu.
- Ellenberg, H., 1988. *Vegetation Ecology of Central Europe*. 4th Edition. Cambridge University Press.
- EU Commission, 1991. CORINE Biotopes Manual. Habitats of the European Community. Data specifications part 2. EUR 12587/3. Luxembourg.
- EU Commission, 1996. Forests in sustainable development. Annex 4.6, Glossary of Terms.
http://europa.eu.int/comm/development/forests/en/en4_6.htm

- EU Commission, 1999. Interpretation Manual of European Union Habitats. EUR 15/2. DG Environment.
- EUROPARC and IUCN, 1999. Guidelines for Protected Area Management Categories – Interpretation and Application of the Protected Area Management Categories in Europe. EUROPARC & WCPA, Grafenau, Germany. 48 pp.
- FAO, 1995. Forest Resources Assessment 1990. Global synthesis. FAO Forestry Paper 124. Rome.
- FAO, 2001a. Global Forest Resources Assessment 2000. Main report. App. 2, Terms and definitions. FAO Forestry Paper 140, Rome.
- FAO, 2001b. State of the Worlds forests 2001. Annex 1, Definitions and acronyms. <http://www.fao.org/forestry/FO/SOFO/sofo-e.stm>
- FAO, 2002a. Expert meeting on harmonizing forest-related definitions for use by various stakeholders. Rome, 23-25 January 2002. Proceedings. Rome.
- FAO, 2002b. Second expert meeting on harmonizing forest-related definitions for use by various stakeholders. Rome, 11-13 September 2002. Proceedings. Rome.
- Forestry Authority, 1994. The management of semi-natural woodlands. Forestry Practice Guides 1 – 8. The Forestry Authority, Edinburgh, UK.
- Forest Stewardship Council, 2000. FSC Principles and Criteria. Document 1.2. Revised February 2000. www.fsc.org/html/1-2.html
- Graae, B.J., Sunde, P., 2000. The impact of forest continuity and management on forest floor vegetation evaluated by species traits. *Ecography* 23, 720-731.
- Henderson, I.F., 1979. Henderson's dictionary of biological terms. Ninth edition, edited by S. Holmes. London.
- Herm, M., Honnay, O., Firbank, L., Lawesson, J., 1999. An ecological comparison between ancient and other forest plant species of Europe, and the implications for forest conservation. *Biol. Cons.* 91, 9-22.
- ITTO, 2002. International Tropical Timber Organization - Guidelines for the restoration, management and rehabilitation of degraded and secondary tropical forests. Draft report prepared on behalf of ITTO by an International Expert Panel held in Bern, Switzerland 18-22 February 2002.
- IUCN, 1994. Guidelines for Protected Area Management Categories. IUCN Commission on National Parks and Protected Areas with the assistance of WCMC. IUCN, Gland, Switzerland and Cambridge, UK. 261 pp.
- IUFRO, 2002. SilvaVoc. A Clearing-house at the service of the forest community. Terminological database (SilvaTerm). <http://iufro.boku.ac.at/silvavoc>
- IUFRO Unit 6.03.02, 1997. A network for terminology within IUFRO network. Discussion Group on Old Growth - in operation January to June 1997. <http://www.wsl.ch/forest/risks/iufro/discussion.html>
- Lund, H. Gyde, 2001. Definitions of old growth, pristine, climax, ancient forests, and similar terms. [Online publication], Manassas, VA, USA: Forest Information Services. Misc. pagination. <http://home.att.net/~gklund/pristine.html>
- MCPF, 1995. Interim report on the Follow-up of the Second Ministerial Conference. Ministerial Conference on the Protection of Forests in Europe, 16-17 June 1993 in Helsinki. Annex III. Ministry of Agriculture and Forestry, Ministerial Conference on the Protection of Forests in Europe Liaison Unit in Helsinki.
- MCPF, 1996. Ministerial Conference on the Protection of Forests in Europe, Progress Report 1996, 27 – 54. Ministry of Agriculture, Rural Development and Fisheries. Liaison Unit in Lisbon.
- MCPF3, 1998. General declaration and resolutions adopted. Third Ministerial Conference on the Protection of Forests in Europe, Lisbon, June 1998. Liaison Unit in Lisbon. Ministry of Agriculture, Rural Development and Fisheries of Portugal.
- NFNA, 1994. Strategy for natural forests and other forest types of high conservation value in Denmark. The National Forest and Nature Agency, Ministry of the Environment. Copenhagen.
- Owen-Smith, N. 1988. Megaherbivores. Cambridge University Press.

- Pajari, B. J.K., Schuck, A. (Eds.) 1994. Terms and Definitions for the Follow-up of the Second Ministerial Conference on the Protection of Forests in Europe. Working Paper 17.6.94, 18 pp.
- Peterken, G. F., 1996. Natural woodland. Ecology and Conservation in Northern Temperate Regions. Cambridge Univ. Press.
- Peterken, G. F., 2000. Natural reserves in English woodlands. English Nature Research Reports, No. 384. English Nature, Peterborough.
- Rosson, J.F., 1995. Forest Plantations in the Midsouth, U.S.A. US Forest Service, Southern Forest Experiment Station. Research Paper SO-290.
- Selander, E., 1969. Glossary of forest terms, Swedish-English. Skogsordlista, Svensk-engelsk. Swedish Centre of Technical Terminology Publication No. 43. Lund.
- Spencer, J.W., Kirby, K.J., 1992. An inventory of ancient woodland for England and Wales. Biological Conservation 62, 77-93.
- Stuart, A.J., 1991. Mammalian extinctions in the late Pleistocene of Northern Eurasia and North America. Biol. Rev. 66, 453-562.
- Svenning, J., 2002. A review of natural vegetation openness in north-western Europe. Biological Conservation 104, 133-148.
- UNCED 1992. As printed in: Johnson, S., 1993. The Earth Summit: The United Nations Conference on Environment and Development (UNCED). 532 pp. International Environmental Law and Policy Series. Graham & Trotman, London.
- UN, 1997. Report of the Ad Hoc Intergovernmental Panel on Forests on its Fourth Session. New York, 11-27 February 1997. E/CN.17/1997/12. New York.
- UN-ECE/FAO, 1997. Temperate and Boreal Forest Resources Assessment 2000 (TBFRA 2000). Terms and Definitions. UN New York and Geneva, 13 pp.
- UN-ECE/FAO, 2000. Forest Resources of Europe, CIS, North America, Australia, Japan and New Zealand. UN-ECE/FAO contribution to the Forest Resources Assessment 2000. Geneva Timber and Forest Study Papers, no. 17. Main report. App. I – TBFRA-2000 Terms and Definitions.
- IUCN/UNEP/WWF, 1991. Caring for the Earth. A Strategy for Sustainable Living. Gland, Switzerland.
- Vera, F.V.M., 2000. Grazing Ecology and Forest History. CABI, Wallingford.
- Wells, R.W., Lertzmann, K.P., Saunders, S.C., 1998. Old-growth definitions for the forests of British Columbia, Canada. Natural Areas Journal 18, 279-292.
- Wenming, L., 1999. Recent changes of forest policy in China and its influences on the forest sector. Chinese Academy of Forestry, Beijing. www.iges.or.jp/fc/ir99/4-10-lu.pdf.
- World Bank, 1991. The Forest Sector: A World Bank Policy Paper. Washington D.C. (Also called "World Bank Forest Strategy").
- World Resources Institute, 1997. Last Frontier Forests: Ecosystems and Economies on the Edge. www.wri.org/wri/ffi/.
- WWF, 1992. Forests in trouble: A Review of the Status of Temperate Forests Worldwide. World Wide Fund for Nature, Gland.
- WWF/IUCN, 1996. Forests for Life. The WWF/IUCN forest policy book. WWF-UK.

Appendix 1

FRA = Forest Resources Assessment
 TB = Temperate and Boreal
 ? = Cannot be inferred with certainty

n = None of the terms are defined in the reference, but can be inferred from context
 x = All relevant terms are defined in the reference
 p = Partly
 f = Forest

P. old-g. = Partly Old-growth
 Semi-n.f. = Semi-natural forest
 Spec. man = Special management

14 levels of forest naturalness with definitions:**Appendix 2**

n10 Ultimate degree of naturalness – **Primeval Forest** – Forest ecosystems never modified by modern man/civilisation even indirectly, where the degree of impact on the ecosystem by indigenous people has not been significantly higher than the impacts of natural wildfire and of large wild animals (e.g. beaver (*Castor spp.*) or megaherbivores). The fauna includes a rich host of large animal species and is not significantly affected by human-induced extinctions or changes to animal population densities. Size is landscape-scale. *Comm: In Europe and America this type belongs in prehistorical times (before megaherbivore extinctions in stoneage), while examples might still occur in other parts of the world (e.g. perhaps some African National Parks). For prehistoric forests the time-period can be specified, e.g. Pleistocene forest or early-Holocene forest.*

n9 Extremely high degree of naturalness - **Virgin Forest** - Forest ecosystems virtually unmodified by man, and where the degree of former human impact on the forest - including soil and hydrology - has been only slightly more significant than the impacts of wildfire and animals (e.g. beaver (*Castor spp.*) or megaherbivores), and is no longer obvious. Wildlife inhabits the area with a fairly natural density and species composition including large herbivores and carnivores. Size is forest-scale. *Comm: In Europe this term has been used by many authors and lay people for the most extremely natural forests of Europe (Bialowieza and several others, see Peterken 1996) well knowing that they have been impacted somewhat by people in former times (grazing, selective cutting, fires etc).*

n8 Very high degree of naturalness - **Frontier forest** – A frontier forest is an area meeting the following criteria: It is primarily forested and predominantly consists of indigenous tree species. It is big enough to support viable populations of all indigenous species associated with that forest type -- measured by the forest's ability to support wide-ranging animal species (such as elephants, harpy eagles or brown bears). It is large enough to keep these species' populations viable even in the face of the natural disasters -- such as hurricanes, fires, and pest or disease outbreaks -- that might occur there in a century. It is home to most, if not all, of the other plant and animal species that typically live in this type of forest. Its structure and composition are determined mainly by natural events, though limited human disturbance by traditional activities of the sort that have shaped forests for thousands of years -- such as low-density shifting cultivation -- is acceptable. As such, it remains relatively unmanaged by humans, and natural disturbances (such as fire) are permitted to shape much of the forest. In forests where patches of trees of different ages would naturally occur, the landscape exhibits this type of heterogeneity. (Rearranged/shortened from World Resess. Inst.:<http://www.wri.org/ffi/lff-eng/>).

n7 Very high degree of naturalness - **Near-virgin forest** – Forest ecosystems (forest scale) untouched long enough to have attained structures, dynamics and species composition similar to virgin forest, even though they may have been significantly modified, e.g. by clearcutting or agriculture at some time in the past. They are distinguished by a mixture in time and space between different seral stages, e.g. between old-growth stages and younger stages. Human impact on the forest structures is not obvious to see. The time necessary in untouched development before this level can be reached depends on how modified the situation was at the start. It is at least several hundred years if the starting point is a plantation-like forest.

n6 High degree of naturalness - **Old-growth forest** – Ecosystems (stand scale) distinguished by old trees and related structural attributes. Old growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulations of large dead woody material, number of canopy layers, species composition, and ecosystem function. The age at which old-growth develops and the specific structural attributes that characterise old-growth will vary widely according to forest type, climate, site conditions, and disturbance regime. For example, old-growth in fire-dependent forest types may not differ from younger forests in the number of canopy layers or accumulation of down woody material. However, old-growth is typically distinguished from younger growth by several of the following attributes: 1) large trees for species and site, 2) wide variation in tree sizes and spacing, 3) accumulations of large-size dead standing and fallen trees that are high relative to earlier stages, 4) decadence in the form of broken or deformed tops or bole and root decay, 5) multiple canopy layers, and 6) canopy gaps and understory patchiness. Old-growth is not necessarily "virgin" or "primeval." Old-growth can develop following human disturbances. (USFS 1989, Wells et al 1998). If the stand is known to be planted/sown or predominantly consists of exotics it is referred to level p4, Partly-natural planted forest or p1/p2, Exotic forests.

Continued on next page

Appendix 2 continued

n5 Quite high degree of naturalness - **Long untouched forest** – Relatively intact forest (stand level) that has been essentially unmodified by human activity for the past sixty to eighty years or for an unknown, but relatively long time. Signs of former human impacts may still be visible, but strongly blurred due to the decades without forestry operations. The time limit depends on how modified the forest was at the starting point. If the stand is known to be planted/sown or predominantly consists of exotics it is referred to level p4, Partly-natural planted forest or p1/p2, Exotic forests.

n4 Moderately high degree of naturalness – **Newly untouched forest** – Forest stands where forestry operations have been discontinued or never occurred since stand establishment, and which are known to have been left untouched for less than sixty to eighty years. Signs of former human management are usually easily visible, becoming more blurred with time. In principle any stand would belong here between forestry operations. If discontinuation of operations is only because of long management intervals, the stand is referred to lower levels. If the stand is known to be planted/sown or predominantly consists of exotics it is referred to level p4, Partly-natural planted forest or p1/p2, Exotic forests.

n3 Medium degree of naturalness – **Specially managed forest** – Forest stands with low-intensity use (allowing for presence of significant old-growth attributes) or where long continuity of pre-industrial type traditional use has given rise to a more or less characteristic forest structure, often with an interesting biodiversity and also often of cultural value. Examples are coppice, pasture forest, non-industrial selective logging and various stands of low accessibility or with protective or recreational functions. Excludes stands where the characteristic structures and attributes have been lost due to discontinuation or to large changes in the traditional use. If the stand is known to be planted/sown or predominantly consists of exotics it is referred to level p4, Partly-natural planted forest or p1/p2, Exotic forests.

n2 Fairly low degree of naturalness – **Exploited natural forest** – Forest stands used and modified by humans so that the forest structure and species composition is more or less heavily changed from the originally natural situation, but still predominantly consisting of self-sown native trees, and without a plantation-like structure. Can be exploitation without preceding silviculture (e.g. modifying old-growth forest), or stands with medium-intensity forest management (e.g. near-to-nature forestry). If a significant proportion of the stand is known to be planted/sown it is referred to level p4, Partly-natural planted forest.

n1 Low degree of naturalness – **Plantation-like natural forest** – Forest stands predominantly consisting of self-sown native trees with high-intensity forest management, so that the forest structure has become plantation-like by being even-aged, having relatively low tree ages, fairly regular tree spacing and only one or two tree species in the canopy layer. If it is not certain that the stand is self-sown it is referred to level p3, Native plantation.

p4 Low degree of naturalness – **Partly-natural planted forest** - Forest stands predominantly consisting of planted or sown native trees, and having somewhat natural structure by being un-evenaged, with mixed species or having significant ingrowth of self-sown trees (e.g. because multiple species have been planted and not intensively managed for timber and/or because of old age and low intensity of forestry). In certain cases such stands are left untouched long enough to correspond to levels n4, n5 or n6. They may be called newly untouched, long untouched and old-growth planted forest respectively.

p3 Extremely low degree of naturalness – **Native plantation** – Intensively managed, basically even-aged forest stands predominantly consisting of native trees, established artificially by planting or sowing with regular spacing. Often monocultures, but sometimes two or more species are established together. Usually the genetic variety of the plantation trees differs from the original genetic variety of the locality.

p2 Almost no degree of naturalness – **Exotic plantation** – Forest predominantly consisting of non-native tree species, where the stand origin is artificial by planting or sowing. In certain cases such stands (or p1) might be left untouched long enough to correspond to levels n4, n5 or n6. Such stands may be called newly untouched, long untouched and old-growth exotic forest respectively.

p1 Variably low degree of naturalness – **Exotic self-sown forest** - Forest stands predominantly consisting of self-sown non-native tree species. In certain cases this category can spread at an undesirable scale, e.g. to the extent that it has replaced or seriously suppressed the species previously occupying the specific area. Such cases can be called forest of invasive species. If it is not certain that the stand is self-sown it is referred to level p2, Exotic plantation.

Any forest stand should be possible to refer to level by a field visit supplemented by general historical and biological knowledge of the area.

Definitions of terms covering multiple levels:**Appendix 3**

N1-n10 = **Natural forest** – Forest stands predominantly composed of self-sown native trees. They are in other words naturally regenerated and complementary to planted/sown stands and exotic self-sown stands. (After FAO 2001a).

Comm: They range from undisturbed by humans (e.g. virgin forest) to heavily utilised for grazing, wood production etc. The degree of naturalness can be described by referring to more detailed levels or subclasses of natural forest. Stands that have natural processes or structures present are taken to be self-sown if no information indicates otherwise. "Natural forest dynamics" refer to the natural dynamics of natural forest undisturbed by humans. They often include a cycle of seral stages of growth.

P3,4+n1-n10 = **Native forest** – Forest stands predominantly consisting of native trees. These can be planted, sown by man or self-sown. They can be used/managed or not. *Comm: Native trees means species which have evolved in the same area, region or biotope where the forest stand is growing and are adapted to the specific ecological conditions predominant at the time of the establishment of the stand (FAO 2001a).*

P1,2 = **Exotic forest** – Forest stands predominantly consisting of non-native trees. These can be planted, sown by man or self-sown. They can be used/managed or not.

P2 + p3 **Forest plantation** – Intensively managed forest stands established artificially by planting or seeding and having regular spacing and even-aged structure. Usually only one tree-species is planted, but sometimes two or more are planted together. (After FAO 2001a). *Comm: They can be either native or exotic species or mixed. Excludes native stands which were established as plantations but which have lost the specific structure of plantation later, e.g. because of long time without intensive management or because many of the planted trees have been cut and self-sown trees have been allowed to take their place.*

P2-p4 = **Planted forest** – Forest stands established artificially by planting or seeding. (After ITTO 2002).

p1+n1-n10 = **Self-sown forest** – Forest stands predominantly consisting of trees which have germinated and grown from spontaneous seedfall, either wholly naturally or influenced by various silvicultural activities, e.g. scarification.

P1-p4 = **Man-made forest** - Forest stands which are either predominantly consisting of non-native (introduced, exotic) tree species or which have been established artificially by planting or seeding.

N4-n1 = **Secondary forest** – Forest stands of native species regenerated largely through natural processes after significant human and/or natural disturbance of the original forest vegetation at a single point in time or over an extended period, and displaying a major difference in forest structure and/or canopy species composition with respect to primary forests on similar sites. (After Chokkalingam & Jong 2001). *Comm: Typical disturbance types are clearcutting, logging, flood, fire and deforestation in general. Continued modification often takes place, e.g. forestry. Can revert to primary forest if untouched natural development proceeds for a sufficiently long time.*

N5-n10 = **Primary forest** - Relatively intact forest areas that have always or at least for the past sixty to eighty years been essentially unmodified by human activity. Human impacts in such forest areas have normally been limited to low levels of hunting, fishing and harvesting of forest products, and, in some cases, to historical or pre-historical low intensity agriculture. (After World Bank 1991, EU 1996)

N4, n5, n7, n9, n10, most of n8 and n6 and minor parts of p1, p2, p4. = **Untouched forest** (since specified year/decade/time) – A common denomination of forests uninfluenced by forestry activities (felling, planting etc.) from a specified time. Is not affected by research, hunting or recreational activities etc. Usually the length of time is minor except in woods designated as untouched (=minimum-intervention) forest by administrative or legal order.

Propositions for the Harmonization of Terms and Definitions Concerning Natural Forests, Planted Forests and Plantations

Georgiy Bondaruk

Ukrainian Research Institute of Forestry and Forest Melioration,

These propositions were written for the 3rd Expert Meeting on Harmonizing of Forest-related Definitions on the base and in development of background paper by Esa Puustjarvi and Markku Simula “Definitions Related to Classifications of Forests and Their Management Status”.

Classifying coppicing as a stand establishment method

Coppicing is the natural form of regeneration from the viewpoint of the absence of human activity in regeneration and completely preservation of previous stand genotype. In some types of natural forests where fires are the considerable part of natural successions (savanna forests, miombo etc.), coppicing is the main (and even the only) form of natural forest regeneration.

But the structure of coppiced forests is different to compare with the structure of seed natural regenerated forests (especially in case of stump shoots).

Hard to agree, that coppice forests are grown exclusively in a short rotation for small materials. Usually such forests are mixed with coppiced and seed regenerated trees (in different proportion). It's possible to distinct coppice forests of 1st and 2nd generations, which are rather productive and distinguished (for oak forests, for example) in high-stem stands, and coppice forests of 3rd and more generations, which are much more less productive and stable, and distinguished in low-stem stands and usually need reconstructive measures.

To consider the coppicing from the viewpoint of the naturalness of forest regeneration processes, it's expedient to put this method in the row of stand establishment methods between natural seed regeneration and assisted natural seed regeneration.

But from the viewpoint of stand structure, the forests established with assisted natural regeneration are more close to natural forests in comparison with coppice ones.

So, the issue under discussion is what is more important – the naturalness of establishing method or the naturalness of regenerated stands' structure. In figure 2 the first approach is realized.

The proposed distinguishing of coppice forests between different classes of naturalness is the next:

- forests in which the coppicing is the main (and even the only) form of natural forest regeneration – to **natural** forests;
- coppice forests of the 1st and 2nd generations – to disturbed **natural** forests;
- coppice forests of the 3rd and more generations – to **semi-natural** forests.

Proposed approach to defining enrichment planting and the approach to distinguishing it from other methods of regeneration

The necessary condition of this kind of establishing method is the presence of some natural regeneration (in opposite case it will be simple planting or seeding).

It's possible to distinguish 3 main goals of enrichment planting:

1. To increase biodiversity in cases of natural regeneration of only one species (for example, after harvesting in monocultures) and the aim of reforestation is to reconstruct the initial natural forest ecosystem.
2. To increase total quantity of regenerated plants, if quantity of natural regeneration is insufficient for successful reforestation

Usually in these 2 cases the native species are planted and established in such manner forests can be classified as **semi-natural**.

3. To increase productivity (commercial value) in case of bad seed natural regeneration (or mainly coppice regeneration) of desirable species with high productivity and commercial value. If native species are planted, naturalness category will be defined by the intensity of further management regime and may vary from **semi-natural** forests to **plantations**. In case of enrichment with exotic species or native species with improved genotypes, it will be **plantations**.

To compare 2 proposed approaches of quantity characteristics of enrichment planting (ratio between planted seedlings and existing naturally regenerated seedlings; ratio between planted area and total area), it's necessary to remark that second approach isn't applicable in cases of randomized planting and/or the absence of soil treatment before planting (these cases, by the way, are enough reasons to consider the established stands as **semi-natural**).

Saying about the distinguishing of enrichment planting from other methods of regeneration, it will be expedient to consider that the planting of at least one seedling is the clear borderline between enrichment planting and all kinds of natural regeneration (including assisted natural regeneration).

To define the border between planting and enrichment planting, it will be useful to illustrate it with logic dependence between quantity of natural regeneration and the ratio (%) between planted seedlings and existing naturally regenerated seedlings (fig. 1).

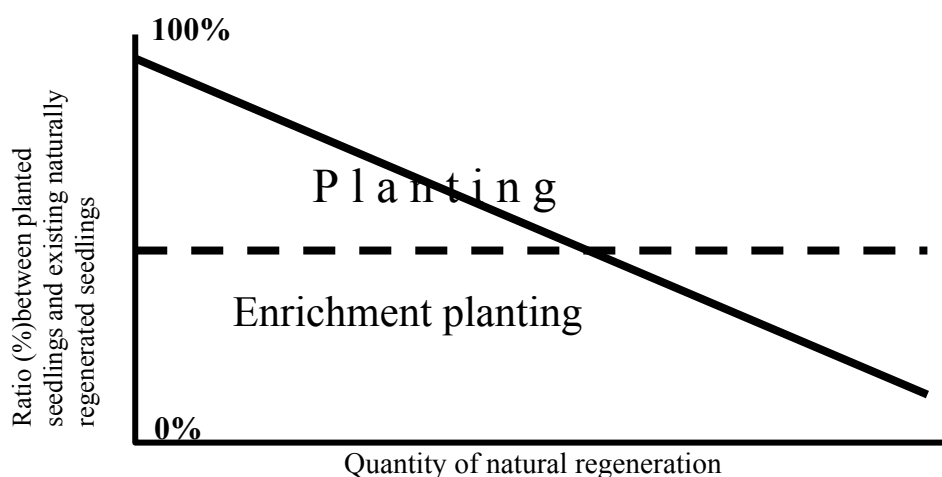


Figure 1. Logic dependence between quantity of natural regeneration and the ratio (%) between planted seedlings and existing naturally regenerated seedlings

The problem is to define the point on the line, which should be clear and enough border between 2 above-mentioned regeneration methods. In specific cases the location of this point depends on the type of forest ecosystem, desirable tree species composition, management function, etc. By default, the reasonable meaning could be consisted 50%. Another discussion issue is if we need to include the quantity of shoots and suckers to total quantity of natural regeneration.

Process	Native species						Exotic species					
	Natural regeneration	Coppicing	Assisted natural regeneration	Enrichment planting	Direct seeding	Planting	Natural regeneration	Coppicing	Assisted natural regeneration	Enrichment planting	Direct seeding	Planting
FAO/FRA	Primary	Semi-natural	Semi-natural	Semi-natural	Semi-natural	Plantation (productive/protective)	Semi-natural				Productive plantation	
	Modified						Secondary					
CBD	Primary	Secondary	Secondary	Secondary	Secondary	Plantation					Plantation	
	Secondary						Plantation					
	Primary						Primary				Plantation	
CBD (for Europe)	Primary						Secondary					
	Secondary						Plantation					
ITTO	Primary	Planted	Planted	Planted	Planted	Planted						
	Modified											
MCPFE	Undisturbed	Semi-natural	Semi-natural	Semi-natural	Semi-natural	Plantation					Plantation	
	bed						Semi-natural					
WCMC/CIFOR	Semi-natural											
	Undisturbed	Native species plantation	Native species plantation	Native species plantation	Native species plantation	Native species plantation					Exotic species plantation	
	bed											
	Disturbed											

Figure 2. Graphical imagination of definitions used to describe the continuum of forest origin and composition in the different processes.

The proposed approach for harmonization

Graphically imagination of the definitions of forests with different human intervention (simplifying some bad algorithmized places) in the proposed structure (establishment method and species origin) is represented on fig. 2.

It's necessary to pay attention to the next features of the figure:

- a lot of blanks, especially in cells of exotic species;
- some cells include different classes (usually 2, but even 3 for direct seeding and planting in CBD definitions for Europe).

In the process of further work, the next issues were implemented:

- to fulfill blanks with suitable classes of forest origin and composition to cover all continuum;
- to select criteria to divide different classes inside one cell.

Concerning first issue, the generalized data of definitions are shown in figure 3. From these data it's possible to compile the next continuum of definitions:

1. Primary / undisturbed
2. Modified / secondary / disturbed / semi-natural
3. Semi-natural / secondary
4. Planted / plantation / native species plantation / productive and protective plantation
5. Exotic species plantation / productive plantation

The last 2 classes may be joined in "Plantation" class with subdivision on the base of species origin ("native species plantation" and "exotic species plantation").

Terms "secondary" and "semi-natural" are repeated in 2 classes. To avoid ambiguity, it's better to use them for the name of the 3rd class.

Exotic species	Semi-natural			Exotic species plantation, productive plantation		
	Native species	Modified, secondary, disturbed, semi-natural	Modified, secondary, disturbed, semi-natural	Planted forests, plantation, native species plantation, productive and protective plantation		
Origin	Primary, undisturbed			Modified, secondary, disturbed, semi-natural		
Method of establishment	Natural regeneration	Coppicing	Assisted natural regeneration	Enrichment planting	Direct seeding	Planting

Figure 3. Generalized table of definitions

The differences between first 2 classes, where there are no differences in species origin and methods of establishment, were determined from the definitions of FAO/FRA, CBD, ITTO, MCPFE and WCMC/CIFOR.

FAO/FRA. The border between primary and modified natural forests is the absence/presence of the visible signs of human activity. Border with the next class of continuum (semi-natural forests) is the absence/presence of artificial reforestation (including assisted natural regeneration) and selective logging.

CBD means the inconsequential disturbance (but visible, may be) as a border between primary and secondary forests. More disturbed forests belong to the next class.

ITTO definition is rather dualistic. From the one side, the mentioning of “so little affected by hunting, gathering and tree cutting” does the definition very close to CBD definition. But the term “elastic capacity”, as the capacity to renew the initial structure, allows to identify the border between “Primary” and “Modified forests” in ITTO with the border between “Modified” and “Semi-natural forests” in FAO/FRA.

MCPFE means the “natural forest dynamics and the absence of known **significant** human intervention”. It allows to consider the border between “Undisturbed” and “Semi-natural forests” like something average between the corresponding borders in FAO/FRA and CBD.

WCMC/CIFOR. ‘Undisturbed forests’ class is rather wide. Its borders is possible to coincide with the border between FAO/FRA classes of “Modified natural” and “Semi-natural forests”.

The evident view of such analysis is shown in figure 4.

Processes	Classes – in upper rows Characteristic of border between classes – in bottom row		
FAO/FRA	Primary	Modified	Semi-natural
	visible signs		artificial reforestation
CBD	Primary	Secondary	
	inconsequential disturbance		
ITTO	Primary	Uncertainty	Modified
	so little affected by hunting, gathering and tree cutting		no excess of elastic capacity
MCPFE	Undisturbed	Semi-natural	
	absence of known significant human intervention		
WCMC/CIFOR	Undisturbed		Disturbed
	Significant areas of disturbance by peoples, including clearing, felling for wood extraction, anthropogenic fires, road construction, etc.		

Figure 4. Visualization of borders between first 2 classes

The propositions for harmonization are the next:

1. To modify the definitions of FAO/FRA “Primary forests” shifting the border like in CBD and ITTO definitions of “Primary forests” and MCPFE definition of “Undisturbed forests”

2. To decompose:
 - CBD definition of “Secondary forests”
 - ITTO definition of “Modified forests”
 - MCPFE definition of “Semi-natural forests”
similar to “Modified” and “Semi-natural forests” in FAO/FRA.
3. To split WCMC/CIFOR definition of “Undisturbed forests” according to borderline mentioned in point 1.

The propositions for the definitions above-allocated classes are the next:

1. **Primary / undisturbed forests** - naturally seed regenerated forests and some coppiced regenerated forests (in which coppicing is the main form of natural forest regeneration) or forests in which method of stand establishment is unknown, but structure is indistinguishable from naturally regenerated forests, with native species, without clearly visible signs of human activity, except inconsequential disturbance by indigenous and local communities living traditional lifestyles.
2. **Modified / disturbed forests** – naturally seed and coppiced regenerated (1st and 2nd generations) forests with clearly visible signs of human activity, with inconsiderable changed structure in the result of non-intensive forest management or exploitation for wood and/or non-wood forest products, wildlife or other purposes, but these changes don't exceed the elastic capacity of natural forest ecosystems.
3. **Semi-natural / secondary forests** – forests from native species, established through planting, enrichment planting, seeding, assisted regeneration or coppicing (3rd and more generations) or naturally regenerated forests with irreversibly changed structure in the result of intensive forest management.
4. **Planted forests / plantations** – established mainly for production of wood and non-wood goods by planting (enrichment planting sometimes) or/and seeding of 1 or 2 species even-aged forest stands of exotic species and intensively managed stands of native species usually with regular spacing.

Overview Presentation On Multilingual Aspects

Points for discussion, a few answers and suggestions

Renate Prüller

IUFRO-SilvaVoc Project on Multilingual Forest Terminology

Harmonisation has been explained in the previous Expert meetings including the background documentation to this meeting as

[H]armonization facilitates comparisons between existing definitions of related terms. It collects existing definitions, establishes linkages, identifies common elements, differences, incompatibilities and inconsistencies, as well as qualitative and, if possible, quantitative relationships. It may result in recommendations for modifications to one or several definitions which make them more compatible, consistent or even congruent.

It is important to keep this approach in mind, as it is also true for work on terms and definitions in a multilingual environment. The comparison and definition of relationships that took place between existing definitions in past meetings will now be extended in a similar way to a comparison between languages.

Before talking about phenomena that can be observed when it comes to comparing terms and definitions between two or more languages, I would like to reflect upon five questions that may also have come to your mind. The answers I am giving here should be considered as a starting-point as they will have to be adapted for each organization or process, and additional ideas and needs may show up.

1) Why multilingual?

Some of the organisations and processes involved in this harmonisation process have a mandate that encourages or mandates them to provide information in more than one official languages* with the aim to strengthen better understanding worldwide. Furthermore, it is fair to better integrate and give access to those parts of the world that to a large extent communicate in another language.

In light of the fact that English is more and more used as *lingua franca*** in the international dialogue, it is certainly easier and less expensive to maintain a monolingual context. At the same time, however, when doing so, we would lose also a component of diversity of thinking, of cultural background that is enriching international deliberations.

2) What more do we need than a translation?

From an outsider's perspective, truly there often are cases when a good translation will make no difference with regard to the final visible result. For the purpose of communicating and transferring

* UN organisations, like FAO, UNEP and UNFCCC use Arabic, Chinese, English, French, Spanish, Russian; IUFRO works with English, French, Spanish and German

** *Lingua franca*: A *lingua franca* is a language used by people of different native languages to communicate with each other. For example, during many international scientific conferences English is used for lectures and discussions. Some *linguae francae* are conglomerates of different languages, resulting in a *pidgin*.

information a good translation based on sound terminology is completely acceptable and sufficient. However, if we want others to use our commonly acquired and harmonized definitions for the forest-related key terms under discussion, it is important also to have a look on the terminology and the related definitions used in the respective linguistic environments. What is the cultural background or national particularities that make it difficult to understand the same thing when using the same words? Therefore there is a need to look behind the terms and the language equivalents, and disclose the content again. At this stage it will be possible to compare the content, i.e. the concept behind the words and attach the respective linguistic labels, i.e. the terms in use in the several languages. Therefore the work in the other languages needs to be done independently for each language group. And as a first step it needs to go away from a simple translation....

3) Is there a need to start from scratch in each language?

The past Expert meetings used the English language for the discussions and as a basis when comparing definitions among the Conventions and Processes. Therefore it is clear that English is and will continue to be the reference (pivot) language in this harmonisation process. The cumbersome work that has already been done need not to be repeated in all languages. However, independent work for each language will complement this work and possibly add new elements to the harmonisation process. As mentioned in the beginning, it means to start now with independent work within the language groups, reveal conceptual differences, compare the terms in use and document the results – similar to the explanation of harmonisation given above.

4) Multilingual terminology work in a nutshell

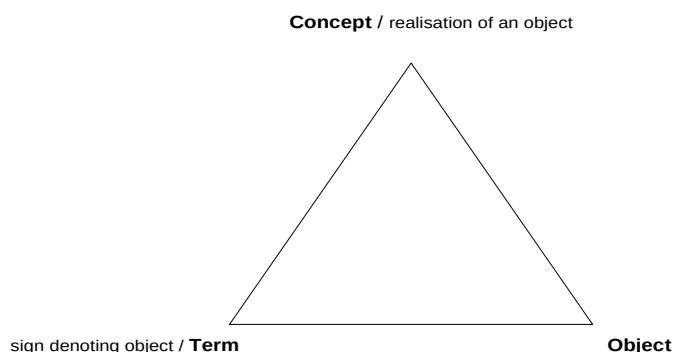


Figure 1: semiotic triangle (see Arntz/Picht/Mayer 2002:38)

The semiotic triangle (see figure 1) is known to most linguists, describing the relation between an object - items as they 'are' - the realisation or perception of the object by humans, and the sign used for denoting the perceived object. The terminologist calls the 'sign' a *term* and the realisation of an object, a *concept*. The aim of terminologists is to describe a concept and to define the relation between a concept, its related concepts and the corresponding terms. The resulting relations can be very complex, the organisation of terms has to be clearly structured to guarantee a maximum of usability, flexibility, and interchangeability.

-> **Equivalence** is or should be the principle underlying any bi- or multilingual terminology work. When there is equivalence between two languages, concepts correspond completely and exactly in these two languages, i.e. they are fully identical: there is only one concept, and the term in the source language and the term in the target language designate this one and only concept.

-> **Partial equivalence:** Often, rather than being totally equivalent, concepts in different languages correspond only partially. Where partial equivalence occurs, it is essential to determine the extent to which the term of the English (=source language) can be rendered by the term in the target language. In the context of the harmonisation process English is used deliberately as the source or reference language. In a general methodology the source and target language could theoretically be any language.

-> **No equivalence** or terminological gap: do not try to *force* a concept into other languages. A concept in a given language may be slightly different or even unavailable in other languages. In general, there are three options to solve the problem: a) by introducing the term in the source language (here English) into the other language through borrowing or loan translation, b) by forming a new term in the other language, i.e. a neologism or c) by a short and concise description of the concept.

-> **Collaboration of native-speaker** subject specialists and the use of a corpus of original texts, not of dictionaries nor translations, is of highest importance. Even more than in monolingual terminology projects, the establishment of multilingual equivalents and their authority strongly relies on teamwork.

5) How to proceed?

The attached Excel sheet contains the list of English key terms that have been subject to discussions in the past two Expert meetings and the additional ones that are dealt with in this meeting. Under each English term you will find equivalent terms in French and Spanish. These equivalents have been compiled from the documentation, often translations, available from the respective organisations, conventions or processes on their Web sites. There are columns for CBD, FAO/FRA, ITTO, UNFCCC/IPCC, Countries, IUFRO, and EU. This table is not at all intended to rank or evaluate the language equivalences, but is meant to show the differences and diversity of terms in use.

-> In a first step, it should be determined whether these terms are all

- denoting the same concept,
- synonyms in one language and equivalents to the English key term,
- full or partial equivalents to the English terms.

To do this, the definitions*** in English but also in the respective languages have to be considered closely. This will not only clarify the full meaning of the terms but also delimitate the terms among each other.

During the discussion other terms related to the indicated concepts and key terms may appear in the respective languages. It is also important that regional differences are mentioned, e.g. different terms used for the same concept in France and French-speaking African countries, or in Spain and Latin America, like for example *repoblación* [Es] and *forestación* [LA] in Spanish.

*** Definition: linguistic description of a concept, based on the listing of a number of characteristics

-> In a second step, once the equivalent terms and synonyms are identified, it should be determined whether there are suitable definitions in the working languages. These definitions may be:

- existing translations,
- improved translations or
- newly formulated definitions

Conclusion

I hope that this short introduction and suggestions related to multilingualism will help you in your endeavour to find and determine equivalents and corresponding definitions in other languages. This work which as such is new to this harmonisation process will be important in better integrating other language communities and contribute to give more visibility to this process on harmonising forest-related definitions.

References

Arntz, Reiner; Picht, Herbert; Mayer, Felix. 2002: Einführung in die Terminologearbeit. 4., gründlich überarbeitete Auflage. Georg Olms Verlag, Hildesheim, Deutschland, Zürich, Schweiz und New York, USA