

COST
Technical Committee “Forests and Forestry
Products“

COST Action E43

*Harmonisation of national forest inventories in
Europe: Techniques for Common Reporting*

MONITORING
PROGRESS REPORT

Period: from (June 2004) to (December 2005)

(Start date of the Action: June 10, 2004)

(December 31, 2005)

**This Report is prepared by the Management Committee of the Action and
presented to the relevant Technical Committee.**

**The report is a "cumulative" report, i.e. it is updated annually and covers the
entire period of the Action.**

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1. OVERVIEW: ACTION IDENTIFICATION DATA

COST Action E43

Harmonisation of national forest inventories in Europe:
techniques for common reporting

TC Recommendation: 27-29/11/2003

CSO Approval: 16-17/2/2004

Start date: 28/6/2004 ⁽¹⁾

Duration: 48

Extension: months

End date: 27/6/2008

First MC meeting: 28-29/06/2004

Last MC meeting: 19-20/09/2005

Final Report: (day/month/year) ⁽²⁾

Evaluation Report: (day/month/year) ⁽²⁾

TC Evaluation: (day/month/year)

Number of signatories: 27

Signatories and date of signature:

1	Austria	15/06/2004
2	Belgium	24/09/2004
3	Croatia	10/12/2004
4	Cyprus	11/06/2004
5	Czech Republic	07/07/2004
6	Denmark	10/06/2004
7	Estonia	10/06/2004
8	Finland	10/06/2004
9	France	10/06/2004
10	Germany	22/06/2004
11	Greece	27/06/2004
12	Hungary	07/07/2004
13	Iceland	09/11/2004
14	Ireland	28/06/2004
15	Italy	15/06/2004
16	Latvia	07/07/2004
17	Lithuania	29/07/2004
18	Netherlands	10/06/2004
19	Norway	03/09/2004
20	Portugal	05/10/2005
21	Romania	11/06/2004
22	Slovakia	28/07/2004
23	Slovenia	26/08/2004
24	Spain	13/07/2004
25	Sweden	22/05/2004
26	Switzerland	24/08/2004
27	United Kingdom	10/06/2004

Institutes of non-COST countries:

United States Department of Agriculture
Forest Inventory and Analysis (FIA) Program

Area:

Action Web site: <http://www.metla.fi/eu/cost/e43/index.html>

Chairperson:

*Title, name Prof. Dr. Erkki Tomppo
Tel.: +358-10-211 2170
Affiliation Finnish Forest Research Institute
Fax.: +358-10-211 2101
Postal Address Unioninkatu 40 A, FIN-00170 Helsinki, Finland
E-Mail: erkki.tomppo@metla.fi*

*P.O. code, City Helsinki
<http://www.metla.fi/>*

Country: Finland

TC Rapporteur: *Title, name, country*

External Evaluator: *Title, name, affiliation, country*

External Evaluator: *Title, name, affiliation, country*

- (1) Date of the first MC meeting.
- (2) When the report is received by TC Secretariat

2. OBJECTIVES

The objectives of the Action are:

1. To improve and harmonise the existing national forest resource inventories in Europe
2. To support new inventories in such a way that inventories will meet national, European and global level requirements in supplying up-to-date, harmonised and transparent forest resource information
3. To promote the use of scientifically sound and validated methods in forest inventory designs, data collection and data analysis
4. To provide examples of harmonised forest resource information about key parameters for Europe

The ultimate goal of the Action is to build up the forestry information services on the national level inventories in order to get maximised benefits from inventories and maximised advantage of local knowledge and requirements together with international requirements. The goal is also to maximise the synergy between NFIs and European and global level processes and policies that require forestry information.

To achieve its objectives, the Action will:

- Establish and maintain a forum for sharing experiences and new ideas, ensuring continuous improvement of the NFIs
- Work actively with harmonisation issues, in order to provide a core set of harmonised forest variables at regular intervals
- Cooperate within different projects for scientific development work within the field of data acquisition for sustainable multi-functional forestry
- Promote active and open dialogue with key organisations and openness to new requirements on forest data for emerging policy needs
- Assess methods for reporting and supplying comparable European level forest resource information
- Identify research needs for joint projects within the EU Framework Programmes and regional (as SNS - Nordic Forest Research Co-operation Committee) and national funding.

3. TECHNICAL DESCRIPTION AND IMPLEMENTATION

The objectives of the work will be met through the activities done in the three **Working Groups (WG)**, through seminars, workshops, Training courses and Short Term scientific missions. The Office Holders were elected in the first MC meeting in Brussels on June 28-29/ 2004. The work plans of the Action and the three working groups were modified and fine-tuned in the first Steering Committee (**SC**) meeting in Helsinki on July 15-16/ 2004. The SC meeting in Nogent-sur-Vernisson, France, on 30/9.-1/10/2004 proposed and the MC committee in Gembloux, Belgium on 21-22/10/2004 accepted the principle that the Action will provide, not only state-of-the-art reports of the harmonisation situations of NFIs in Europe and outlined tools to meet the harmonisation, but also some examples of harmonised basic forest resource estimates. This implies that some practical work and analysis have to be done by the Action and the WGs.

Main output of the Action is to collect and define reference definitions and concepts and to develop methods for obtaining harmonised results. Following procedure of working was agreed for all WGs.

- Analyse existing standards (TBFRA2000, FRA2005, MCPFE, IPCC GPG, CBD...) and the results of the questionnaires
- Identify the key parameters for which we define references

- Define references
- Design standardised result tables for each WG. These tables serve as harmonised European level forest inventory, forest carbon pool and forest biodiversity statistics
- Select the most essential tables (core tables)
- Collect the information of the core tables independently of the additional funding
- Evaluate how close countries are to the references, identify differences
- “Build bridges” for achieving standardised results
- Errors & reliability must be considered, methods for eliminating these biases and uncertainties must be developed.
- Countries may be asked which practices/definitions they could change

One concrete output of the Action is examples of harmonised results for some countries to be identified later. Linkage between Work Groups will be maintained by joint sessions and cooperation of the WG Chairpersons and the Action Chairs.

The three working groups are:

- WG1: Harmonised definitions and measuring practices.
- WG2: Harmonised estimation procedures for carbon pools and carbon pool changes.
- WG3: Harmonised indicators and estimation procedures for assessing components of biodiversity with NFI data.

Task Force groups (TF) and sub-groups have been established to make to work more efficient.

Technical description and implementation by WGs

WG1 established a task force group (sub working group) for preparing the questionnaire. It began its work after Hørsholm meeting and ended with Florence meeting. The members were: Adrian Lanz (Switzerland, Leader), Martin Cerný (Czech Republic), Stein Tomter (Norway), Karl Gabler (Austria), Ulf Söderberg (Sweden), Kari T. Korhonen (Finland), Thierry Belouard (France), Piermaria Corona (Italy), Patrizia Gasparini (Italy), Jacques Rondeux (Belgium), Vivian Kvist Johansen (Denmark), Jean-Christoph Hervé (France). The goal was to prepare a questionnaire on tree and forest definitions, measurement techniques, volume functions, and sampling designs used for total growing stock of standing living trees and total volume of standing dead trees estimation in European NFIs.

The -working mode was TF meeting in Gembloux and home work with information exchange through emails. The questionnaire was accepted by full WG1 at Florence meeting.

WG2 also established a temporary TF group to prepare the questionnaire of the state-of-the-art of Carbon reporting in Europe. The focus was on LULUCF (Land Use, Land Use Change and Forestry) sector of UNFCCC (United Nations Framework Convention on Climate Change) and UNFCCC/KP (UNFCCC/Kyoto Protocol) reporting. The members of the group were Göran Ståhl (Sweden, leader), Mark Broadmeadow (United Kingdom), Emil Cienciala (Czech Republic), Antoine Colin (France), Karsten Dunger Germany) and Erkki Tomppo (Finland).

WG3 decided to establish three working subgroups.

Subgroup 1: developing of the table questionnaire

Subgroup 2: forest type classification
Subgroup 3: statistical issues.

Members of the subgroup 1 are: Jan-Erik Nielsen, (Norway, leader), Annemarie Bastrup-Birk (Denmark), Anna-Lena Axelsson (Sweden), Catherine Cluzeau (France), Urs-Beat Brändli (Switzerland), Elmar Hauk (Austria) and Gherardo Chirici (Italy). The goal of subgroup 1 has been to structure the list of forest biodiversity indicators chosen from the CBD and MCPFE indicators. The list includes indicators which are measured or assessed directly or indirectly by the National Forest inventories. The purpose of the questionnaire is to get information on forest biodiversity inventorying in order to be able identify similarities and gaps between the different countries. Gherardo Chirici together with some of his team will develop a database based on the table questionnaire in order to treat the questionnaire results in an efficient way.

Members of the subgroup 2 are: Anna-Lena Axelsson, Jan-Erik Nielsen, Nadia Barsoum, Anna Barbati (Italy), Iciar Alberdi Asensio (Spain). The goal of the subgroup 2 is to implement a forest type approach in the work of the WG3. The concept of 'forest type' is seen as a means to facilitate the harmonisation of the 'National Forest Inventory' assessment and reporting. The subgroup will be working with 12 main forest types, which will be further sub-divided in accordance to the work done under the BEAR project. The subgroup will submit a list of forest types and maps of eco-regions to WG2.

The subgroup 3 is tentatively led by Dieter Pelz (Germany). The members will be selected later.

Furthermore, it was agreed that harmonisation aspects of some key variables was to be prepared by nominated persons at the Freiburg meeting. In addition, some WG members were appointed to identify BD variables specific for some countries and analyse potential harmonisation problems to be discussed at the next meeting. The variables and persons in charge are: age (Anna-Lena Axelsson, Sweden and Jean-Erik Nielsen, Norway), veteran trees and microsities (Nadia Barsoum, UK), deadwood (Anna-Lena Axelsson, Sweden), forest types (Anna Barbati, Italy, Iciar Alberdi Asensio, Spain).

All working group meetings have been used for concrete work with the development of the table questionnaire and for analysing and selecting core variables. The second detailed questionnaire on definitions and inventory methods is also developed at the working group meetings. Most countries have been represented in all meetings at Hoersholm, Gembloux and Florence. Refinements and clarifications as well as more administrative work have been done via e-mail contacts.

Secretarial services

The Science Officer of the Action, Mr. Günter Siegel, serves as a Meeting Secretary in MC meetings and writes the minutes. In the first MC meeting in Brussels, Dr. Niall Farrelly (Ireland) expressed his readiness to serve as a Meeting Secretary in the MC meetings at which the Science Officer will not be present. After Dr. Farrelly left, Mr. Graham Bull from Scotland's Forest Research was elected as a new meeting secretary at the Freiburg meeting in September 2005.

During the joint WG meetings, separate WG meetings and SC meetings, the meeting secretaries are elected separately for each meeting. The other secretarial services during the meetings are provided by the hosting organisations of the meeting. Practical arrangements before the meetings have been done by the hosting institute and Metla. Other secretarial work related to the Action was arranged by Metla.

4. PARTICIPATION AND COORDINATION

4.1 Management Committee

Chairperson:

Prof. Dr. Erkki TOMPPO

Finnish Forest Research Institute

Unioninkatu 40 A, FIN-00170 HELSINKI, FINLAND

Tel: +358 10 211 2170. Fax: +358 10 211 2101, Email: erkki.tomppo@metla.fi

Vice Chairperson:

Dr. Klemens SCHADAUER

Bundesamt und Forschungszentrum für Wald

Seckendorff-Gudent Weg 8, A-1131 WIEN, AUSTRIA

Tel: +43 1 87838 1226, Fax: +43 1 87838 1251, Email: klemens.schadauer@bfw.gv.at

Science Officer:

Mr. Günter SIEGEL

COST Office

149 Avenue de Louise 149, PO Box 12, B-1050 Brussels, BELGIUM

Tel: +32 2 533 38 24, Fax: +32 2 533 38 90, Email: gsiegel@cost.esf.org

Meeting Secretary:

Mr. Graham BULL

Woodland Surveys Unit

Biometrics, Surveys and Statistics Division

Forest Research, Northern Research Station

Roslin, Midlothian, EH25 9SY

SCOTLAND

Tel: +44 (0)131 445 6914, Fax: +44 (0)131 445 5124

Email: graham.bull@forestry.gsi.gov.uk

National Members of the Management Committee

Austria: Dr. Klemens SCHADAUER, Bundesamt und Forschungszentrum für Wald

Belgium: Prof. Jacques RONDEUX, Faculté des Sciences Agronomiques de Gembloux

Croatia: Mr. Mislav Vedris Mario BOŽIC, University of Zagreb
Mr. Željko GALIC, University of Zagreb
Mr. Nikola LUKIC, University of Zagreb

Cyprus Dr. Loizos LOIZOU, Ministry of Agriculture, Natural Resources and Environment
Forestry Department

Czech Republic

Dr. Martin CERNÝ, Institute of Forest Ecosystem Research Limited

Dr. Emil CIENCIALA, Institute of Forest Ecosystem Research Limited

- Denmark:** Dr. Annemarie BASTRUP-BIRK, Royal Veterinary and Agricultural University
Forest & Landscape Denmark
Dr. Vivian Kvist JOHANNSEN, Centre of Forests, Landscape and Planning
- Estonia:** Mr Veiko ADERMANN, Centre of Forest Protection and Silviculture, the Department
of National Forest Inventory
- Finland:** Dr. Kari T. KORHONEN, Finnish Forest Research Institute, National Forest
Inventory, Joensuu Research Station
Prof. Dr. Erkki TOMPPONEN, Finnish Forest Research Institute, National Forest
Inventory, Vantaa Research Station
- France:** Dr. Claude VIDAL, Inventaire Forestier National
Mr. Jean WOLSACK, Inventaire Forestier National
- Germany:** Dr. Gerald KÄNDLER, Forest Research Institute of Baden-Württemberg, Department
of Biometrics
Dr. Heino POLLEY, Federal Research Centre for Forestry and Forest Products
Institute for Forest Ecology and Forest Assessment
- Greece:** Dr. Ioannis MELIADIS, National Agricultural Research Foundation Forest Research
Institute
- Hungary:** Mr. László KOLOZS, State Forest Service
- Iceland:** Mr. Bjarki Thór KJARTANSSON, Icelandic Forest Research, c/o Agricultural
Research Institute (RaLa)
Mr. Arnór SNORRASON, Icelandic Forest Research
- Ireland:** Dr. Niall FARRELLY, Forest Service Department of Agriculture and Food
- Italy:** Prof. Marco MARCHETTI, Accademia Italiana di Scienze Forestali
Dr. Vittorio TOSI, ISFA
- Latvia:** Mr. Jurgis JANSONS, Latvia State Wood Research Institute 'Silava'
- Lithuania:** Dr. Albertas KASPERAVICIUS, Deputy Director, Lithuanian Service of Forestry
Prof. Andrius KULIEŠIS, Director, Lithuanian Service of Forestry
- Netherlands:**
Dr. Gerard (G.M.) DIRKSE, Alterra, Centrum Landschap
Dr. Gert-Jan (G.J.) NABUURS, Alterra (Centrum Ecosystemen)
- Norway:** Dr. Stein M. TOMTER, Norwegian Institute of Land Inventory
- Portugal:** Dr. Susana ABREU DIAS, Instituto Superior de Agronomia
Mr. Paulo ZUZARTE GODINHO, National Institute for Agrarian and Fisheries
Research

Romania: Mr. Ovidiu BADEA, ICAS
Mr. Gheorghe MARIN ICAS

Slovak Republic:

Dr. Martin MORAVCIK, Forest Research Institute, Department of Forest Management and Monitoring

Slovenia: Prof. Milan HOCEVAR, Slovenian Forestry Institute

Spain. Dr. Iciar ALBERDI ASENSIO, Inventario Forestal Nacional, D. Gral. para la Biodiversidad
Dr. José A. VILLANUEVA ARANGUREN, Servicio de Inventario Forestal D. Gral. para la Biodiversidad

Switzerland:

Dr. Peter BRASSEL, Abteilung Landschaftsinventuren, Eidg. Forschungsanstalt für Wald, Schnee und Landschaft (WSL/FNP)
Dr. Adrian LANZ, Abteilung Landschaftsinventuren, Eidg. Forschungsanstalt für Wald, Schnee und Landschaft (WSL/FNP)

United Kingdom:

Mr. Simon GILLAM, Economics and Statistics, Forestry Commission
Dr. Mark LAWRENCE, Head of Surveys and Measurement Group, Biometrics, Surveys and Statistics Division, Forest Research, the executive research Agency of the Forestry Commission

4.2 Participating Institutes

Austria: Bundesamt und Forschungszentrum für Wald (BFW), Department: Austrian Forest Inventory

Belgium: Faculté des Sciences Agronomiques de Gembloux

Croatia: University of Zagreb

Cyprus Ministry of Agriculture, Natural Resources and Environment Forestry Department

Czech Republic: Institute of Forest Ecosystem Research Limited
Forest Research Institute, Czech Republic

Denmark: Royal Veterinary and Agricultural University, Forest & Landscape Denmark, Centre of Forests, Landscape and Planning

Estonia: Centre of Forest Protection and Silviculture, The Department of National Forest Inventory

Finland: Finnish Forest Research Institute, National Forest Inventory

France: Inventaire Forestier National

- Germany:** Forest Research Institute of Baden-Württemberg, Department of Biometrics
Federal Research Centre for Forestry and Forest Products, Institute for Forest Ecology
and Forest Assessment
- Greece:** National Agricultural Research Foundation Forest Research Institute
- Hungary:** Hungarian State Forest Service, Forest Management and Mapping Department
- Iceland:** Icelandic Forest Research, c/o Agricultural Research Institute (RaLa)
- Ireland:** Forest Service Department of Agriculture and Food Wexford
- Italy:** Accademia Italiana di Scienze Forestali
Istituto Sperimentale per l'Assestamento Forestale e per l'Alpicoltura (ISAFA), Forest
and Range Management Research Institute
- Latvia:** Latvia State Wood Research Institute 'Silava'
Ministry of Agriculture of Latvia, Forest Resources Department
- Lithuania:** Lithuanian Service of Forestry
- Netherlands:** Alterra, Centrum Landschap
- Norway:** Norwegian Institute of Land Inventory
- Portugal:** Instituto Superior de Agronomia
National Institute for Agrarian and Fisheries Research
- Romania:** Forest Research and Management Institute (ICAS), Bucharest, Romania. Biometrics
and Forest Inventory Labs
- Slovak Republic:** Forest Research Institute, Department of Forest Management and Monitoring,
Department of Forestry Policy, Economics and Forest Management Planning
- Slovenia:** Slovenian Forestry Institute, Forest Inventory and Geomatics Department
- Spain:** Servicio Inventario Forestal Nacional, D. Gral. para la Biodiversidad
- Sweden:** Swedish University of Agricultural Sciences (SLU), Dept. of Forest Resources and
Geomatics
- Switzerland:** Abteilung Landschaftsinventuren, Eidg. Forschungsanstalt für Wald, Schnee und
Landschaft (WSL/FNP), Landscape Inventories Section
- United Kingdom:** Forestry Commission, Forest Research, Economics and Statistics Division,
Surveys and Statistics Division & Woodland Surveys Unit

4.3 Meetings of the Management Committee

28th-29th June 2004	Brussels, Belgium
9th September 2004	Hørsholm, Denmark
2nd December 2004	Florence, Italy
14th-15th April 2005	Vienna, Austria
19th-20th September 2005	Freiburg, Germany

4.4 Meetings of the Working Groups

Work Group 1:

9th-10th September 2004	Hørsholm, Denmark
21st-22nd October 2004	Gembloux, Belgium
2nd-3rd December 2004	Florence, Italy
14th-15th April 2005	Vienna, Austria
19th-20th September 2005	Freiburg, Germany

Work Group 2:

9th-10th September 2004	Hørsholm, Denmark
21st-22nd October 2004	Gembloux, Belgium
2nd-3rd December 2004	Florence, Italy
14th-15th April 2005	Vienna, Austria
2nd- 4th May 2005 (Task Group)	Graz, Austria
19th-20th September 2005	Freiburg, Germany

Work Group 3:

9th-10th September 2004	Hørsholm, Denmark
21st-22nd October 2004	Gembloux, Belgium
2nd-3rd December 2004	Florence, Italy
14th-15th April 2005	Vienna, Austria
19th-20th September 2005	Freiburg, Germany

4.5 Short-term scientific missions

Work Group 1:

Analysis of the state-of-the-art of National Forest Inventories in European countries

Date: 7th- 24th March 2005

Host: Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Birmensdorf, Switzerland

Nationality of Scientists:

Dr. Adrian LANZ, Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Switzerland

Dr. Lucio DI COSMO, Italian National Forest Inventory, Trento, Italy

Dr. Thomas GSCHWANTER, Federal Research and Training Centre for Forests, Natural Hazards and Landscape, Vienna: Department of Forest Inventory, Vienna, Austria

Mr. Nicolas ROBERT, French National Forest Inventory, Nogent-sur-Vernisson, France

Topics: The mission focused on three main thematic issues: definition and measurement of forest area, definition and measurement of trees and tree volume, and the sampling design of NFIs in 20 European countries. Review and synthesis of the current state-of-the-art were produced.

Analysis and reporting of the state-of-the-art questionnaire

Date: 16th July- 5th August

Host: Finnish Forest Research Institute, Helsinki, Finland

Nationality of Scientists:

Prof. Erkki TOMPPO, Finnish Forest Research Institute, Helsinki, Finland

Dr. Lucio DI COSMO, Italian National Forest Inventory, Trento, Italy

Dr. Thomas GSCHWANTER, Federal Research and Training Centre for Forests, Natural Hazards and Landscape, Vienna: Department of Forest Inventory, Vienna, Austria

Mr. Nicolas ROBERT, French National Forest Inventory, Nogent-sur-Vernisson, France

Dr. Adrian LANZ, Swiss Federal Institute for Forest, Snow and Landscape Research (WSL), Switzerland

Dr. Claude VIDAL, French National Forest Inventory, Nogent-sur-Vernisson, France

Topics: The mission analysed the answers to the revised WG1 questionnaire, created the first proposals for the concepts called reference. The mission also made first studies to built-bridges from forest inventory estimates produced with definitions not in the reference to the estimates based on the reference. The mission made proposals, recommendations and presentations to Freiburg Joint Working Group meeting on 19-20 September 2005.

Work Group 2:

Analysis of the state-of-the-art of national strategies for greenhouse gas emission inventory in European countries

Date: 7th- 12th March 2005

Host: Department of Forest Resource Management and Geomatics Swedish University of Agricultural Science (SLU), Umeå, Sweden

Nationality of Scientists:

Prof. Göran Ståhl, Department of Forest Resource Management and Geomatics Swedish University of Agricultural Science (SLU), Umeå, Sweden

Dr. Ass. Prof. Emil CIENCIALA, IFER - Institute of Forest Ecosystem Research, Czech Republic

Karsten DUNGER, German Federal Research Centre for Forestry and Forest Products Hamburg, Germany

Arnór SNORRASON, Icelandic Forest Research, Reykjavik, Iceland.

Dr. Hans Petersson, Swedish University of Agricultural Science (SLU), Sweden

Topics: The mission analysed the state-of-the-art of national strategies for Greenhouse Gas emission inventory in European countries with the adopted methodological guidelines of the IPCC (GPG LULUCF) for the reporting under UNFCCC and its Kyoto Protocol. The state-of-the-art analysis was based on questionnaires prepared by the WG2 and responded by countries (19). Review and synthesis of the current state-of-the-art were produced.

Work Group 3:

Analysis and reporting of the state-of-the-art questionnaire

Date: To be held in early 2006

5. RESULTS

In autumn 2004, NFI descriptions were compiled by the experts from 21 countries (Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Norway, Romania, Slovak Republic, Slovenia, Sweden, Switzerland and the United Kingdom). The descriptions include information about history of the NFI, sampling procedures, estimation techniques, data management, reporting, quality assurance and the relation of individual NFIs to other inventories and data.

A number of short term scientific missions and working group meetings were conducted throughout 2005 in which scientists collaborated intensively in evaluating responses from questionnaires designed in 2004, reviewing international recommendations, drafting a report on current definitions and management practices, and proposing core variables for study. In addition, harmonisation guidelines for impact studies were initiated in conjunction with the pilot studies and harmonisation options and alternatives were identified. The first proposals for the concept of *reference* were drafted.

5.1 Work Group 1: Harmonised Definitions and Measurement Practices

The objective for WG1 to date has been to discuss detailed definitions and measurement or assessment protocols, in order to identify causes of discrepancy between different NFI outputs and discuss of harmonisation. A report synthesizing current definitions and measurement practices in the NFIs and European recommendations and information needs based on international agreements and processes was produced.

The first STSM held in Birmensdorf, Switzerland, analysed and compared current definitions and methods utilised in national forest inventories (NFIs) in Europe on the basis of NFI descriptions and NFI questionnaires provided by WG1 experts during autumn 2004 and spring 2005. In some cases, additional information was obtained from the EFICS study, UNECE/FAO and MCPFE documents. The analysis focused on three main thematic issues: definition and measurement of forest areas, definition and measurement of trees and tree volume, and the sampling design of NFIs. The efforts produced a first draft for a comprehensive report on standards and methods in European NFIs.

The second STSM was held in Helsinki and the creation of precise *references* seemed to be the most important issue before building bridges from individual national results to common European results. We have two sources that must be taken into account for creating references: National definitions used by individual NFIs on the one hand and definitions that exist at international level like GFRA 2000, TBFRA 2000, GFRA 2005 and IPCC on the other hand. Considering these available definitions, the parameters needed for establishing a reference have to be determined in a first step. Parameters that appear in all definitions are especially recommended to be used. Other frequent parameters can be included to clarify or to enhance the reference.

WG1 has held two productive STSM which included the participation of young scientists. Whilst the work load for the first STSM was greatly underestimated, a productive second STSM ensured that WG1's agenda corresponds to its planned timetable.

5.2 Workgroup 2: Harmonised estimation procedures for carbon pools and carbon pool changes

The focus of WG2 is harmonization of definitions and measurement procedures of those inventory variables that are related to the estimation of forest carbon pools and changes in carbon pools. The Action interacts with IPCC work, specifically on the currently adopted methodological material of “Good practice guidance” for emission inventory of the LULUCF (Land Use, Land-Use Change and Forestry) sector.

In 2005, the major goal of WG2 was to evaluate the state of the art in European carbon inventory under the Climate Convention (UNFCCC – United Nation Framework Convention on Climate Change), current utilization of data from the NFI programs in the emission inventory of the LULUCF sector and issues related to the accounting of forestry activities under the Kyoto Protocol of the Climate convention. Therefore, WG2 prepared and disseminated a specific questionnaire, which was evaluated during a short-term scientific mission (STSM) in Umea, Sweden in March 2005. The questionnaire covered items related to land-use definitions, estimation of five ecosystem carbon pools and their changes and the requirements related to the Kyoto Protocol. The questionnaire confirmed the key importance of NFI programs for the assessment of carbon pools and their changes as required by the Climate Convention and its Kyoto Protocol. The questionnaire identified fundamental differences among the individual European countries. From this respect, the Action E43 was found very timely and important to aid carbon estimation and reporting in comparable manner.

WG2 decided to prepare a follow-up questionnaire to be distributed in early 2006, which would focus on several methodological issues that have been under revision in the current year. Additionally, the decisions regarding Kyoto Protocol voluntary activities should already be known and thereby also analyzed by the questionnaire update.

Parallel to the above activity, WG2 also works on definitions and their harmonization. The ambition of this task is to elaborate reference definitions on the basis of those given by the IPCC Good Practice Guidance in relation to the data and information available from the NFI programs. This task will be elaborated during 2006.

The progress of WG2 agenda was in line with the planned timetable. One additional item included ad hoc was the identified need of the questionnaire revision, which was determined by the specific timetable of the emission inventory and the ongoing methodological implementation of IPCC Good Practice Guidance in 2005. No other problems were encountered in the working agenda of WG2 in 2005.

WG2 is devoted to motivating and attracting young scientists to take responsibility of the particular items of the agenda. The realized STSM also included several young scientists and more involvement of young scientists is planned ahead for the next year.

5.3 Workgroup 3: Harmonised indicators and estimation procedures for assessing components of biodiversity with NFI data

The main task of WG3 is to identify possibilities of measuring components of biodiversity in the context of large area forest inventories in such a way that the results are comparable over vegetation zones. Biodiversity is commonly divided into genetic, species and ecosystem diversity as well as

functional diversity. The key components by ecosystems and vegetation zones will be identified. Harmonised definitions and measurement practices will be sought.

In 2005, the major objective for working group 3 was to select the indicators and variables for analysis, design questions and incorporate responses through a rigorous process and produce an online database based on the responses to the online questionnaire. Thus, WG3 continued to prepare and concluded open online questionnaire on the 42 most important and generally available, biodiversity related variables in NFIs containing already more than 9000 records. The system allows online analysis and integrates a component to declare (and analyse) the importance and feasibility of variables in a participative way. Based on the responses to the questionnaire, seven core variables were selected taking into account other activities in the field like CBD and MCPFE (reporting) on one side, and related projects like COMMON, BioSoil, ForestBiota on the other side.

Templates for detailed description of definitions and methodologies of the selected core variables are in the process of being prepared. The report on the first questionnaire will be completed during the STSM in January 2006. The second questionnaire will be finished ready for NFI expert responses in 2006. Forest type classification will be treated by WG2.

A short term scientific mission was scheduled for October 2005 in which country reports and publications were to be compiled, however, this had to be postponed to early 2006 due to inadequate funding and the request to elaborate responses from the online questionnaire before a productive STSM could be organised. Consequently, the progress of WG3 corresponded to the planned timetable until September 2005. We do not anticipate that this will lead to a serious delay of results.

6. DISSEMINATION OF RESULTS

6.1 Publications and Reports

A total of 7 publications by both the management committee and working groups have been compiled to date. Please refer to the Annex for a detailed list of COST E43's publications and reports.

6.2 Conferences and Workshops

UNECE/FAO Team of Specialists on “*Monitoring forest resources for SFM in the UNECE Region*”. Inaugural meeting of the Team of Specialists *Geneva, Palais des Nations, 25-27 April 2005*

COST E43 Presentations by Prof. Erkki Tomppo & Dr. Claude Vidal

DEXA'05 Workshop FEIDSS FEIDS'05

Forest and Environmental Information and Decision Support Systems (August 26 2005, Copenhagen)

Workshop Keynote: Jes-s San-Miguel-Ayanz, Director, Institute for Environment and Sustainability, European Commission - DG Joint Research Centre, LMU - INFOREST.

"Harmonisation policies and initiatives in the EU, 2005 and on..."

Invited Speakers:

Erkki Tomppo, Coordinator, NFI Finland: Project Leader;

Research and development of forest inventory methods, Metla, Finland;

"Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting"

A number of COST Action E43 members were invited to present COST E43 and examples of European NFIs at the United States' **7th Annual Forest Inventory and Analysis Symposium**. (3rd-6th October 2005, Portland, USA¹) Abstracts of presentations are available in the Symposium Proceedings.

COST E43 Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting, organised the following training course for young scientists:

"Up-to-date technology for ground-based survey of national forest inventories" (9th-11th October 2005 Institute of Forest Ecosystem research (IFER), Czech Republic)

In 2005 WG2 participated in the following the international conferences

- i) „Land-use Related Choices under the Kyoto Protocol Obligations, Options and Methodologies for Defining "Forest and for Selecting Activities under Kyoto Protocol Article 3.4“ (2-4 May 2005, Graz, Austria)².
- ii) „Improving the Quality of Community GHG Inventories and Projections for the LUCF Sector“ (22-23 September 2005, Joint Research Centre (JRC), Ispra, Italy)³.

WG2 participants presented two oral presentations under the event i) above and one presentation under the event ii) as above.

6.3 Web site

The COST E43 web site is hosted by Metla at URL <http://www.metla.fi/eu/cost/e43/>. The site was opened 30 August 2004 and it is maintained by Mr. Kai Mäkisara from Metla. It currently provides public information about the Action's activities and results. It also includes a restricted subtree for internal documents of the Action. The site will be gradually expanded to present the results of the work done and results to be achieved within the Action.

6.4 Scientific and Technical Co-operation

Co-operation was established with the CARBOEUROPE Accompanying Measure which coordinates research projects within the CarboEurope cluster by the formation of a steering committee for regular exchange of information, harmonisation of research and synthesis of achieved results across the projects and scales. The CarboEurope-Cluster consists of eight different projects, which will work closely together in order to reach an overall understanding of the carbon cycle.

Of these Carbo-Europe Cluster, COST E43 and WG2 has been dynamic in collaborating and establishing co-operation Joanneum Research who coordinate the CARBO-INVENT project of 14 partners from 10 countries. CARBO-INVENT is a Joint International Project for identifying,

¹ See <http://www.fia.fs.fed.us/symposium/> for complete programme and presentations.

² See www.joanneum.at/CarboInvent/workshop/workshop02.html for a complete agenda and presentations.

³ Viz ghgdata.jrc.it/lucf/lucfmain.cfm pro plný program a uvedené prednášky.

developing and testing methods for assessment of carbon (C) stock changes in forests at national/EU levels. CarboInvent is a shared-cost project co funded by the Research DG of the European Commission within the RTD activities of a generic nature of the Environment and sustainable development sub-programme (5th Framework Programme).

The application for membership in the COST Action E43 by the United States Department of Agriculture, Forest Inventory and Analysis (FIA) was presented to the Management Committee meeting held in Freiburg on the 19th September 2005. The decision was approved and co-operation has been established with the USA's FIA programme currently represented by Dr. Ron McRoberts.

An official invitation to join the COST Action E43 has been extended to Mr James Barton, Programme Leader for the Carbon Monitoring System under the Ministry for the Environment, New Zealand. The invitation has, to date, been unofficially accepted and membership is expected in early 2006.

6.5 Transfer of results

At a national level, National entities like research institutes, universities and governments, are the expected end-users of the results from the COST Action E43. These national entities also create and use the information generated and scientists from these member national bodies are part of the COST E43 team. Therefore, the national dissemination plan is intact given that participants are active in the COST Action and their National Forest Inventory.

At an international level, the end users are expected to be the Joint Research Centre (JRC), UNECE/FAO, MCPFE and the UNFCCC. Several participants and a management committee member in COST E43 are directed employed by JRC. Furthermore, several tenders under the JRC have been applied for through COST E43, if these tenders are successfully approved, an optimal transfer of results should occur, but this is still contingent on the final decision by JRC.

UNECE/FAO, MCPFE and the UNFCCC are and will be, end-users of the information from the COST E43 Action. These international bodies will compile information from the national bodies.

Several meetings and discussions have been held with the European Commission, DG ENV, Director Robert Flies, IPCC Forest, Chairman, Prof. Michael Köhl and DG Joint Research Centre, Director Guido Schmuck and Dr. Jesus San-Miguel-Ayanz concerning the establishment of European Forest Monitoring Mechanism. E43's work provides good basis and serves as a starting point for that type of body.

6.6 Contacts in the ERA

Joint Research Centre (JRC)
European Environment Agency (EEA)

7. ECONOMIC DIMENSION

List estimate of total manpower expressed in person-year dedicated to the activities of the Action for each year and the total duration of the Action.

List funds received from the COST budget for each year and for the entire duration of the Action utilised for Secretariat, Publications, Workshops and Seminars, MC meetings, Short-Term scientific missions, other and total.

7.1 Total Manpower by Meetings and Working Groups

Management Committee Meetings

Date	Place	Days	Number of Participants
28th-29th June 2004	Brussels, Belgium	22	22
9th September 2004	Hørsholm, Denmark	5	20
2nd December 2004	Florence, Italy	5	19
14th-15th April 2005	Vienna, Austria	8	30
19th-20th September 2005	Freiburg, Germany	7	32

Steering Committee Meetings

Date	Place	Days	Number of Participants
15th-16th July 2004	Helsinki	16	8
30th Sept-1st October	Nogent-sur-Vernisson	16	8
2nd-3rd December 2004	Florence	2	8
17th-18th March 2005	Birmensdorf	18	9
28th-29th July 2005	Helsinki	22	11

In addition, 2 person-days were spent for the preparation of each meeting. In total 121 person-days were dedicated to Management committee and Steering Committee meetings to date.

The manpower dedicated to work group meetings are:

Work Group 1:

2004	Number of Days	Tasks/Meetings	Number of Participants
	58 days	Hørsholm, Denmark	29
	26 days	Gembloux, Belgium (Task force)	13
	42 days	Florence, Italy	21
	63 days	NFI descriptions from 21 countries	
	12 days	NFI presentations from 4 countries	
	4 days	Work Plan	
	6 days	Preparation of meetings	
	10 days	WG1 questionnaire drafts	
	10 days	WG1 questionnaire reviews	
2005	58 days	Vienna, Austria	24 members, 6 guests
	72 days	Brimensdorf, Switzerland STSM	4
	88 days	Helsinki, Finland STSM	4 (+2 part-time)
	56 days	Freiburg, Germany	23

Work Group 2:

2004	Number of Days	Tasks/Meetings	Number of Participants
	40 days	Hørsholm, Denmark	20
	10 days	Gembloux, Belgium (Task force)	5
	37 days	Florence, Italy	19 participants
	13 days	Personal and institutional introduction	26
	20 days	WG2 questionnaire from 10 countries	
	4 days	WG2 Work Plan	
	10 days	WG2 Preparation of meetings	
	10 days	WG2 questionnaire drafts	
	8 days	WG2 questionnaire reviews	
2005	28 days	Umeå, Sweden STSM	4
	46 days	Vienna, Austria	19 members, 2 guests
	12 days	Graz, Austria (Task force)	4
	52 days	Freiburg, Germany	23

Work Group 3:

2004	Number of Days	Tasks/Meetings	Number of Participants
	46 days	Hørsholm, Denmark	23
	34 days	Gembloux, Belgium (Task force)	17
	34 days	Florence, Italy	17
	3 days	WG3 Work Plan	
	10 days	WG3 Preparation of meetings	
	14 days	WG3 questionnaire drafts	
	14 days	WG3 database	
	10 days	WG3 questionnaire reviews	
2005	46 days	Vienna, Austria	20 members, 2 guests
	38 days	Freiburg, Germany	17 members

The estimated manpower for the work groups for the year 2005 is 496 days.

The cumulative manpower over the entire project is 4.854 person-years.

7.2 COST E43 Cumulative Budget

The funds received from COST budget for 2004 and 2005 are given by the meetings in the table below. It is also the total COST funding due to the fact that the meetings are the only activities which have required COST funding so far.

E43	Date	Meeting	Amount	Status	Total
2004	28/06/2004	Brussels (B)	16593	PAID	
	15/07/2004	Helsinki (FIN)	4800	APPROVED	
	09/09/2004	Hørsholm (DK)	53250	APPROVED	
	30/09/2004	Nogent-sur-Vernisson (Paris) (F)	6000	APPROVED	
	21/10/2004	Gembloux (B)	24000	APPROVED	
	05/11/2004	Brussels (B)	1200	APPROVED	
	02/12/2004	Florence (I)	45000	APPROVED	
					150843
2005	17/03/2005	Birmensdorf (CH)	4513	APPROVED	
	14/04/2005	Vienna (AT)	43641	APPROVED	
	29/04/2005	Brussels (B)	420	APPROVED	
	02/05/2005	Graz (AT)	4440	APPROVED	
	28/07/2005	Helsinki (FIN)	5560	APPROVED	
	19/09/2005	Freiburg (DE)	43504	APPROVED	
	16/07/2005	Helsinki (FI) STSM	1610	APPROVED	
	07/03/2005	Umeå (SE) STSM	1520	APPROVED	
	07/03/2005	Birmensdorf (CH) STSM	1660	APPROVED	
	2005	School	2808	APPROVED	
					109676
Cumulative Total					260519

ANNEX

List of publications and reports

COST E43 Management Committee Reports and Publications: Progress Report from June 2004 to December 2004

Petersson, H., Ståhl, G., Dunger, K., Tomppo, T., and Tosi, V. (2005). Draft Reference Definitions for Harmonised UNFCCC/KP Reporting. A discussion paper from the Freiburg meeting, Sept 2005.

COST E43 Working Group Reports and Publications:

In 2005, WG1 prepared the following two reports from the STSMs:

a) Cosmo, L., Gschwantner, T., Robert, N., & Lanz, A. (2005) COST E43 WG1 Scientific report from the short-term scientific mission carried out from 7-24th March 2005 at the Swiss Federal Institute for Forest, Snow and Landscape Research in Birmensdorf.

b) Cosmo, L., Gschwantner, T., Robert, N & Tomppo, E. (2005) COST E43 WG1 Short-term scientific mission No. 2. July 17th-August 6th, Finnish Forest Research Institute, Helsinki.

c) COST Action E43 (Solböle Taskforce). (2005) Definition of References. Draft Paper on References within COST E43. Sept 14th. 2005.

In 2005, WG2 prepared a report from the STSM in Umeå
E. Cienciala, K Dunger, H. Petersson, A Snorrason, G Ståhl (2005) COST E43 WG2 STSM scientific report.

In 2005 WG3 prepared
Guidelines for the compilation of the on-line questionnaire on the contribution of field data acquired in NFI for forest biodiversity assessment