

# **International Information on European Forest Sector**

**State – Challenges – Opportunities**

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# Executive Summary

This discussion paper considers the questions “Is there a need for better information exchange on the forest sector in Europe?” and “Who is asking for it?”

The paper presents the results of a reconnaissance of the international information on the forest sector in Europe, focussed mainly on socio-economic aspects. This involved a review of the supply and the actual suppliers of forest sector information, a survey of demand and an assessment of the relationship between supply and demand. The analysis sought to identify areas of importance where there is a lack of information, in which form it is demanded and who are the clients for additional or improved information.

To ascertain the supply and the suppliers of forest sector information, an overview of the main existing data and information collecting entities was developed and a comprehensive metadata was compiled. Entities considered fell into three broad groups: those which had forestry statistical and spatial analysis and databases, those with various forms of information directly relating to the forest sector and those with information relevant to forest sector issues, but not directly identified with the sector. These European-wide and international entities contain data that are well referenced, transparent with respect to data origins, user-friendly in most cases, and with ample provision of relevant links and resources for further investigations.

The discussion paper considers information priorities and data potential at international level with respect to the monitoring, assessment and reporting on the MCPFE pan-European Criteria and Indicators for Sustainable Forest Management. It can be concluded that Criterion C1 (*Forest Resources*) and C5 (*Protective functions*) are well covered at the international level. The coverage of Criteria C3 (*Productive functions*) and C6 (*Socio-economic functions*) are rather limited. The analysis on data completeness that was made by MCPFE experts and reported in “State of Europe’s Forests 2007”, expands on this view.

The data and information needs, as perceived by the various communities relating to the forest sector, were examined through a questionnaire enquiry, personal interviews and telephone discussions. The enquiry was sent to 60 contacts representing: international organisations, industry federations, information centres, research, education, environmental NGOs, national administrations and consulting companies. About half responded.

Some areas of forest sector information were considered good, accessible and broadly meet demand. In forest resources assessment, for example, considerable resources have been devoted to collection systems and there is an on-going process to overcome deficiencies and improve accessibility and harmonisation.

In some other areas though great importance was attached to information, it was sometimes inaccessible or problematical in relation to the needs of some constituencies.

Examples included: production and trade, particularly the production and consumption of wood for energy – (information was considered incomplete); economic and social dimensions of forest sector activity – (existing international data were poorly accessible and not sufficiently differentiated); price information – (consistent time series lacking). There was strong recognition of the importance of information on legislation and the social framework relating to the sector.

Some international information is good, accessible and meets user demand. In some other areas seen as important by users, basic information is available but the analysis and accessibility does not satisfy user demand. There are also areas where the basic data are seen as incomplete or missing, while the users place great importance on getting valid information on these areas.

Concerning the form of information, the strongest demand was for ready access to information with sound analysis in a processed, aggregated and harmonised form and the provision of well-formulated interpretation. The web/online publication were the most preferred means of reaching for information. There is an indication of a limited willingness to pay for information services through consultancy contracts and special projects.

The assessment found that there are areas where the existing information system does not meet all important needs. Research, analytical, networking and dissemination activities could support improved delivery of needed information.

So there is a place for additional effort. In selecting topics and areas of activity, the priority would be in the areas where there is a strong demand, but little supply.

The paper concludes by presenting options and suggestions, which could help guide a new initiatives in international forest sector information.

To be effective new additional effort on international forest sector information:

- Must complement existing systems;
- Conflicts and competition should not be allowed;
- There should be partnerships to collect, validate, analyse and disseminate.

The strategy of any new information initiative should focus on international issues with a policy orientation, which are of major importance to the European forest sector community. The objective could be to bring together information on the economic and social dimensions relevant to the selected issue, evaluating these and presenting comprehensive reports on the outcome.

Any new initiative should be flexible in the selection of issues and responsive to the information needs of forest sector community. The method of working must be collaborative – involving multi-disciplinary, multi-sectoral and multi-agency collaboration.

# Preface

In May 2007 the Urban Community of Greater Nancy contracted the European Forest Institute (EFI) to carry out a feasibility study on the operational implementation of an European Observatory on Forests (OEF). The OEF would constitute a component of a EFI Regional Office in the Central European region. The application process for establishing such a Regional Office (entitled EFICIENT) is currently ongoing.

The study was to investigate the potential role of an OEF in relation to existing organisations involved in collection and dissemination of international information on forests and the forest based sector. The study was also to assess the demand, market and target audience for the services within its potential role.

This discussion paper presents the results of research, surveys and analysis on the supply and demand for international information on the forest sector and conclusions on options for additional effort on information initiatives.

The authors of this report would like to express their gratitude to all who contributed towards this report.

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March 2008

The Authors



# List of Abbreviations

C&I	Criteria and Indicators
CEI-BOIS	The European Confederation of the Woodworking Industries
CEPF	The Confederation of the European Forest Owners
CEPI	Confederation of the European Paper Industries
CITES	Commonwealth of Independent States Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on Migratory Species
CoE	The Council of Europe
COMEXT	Intra- and Extra-European Trade
DG	Directorate General
EAF	Economic Accounts of Forestry
EC	European Commission
EC-DG Env	European Commission's Directorate General Environment
ECNC	European Centre for Nature Conservation
EEA	The European Environment Agency
EEC	European Economic Zone
EfE	Environment for Europe
EFERN	The European Forest Ecosystem Research
EFFIS	European Forest Fire Information System
EFI	European Forest Institute
EFSOS	European Forest Sector Outlook Studies
EIONET	European environment Information and Observation Network
ENGREF	The Institute of Forestry, Agriculture and Environmental Engineering
ETC-BD	The European Topic Centre on Biodiversity
ETC-NC	The European Topic Centre on Nature Conservation
ETC-NPB	The European Topic Centre on Nature Protection and Biodiversity
EU	European Union
EUFORGEN	European Forest Genetic Resources Programme
EUROPROMS	European Protection and Market Statistics
EUROSTAT	European Statistics
EUSIS	European Soil Information System
FAO	Food and Agriculture Organisation of the United Nations
FAO CPF	Collaborative Partnerships on Forests
FORIS	FAO Forestry Department Country profiles site
GDP	Gross Domestic Product
GMES	Global Monitoring for Environment and Security

GRID-Europe	Global Resource Information Database for Europe
GSE	Global Monitoring for Environment and Security Services Element
ICP Forests	International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests
IEA	International Energy Agency
IES	Institute for Environment and Sustainability
ILO	International Labour Organisation
IPCC	Intergovernmental Panel on Climate Change
IPGRI	International Plant Genetic Resources Institute
ITTO	International Tropical Timber Organisation
IUCN	The International Union for the Conservation of Nature and Natural Resources
IUFRO	The International Union of Forestry Research Organisation
JFSQ	Joint Forest Sector Questionnaire
JRC	Joint Research Centre
MaB	Man and Biosphere Programme
MCPFE	The Ministerial Conference on the Protection of Forests in Europe
MIPS	Material Input Per Service Unit
NFI	National Forest Inventory
NFP	National Forest Programme
NGO	Non-governmental Organisations
OECD	The Organisation for Economic Co-operation and Development
SEBI 2010	Streamlining European 2010 Biodiversity Indicators
SFM	Sustainable Forest Management
TBFRA	Temperate and Boreal Forest Resource Assessment
UN CBD	United Nations Convention on Biodiversity
UNCCD	United Nations Convention to Combat Desertification
UNCSD	United Nations Commission on Sustainable Development
UNECE	United Nations Economic Commission for Europe
UNECE-TC	Timber Committee of the United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNFCCC	United Nations Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UNSTAT	United Nations Statistics Division
WCMC	World Conservation Monitoring Centre
WHC	World Heritage Convention
WRI	World Research Institute
WSL	Swiss Federal Research Institute for Forest, Snow and Landscape
WWF	World Wide Fund for Nature

# 1. Introduction

Is there a need for better information exchange on the forest sector in Europe? Who is asking for it?

There is a perception that data is something that public authorities should provide. According to the European Commission (2003), Member States of the EU are obliged to facilitate re-use of public sector information. National and international public bodies have responded over many years, to the concern to collect and make available information, for the forest sector at regional, national and international levels. Climate change, biodiversity and wood for energy are in the political spotlight. These and other topics require comprehensive information to describe current state, to understand arising pressures and impacts, to identify opportunities and synergies and to formulate proposals for action. Data needs linked to processes such as the Ministerial Conference on the Protection of Forests in Europe (MCPFE), the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity are substantial and amongst the most important. Thus the amount of data that EU Member States are obliged to provide to several international data collection systems and initiatives has increased tremendously over the past years and these tasks are becoming an increasing burden.

This discussion paper presents the results of a reconnaissance of the international information on the forest sector in Europe, focussed mainly on socio-economic aspects. This was carried out to test the null-hypothesis that there is no need for additional data collection and it is not requested. In brief, this involved a stock taking exercise on the supply and the actual suppliers of forest sector information, a survey of demand and an assessment of the relationship between supply and demand. The analysis sought to identify areas of importance where there is a lack of information, in which form it is demanded and who are the clients of such extensive or improved information. On the basis of this, suggestions about meeting the “demand without supply” were developed.

The approach of the study involved three main steps. The first was to get a view of the supply side. In the chapter “Reporting obligations” countries’ obligations in relation to the provision of information on aspects of the forest sector to international organisations is reviewed. In the chapter “Information collecting entities” the development of an overview of existing data and information collecting entities and the compilation of comprehensive meta-data is presented.

The second step was the assessment of the demand for information. This was done in two parts. The chapter “Data for MCPFE Criteria and Indicators” provides a review of the data situation at the European level with particular reference to the pan-European Criteria and Indicators (C&I), as adopted by the Ministerial Conference on the Protection of Forests in Europe (MCPFE 2003). The Chapter “Information Needs Assessment” reviews

an information needs assessment, based on an enquiry that was sent to a broad audience of various actors within the European forest sector. These are drawn together to form conclusions on the nature of the perceived needs and demand for information on the forest sector.

The third step presented in the chapter “Supply and demand” brings together supply – according to availability of data, degree of processing, accessibility and quality – with demand. This focused mainly on the socio-economic aspects of the forest sector.

The supply and demand analysis allowed for (1) an identification of topics and areas of activity where demand for information is not provided for by existing collection systems (chapter “Possible tasks and objectives”) and (2) the identification of possible objectives and tasks for bridging gaps for forest sector information. Suggestions on the considerations and options for the development of activity for such an enterprise are derived from this analysis are presented in the final chapter “Conclusions and recommendations”.

## 2. Reporting Obligations

In the past half century considerable effort has been devoted to international collaboration to improve well being through the agreement of common standards in their economic, social and environmental affairs. An important component has been the development of systems for information exchange. Now concern over the ever-increasing reporting burden on forest-related issues has yielded a call for the need for harmonising and streamlining forest-related reporting, in order to increase the usefulness and relevance of international forest information (FAO CPF, 2004).

Countries have to provide a tremendous amount of data to several international data collection systems and initiatives in order to fulfil the reporting obligations with respect to international commitments or so-called “gentlemen’s agreements”. All adopted legislative instruments like conventions, resolutions or directives, require their parties to report at irregular or regular intervals on the national implementation status and progress.

According to the EEA Reporting Obligation Database, Germany, for example has to report on about six binding legislative instruments explicitly relevant for forest and forestry<sup>1</sup>, and on about 14 other nature and environmental reporting obligations, which have cross linkages to other specific forest issues, such as climate change or biodiversity (see Table 1).

National reporting requirements to these instruments vary in their extent and periodicity. The forest-related content of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), for example the Ramsar Convention is limited in scope compared to that of the UNFF, ITTO, UN Convention on Biological Diversity (CBD), United Nations Convention to Combat Desertification (UNCCD), and UNFCCC, all of which have a substantial forest coverage and a strong sustainable development component and are thus highly relevant to the issue of comprehensive international reporting on forests (FAO CPF, 2004).

International agreements require governments to provide trade data. For EUROSTAT this is governed by precise legal texts and for the UN Statistics Division it is according to internationally agreed standards. The most current relevant instrument to collect data on forest sector production and trade information is the Joint Forest Sector Questionnaire (JFSQ), which collects annual data for UNECE, FAO, EU and ITTO (Wardle et. al., 2000). Information for the periodic FRA (Forest Resource Assessment) is collected by FAO in collaboration with other organisations. In both cases countries agree to provide the required information according to agreed standards. Within the Ministerial Conference on the Protection of Forests in Europe (MCPFE) a set of pan-European Criteria and Indicators for Sustainable Forest Management has been officially adopted by its member states and the EC. Governments and the EC agreed Criteria and Indicators (C&I) against which to monitor development of the forest sector. An overview of the data situation relating to this particular process is presented below (see Chapter 3).

1 Selected are only those legislative instruments in which the word “forest” or “timber” occurs

**Table 1.** Forest relevant legislative instruments and reporting obligations – example of Germany (Requardt 2007).

<b>Explicit forest relevant</b> legislative instruments	Report to
Regulation (EC) No. 2152/2003 of the European Parliament and of the Council of 17 November 2003 concerning monitoring of forests and environmental interactions in the Community (Forest Focus)	EU (DG Env.)
Decision No. 2367/2002/EC of the European Parliament and of the Council of 16 December 2002 on the Community Statistical Programme 2003 to 2007 (e.g. OECD/Eurostat JQ on the State of the Environment: Forest data)	Eurostat (OECD)
International Tropical Timber Agreement (ITTO/UNECE/FAO/Eurostat Joint Forest Sector Questionnaire)	Eurostat
International Tropical Timber Agreement (Report for Indicators at the National/ FMU Level)	ITTO
Global Forest Resources Assessment	FAO
Convention on Long-range Transboundary Air Pollution (ICP Forests)	PCC (UNECE)
<b>Other forest relevant</b> legislative instruments	Report to
Convention on the Protection of the Alps	Alpine Convention Sec.
Convention on the Conservation of European Wildlife and Natural Habitats	Bern Convention
Convention on Biological Diversity	CBD
Convention on International Trade in Endangered Species of Wild Fauna and Flora	CITES
Agenda 21	CSD
EEA Annual Management Plan (Nationally designated areas CDDA-1)	EEA
Decision No 280/2004/EC of the European Parliament and of the Council of 11 February 2004 concerning a mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol	EEA (DG Env.)
Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora	EEA (DG Env.)
Council Regulation (EC) No. 338/97 of 9 December 1996 on the protection of species of wild fauna and flora by regulating trade therein	EEA (DG Env.)
Directive 2001/18/EC of the European Parliament and of the Council of 12 March 2001 on the deliberate release into the environment of genetically modified organisms and repealing Council Directive 90/220/EEC	EEA (DG Env.)
Decision No. 2367/2002/EC of the European Parliament and of the Council of 16 December 2002 on the Community Statistical Programme 2003 to 2007 (e.g. Land data, Wildlife data)	Eurostat
Convention on Wetlands of International Importance Especially as Waterfowl Habitat	Ramsar Convention
United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa	UNCCD/ CST
Convention concerning the Protection of the World Cultural and Natural Heritage	UNESCO
United Nations Frameworks Convention on Climate Change (Greenhouse gas inventories)	UNFCCC

### 3. Information Collecting Entities: Metadata Review

As a first task in the stock taking exercise on the supply and the suppliers of forest sector information, an overview of the main existing data and information collecting entities was developed and a comprehensive metadata was compiled.<sup>2</sup> This section provides the main findings and important observations from the collected information.

A total of 43 entities were evaluated. These represent a cross section existing entities. (see Annex 1 for full list of entities). The type of forestry data and information collected or provided by the different entities cover a wide range, from statistics on forest resources, to analysed data and statistics, and facts and figures of woodworking and paper industries, Europe's forest, and family forestry, to forest-related databases

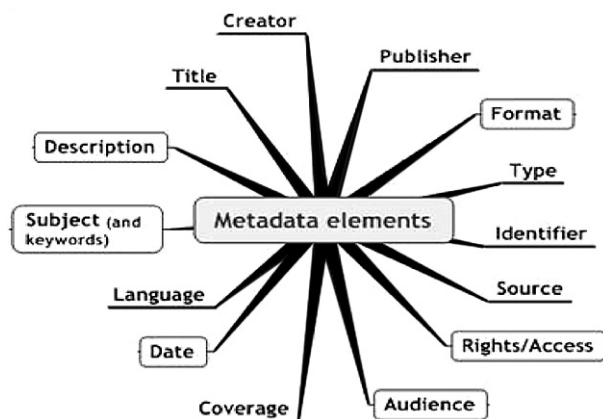
The necessary information was collated through literature review, internet searches and, in some cases, through personal contacts with the respective organisations. Entities evaluated were essentially public bodies – either governmental or non-governmental. Private/commercial enterprises, which may have international information on the forest sector among their business activities were not included. The compilation of the information followed a standardised procedure based on the Dublin Core Metadata Initiative and its metadata element set (DCMI, 2008). One metadata record was produced for each entity. Figure 1 provides an overview of the metadata elements which were applied when describing the individual entities.

By following such a structure, a concise overview of the entities could easily be obtained. Each of the metadata elements provided useful information on the entity being investigated. Important metadata elements for the investigation, as highlighted in Figure 1, include (1) the subject and the corresponding keywords that immediately direct to the usefulness of the organisation in meeting user needs; (2) the description of the core activities of the entities further elaborates on what the organisation is actually engaged in, whether it is collecting and providing informational service or whether it is also involved in raw data collection and dissemination; (3) the data type and format further helps to identify if the available types and format of information is useful and meeting the user needs; (4) and finally, the targeted audience and accessibility of the available information lead to the user decision whether the particular entity is worth exploring for the user needs.

The investigated organisations collecting and providing forestry information were categorised under European and International scopes. Entities under European scope

2 Relevant documents for compiling the list of sources and responsible institutions at international level (see Annex 2) were for example:

- MCPFE 2003: Where to find forest data – A Pan-European Overview of International Institutions and Networks, Liaison Unit Vienna, p. 64
- Requardt, A., 2007: Pan-European Criteria and Indicators for Sustainable Forest Management: Networking Structures and Data Potentials of International Data Sources, PhD thesis, University of Hamburg, Institute for World Forestry. P. 78-80 (Table7)
- EUROFOREST Portal. See at: <http://forestportal.efi.int/>.



**Figure 1.** Metadata elements used to describe an entity (DCMI 2008; Schuck et al. 2007).

include those that cover Europe, European Union, pan-European, and countries covered under the United Nations Economic Commission for Europe (UNECE), while entities under International scope additionally cover other parts of the world, such as the tropics and non-European countries. For each of the two categories, the organisations were classified into four sub-categories: (a) Industries sector; (b) Governmental and Non-Governmental Organisations; (c) Education and research; and (d) Others.

Table 2 gives an indication of the number of entities that were investigated under each of the four sub-categories.

## European scope

A total of 23 entities out of 43 contain forestry data and information at European level. Of these, three were industry federations (The European Confederation of the Woodworking Industries, CEI-BOIS; The Confederation of the European Forest Owners, CEPF; The Confederation of the European Paper Industries, CEPI). These provide information for policy-makers that also have value for researchers. However, the industry federations are not involved in raw data collection or dissemination.

Six entities were classified as being governmental organisations, targeting a range of audience from researchers, policy-makers, agencies, environmental groups, to the general public. The organisations evaluated in this category were: The European Environment Agency (EEA); The UNECE's Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (UNECE-CLTRAP) and EMEP; European Commission's Directorate General Environment, EC-DG Env; Timber Committee of the UNECE, (UNECE/-TC); The Ministerial Conference on the Protection of Forests in Europe (MCPFE); and The Council of Europe (CoE).

A further 12 organisations were found to represent education, research and networks. These included: The EC's Joint Research Centre (JRC); The EC's Eurostat division; The



**Table 1.** Breakdown of the 43 entities evaluated in the four sub-categories.

	European scope	International scope
a) Industries	3	0
b) Governmental and non-governmental	6	5
c) Education, research, networks	12	11
d) Others	2	4

European Forest Institute (EFI); The International Co-operative Programme on Assessment and Monitoring of Air pollution Effects on Forests (ICP Forests); The European Topic Centre on Biodiversity, (ETC-BD); Nancy-Freiburg-Zürich Forest Network, (NFZ.Forestnet); The European Forest Ecosystem Research Network, (EFERN). These entities not only contain forestry and forest education information but also a wide range of data and databases. The target audience range mainly from researchers, educators and students, to consultants, government and non-government agencies, in a few cases policy-makers, and the general public. The organisations investigated are from well-established data collectors and providers to informational service entities.

Those entities that did not explicitly fit in the sub-categories (a)-(c) were placed under “Others”. The sites included are of a slightly different nature in that they are designed more for providing informational services than data or analysis. However, the intended audience of these entities are not very different than those listed in (a)-(c). Two examples that were evaluated were: The Global Monitoring for Environment and Security (GMES) and The International Energy Agency (IEA).

### **International scope**

The remaining 20 entities contain information at European and international levels. While the targeted audience is similar to that of the entities indicated under European information, the scope of the entities investigated here are broader, and in many cases inter- and multidisciplinary.

Industries at international scale were not included in the study.

A total of three governmental entities were evaluated on international level. These were more inter-governmental types, such as Intergovernmental Panel on Climate Change (IPCC); The International Tropical Timber Organisation (ITTO) and The Organisation for Economic Co-operation and Development (OECD).

Two non-governmental organisations were evaluated, both having European, as well as international scopes. These entities included Greenpeace International and the World Wide Fund, WWF. The main targeted audience for these organisations include the general public, informing them of key environmental issues and international and national government stances on key topic areas ranging from environmental, conservation, biodiversity, to policies and expert views. Other targeted groups of the NGOs include researchers, policy-makers, agencies and environmental groups.

On an international scale, 11 entities that were investigated focussed their information, among others, on researchers, educators, policy-makers, as well as to the general public. The sites evaluated included: The International Union of Forestry Research Organisation (IUFRO); The UN's Food and Agricultural Organisation Forestry Department (FAO Forestry); The UNEP's GEO Environmental Outlook Data Portal (UNEP – GEO Data Portal); DEWA/GRID-Europe; The UNEP's World Conservation Monitoring Centre (UNEP-WCMC); Biodiversity International; Earth Trends – The Environmental Information Portal; The UN's Commission on Sustainable Development (UNCSD); The United Nations Statistics Division (UNSTAT); and The World Resources Institute (WRI).

There were four entities investigated under “Others”. The websites of these international entities are inter- or multidisciplinary in nature. While forestry is not the main focus of most of these sites, there is a wide range and comprehensive information available on forests and forestry sector under environment, sustainable development, conservation, biodiversity, or energy. Examples of such multidisciplinary entities are: The Environment for Europe process (Efe); The International Labour Organisation (ILO); The International Union for the Conservation of Nature and Natural Resources (IUCN); and The World Bank Group.

### **3.1 Metadata description and analysis**

The 43 entities investigated relate to forestry data and information either directly or indirectly, and contain various forms of data in varying levels of complexity. The data available from the sites range from simple informational types with html links, to reports containing polished and analysed data, to statistical and spatial analysis, to databases with measurement or modelled data. The extent of the data and their formats depend on the types of entities and their objectives concerning forestry subject. Table 3 presents a metadata record which stands exemplary for full stock taking exercise of 43 entities.

While some institutions focus on forestry information only, providing forestry databases and analysed data, others are of multi- or interdisciplinary nature where information on forestry sector is embedded in other general topics like sustainable development or climate change. Institutions like FAO, UNECE-TC, UNSTAT and Eurostat provide country-based forest-related data, as well as statistics and analysis of varying degrees. Other institutions not necessarily collect or disseminate data but provide informational services on where one could obtain certain types of forestry data, or engage in providing forestry education information.

### **3.2 Data and information accessibility**

All the entities investigated in the current chapter are easily accessible. Information accessibility and availability depended on the type of entities and the type of data being sought. For example, almost all sites provided a good number of publications and reports for free, in easily accessible manner.

Some institutions provided all their information materials for free and in user-friendly forms. Others have restricted access, or are only accessible upon registration, which was once registered in most cases free of charge. Industry federations and research institutions in particular, had restrictions on the provision of some of their data and information. Research organisations often had limitations on providing raw or processed data. A user may be asked to either request data directly with the organisation or it may have to be purchased.

### 3.3 Synthesis of metadata review

The metadata investigations revealed the existence of a range of entities and organisations engaged in collecting and disseminating forestry data and information, either directly or indirectly. A wide range of data exists and is available in the form of reports and publications, as well as information availability on websites in user-friendly manner in many cases.

The organisations provide varying degrees of information, databases on various forestry aspects, and forestry data analyses and statistics of varying complexities. These data range from informational types with html links, reports containing analysed presentation, statistical and spatial analysis, database with measured or modelled data.

The evaluation also revealed that the relation of the information to the forest sector is varied. Thus 14 entities had forestry statistical and spatial analysis, as well as forestry databases, with further 14 entities having other forms of information directly relating to the forest sector. 15 entities contain information relevant to the forest sector issues but may not necessarily be directly identified with the sector. These entities tend to have different dimension and approach, for example, from environmental or energy point of view.

Only a few entities engage in raw data collection or dissemination. Raw data here refer to plot or measured data (Institutions responsible e.g. for collecting national forest inventory data, monitoring forest condition in Europe). The Eurostat and UN's Statistics Division, UNSTAT, collect trade statistics according to internationally agreed standards on all products for the EU and at a global scale. Other institutes such as EFI utilises e.g. UNSTAT data, processes it and imports it to its forest products trade flow database covering the trade between all countries dating back from the near present to the year 1962. Forest resources assessments have been implemented in regular intervals by FAO and the UNECE/FAO since the 1950s. Forest resources are reported by countries based on harmonised collection procedures and definitions.

Industry federations, for example, make use of available data from other organisations involved in specific data collection activities. NGO sites and others such as the EEA, provide regularly updated news items on current topics, reports and media releases, while those entities dealing with education, research and networks, both on European and international scale contain comprehensive datasets, inventory data, country data and country-specific reports on various topics, as well as analysed country data in the form of graphs and tables, statistics, literature catalogue, reference materials and html links. A few sites include interactive databases where users have the possibility to search for specific information and retrieve data in the form of tables, maps, graphs and charts. Others

**Table 3.** Example of a completed metadata record (The European Forest Fire Information System, EFFIS; <http://effis.jrc.it/Home>).

Title	European Forest Fire Information System – EFFIS
Creator	European Commission Joint Research Centre. Institute for Environment and Sustainability
Subject	Risk forecast; Damage assessment; Rapid damage assessment; EU fire database; Atmospheric Emissions; Vegetation regeneration; Post-fire risk; Up-to-date risk maps
Keywords	Europe, forest fires, emissions
Description	<p>The European Commission DG Joint Research Centre, set up since 1999, is a research group to work specifically on the development and implementation of advanced methods for the evaluation of forest fire risk and mapping of burnt areas at the European scale. These activities led to the development of the European Forest Fire Information System (EFFIS). Since the year 2003 EFFIS is part of the Regulation (EC) No 2152/2003 (Forest Focus) of the European Council and Parliament on monitoring of forests and environmental interactions. All the EFFIS activities are coordinated with DG Environment to reach the final users, Civil Protection and Forest Services, in the Member States.</p> <p>EFFIS aims to provide relevant information for the protection of forests against fire in Europe, addressing both pre-fire and post-fire conditions. On the pre-fire phase, EFFIS is focused both on the development of systems to provide forest fire risk forecast based on existing fire risk indices, and on the development of new integrated forest fire risk indicators (EFFIS - Risk Forecast). These indices permit the harmonised assessment of forest fire risk at the European scale. They may be used as tools for the assessment of risk situations in cases where international co-operation in the field of civil protection is needed.</p> <p>Currently, the dynamic forest fire risk forecast indices are available on the EFFIS website and sent to the Member States Services daily from the 1st of May until the 31st of October. On the post-fire phase, EFFIS is focused on the estimation of annual damage caused by forest fires in Southern EU. All burned areas larger than 50 ha, which account for around 75 % of the total area burnt in southern Europe are mapped every year using satellite imagery (EFFIS – Damage Assessment). The first cartography of forest fire damages in southern EU was produced for year 2000 and continued for the subsequent years. Additionally, as from 2003 a new activity for rapid assessment of forest fire damage has been developed in order to map all the fires larger than 100 ha twice during the fire season: at the beginning of August and at the beginning of October (EFFIS – Rapid Damage Assessment).</p> <p>An EU Fire Database is also included in EFFIS (previously referred to as Common Core database). The database contains the forest fire information compiled by some of the EU Member States. The outcome of research topics on forest fires currently investigated at the JRC will be implemented in EFFIS in the forthcoming years. These topics are all related to the post-fire phase and refer to forest fire atmospheric emissions, vegetation regeneration, and post-fire risk analysis.</p>
Publisher	European Commission Joint Research Centre. Institute for Environment and Sustainability.
Date	Accessed online: 25-1-2007; Last updated: 21-12-2006
Type	Website: including; text documents, interactive maps
Format	HTML, PDF

**Table 3.** Continued.

Source	European Commission DG Environment and DG JRC – IES. Regulation (EC) No 2152/2003 (Forest Focus) of the European Council and Parliament on monitoring of forests and environmental interactions. All the EFFIS activities are coordinated with DG Environment to reach the final users, Civil Protection and Forest Services in the Member States. Maps: Meteorological Data from MeteoFrance, Administrative Boundaries from EUROSTAT – GISCO, Application by DG JRC – Inforest Action
Identifier	<a href="http://effis.jrc.it/Home/">http://effis.jrc.it/Home/</a>
Language	English
Coverage	European Union
Rights	<a href="http://europa.eu/geninfo/legal_notices_en.htm">http://europa.eu/geninfo/legal_notices_en.htm</a>
Audience	Researchers, students, educators, consultants, public
Access	limited public access

provide “search” and “advanced search” options, while a few entities restricted the search to predefined queries.

The format of the available data range from purely informational sites with references and relevant html links, to PDF, PHP, EXCEL and ASCII and other text documents, to multimedia formats, including videos, high resolution images, interactive maps, to analysed data in the form of tables, charts and graphs, maps, as well as metadata descriptions.

A few sites were found to be indirectly related to forestry. This means that while the databases within these entities did not provide direct forestry data or information, they contained other types of databases, such as emissions data, modelled data of atmospheric pollution, information on different models used and assessment reports that are useful in the forestry sector, and particularly for researchers who are interested in investigating pollution effects on forests.

The criteria on which the information was judged in this investigation showed that the 43 European-wide and international entities contain data that are well referenced, transparent with respect to data origins, user-friendly in most cases, and with ample provision of relevant links and resources for further investigations.



## 4. Data for MCPFE Criteria and Indicators

### 4.1 Introduction

At the fourth Ministerial Conference on the Protection of Forests in Europe (MCPFE) in 2003, a revised set of pan-European Criteria and Indicators (C&I) were adopted as a common policy instrument for evaluating and reporting on Sustainable Forest Management (SFM) at the pan-European and national levels.

National, but also international, data sources maintained by different institutions and organisations are asked to provide adequate datasets for the reporting – in particular – of the 35 quantitative pan-European indicators. Basically data collection and reporting is carried out at pan-European level, based on national level data collection systems. National Forest Inventories in European countries can be regarded as a primary source of information. However, the gap-analysis (Sollander 2001) and the Liechtenstein Case Study (Requardt 2003) have shown that lots of other sources are also essential for C&I reporting, in particular for indicators that cover cultural or socio-economic aspects.

Countries already collect and report data in order to fulfil several other international commitments and information requirements. Numerous organisations and networks at the European or international levels collect and maintain large amounts of different data (see Chapter 3 Information Collecting Entities).

As the pan-European C&I cover a wide scope of different forest and forestry related information aspects, they can perfectly be used to structure and analyse information priorities and gaps of ongoing monitoring, assessment and reporting activities either at national or international level.

### 4.2 International Data Situation according to MCPFE C&I

This chapter relies on the outcome of a study by Requardt (2007). The study analyses and describes the information priorities and data potential at international level with respect to the monitoring, assessment and reporting on the pan-European C&I for SFM. The study provides a comprehensive overview of “*Where to find which forest data*” at the pan-European level. By using C&I as a baseline a large amount of various internationally relevant data sources were structured, organised and analysed according to their C&I data potentials.

Requardt (2007) shows that a large number of datasets according to the pan-European C&I are already available at the international level. His study clearly highlights the current

capacities and deficits within the pan-European monitoring, assessment and reporting on SFM. Although the quantitative amount of sources and therefore the amount of available datasets per indicator does not mean that one single source would not be sufficient for adequate data supply, it can be recognised that some criteria and indicators are notably well covered and that others have clear data deficits (see Figure 3). According to the selected list of international data sources and with respect to the 35 quantitative indicators, nine *core indicators*<sup>3</sup> and eleven *deficit indicators*<sup>4</sup> were identified. Defined core and deficit indicators do not only describe the data potentials and gaps, they also indicate very well the current information priorities that are set in ongoing monitoring, assessment and reporting activities at international level.

Based on Requardt's study (2007) it can be concluded briefly that Criterion C1 (*Forest Resources*) and C5 (*Protective functions*) can be regarded as well covered at the international level. The monitoring, assessment and reporting capacities according to Criteria C3 (*Productive functions*) and C6 (*Socio-economic functions*) are rather limited. However, summarising the analysed data potential (data coverage) for each of the six pan-European criteria the situation can be described as follows:

#### *C1: Maintenance and Appropriate Enhancement of Forest Resources and their Contribution to Global Carbon Cycles*

With respect to the requirements of Criterion C1, 13 of the 21 institutions and organisations investigated (see Figure 2) provide datasets according to at least one of the four indicators of Criterion C1. The UNECE and the EFI cover all four indicators. In general, the data potential of C1 at international level can be regarded as sufficient and well covered. The indicator *1.1 Forest area* is the most covered and as expected, it can be regarded as *the* central indicator within the pan-European monitoring, assessment and reporting (see Figure 3). Some data are missing according to the indicator 1.3, particularly on *age structure*. Reviewing future potential data sources, such as GMES GSE Forest Monitoring or ICP Forests (BioSoil/ Level I), it can be recognised that improved data assessments on forest resources focus specifically on issues like forest biomass and carbon stocks. Also relevant are more integrative landscape perspectives on the spatial distribution and patterns of forests, assessed by new remote sensing techniques.

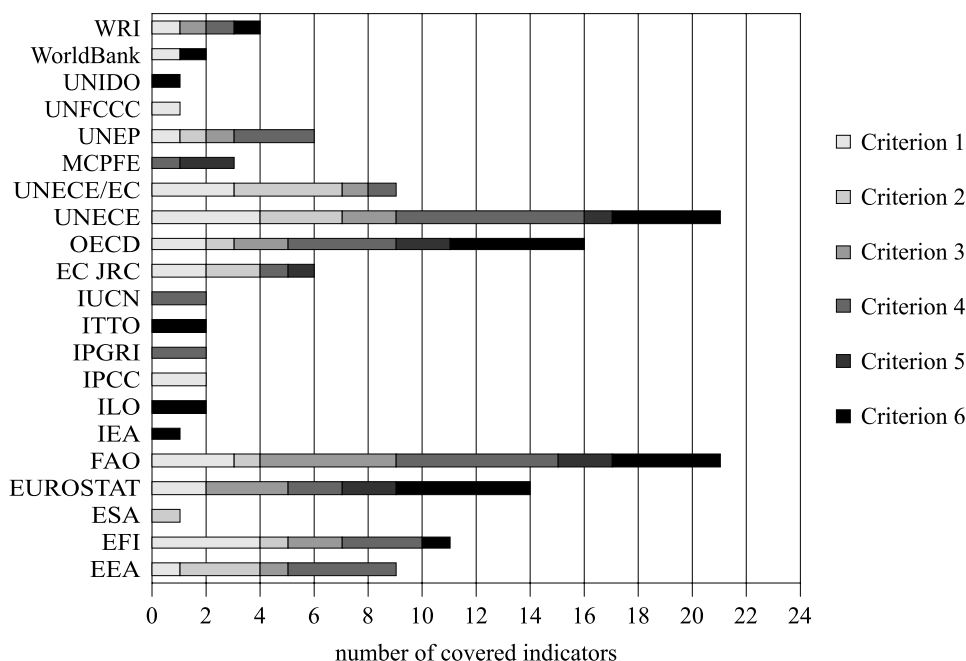
#### *C2: Maintenance of Forest Ecosystem Health and Vitality*

The monitoring, assessment and reporting on Criterion C2 (*Health and vitality*) concentrates mainly on indicator 2.4 *Forest damage*, specifically covering datasets on forest fires. The joint monitoring programme ICP Forests/Forest Focus can be regarded as the most relevant source covering all four indicators of Criterion C2. Institutions like the UNECE and EEA refer directly to the harmonised assessment of ICP Forests/Forest Focus when it comes to the reporting of forest health and vitality, like on 2.1 *Deposition of air pollutants* and 2.3 *Defoliation*. Reference to the ICP Forests/ Forest Focus is also given, to

3 Core indicators (see definition in Chapter 4.3.1): 1.1 *Forest area*, 1.2 *Growing stock*, 1.4 *Carbon stock*, 2.4 *Forest damage*, (3.1 *Increment and fellings*), 3.2 *Roundwood*, (4.8 *Threatened forest species*), 4.9 *Protected forest*, (6.8 *Trade in wood*).

4 Deficit indicators (see definition in Chapter 4.3.1): (1.3 *Age structure and/or Diameter distribution*), 3.4 *Services*, 4.4 *Introduced tree species*, 4.6 *Genetic resources*, (6.2 *Contribution of forest sector to GDP*), 6.3 *Net revenue*, 6.4 *Expenditures for services*, 6.6 *Occupational safety and health*, (6.9 *Energy from wood resources*), (6.10 *Accessibility for recreation*), 6.11 *Cultural and spiritual values*.



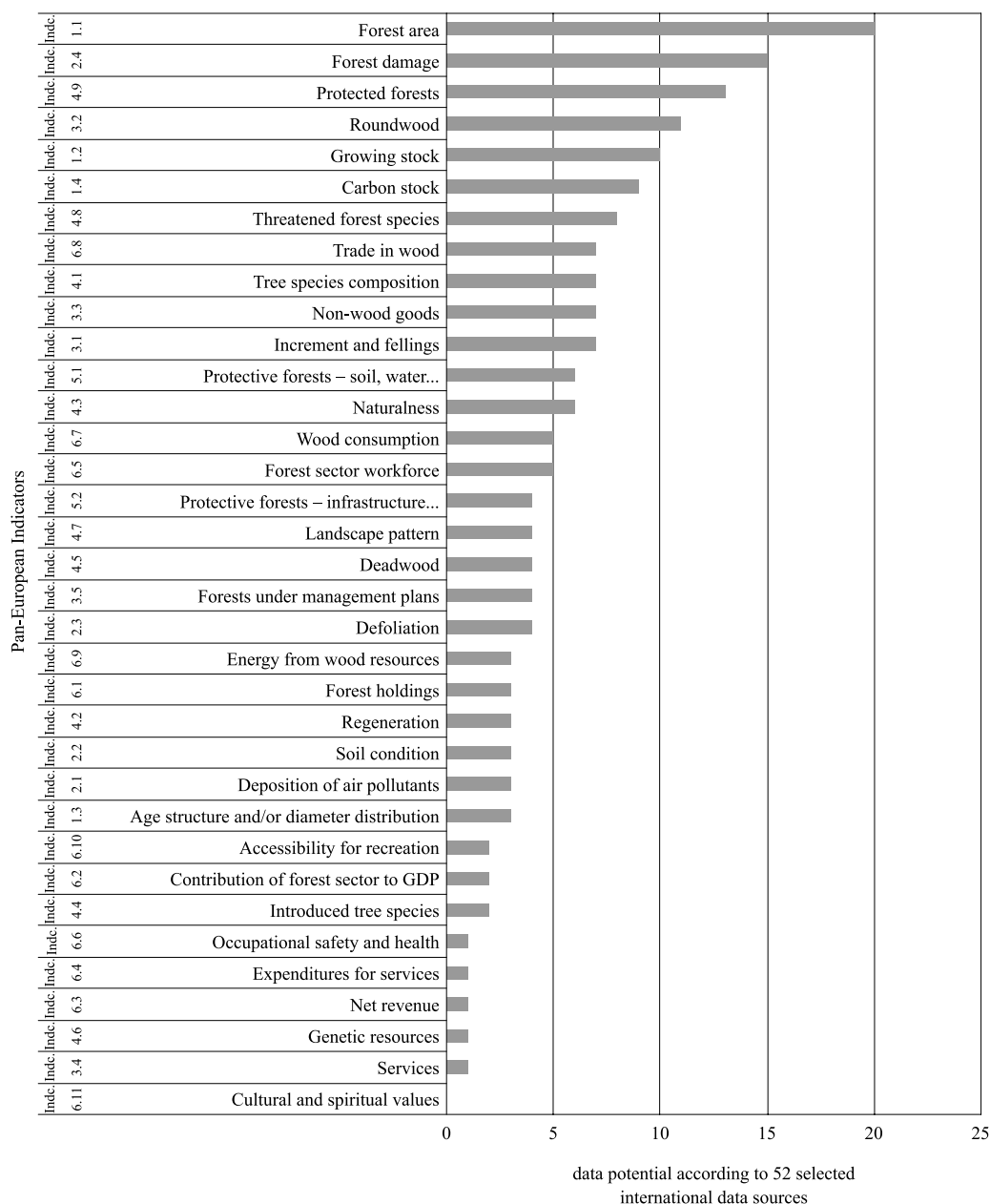


**Figure 2.** Data potential summarised according to the 21 most relevant international institutions/organisations and according to the six pan-European criteria (Requardt 2007).

some extent, regarding the indicator 2.4, except on forest fires. As forest damage is a complex indicator covering various abiotic, biotic and human induced causes, institutions like the UNECE, OECD and EEA also include other national statistics to describe multi-complex situations of forest damage in Europe. For the reporting on forest fires the DG JRC EFFIS can be regarded as the most relevant source. However, ICP Forests Level I and Level II data are also internationally relevant according to the indicators 2.2 *Soil condition* and 1.4 *Carbon stock (of forest soils)*. More complex international soil data are compiled only by the EC JRC European Soil Information System (EUSIS).

### *C3: Maintenance and Encouragement of Productive Functions of Forests (Wood and Non-Wood)*

With respect to the five indicators of Criterion C3, indicator 3.2 *Roundwood* is notably more covered than the other indicators. C3 is also only covered by one source to a 100% – namely by the FAO. The indicator 3.1 *Increment and fellings* is well covered by the National Forest Inventory (NFI) data and therefore also by several sources maintained by EEA, EFI, Eurostat, FAO, UNECE, OECD etc. However, data on indicators like 3.3 *Non-wood goods* and on 3.4 *Marketed services* are rather limited. The FAO Forestry Department country profiles site (FORIS) has a rather limited data potential for at least some information on marketed services and non-wood goods. The FAO database on non-wood goods can be regarded as a compendium of various selected case study reports than a structured assessment and database of quantitative data. Some additional data on non-wood goods might also be available by the Eurostat EUROPROMS and the Intra- and



**Figure 3.** International information priorities structured according to the MCPFE indicators for sustainable forest management (Requardt 2007).

Extra-European Trade (COMEXT) database. Future capacities with respect to the indicators 3.3 and 3.4 are seen in the EUROSTAT Economic Accounts for Forestry (EAF), which is planning to set up an additional non-wood sector database that might be relevant particularly at EU level.

#### *C4: Maintenance, Conservation and Appropriate Enhancement of Biological Diversity in Forest Ecosystems*

Although thematically covered by 13 of the 21 investigated institutions, none of the investigated institutions/organisations provides datasets for all of the nine indicators of C4 (*Biodiversity*). Only the FAO (with 70%) and the UNECE (with 80%) cover more than 50% of the indicators. Similar to Criterion C6, C4 covers several different forest biodiversity aspects, which are described by a high number of different indicators. Well covered are the indicators *4.1 Tree species composition*, *4.3 Naturalness*, *4.5 Dead wood*, *4.7 Landscape pattern*, *4.8 Threatened forest species* and *4.9 Protected forests*.

Comparing the data coverage of forest biodiversity aspects at international level it can be seen that the current monitoring, assessment and reporting focuses specifically on indicator 4.9. Data are lacking on indicators *4.4 Introduced tree species* and *4.6 Genetic resources* (see list of deficit indicators in footnote 4, p.24). Although classified as deficit indicators there are some relevant data sources in place. The IUCN Invasive Species database and the UNECE TBFRA 2000, for example, provide some data on indicator 4.4, while 4.6 is currently covered only by the IPGRI EUFORGEN. However, quantitative data on forest genetics are still limited, as the current EUFORGEN database provides some general information on genetic resources within Europe rather than explicit quantitative data requested by the MCPFE.

The EC funded projects ForestBiota and BioSoil are considered as potentially relevant approaches to enhance the current joint monitoring programme of ICP Forests and Forest Focus on Level I and Level II – specifically with regards to biodiversity indicators. Developed and partly already approved approaches, such as ForestBiota or BioSoil seem to be appropriate for collecting further datasets on a harmonised pan-European level in the future. Very promising future potentials for capacity building of Level I and Level II monitoring are specifically seen in new data collections on indicators *4.1 Tree species composition*, *4.2 Regeneration*, *4.3 Naturalness*, *4.4 Introduced tree species*, *4.5 Deadwood* and *4.8 Protected forests*.

When it comes to the national reporting on biodiversity in general, there has been a significant amount of work undertaken on exploring synergies and co-operation towards biodiversity-related conventions. The streamlining initiative of the UNEP-WCMC promotes synergies and co-operation between *Multilateral Environmental Agreements*<sup>5</sup>, particularly biodiversity-related conventions, and related mechanisms (UNEP-WCMC, 2005). Another example is the Streamlining European 2010 Biodiversity Indicators (SEBI 2010) initiative, which has the objective to develop a set of biodiversity indicators to assess and inform about progress towards the European 2010 targets of the CBD. Work is performed in collaboration between EEA, the European Centre for Nature Conservation (ECNC) and UNEP-WCMC. In 2006 SEBI 2010 elaborated a so-called *Forest Status Indicator* (Petriccione and Fischer, 2006), a complex indicator based on some surrogate measures for biodiversity. The streamlined joint indicator intends to be policy relevant by showing progress towards the CBD 2010 targets.

5 Such as: Convention on Biological Diversity (CBD), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), Convention on Migratory Species (CMS), Convention on Wetlands (Ramsar Convention) and World Heritage Convention (WHC).

*C5: Maintenance and Appropriate Enhancement of Protective Functions in Forest Management (notably soil and water)*

Criterion C5 (*Protective functions*) is covered only by six of the 21 investigated institutions and organisations, but as there are only two indicators, four of the institutions (the MCPFE, the OECD, the FAO, and EUROSTAT) have a data potential for both indicators. Under the framework of the MCPFE/UNECE Regional FRA 2003, the MCPFE collected data at national level according to explicit MCPFE definitions and data requirements. The assessment of protective functions is of special concern in the alpine regions. Institutions, such as the Swiss Federal Institute for Forest, Snow and Landscape Research (WSL) and the Swiss Federal Institute for Snow and Avalanche Research in Davos (SLF Davos) have long-term experiences and well-established data assessments on that particular aspect. Although neither of the two indicators of Criterion C5 has been identified as a core indicator, more datasets are currently available at international level according to indicator 5.1 *Protective forest – soil, water and other ecosystem functions*.

*C6: Maintenance of other socio-economic functions and conditions*

Concerning Criterion C6 none of the 11 indicators is defined as a core indicator with respect to the current pan-European monitoring, assessment and reporting activities. However, comparing all 11 indicators, the most widely covered are indicators 6.7 *Trade in wood* and 6.8 *Wood consumption*. This shows that the current international monitoring, assessment and reporting on the socio-economic aspects of SFM are focused on the timber market aspects rather than on any other socio-economic aspect. It can be concluded that current capacities at international level to report on indicators like 6.3 *Net revenue*, 6.4 *Expenditures for services*, 6.6 *Occupational safety and health*, 6.9 *Energy from wood resources* or 6.11 *Cultural and spiritual values* are rather limited. From the perspective of data sources, the situation is similar to that of Criteria C1 and C4. Several institutions or organisations (11 in total) provide some datasets for some of the 11 socio-economic indicators, but only two of them (the OECD and EUROSTAT) cover at least 50% (5 of 11 indicators).

In general it can be recognised that the interest to assess and report on socio-economic aspects has increased in recent years. For example, socio-economic aspects were not covered by the FRA 2000 but were covered, to some extent, by the FRA 2005. Furthermore, there are several other on-going new initiatives that might be relevant for covering current deficits on socio-economics in the future. According to Figure 3 it can be seen that the indicator 6.11 is the only one that is not covered by any quantitative data collected by the 52 selected international data sources.

The CoE European Landscape Convention and the United Nations Educational, Scientific and Cultural Organisation (UNESCO) World Heritage Convention and the Man and Biosphere (MaB) Programme do not provide explicit data sources. Nevertheless they are considered as relevant programmes or frameworks that might provide at least some relevant information on indicator 6.11 in the future. The situation for the deficit indicators 6.2 *Contribution of the forest sector to the GDP*, 6.3 *Net revenue*, 6.4 *Expenditures for services* and the correlated indicator 3.4 *Services* (see above), seems to be more promising. Especially the EAF – not only for the already covered “wood sector”, but also for the not yet covered “non-wood sector” – seems to be a relevant future data source. The new data assessments for the accomplishment of the UNECE’s European Forest Sector

Outlook Studies (EFSOS) report are also relevant. New assessed information, such as the datasets on non-wood goods on the contribution of the forest sector on the GDP or the forest sector workforce could be used in the future for the reporting on explicit socio-economic indicators.

In the framework of discussions on climate change and energy security, wood gained greater attention as a carbon neutral energy to replace non-renewable energy sources. To bring this particular aspect on to the agenda, in spring 2007 UNECE held a workshop (UNECE/FAO, 2007) on the issue “Mobilising Wood Resources”. Within that workshop discussions focussed on new modalities to obtain or estimate lacking data, e.g. for the indicators *6.7 Wood consumption* and *6.9 Energy from wood resources*.

### 4.3 Reporting for the MCPFE 2007 – Situation of Data Completeness

The following paragraphs rely completely on the latest MCPFE report “State of Europe’s Forests 2007” and on the analysis on data completeness that was made by MCPFE experts within this context (see Köhl et al. 2007 in: MCPFE, 2007 – Annex 2, p.176-182).

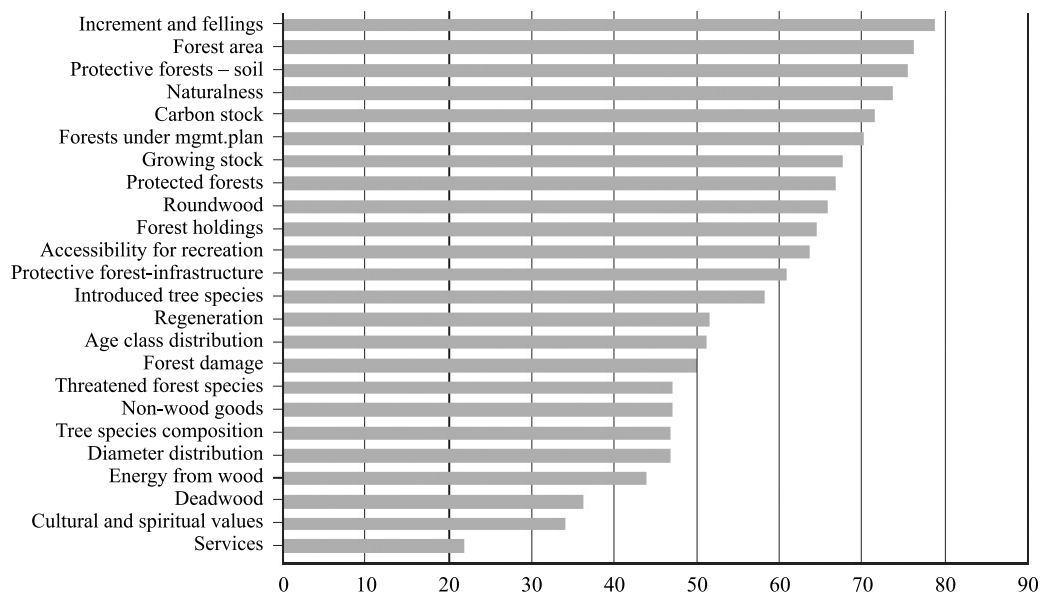
The MCPFE report “State of Europe’s Forests 2007” is a comprehensive and up-to-date description of the situation and the management of European forests as well as the related policies and institutions. It shows the status and trends related to forests and sustainable forest management in Europe, structured according to the pan-European C&I.

Data for the analysis of pan-European quantitative indicators for SFM were made available from different national and international sources. For 23 of the 35 indicators, data were provided directly by countries through a common enquiry developed jointly by the UNECE/ FAO and MCPFE. The report comprises data from 46 European countries, including the Russian Federation.

Each reporting form of the enquiry contained a table with a different number of table cells to facilitate data collection. The number of requested table cell entries varied from 4 (*indicator 3.4 Services*) to 168 (*indicator 4.8 Threatened forest species*). In total, information for 1099 table cell entries were requested. The large number of entries results from the need to report sub-categories as well as status at different points in time for each indicator.

A detailed analysis of the completeness of the submitted data by MCPFE countries was conducted and showed for the MCPFE region, an overall completeness of 57 % of the total number of requested table cell entries. The highest degree of completeness of requested table cell entries was achieved for indicator *3.1 Increment and fellings* (79 %), followed by indicator *1.1 Forest area* (76 %) and indicator *5.1 Protective forest – soil, water and other ecosystem functions* (76 %). Lowest level of completeness was found for indicator *6.9 Energy from wood* (44 %), indicator *4.5 Deadwood* (36 %), indicator *6.11 Cultural and spiritual values* (34 %), and indicator *3.4 Services* (22 %). As for these four indicators only a few cell entries were requested, it can be concluded that the data availability of these indicators is absolutely poor at national levels.

Data deficits are also seen for the indicators *4.7 Landscape pattern*, *6.4 Expenditures for services*, *6.6 Occupational safety and health* and the private forest sector in general. For the MCPFE reporting no data were available from both, countries and international data provider. Different case studies were made to report on these information



**Figure 4.** Degree of completeness (%) of requested table cell entries by indicator (MCPFE, 2007 – Annex 2).

requirements, such as by EC JRC and EEA on “Landscape pattern” or by UNECE/FAO, MCPFE and CEPF collecting data on the private forest sector through a questionnaire send to 38 European countries. Data on the indicator 6.6 *Occupational safety and health* were made available through national correspondents networks. Especially for the requirements of criterion C6 “*Socio-economic functions*” other additional data sources from different countries were included to complete missing information at least some extent.

It can be concluded that described data deficits or data potentials by MCPFE assessment partly match with the data potentials and deficits described by Requardt (2007) (see Chapter 3.1.2 above). Differences can be explained as the views on analysing data potentials and deficits for were different. Within the study of Requardt (2007) the focus was set on the international level – analysing the information priorities and data potentials of most relevant monitoring, assessment and reporting activities at European level. The analysis on data completeness for the MCPFE reporting 2007 instead, focused solely on the national level – analysing the different amount of data that was provided by countries to the joint MCPFE/UNECE/FAO enquiry.

# 5. Information Needs Assessment

## 5.1 Introduction

In this chapter the results of a survey of needs for international information on the forest sector are presented. This survey aimed to get a sense of perceived needs, demand and willingness to pay for information on the sector and various types of information service.

The data and information needs, as perceived by the various communities relating to the forest sector, were examined through a questionnaire enquiry, followed by personal interviews and telephone discussions. The design of the questionnaire followed previous relevant studies on forestry data and information (Päivinen and Köhl, 2005; Peck, 1996). This enquiry into needs, demand and the market for international information on the forest sector asked seven questions to provide indications on the following:

- the orientation of the responding organisation to this field of information
- the importance of pan-European criteria for SFM
- the priority of important topics and the degree to which information need is already met
- the form in which information is needed and the type of use
- the need for research
- the need for training
- the value, cost and willingness to pay for information services in this field.

### Contacts and respondents

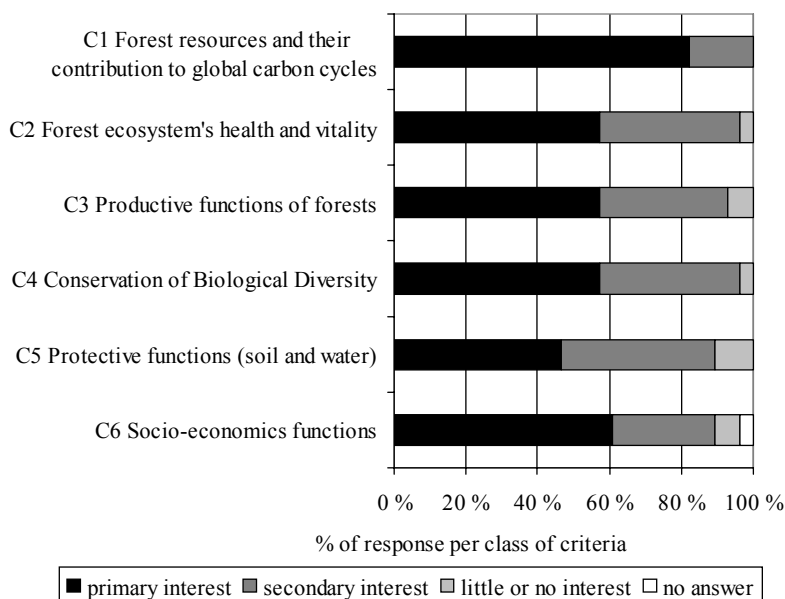
The enquiry was sent to about 60 contacts representing organisations dealing with European forest sector issues including: international organisations, industry federations, information centres, research, education, environmental NGOs, national administrations and consulting companies. 28 contacts completed the main questionnaire, with 16 providing more detail through an annex questionnaire. The questionnaire results were complemented by personal visits and telephone discussions with 12 respondents. Responses were received from at least one representative from each category of organisation.

## 5.2 Questionnaire outcome

The following summary view is based on 28 responses in total. The main questions are considered in turn. The figures within that summary illustrate the degree of interest, importance or priority attached to specific topics raised in the enquiry by the respondents.

## Q2: Pan-European Criteria and Indicators for Sustainable Forest Management

Indication of importance:



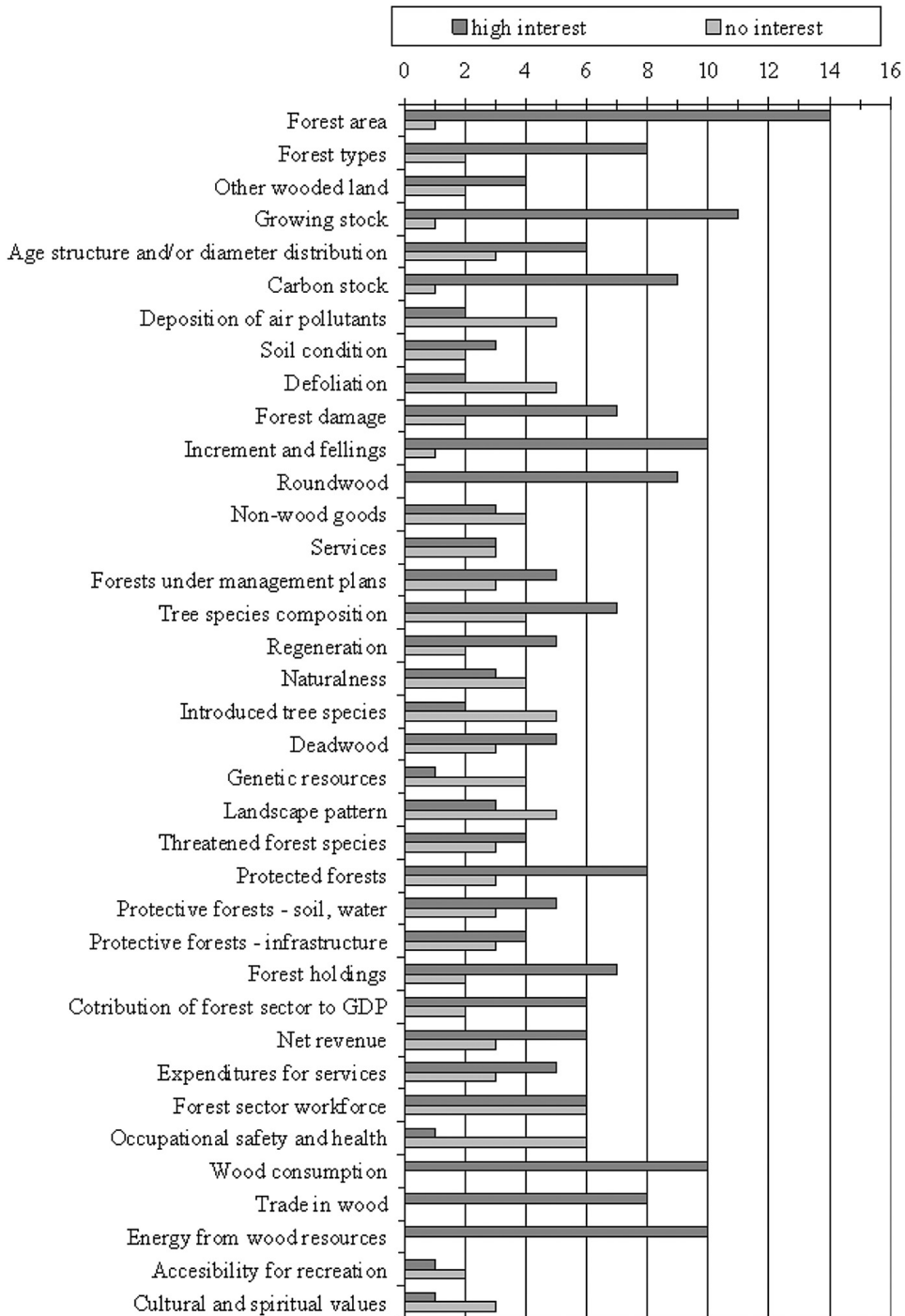
All of the six pan-European criteria are regarded as important and of high relevance for monitoring, assessing and reporting on forests status and development. When asked to indicate the order of importance to receive international information relevant to the six criteria, it can be seen that 80% of the respondents gave high priority to information on C1, while 50–60% gave high priority for information on other criteria.

The annex to the questionnaire provided the respondents the opportunity to elaborate on the details for each of the 35 indicators in relation to the pan-European C&I for SFM, as follows:

Information Priority / Relevance 0 – 1 – 2 – 3	Approach of information acquisition	Sources you use/ refer to Please list source and institution.	Do available systems meet your needs? satisfactory / not satisfactory

The table in Annex 2, Priority attached to the pan-European indicators, shows the scores from 16 responses. Figure 5 shows the ranking of interest from these responses (as being of high or of no interest) in obtaining information according to the 35 pan-European indicators. The figure clearly depicts that high scores go generally to forest area, growing stock, increment, wood consumption and energy from wood. Six respondents indicated no interest in workforce and occupational safety, while five indicated no interest in deposition of pollutants, defoliation, introduced species and landscape pattern. Very little information was provided on the approach to information acquisition. The sources identified were often the same, namely: FAO FRA, UNECE, National Forest Inventory data.





**Figure 5.** Ranking of interest to obtain information according to the 35 pan-European Indicators and the two forest area indicator classifications *Forest types* and *Other wooded land*.

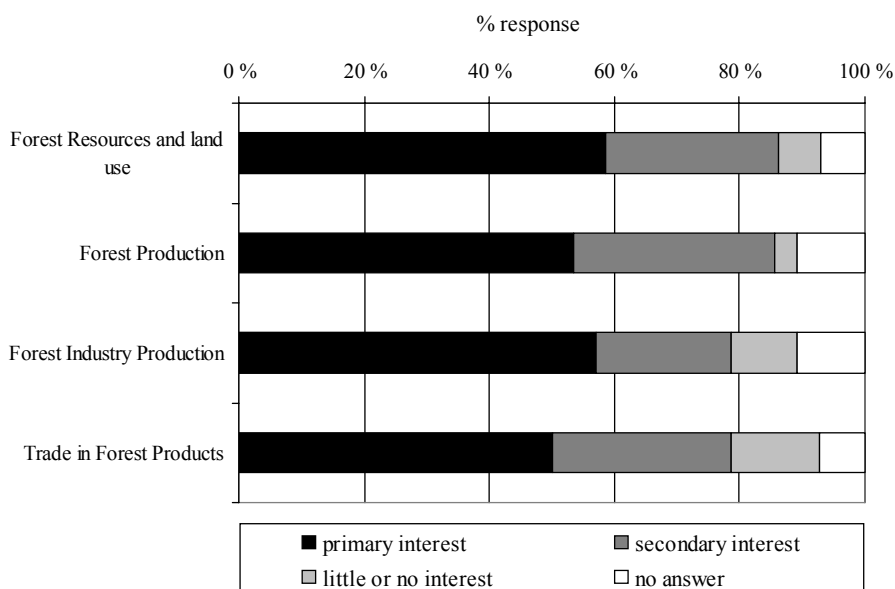
Comments and suggestions in the responses included:

- Harmonisation was recommended with respect to the forest area, forest types, age structure, growing stock, carbon stock, increment, protected forests, roundwood and wood consumption.
- Aim should be inventories with more recent data and all data from the same year.
- Information on GDP should be updated annually and boundaries of the sector should be better defined.

### Q3. Priority of information coverage on selected important topics

This section considered topics in four groups. In the first two groups the respondents were asked to indicate whether individual topics were satisfactorily covered by available information or if coverage was considered deficient, to indicate what improvements were needed. In the third and fourth groups which included topics where information coverage was known to be problematical respondents were asked to indicate the priority they would give to obtaining improved coverage.

#### 3a. Forest resources, land use and products

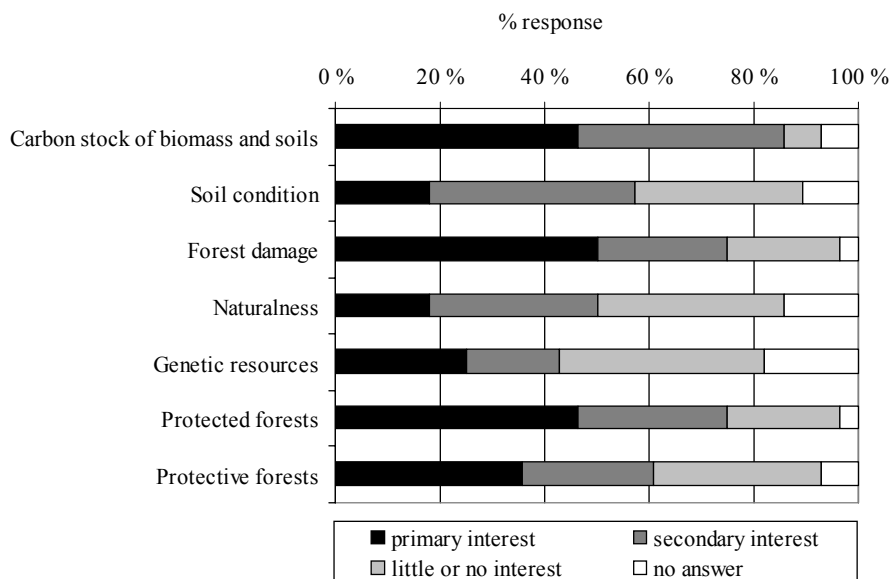


70% of the respondents were satisfied with the availability of data in the field of forest resources, land use and products. 20% considered the provision deficient, most notably on forest resources, data compatibility with data from other natural resource fields and data coherence on forest types. Also mentioned was the lack of defined relation between forest resources to the value and trends in forest biodiversity. Access was considered difficult to resources, production and trade data, particularly in finding the data relevant to specific

branches of the sector. Trade data were considered to provide a low level of detail and were often ‘old’ or outdated rather than updated.

Information on forest resources, land use and products was regarded as being of high importance by most respondents. International and national respondents regarded the international reporting as generally satisfactory in relation to their needs, while industry associations and research organisations were more critical.

### 3b. Carbon, ecosystem health and conservation



Around 50% of the respondents were satisfied with the information available on carbon stocks, forest damage and protected forest, while 30% considered it unsatisfactory. On other topics the proportion satisfied with information availability were lower and the numbers attaching little or no importance to the topics approached one third.

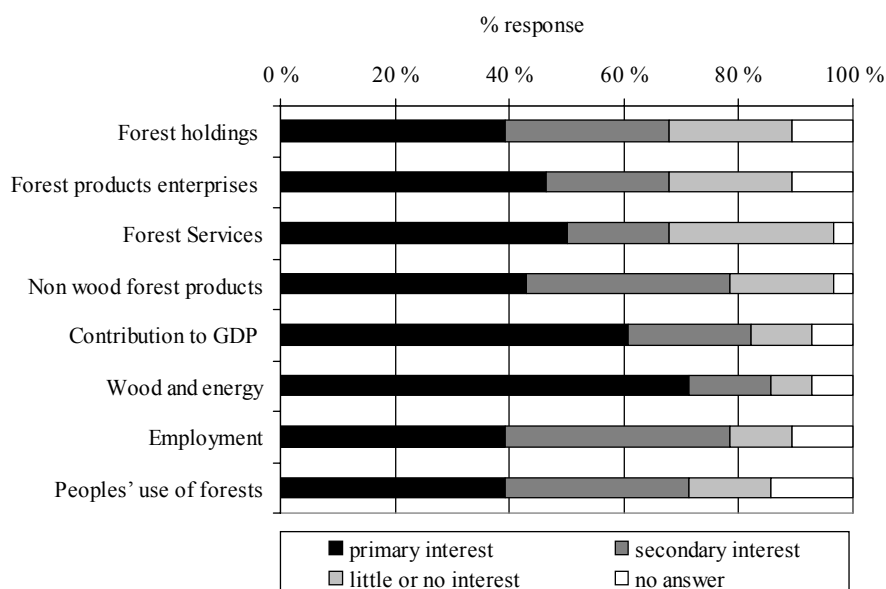
The deficiencies noted included a lack of data and a lack of coherent classification and method in relation to forest damage and naturalness. It was also mentioned that on protected forests the data are heterogeneous and not comparable between countries. Also in the case of protected and protective forest there was a lack of coherence and consistency in relation to forest types. There was considered to be a need for more information on management and cultivated forests. In general, clearly noted was a lack of harmonisation.

One respondent noted that new sustainability criteria are being used today in the natural resources policy debates, namely: “Footprints, Material Input Per Service Unit (MIPS), eco-efficiency, energy-efficiency, material-efficiency, decoupling, etc”. impacts, while issues around efficiency are receiving increased attention in other sectors adjacent to forests and forestry. This suggests taking up the initiative in relation to the International Panel on Natural Resources on the development of an information system to support

development of appropriate indicators on eco-, energy- and material efficiency relevant to forest sector activity. The forest sector is in a good position with a relatively good information base for putting together appropriate material intensity indicators. The sector could work with EEA and the EU Natural Resources Strategy in this field where these concepts are being considered. Another area concerns the forest sector in relation to public procurement policy with the opportunity to lead with a sound information base on the sustainability and environmental acceptability of forest sector products and activities.

### 3c. Economic and socio-economic activities

Indication of importance:



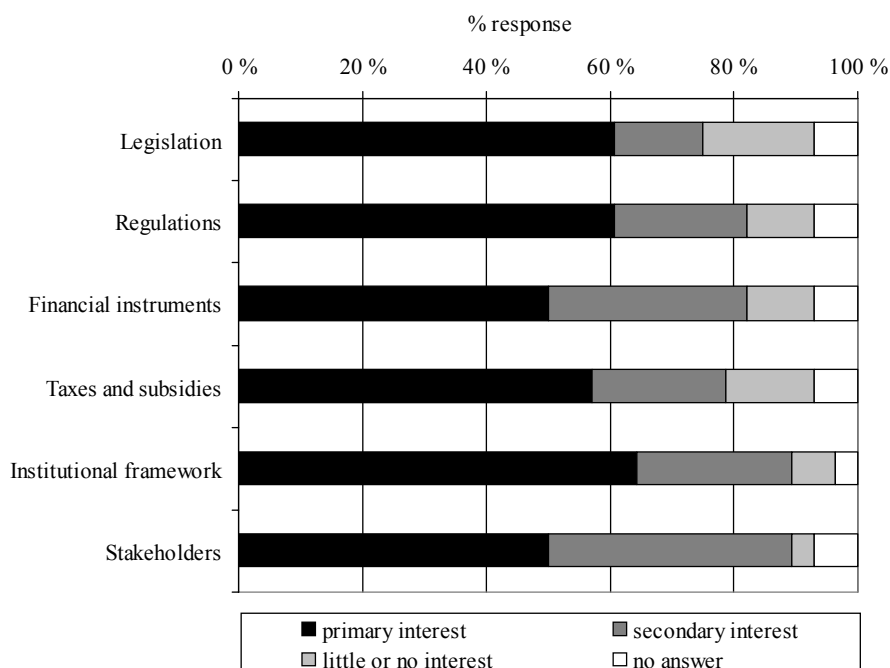
Some 70% of the respondents attached high importance to information on wood and energy and 60% to information on GDP. Respondents attaching high importance to certain topics were particularly concerned about limitations of the information available. Employment information misses forest owners' input and indirect employment, thereby does not reflect reality. Information on the economy needs to include value of output/ by-product, intermediate consumption, gross/net value added at basic prices, fixed capital formation, factor income, operating surplus, entrepreneurial income, net fixed capital formation and labour input. Information on prices and labour cost, not listed in the questionnaire, were regarded as important by many respondents. International organisations attached high importance to the topics listed in 3c. Industry associations gave particular importance to forest products enterprises, GDP, wood and energy, and employment.

Areas where information should be improved include prices and, particularly the use of wood for energy. The ECE wood energy enquiry has shown that information on

consumption requires an active process of measurement. Consumption of wood in energy is currently unknown. Without these data we can't build reliable policy. The linkage between resources and production is important. Land use policy is an area of conflict, with bio-energy and bio-fuels potentially leading to competition for resources, thereby having impact on industry. A most urgent area at the moment is wood for energy, as there is a pressure to increase renewables in the wood for energy strategy.

### 3d. Information on social framework and constraints

Indication of importance:



About 60% of respondents attached high importance to these topics. Especially information on legislations, regulations and institutional frameworks are regarded as highly relevant. Currently there are only few initiatives on-going at international level collecting data on social framework and constraints on a sound but comparable basis. International and industry association respondents attached high importance to all these topics while national respondents regarded regulations as their primary interest.

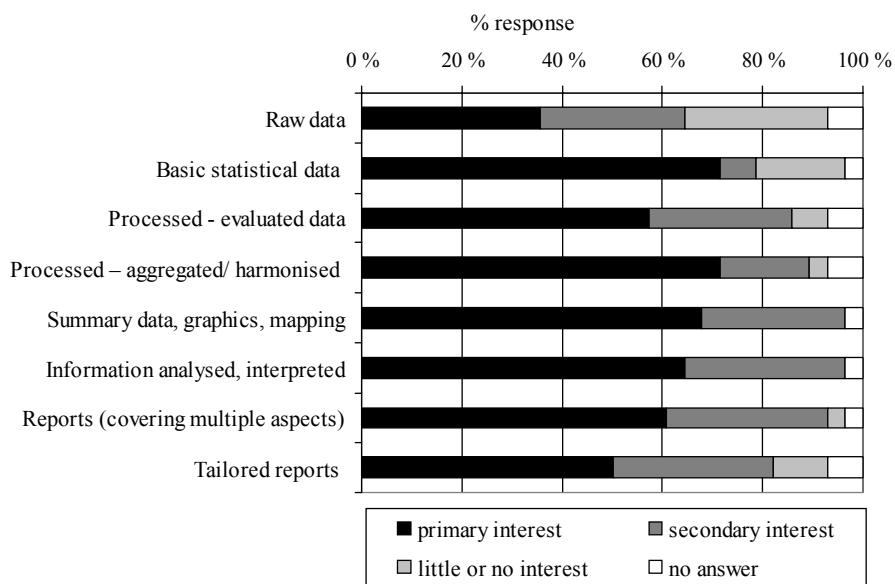
### Q4. The form of information

International information appears in many different forms. The basic statistical information may be held in the form of a database containing every element of data in a coded format. The data may be published in statistical yearbooks, or they may be analysed

to produce summary tables supported by graphics and mappings showing distribution and trends, together with descriptive text. Relevant data may be analysed to provide information to guide a particular decision.

#### 4a. What degree of analysis is required

Indication of importance:



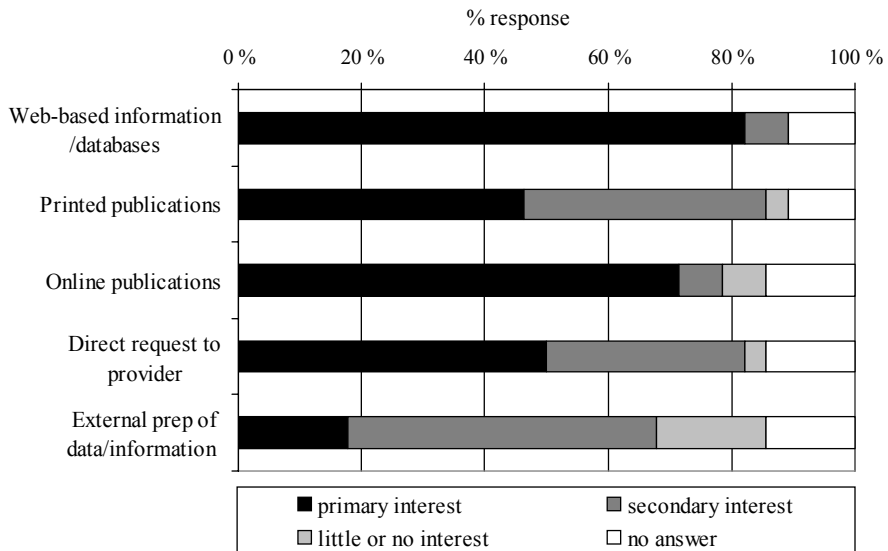
75% of the respondents attached high importance to the availability of processed, aggregated, harmonised and summarised information. There was also a high requirement for access to the basic data and some requirement for tailored reports. One respondent indicated the specific requirement for geographic information. Lower interest in tailored reports and in reports in general, perhaps indicates a preference among respondents to get information to formulate their own report (make own conclusions).

Respondents indicated the need for summarised data material and the need to know where such concise data can be obtained. Interest in raw data was less, as opposed to well-formulated information. High value was attached to sound analysis and the provision of well-formulated interpretation. Information was often needed on an ad hoc basis so that there would be value in knowing a platform where one could obtain the data or information needed, or at least steer towards priority data.

There were small variations in focus. Industry associations attached more than average importance to reports and indicated low interest in raw and basic data, while international organisation respondents focussed particularly strongly on processed and harmonised data. Collecting organisations gave greatest importance to raw and basic data.

#### 4b. Approach to information acquisition

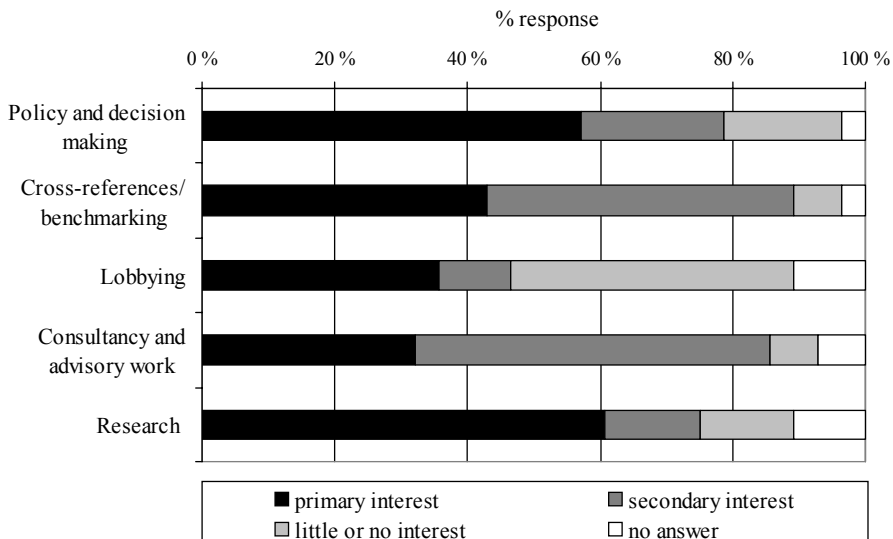
Indication of importance:



High value was attached to accessing web-based information and online publications. Printed publications remain important and the possibility of direct request for specific information was also highly valued. The preference for online information indicates clearly the demand on having information available and easily accessible when requested.

#### 4c. Use of information

Indication of importance:



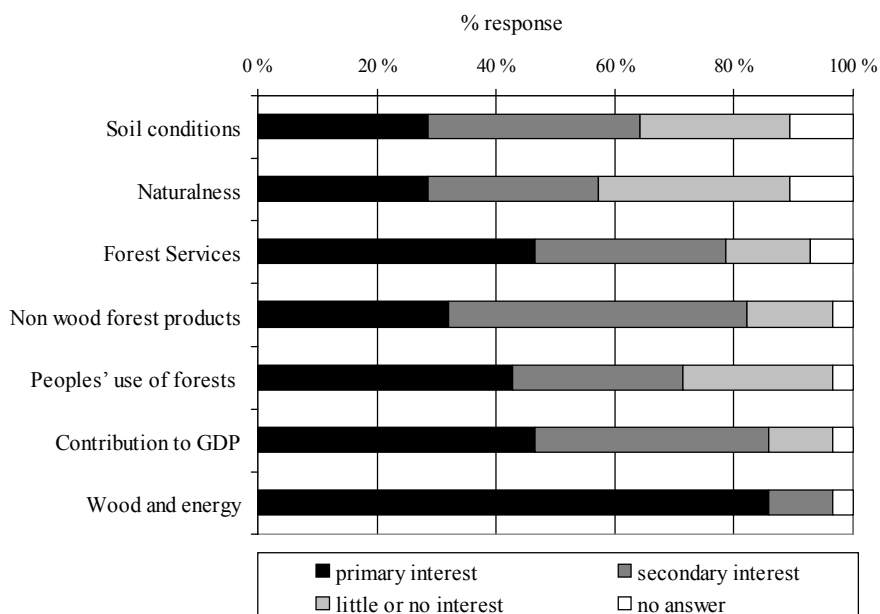
The principle uses of international information were in research and the policy area. Cross-referencing and benchmarking were also regarded as being important. Other relevant uses mentioned were production of international harmonised statistics and the use of information regarding communication and education. While industry associations and NGOs see information as an essential component of their role of lobbying in support of the interest of their members, this use of information is largely excluded in the responses from international and national organisations.

*“Without these data we can’t build reliable policy”*. A sound and credible information base is seen to be essential both by the international governmental organisations involved in the development of policy and by the NGOs concerned with influencing policy to secure the interests of their constituency and to monitor the implementation of policy.

#### Q5. Research on information

The estimation of quantitative information on many topics, which are important or may receive increased attention due to further development of interest in sustainability and the environment, may become a challenge. Research into and the development of appropriate methods of measurement and estimation, and on data collection methods and data interpretation may therefore be appropriate. The enquiry focussed first on the topics where research on the appropriate method for information collection is needed and secondly on the need for development of appropriate methodology.

Research on topics – Indication of importance:



85% of the respondents identified wood and energy as an area where research on information is important. Contribution to GDP, services, people’s use of forests and on non-wood forest products were also widely viewed as important. Specific topics suggested

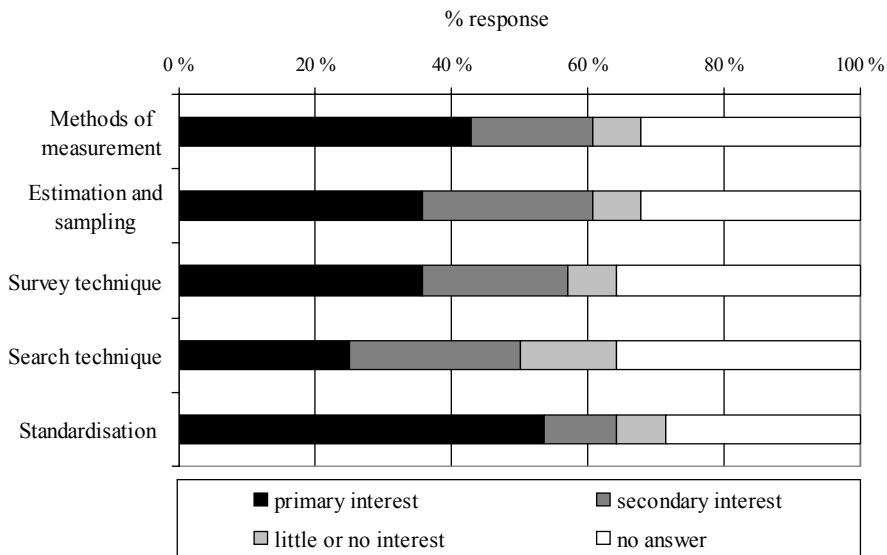


for information research included: economic valuation of conservation and approaches to restoration.

Respondents have indicated a number of areas where information would be of value, but international information is missing or problematical and where research into how to obtain consistent international information would be relevant. Examples mentioned are the following:

- So far as economic indicators are concerned existing statistics do not include the relevant classifications;
- We are missing information about the number of owners, area of the properties, annual cuttings per owner, profitability per exploitation;
- Evaluation of forest and its services, for example, as a basis for compensation for use of forests by outsiders, such as access for fruits, water protection, amenity benefit to neighbours.

Research on methodology- Indication of importance:



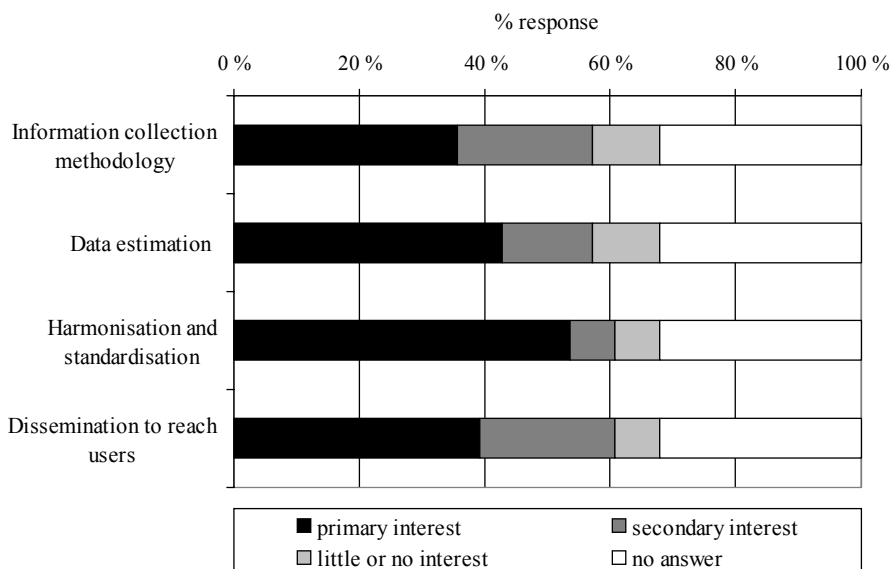
Importance was attached to research on appropriate methodologies, the highest ranking being given to standardisation to guarantee compatibility of information on different natural resources. Also relevant is the research towards identifying appropriate methods of measurement. Around 35% of respondents didn't answer on this aspect.

## Q6. Education and training

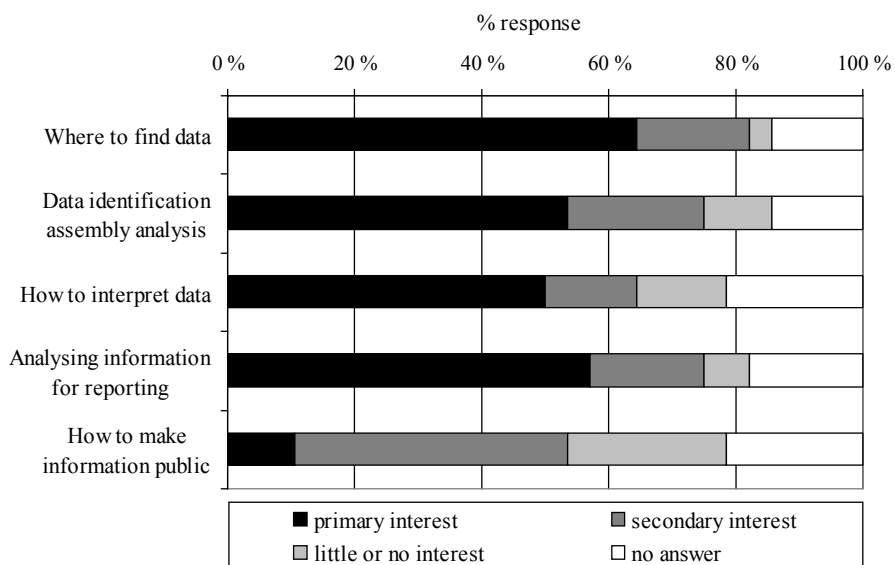
The development of effective collection of information on new topics and the achievement of standardisation in international information would be facilitated by the availability of training. Training programmes for information providers might be orientated to quality of

information entering international information systems and dissemination to reach the right public. Training for users might concern identification of appropriate information, access and interpretation to utilise them.

Training for providers – Indication of importance:



Training for users- Indication of importance



Around 50% of the respondents attached high importance to training for data providers, particularly in the areas of harmonisation and estimation, while about 70% attached high importance to training for data users in identifying, interpretation and analysis of international information.

**Q7. Value, cost and willingness to pay**

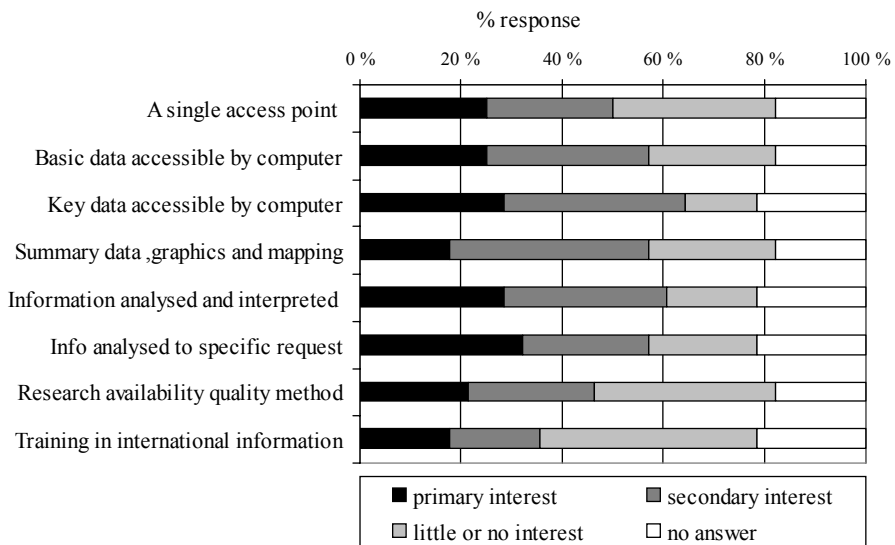
International information relevant to forests is assembled by a number of organisations concerned with different aspects of the forest sector. Often the data constitutes a small part of the data collecting organisation’s concern. There may be merit in building expertise in one location in identifying and accessing data, and assembling and interpreting international information relevant to all aspects of sustainable management of forests, the environment and development in Europe. There may be a place for research on methodology and for appropriate training. The availability of such a service may have value to the information user. The provision of the service would also have a cost.

**7a. Obtaining international information**

The enquiry explored the extent of work on international information within the responding organisations. Most organisations involved their own staff in this work. Less than half of the respondents mentioned hiring consultants or purchasing information from other organisations. For 60% of the respondents the work involved more than one person year per year.

**7b. Value placed on data availability**

The enquiry explored the questions “Does the organisation value access to international information?” and “Would the organisation be willing to pay a reasonable service fee for the provision of information services?”



50–60% of the respondents indicated that they valued the availability of most of these types of international information service with lower priority for research and education services. 20–25% of the respondents indicated willingness to pay for different services. But also 10–30% indicated clearly only little or no interest in availability of these services. 20% of respondents did not provide answers to this question.

Most respondents from industry associations indicated willingness to pay to get information analysed and interpreted and to meet specific need. Various organisations across the spectrum of respondents recognised that it would be necessary to pay for some information or information services in meeting their information needs.

It was the perception of the respondents that data is something public authorities should provide and it should be available to all in a transparent manner in a non-competitive way. UNECE and FAO are sources of international forest and forest industry information. Their information is provided free via the web. Several respondents indicated doubt about willingness to buy information services. In some cases they mentioned exchange arrangements with organisations providing information not involving cash payment.

Special studies are sometimes carried out. Industry associations indicated that some of their information was obtained either by purchasing or contracting. Data on trade is purchased from EUROSTAT and UNSTAT, while in-depth studies are carried out by consultants. Small scale research studies are done by interns in conjunction with university. Industries and industry associations hire consultants to get information and data and to do the analysis needed by the industry, for example, through special studies on trade, GDP, income and bio-fuels impact.

### **5.3 Conclusions on Information Needs**

Based on the study by Requardt (2007) on the pan-European C&I it can be concluded that Criteria C1 (*Forest resources*) and C5 (*Protective functions*) can be regarded as well covered at the international level. The monitoring, assessment and reporting capacities according to Criterion C3 (*Productive functions*) and C6 (*Socio-economic functions*) are rather limited. This is also consistent with the response to the needs assessment by the questionnaire approach within this study.

Resource assessment, forest and industry production and trade have been recognised by international organisations as areas where information is of primary importance to the international community, reflecting the needs identified by the governmental members of these organisations and developed over many years. In the case of forest resources assessment and land use, considerable resources have been devoted towards the development of national and international collection systems. Although there is dissatisfaction with aspects of harmonisation and detail there is also an on-going process to overcome deficiencies and improve accessibility.

High priority was attached to information on production and trade but there was concern about deficiencies with respect to detail, timeliness and accessibility. Particular importance was attached to information on the production and consumption of wood for energy. Importance was attached to information on economic and social dimensions of forest sector activity, but there was a perception that the existing international data were

poorly accessible and not sufficiently differentiated to meet the needs in this area. Price information was important but lacking. There was strong recognition of the importance of information on legislation and the social framework relating to the sector.

High importance was also attached by users of international information to the availability of processed, aggregated, harmonised and summarised information, and to accessibility through the web or online. Most respondents indicated that they valued access to international information services, but only a small proportion indicated a willingness to pay a reasonable fee for some services.



## 6. Demand-Supply Analysis

### 6.1 Introduction

This chapter presents the assessment of the supply and demand situation in relation to international information on the forest sector. The approach taken was to examine supply provided by existing entities involved with international information. The assessment of demand is developed on the basis of this information supported by responses to the needs enquiry and the follow up consultation with a number of organisations. In the analysis the supply – according to availability of data, degree of processing, accessibility and quality – is brought together by topic with demand. This is presented diagrammatically in a matrix. The analysis sought to identify areas of importance where there was a lack of information in the form that it was wanted and the public that wanted that better information.

### 6.2 Assessment of Demand-Supply Situation

In this section the supply and demand situation for information on a number of major topics is illustrated.

#### Forest resources and land use

##### *Supply*

There are a number of institutions that are involved in forest resources assessments. Examples of such institutions include:

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##### *Forest resources and land use data*

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FAO/ECE FRA – forest resource assessment – ECE region and global  
EU JRC – forest mapping – EU member countries  
ENFIN involved in harmonising inventory data – EU member countries  
EFI European forest map – Europe

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WCMC mapping forest in environmental context – global

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Information is available in the form of reports, publications, tables, websites, databases and mappings. There is on-going discussion of harmonisation, improving accessibility to existing public systems, to timelines and to detail. Some detail is considered sensitive by the originating national entity and access is restricted in this respect.

#### *Demand*

There are systems that have been set up to meet demand, as perceived by the national government members of the data collecting organisations. At the level of national aggregate statistics the data and reporting also meet the demand of the wider community. There is a demand for more refined information on growth and yield and more detailed distribution, for example by forest types or ownership classes.

### **Forest production, industry production and trade in forest products**

#### *Supply*

Relevant sources for collecting information on forest production, industry production, and trade in forest products are:

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*UNECE/FAO – Timber Bulletin for Europe, FAO Yearbook of forest products*

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EUROSTAT – COMEXT trade database

UN Statistics Division – UNSTAT trade database

EFI – Forest Products Trade Flow database

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Industry Association – products data

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The UNECE, jointly with FAO, EUROSTAT and ITTO, collects annual data on production and trade in forest products. Information is available in the form of reports, publications, tables, websites and databases. Industry associations assemble production and trade information relevant to their industries. The scope maybe limited to their member countries, thereby access may be restricted to members.

The EUROSTAT and UNSTAT collect trade statistics according to internationally agreed standards on all products for the EU and the rest of the world. These have detailed coding for most forest sector products. The data are accessible through electronic media, though there may be an accessibility fee. Summary data are published but not orientated to narrowly defined sector interest (Wardle et. al., 2000).

EFI has established a standardised forest products trade flow database using UNSTAT data covering all years and all countries of the world back to 1962. Partial access is possible through the web, but limited to EFI members. Summary information has also been published and some research access has been provided (Michie and Wardle, 1998).

#### *Demand*

The annual production and trade system meets the demand of the government members of the collecting organisation. However, some users regarded it as slow and lacking in detail. There is demand for accessible, assembled and summarised trade information and trade statistics relating to specific forest product areas and inter-country flows – a facility that is feasible but not easily obtained from the existing system.



## **Contribution to GDP and employment**

### *Supply*

Some information on GDP by sector is collected by the EUROSTAT and the UN. However, it is not possible to identify precisely the information relating specifically to forestry or particular forest industry or service branches relating to the forest sector.

### *Demand*

There is a strong perception of need for reliable indicators of the economic activity of the sector identified with particular industries and services. “Information on the economy needs to include value of output by product, intermediate consumption, gross/net value added at basic prices, fixed capital formation, factor income, operating surplus, entrepreneurial income, net fixed capital formation and labour input. Information on prices and labour cost are important”. The demand is for more refined information than is readily available from existing statistics.

## **Wood and energy and energy balance**

### *Supply*

Though there is information on total wood production, which is categorised to some extent, information on the actual end-use of wood produced is not recorded in international statistics, nor are there records of the consumption of wood in energy generation.

### *Demand*

There is a perception of the need to know the quantity of wood from wood produced for energy use, in view of the competition with supply to other sectors, the relationship with the potential wood supply and the contribution to energy supply.

## **Services and people’s use of forest**

### *Supply*

There are no comprehensive international statistics about services provided by forests, partial information about different functions has been collected, for example in ECE Timber trends and outlook studies. Some local assessments have been made on the number of people using forests for recreation.

### *Demand*

Information on the use and value are relevant to ideas about compensation for the use of forests by outsiders, such as access for fruits, water protection, and amenity benefit to neighbours. Such information is as relevant to the assessment of the value as to the social benefit from the forests.

### *Private woodland enterprises*

Information is lacking on the number of owners, area of the properties, annual cuttings per owner, profitability per exploitation, if the activity of the owner is full-time or part-time, the average age of the owner, and the average income per hectare and owner.

### *The information format*

Information and data can appear in many different formats. Basic statistical information may be held in the form of a database containing every element of data in a coded format. Data may be published in yearbooks in printed or electronic format, or they may be analysed to produce summary tables supported by graphics showing distribution and trends, together with descriptive text. Data may also be analysed to provide information to guide a particular decisions.

### *Supply*

Most information providing organisations have designed information systems to meet the specific objectives that they serve. Thus the information may not be in the form relevant to users seeking information for other purposes. Many entities do provide access to their information through the web and online.

### *Demand*

The greatest need, emerging from this study, was for ready access to information with sound analysis in a processed, aggregated and harmonized form and the provision of well-formulated interpretation. Usually the need will be for information precisely relevant to the issue with which the user is concerned. The web and online publication were the most preferred means of reaching for information.

### *Value of information and willingness to pay*

Information and data assembled by organisations on different aspects of the forest sector may constitute only part of the collecting organisation's concern. There may be merit in building expertise in identifying and accessing data and/or assembling and interpreting data and information. The availability of such services may have value to information users. The provision of services may have a cost.

### *Supply*

Many international entities provide free access to their information. Some important statistical data are accessible but subject to a user fee. Certain consulting companies provide the services of assembling and analysing information from available data sources on a contract basis.

### *Demand*

There is a strong perception that international information should be collected and made freely available to the public. There is also recognition that the identification, extraction, assembly, analysis and interpretation of information have a cost. Organisations are willing to pay accessibility fees, to contract competent consultants to prepare information to meet their specific requirements. Certain international organisations also organise projects to assemble the required information.

### 6.3 Summary of demand and supply

Firstly, in certain areas international information is good, accessible and meets user demand. Secondly, in some other areas seen as important by users, basic information is available but the available analysis and accessibility does not satisfy user demand. Thirdly, there are areas where the basic data are problematical or missing, while the users place great importance on getting valid information on these areas.

Concerning the form of information, the strongest demand was for ready access to information with sound analysis in a processed, aggregated and harmonised form and the provision of well-formulated interpretation. The web and online publication were the most preferred means of reaching for information. There is an indication of a limited willingness to pay for information services through consultancy contracts and special projects.

Figure 6 shows, for some selected examples, the basic situation of forest sector information supply and demand.

Legend: -> = Supply <- = Demand				
	Data	Processed Data	Summary & Graphics	Reports
Forest Resources	—————>			
				←—————
Spatial Information	—————>			
				←—————
Fire	—————>			
				←—————
Production	—————>			
			←—————	
Trade	—————>.....>			
			←—————	
GDP	.....>			
			←—————	
Employment	.....>			
			←—————	
Wood Consumption/ Energy	.....>			
			←—————	
Prices	.....>			
			←—————	

**Figure 6.** Forest sector information supply and demand (selected examples).



# 7. Possible Tasks and Objectives

## 7.1 Introduction

In the previous chapter we found that there were important areas of information where there was demand not met by supply and that there were people who wanted that demand to be met. In this chapter the possible objectives and tasks for any additional effort on the collection, analysis and dissemination of international forest sector information are considered. Ideas about possible topics and approaches are discussed.

First and foremost any new additional effort must complement existing systems. Conflict and competition could be counter-productive in distracting from existing effort and diluting resources. Thus the additional effort must be targeted at important areas not currently provided for by existing systems and should be provided with new resources. As on any important topic there will certainly be work in progress in both international and national organisations which will be relevant to the information effort, the approach should be through partnerships to collect, validate, analyse and disseminate data and information.

## 7.2 Choice of topics

First we look at the information supply/demand situation of a number of topics as a basis for judging the priority for additional effort and the type of information activity that would be most beneficial. Thus:

The situation relating to **forest resources and land use** is that international information is collected analysed and disseminated by a number of institutions and the perception is that this effort largely meets the demand. In so far as it is found unsatisfactory a process exists and is working to make improvements to overcome deficiencies. New effort outside these processes might be counterproductive.

The situation relating to **trade in forest products** is that excellent basic data are available, but while it is considered of great importance the information is perceived to be poorly accessible. In this situation a service in validation, analysis and presentation of information specific to the sector's needs may be appropriate.

Information on **GDP and the economic dimensions of forest sector activity** are problematical. Data specific to the various branches and types of activity are not readily available. Objective assessment of the economic contribution is considered important. Investigation of basic data and the development of acceptable methodology for estimation are possible objectives.

International data on **wood use in wood products and energy** is available to only a very limited extent, though there are many potential sources. This type of information is recognised as basic to economic and policy analysis. Development of an information network to bring this type of information together is a potential area of activity.

Suggestions have been put forward in discussions with contacts in the course of this project that **information for all forest based industries** should be brought together in a consistent manner.

Complex information on the **structure and the economy of private forestry** activity is needed as a basis for policy in that area.

These are important ideas to which a new initiative may be able to make a contribution. Particular interest in the idea of additional international forest sector information service has come from associations representing forest owners, and wood using industries. They have indicated the particular difficulty of identifying and bringing together the wide range of information required to carry out the tasks of covering the sector. They stressed the importance of ready access to well formed information relevant to particular concerns. This perhaps suggests an information assembly and analysis activity, specializing in knowledge of the location of relevant information able to respond to a range of needs. An important suggestion was that the user community should take part in the choice of information areas to be worked on.

### 7.3 Choice of approaches

New additional effort on international forest sector information might take various approaches. Some possible approaches, of which it might adopt one or a combination of several, are the following:

- Assembly, analysis and dissemination of developed information summaries and presentations in areas such as trade information
- Network for assembly and dissemination, for example, information on forest product prices
- Development of information profiles required by particular sector branches
- Project type activity oriented to meeting information needs of priority topics

It may also adopt a research approach. Two possibilities, in line with the findings on supply and demand, might be the following:

- Investigation of data and indicators for estimation of sector and branch economic contribution;
- A research network to develop methods to estimate wood use for energy

### 7.4 Other efforts on forest sector information

This section discusses three additional ideas that might be considered in the selection of activities in a new information initiative.

## **A) Reporting on qualitative indicators**

Besides the reporting on quantitative indicators it is important to monitor and report on qualitative indicators also. Qualitative indicators, such as those adopted by the MCPFE (2003), help to describe the overall policies, institutions and instruments for sustainable forest management at national or regional level.

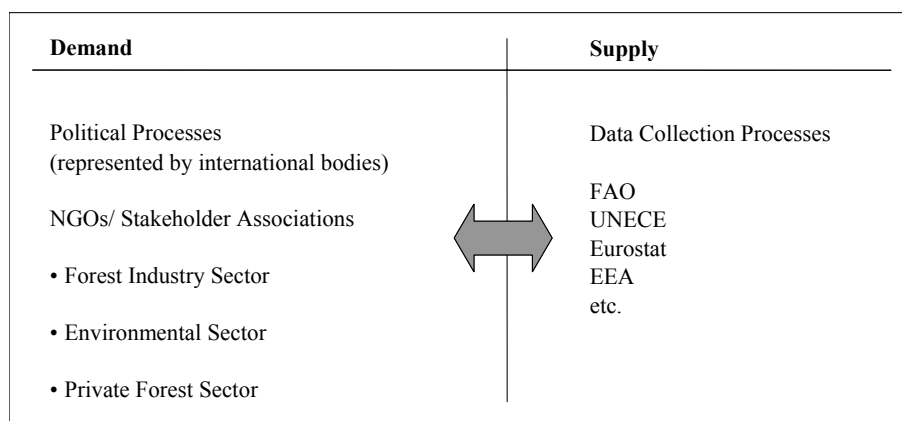
Individual policy measures, as a response to concrete and specific forest related issues need to be seen in context. The different country traditions, as well as the more concrete differences in government systems and legal systems predetermine activities and policies, and their effectiveness. Currently, there are only a few on-going initiatives that compile information on legal, financial and political efforts, and activities that implement and maintain SFM at national or regional level. The first sound information at pan-European level has been collected and analysed recently by the UNECE/MCPFE for the reporting to the upcoming MCPFE in Warsaw November 2007. The information for that report had been collected by an enquiry structured according to the policies, institutions and instruments for SFM in general, and by particular policy areas, such as carbon balance, health and vitality or biodiversity.

Although a lot of information could have been compiled for that particular report, national authorities like the ministries often face difficulties in getting sound information on relevant policies, institutions and instruments collected at national or regional level. The National Forest Programmes (NFP) is one important means to structure and formulate national/regional objectives and to describe relevant policies, institutions and instruments in place. A new initiative could provide support for collecting information on qualitative indicators. Furthermore, it could provide help in putting collected data on quantitative indicators in relation to qualitative indicators. Interpreting the entire context of forest status and changes in relation to on-going and existing policies, institutions and instruments is crucial for implementing and maintaining SFM at various scales.

## **B) Data Collection on Private Sector**

Data on the private forest ownership sector are partly difficult to assess at European scale, as there are not always monitoring structures in place, either at national or regional level. Data especially on the small-scale forest ownership sector are lacking.

With respect to the upcoming MCPFE in Warsaw in November 2007, the UNECE/FAO Timber Section, together with the MCPFE Liaison Unit Warsaw and CEPF have elaborated and sent an enquiry to the national ministries, as there is a significant lack of knowledge concerning the private forest sector in Europe. A significant share of the total forest area in Europe is owned by private forest owners. These forests play a key role in sustaining forest ecosystems and enhancing rural development in Europe. Moreover, the private forest sector in Europe is rapidly changing due to various reasons, like migration from the land to more urban areas or due to land splitting in the cause of heritage. New work could support data collection on private forest sector to facilitate a better understanding of the European private forest owners and to develop policies for private forestry.



**Figure 7.** Demand-Supply Analysis (after Requardt 2007).

### C) Support for a continuous Demand-Supply Analysis

There are several on-going initiatives to harmonise and streamline monitoring, assessment and reporting processes, but which often focus on particular theme rather than on the entire “big picture” of demand and supply relevant to the forest sector (Figure 7). Hence, a continued dialogue/mission focusing on the complexity of obligations and data requirements in comparison to on-going data collection processes seems necessary.

Besides the existing harmonisation and streamlining processes and initiatives, it is important to constantly check whether the available data fulfil existing requirements, not only of political processes but also of stakeholder associations that highly influence political processes. Similar to the questionnaire described above in the chapter on information needs, that has been sent to various stakeholders and representatives, further demand-supply analysis organised as a continuous process seems necessary. Especially the specific demands of non-governmental driven requirements as of various NGOs, within the forest industry, the environmental or the private forest sectors, should be analysed and articulated comprehensively to on-going monitoring, assessment and reporting processes. Support on this could be given by a new initiative, which could provide an information platform for helping NGOs in influencing on-going monitoring processes that are rather governmental driven than NGO driven.

In addition to the above objectives and tasks, a more specified demand analysis would be highly valuable. The key questions of such a demand analysis are: Who needs actually what kind of information? Who are the users and for what do they use the information that is compiled by tremendous on-going efforts? Study like Parviainen and Lier (2006), which describes the use, as well as the particular differences of national forest report is a good example to assess who is actually using national forest data.



## 8. Conclusions and Recommendations for a New Initiative

It was found that there were important areas of information where there was demand not met by supply and that there were people who wanted that demand to be met. In this chapter we summarise some considerations and options that may help in formulating any new initiative on international information on the forest sector.

### General Considerations

Is there a need for better information exchange? Who is asking for it?

This assessment has found that:



























- There are areas where the information available largely meets demand;
- There are areas where basic data are available but users require easier access and appropriate analysis to meet their needs;
- There are areas where the data are problematical or missing and research is needed on data collection and estimation to develop effective information to meet needs.

There are existing sources of international forest and forest industry information. Therefore creation of a new “expert service”, which undoubtedly uses this existing information, does not make sense. Conflict and competition could be counter-productive in distracting from existing effort and diluting resources.

The current assessment has found that there are areas, as summarised above, where the existing information system does not meet all important needs. So there is a place for additional effort, but to be effective:

- New additional effort must complement existing systems;
- Conflicts and competition should not be allowed;
- There should be partnerships to collect, validate, analyse and disseminate.

Research, development of new information systems and assembly of “difficult” information can be facilitated by bringing together or networking in teams of experts. A major requirement in the establishment of any new information series is continuity. Information should be objectively collected and analysed and available to all in a transparent manner and in a non-competitive way.

Legend:	 Demand but no supply	 Sufficient supply	 Supply partially meets demand		
	Data	Processed Data	Summary & Graphics	Reports	
Forest resources					
Spatial information					
Fire					
Production					
Trade					
GDP					
Employment					
Wood consumption / Energy					
Prices					

**Figure 8.** Summary of forest sector information demand and supply.

## Options

In the assessment of supply and demand, the data in some topic areas were found to be problematical or missing. In other areas information was inaccessible or not available in the forms that met user needs. Research, analytical, networking and dissemination activities could support improved delivery of needed information. In selecting topics and areas of activity, the search would be in the areas where there is a strong demand but very little supply. Following from Figure 6, Figure 8 provides a summary of possible areas where there is a demand but no or limited supply.

### Options in relation to topics

- Development of an information network to strengthen information on wood use in wood products and energy;
- Trade in forest products – validation, analysis and presentation of information specific to the sector's needs;
- Investigation of basic data and the development of acceptable methodology for the estimation of information on GDP and the economic dimensions of forest sector activity;
- Development of an information network for forest product price information;
- Development of information profiles relevant to new sustainability criteria;
- Development of information profiles required by particular sector branches;

- Development of information on the private forest ownership sector;
- Development of information on qualitative indicators

### **Options in relation to type of activity**

- Assembly, analysis and dissemination of relevant information summaries and presentation on selected issues;
- Development of in house knowledge of information networks, platforms and metadata to support information assembly;
- Development of research networks on problematical information;
- Investigating information needs through an on-going needs enquiry.

### **Options in relation to the market**

- Core funding (long-term activities; pilot projects);
- Participation in public contracts (linked to OEF strategic issues);
- Consulting contracts to meet special information needs (on request).

## **Recommendations**

The strategy of any new information initiative should focus on international issues with a policy orientation, which are of major importance to the European forest sector community. The objective would be to bring together information on the economic and social dimensions relevant to the selected issue, evaluating these and presenting comprehensive reports on the outcome.

The initiative should be flexible in the selection of issues, responding to the current needs of the forest sector community. Its resources may limit it to tackling only one major issue within a working period. It should be proactive in identifying, researching and assembling information from all sources and sectors relevant to the issues addressed.

In order to carry out its work it will require expertise in information and statistics of the European forest sector. It will require competence in computing, networking and informatics, as well as developing a comprehensive knowledge of forest and related sector information platforms, metadata and databases. According to the issues addressed, there may be a need to mobilise specialised expertise to ensure competence in researching the relevant topics.

The method of working must be collaborative. Selection of issues will be in partnership with the forest sector community. Any new initiative must work in partnership with existing information entities to collect, validate, analyse and research the information relevant to selected issues. Collaboration may be supported by networking, seminars and workshops to ensure the inclusion of the greatest range of relevant expertise.

In its selection of topics, it is recommended that the initiative would be assisted by advice from relevant experts, for instance from international organisations, industry

associations, research organisations and non-governmental environment organisations relating to the European forest sector.

The importance of flexibility and of responsiveness to the information needs of forest sector community was emphasised above; as was the option for the initiative to adopt a project approach developing networks relating to a specific urgent but problematical information need. An example could be a pilot project “information on wood for energy” in the forest and forestry sector. The topic was rated with the highest priority for improved information coverage in the needs enquiry. Such a project might explore information on quantitative, economic and social dimensions relating to the use of wood for energy. It would need to be carried out in collaboration with the EU ‘wood for energy’ strategy, the ECE/FAO studies on wood consumption and the industry association studies of impact of bio-fuels. It would involve a multi-disciplinary, multi-sectoral and multi agency collaboration. It would be important to ensure that the information initiative was complementary to on-going work on the general subject.

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## **Annex 1. List of entities included in the metadata record.**

1. CEI-Bois	The European Confederation of the Woodworking Industries
2. CEPF	Confederation of European Forest Owners
3. CEPI	Confederation of European Paper Industries
4. CoE	Council of Europe
5. DG-ENV	European Commission's Environment Directorate General
6. DFDE	Database on Forest Disturbances in Europe
7. EarthTrends	Earth Trends by World Research Institute
8. EEA	European Environment Agency
9. EFERN	European Forest Ecosystem Research Network
10. EFIDAS	European Forestry and Information Data Analysis System
11. EFFIS	European Forest Fire Information System
12. EFISCEN	EFISCEN Inventory database
13. EFI	European Forest Institute
14. ETC-BD	European Topic Centre of Biological Diversity
15. EUROSTAT	European statistics
16. FAO	Food and Agriculture Organisation
17. GFIS	Global Forest Information System
18. GMES	Global Monitoring for Environment and Security
19. Greenpeace International	Greenpeace
20. ICP Forests	International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests
21. IEA	International Energy Agency
22. ILO	International Labour Organisation
23. IPCC	Intergovernmental Panel on Climate Change
24. IPGRI	EUFORGEN – European Forest Genetic Programme
25. ITTO	International Tropical Timber Organisation
26. IUCN	The International Union for the Conservation of Nature and Natural Resources
27. IUFRO	International Union of Forestry Research Organisation
28. JRC	Joint Research Centre
29. LTFRA	Long-term European forest resources database
30. MCPFE	Ministerial Conference on the Protection of Forests in Europe
31. NFZ.forestnet	Nancy-Freiburg-Zurich Forestnetwork
32. OECD	Organisation for Economic Co-operation and Development
33. UNCSD	United Nations Commission on Sustainable Development
34. UNECE-TC	United Nations Economic Commission for Europe – Timber Committee
35. UNECE-EfE	United Nations Economic Commission for Europe – Environment for Europe
36. UNEP GEODATA PORTAL	United Nations Environment Programme – Geodata Portal
37. UNEP-GRID	United Nations DEWA/GRID Europe
38. UNEP-WCMC	United Nations Environment Programme – World Conservation Monitoring Centre
39. UNSTAT	United Nations Statistics Office
40. WFI	World Forest Institute
41. Worldbank Group	Theme: Environment
42. WRI	World Resources Institute
43. WWF	World Wide Fund for Nature

**Annex 2: Priority attached to the pan-European Indicators.**

	No.	Indicator	low interest	medium interest	high interest	no interest	NA
C1	1.1	Forest area	0	1	14	1	0
	1.1b	Forest types	2	4	8	2	0
	1.1c	Other wooded land	4	6	4	2	0
	1.2	Growing stock	1	3	11	1	0
	1.3	Age structure and/or diameter distribution	2	5	6	3	0
	1.4	Carbon stock	0	6	9	1	0
C2	2.1	Deposition of air pollutants	5	4	2	5	0
	2.2	Soil condition	8	3	3	2	0
	2.3	Defoliation	7	2	2	5	0
	2.4	Forest damage	2	5	7	2	0
C3	3.1	Increment and fellings	3	1	10	1	1
	3.2	Roundwood	4	2	9	0	1
	3.3	Non-wood goods	4	4	3	4	1
	3.4	Services	5	3	3	3	2
	3.5	Forests under management plans	2	5	5	3	1
C4	4.1	Tree species composition	1	3	7	4	1
	4.2	Regeneration	5	3	5	2	1
	4.3	Naturalness	6	2	3	4	1
	4.4	Introduced tree species	5	3	2	5	1
	4.5	Deadwood	5	2	5	3	1
	4.6	Genetic resources	6	4	1	4	1
	4.7	Landscape pattern	4	3	3	5	1
	4.8	Threatened forest species	4	4	4	3	1
	4.9	Protected forests	3	1	8	3	1
C5	5.1	Protective forests – soil, water	2	5	5	3	1
	5.2	Protective forests – infrastructure	3	5	4	3	1
C6	6.1	Forest holdings	2	4	7	2	1
	6.2	Contribution of forest sector to GDP	3	4	6	2	1
	6.3	Net revenue	1	4	6	3	2
	6.4	Expenditures for services	3	3	5	3	2
	6.5	Forest sector workforce	1	2	6	6	1
	6.6	Occupational safety and health	2	3	1	6	4
	6.7	Wood consumption	2	2	10	0	2
	6.8	Trade in wood	1	5	8	0	2
	6.9	Energy from wood resources	1	3	10	0	2
	6.10	Accessibility for recreation	8	3	1	2	2
	6.11	Cultural and spiritual values	7	3	1	3	2