Analysis of Protected Forest Areas in Europe - Provisional Results of COST Action E27 PROFOR

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Abstract

Protected Forest Areas PFA have become a major issue in the international forest policy forum. To analyse the large number of PFA categories and classification systems at both the national and international level, the EU-COST Action E27 "Protected Forest Areas - Analysis and Harmonisation" was launched in 2002 with a duration of 4 years. The main objective of the action is to describe, analyse and harmonise the wide-range of PFA categories used in European countries within the context of existing international systems of protected forest areas. The scientific programme covers PFA definitions, national classifications and their historical and legal background, analysis of options for the integration of data collected in national forest inventory programmes, and harmonisation of definitions and identification of problem areas when using international classification systems and reporting to international organisations. Clarification of the concept of naturalness and key terms is needed. An overview of provisional results of the action is given.

Keywords: protected forest areas, biodiversity conservation, categorisation of nature reserves

1   Introduction

Three major characteristics distinguish European forests from other regions of the world: Firstly, the forests have virtually all been altered by man to some extent. Thousands of years of human impact – which was not always characterised by sustainable use – has changed the conditions and proportions of forests substantially. Secondly, forests of most parts of Europe are artificially fragmented to some degree. The size and shape of the remaining forests do not allow the same concepts of biodiversity conservation as in large, untouched forest landscapes. Thirdly, the ownership structure is very differentiated and dominated in most countries by small scale forestry on private or community land. These specific attributes of European forests often reduce the possibilities to establish protected forest areas or impose specific approaches in the selection, establishment and management of protected forest areas.

Data on protected forest areas have been collected internationally in connection with other forest inventory data through the Temperate and Boreal Forest Resource Assessment TBFRA 2000 (UN 2000), using the IUCN classification (IUCN 1994). In Europe, the European Environment Agency (EEA) and its European Topic Centre on Nature Conservation in Paris have collected information on all types of designated protected areas since 1995. The Ministerial Conference on the Protection of Forests in Europe (MCPFE) developed the first set of Pan-European Indicators for Sustainable Forest Management in the early 90s within the so called Helsinki-process (1993-1995). These indicators have been revised and adapted for use in the Fourth Ministerial Conference 2003 in Vienna (MCPFE 2003 a). One of the 9 indicators for the criterion 'C4: Maintenance, conservation and appropriate enhancement of biological diversity in forest ecosystems' is indicator '4.9: Protected forest'. This means that countries are requested to monitor, assess

and report the Protected Forest Areas (PFA) that exists in the country (both in absolute and relative figures).

The initiatives have produced rather varied results on the state and numbers of forest protection in Europe. The reasons for the difficulties in comparison include the different definitions of forest, variation in the protection categories and in the activities permitted in protected areas, differences in the naturalness and continuity of forests, and differences in the protection objectives (Parviainen & Frank 2003). A clarification of the state of forests protection in different countries is still needed in order to achieve a harmonised discussion.

2 Assessment of protected forest areas in Europe

2.1 Strictly protected forest reserves - COST Action E4

The first systematic analysis of strictly protected forest areas in Europe was COST action E4 Forest Reserves Research Network, carried out in 1996-1999 (Parviainen et al. 2000, European Commission 2000). One of the main results of COST E4, when analysing strict forest reserves was that the ideal non-intervention concept of developing appreciable areas of real untouched forests is not a realistic scenario for Europe. The largest natural forests strictly protected in reserves are in Finland, Sweden and the remote areas of Central and Eastern Europe. Due to the continuous use of forests historically, large original forests can be found only in the boreal zone on the European side of the Russian Foundation. Scattered relics of native forests still persist in mountainous areas of the Balkan, Alpine and Carpathian regions (Diaci 1999, Diaci & Frank 2001, Korpel' 1995). Because of the historical use of forests and the specific small scaled ownership structure, the European concept of forest protection has become a more complex and varied one than in other countries with huge areas of untouched forests (Parviainen & Frank 2003). A specific characteristic of forest protection in Europe is the necessity to include forest areas where use has been, or still is, limited to some degree and management linked with the aims of multiple forest use.

2.2 Temperate and Boreal Forest Resource Assessment TBFRA 2000

The Temperate and Boreal Forest Resource Assessment of UN-ECE/FAO (TBFRA 2000) in Europe has used the "Protected Area Management Categories" of IUCN (1994), which are developed for worldwide use, and include 6 protection categories (United Nations 2000). The IUCN classification system works only for the assessment of the protection status of vast, untouched, continuous forest areas, but is not so easily applied to the forests of Europe.
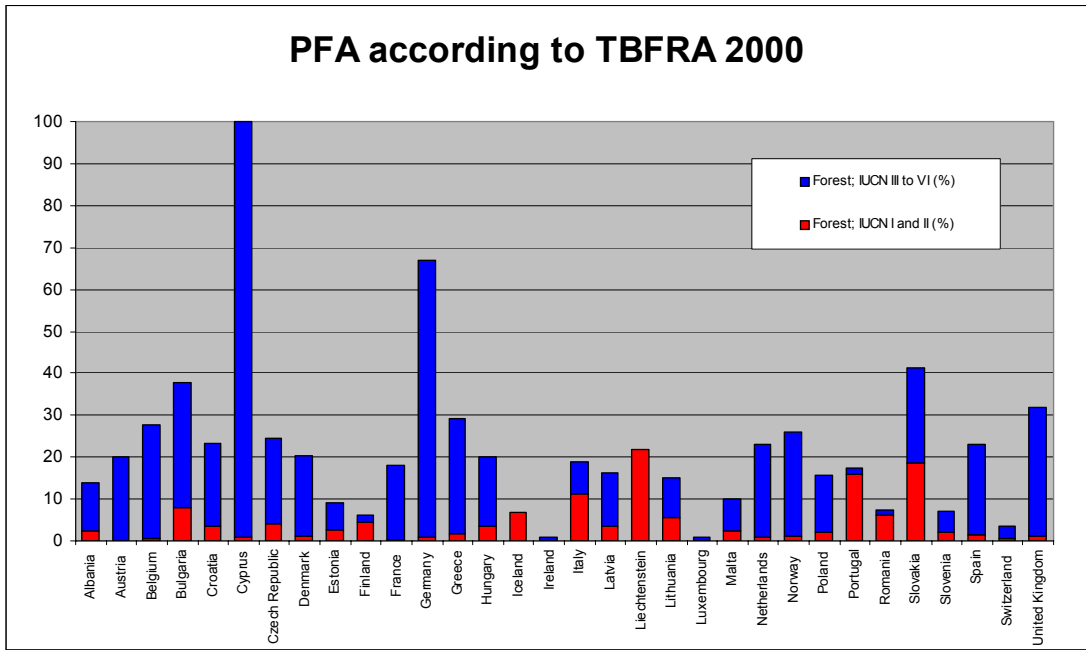

Figure 1. Reported figures for protected forest area (relative to the total forest area), as reported in the Temperate and Boreal Forest Resource Assessment (UN-ECE/FAO) 2000. Source: COST Action E27 – Protected forest areas in Europe – analysis and harmonisation – Discussion Paper WG 1.

2.3 European Common Database on Designated Areas (CDDA)

In 1995, the European Environmental Agency (EEA) with the help of its Topic Centre (ETC/NC) in Paris, the Council of Europe and the WCMC started to co-ordinate their activities related to a data basis on designated areas. This project is called "Common Database on Designated Areas" (CDDA), and it includes the information from nationally designated areas, EU designations and international designations. The aim is to produce an overall database on all protection categories in Europe, and a complete database of all protected sites in Europe. The data-input is generally co-ordinated by the national ministries of the environment.

This CDDA list is an important database which collects all designation types by national names, numbers and surface. It contains information on over 50,000 designated areas from 48 countries, covering more than 800 various national designation types. (An estimation of all areas for Europe is around 65,000–70,000 sites). CDDA, however, does not make any analysis on the harmonisation of the national designations.

These numbers show that the comparison of protected forests is extremely different because of numerous categories and definitions. CDDA provides a subdivision in type A, B and C for every individual protected area included. However, this is not a classification as such, only a way to 'group' the records. It is not designed nor used for reporting purposes.

2.4 Ministerial Conference on the Protection of Forests in Europe(MCPFE)

The "Ministerial Conference on the Protection of Forests (MCPFE)" is a high-level process for forest policy dialogue and co-operation, including forest biodiversity issues. "Area of forest and other wooded land protected to conserve biodiversity, landscape and specific natural elements, according to MCPFE Assessment guidelines" is an important indicator for forest biodiversity within the MCPFE process. Countries are requested to monitor, assess and report the protected forest area (PFA) that is present in the country. MCPFE also collaborates with the ministerial process "Environment for Europe" and in the "Pan-European Biological and Landscape Diversity Strategy (PEBLDS)" (MCPFE 2003 a). The MCPFE Assessment Guidelines for Protected and Protective Forest and Other Wooded Land in Europe (MCPFE 2003 a) are an outcome of the implementation of the joint "Work-Programme on the Conservation and Enhancement of Biological and Landscape Diversity in Forest Ecosystems 1997–2000" of the MCPFE and "Environment for Europe", the pan-European ministerial process of the ministers for Environment.

The MCPFE classes (Table 1) consist of three categories with different management objectives: protected forests safeguarding biodiversity, protected landscapes and specific natural features, and protective functions of forests mainly managed for the protection of soil, water, and against natural hazards. There is a clear distinction between protected forests and protective forests, as the first are especially dedicated to the conservation of forest biodiversity, while protective forests are mainly managed for the protection of other natural resources, infrastructure and people.

Table 1. MCPFE classes of protected and protective forest and other wooded land respective protected area management categories of IUCN and designation types used by EEA in its data base on designated areas (CDDA).

MCPFE Classes		EEA	IUCN
1. Main Management Objective "Biodiversity"	1.1: "No Active Intervention"	A	I
	1.2: "Minimum Intervention"	A	II
	1.3. "Conservation Through Active Management"	A	IV
2. Main Management Objective: "Protection of Landscapes and Specific Natural Elements"		B	III,V,VI
3. Main Management Objective : "Protective Functions"		(B)	n.a.

The MCPFE classes are congruent both to the Protected Area Management Categories of IUCN – The World Conservation Union and the Common Database on Designated Areas (CDDA) managed by the EEA.

Protected forests amount to 11.7 % of the total forest area in Europe. Altogether, Europe's protected forest areas cover about 127 million ha. Of these, 85% are designated to conserve forest biodiversity, while 15% are designated to protect landscapes. Protected forests with no intervention (MCPFE class 1.1) in relation to the protected forest area in Europe are 3.2%, with minimum intervention (MCPFE class 1.2)

2.8%. The majority covers MCPFE class 1.3 (active intervention) with 79%, and protected forests designated to protect landscape (MCPFE class 2 covers 15 % of the whole protected area).
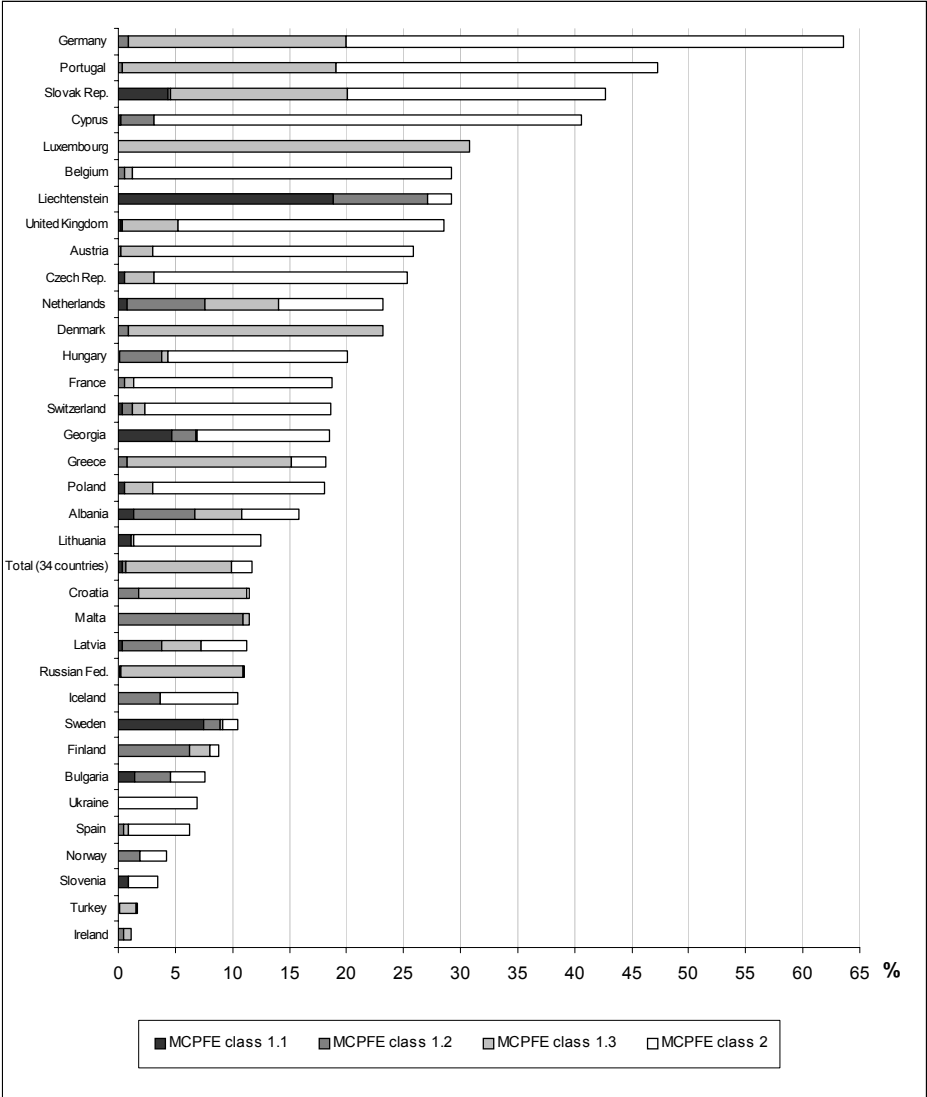

Figure 2. Share of protected forest and other wooded land in 34 European countries. Source: MCPFE (2000 and 2002). (Figure taken from MCPFE, 2003b).
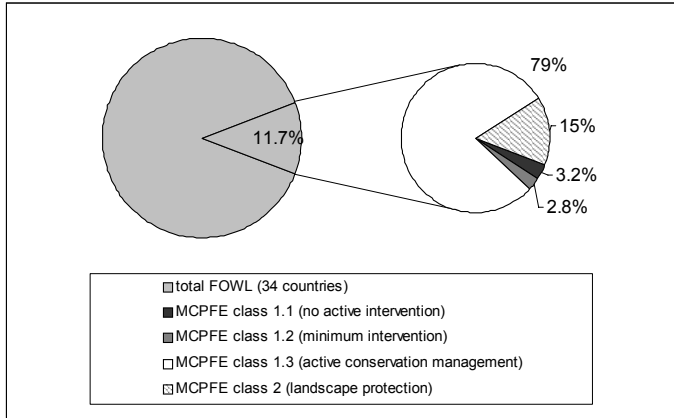

Figure 3. Total forest and other wooded land (FOWL) area and share of MCPFE classes 1.1-1.3 and 2 in 34 European countries. Source: MCPFE (2000 and 2002) Figures taken from MCPFE 2003b).

2.5 Natura 2000

In the European Union, "Natura 2000" is the common network of protection of all ecosystems according to the EU Habitats Directive 92/43/EEC and Birds Directive 79/409/EEC, with the aim of preserving the most important natural habitat types and species in the territory of the EU. Besides forests, the Natura 2000 network also includes other relevant ecosystems of common interest.

The still ongoing process of the development of the Natura 2000 network, the overlapping of designated Natura 2000 sites with existing protected areas and the unclear assignment of individual sites to internationally agreed protection categories currently does not allow a clear picture how much forests differentiated by protection classes is included in Natura 2000 in Europe.

2.6 International Union for the Conservation of Nature (IUCN)

In 1994 IUCN introduced the 'IUCN international system of protected area management categories' (IUCN, 1994). This was intended to improve communication and understanding amongst experts and to provide international standards to help governments raise the quality of protected area management and international data collection, handling and dissemination. With the introduction of the IUCN international system it was also intended to encourage governments to develop national and sectoral interpretations of the global IUCN protected area guidelines.

However, it has become evident that there are uncertainties about how to apply the IUCN system in relation to some aspects of forest protection. Governments have encountered difficulties in reporting to the compilation of the 1997 UN list (UN, 1998). There has also been inconsistency in the way countries distinguished between the protection categories, and irregularities have been found in the data on protected forests reported to WCMC (1997 list) and the FAO Forest Resources Assessment 2000.

3 Protected forest areas in Europe – analysis and harmonisation - COST action E27 (PROFOR)

3.1 What is COST?

COST is an intergovernmental framework for European Co-operation in the field of Scientific and Technical Research, allowing the co-ordination of nationally funded research on a European level. COST is based on actions. These are networks of co-ordinated national research projects The Actions are defined by a Memorandum of Understanding (MoU) signed by the Governments of the COST states wishing to participate in the Action. COST Actions cover basic and pre-competitive research as well as activities of public utility. COST has a geographical scope beyond the EU; most of the Central and Eastern European countries are members. COST also welcomes the participation of interested institutions from non-COST member states without any geographical restriction. More information can be found at the COST-website: www.cordis.lu/cost

3.2 Goals, signatory states, observers, working groups

The main goal of COST Action E27 Protected forest areas in Europe – analysis and harmonisation (PROFOR) is to harmonise the wide-range of protected forest area categories used in European countries within the context of existing international systems of protected areas (COST 2001). The duration of the Action is 4 years, ending in February 2006. For further details on the goals and structure of the Action see http://bfw.ac.at/020/profor.

COST Action E27 PROFOR analyses the classification systems of Protected Forest Areas (PFA), the reporting, the definitions of forests and other wooded land used. Some protected areas include both forests and open areas; harmonisation is also needed regarding the assessment of forests inside of protected areas. Other issues are the clarification of the concept of naturalness as used for forest protection, analysis of possibilities of linking PFA to national forest inventory data collection processes and a tentative description of PFA various outputs according to their total economic value. The scientific programme covers PFA definitions, national classifications and their historical and legal background, analysis of options for the integration of data collected in national forest inventory programmes, and harmonisation of definitions and reporting processes to international sources.

By October 2004, 25 European countries have signed the Action: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Finland, F.Y.R. of Macedonia, France, Germany, Greece, Ireland, Italy, Lithuania, The Netherlands, Norway, Poland, Portugal, Romania, Serbia and Montenegro, Spain, Slovenia, Sweden, Switzerland and the United Kingdom.

The following international organisations have asked for an official observer status. They are fully involved in the working process of the action and have full access to all documents and data:
- Ministerial Conference on the Protection of Forests in Europe (MCPFE) – Liaison Unit Warsaw
- European Environment Agency (EEA) – European Topic Centre on Nature Protection and Biodiversity.
  COST E27 further co-operates directly with the following organisations:
- International Union for the Conservation of Nature (IUCN)
- "Environment for Europe" - Pan European Biodiversity and Landscape Diversity Strategy (PEBLDS) – Joint Secretariat
- United Nations Economic Commission for Europe (UN-ECE).
  The action is based on 3 Working Groups, each covering specific Work Packages:

Management committee (MC) One or two representatives from each member country Chair: Georg Frank, Austria Vice-Chair: Jari Parviainen, Finland		
Steering Committee (SC) Chairman, Vice-chairman, Co-ordinators of the Working Groups, Action Secretary, Scientific Secretary		
Working Group 1 (WG1) Jim Latham, U.K. Description and analysis of Protected Forest Areas – national dimension	Working Group 2 (WG2) Kris Vandekerkhove, Belgium Harmonisation and improvement of information on European Protected Forest Areas – international dimension	Working Group 3 (WG3) Andreas Schuck, Germany A clearing house mechanism for European Protected Forest Areas

3.3 Description and analysis of PFA – national dimension – Working Group 1

In order to have a common understanding of PFA it is important to establish a clear overview of national approaches to classification. These approaches differ according to each nation's requirements and circumstances. Knowledge of these differences is important in pan-European and international efforts to map, classify, collect and disseminate information on PFA. The emphasis is on understanding similarities and differences between PFA in different countries, and interpreting these within the context of fundamental geographic, ecological and historical variation.

The main activities of WG1 are the description of the historical background of national PFA-classification systems, the collection of national PFA-definitions, the legal status of PFA and their management, the compilation of basic data of PFA, and reporting procedures. The tasks of this scientific area are divided into two sub-areas, the first being the compilation of information and the second scientific comparison.

As a major output of WG1 scientific reports about the history and state of protected forest areas from each country are in preparation. To make the figures comparable, all country reports follow a standardised scheme:
- History of PFA
- Current state of PFA
- Main types of PFA
- Responsible organisations and procedures
- Selection criteria and representativity
- Inventories and monitoring
- Landscape and spatial considerations
- Future development.

The reports will be an important basis for further analysis of PFA in Europe. In addition to the country reports the following aspects of forest protection are covered by sub-groups resp. task forces:
- History of PFA (Jan-Carl Welzholz, Germany)
- Responsible Organisations (Floor Voode, The Netherlands)

- Selection criteria (Etienne Branquart, Belgium)
- Inventories and monitoring (Flemming Rune, Denmark)
- Identifying differences and commonalities between countries, multivariate analysis of the PFA tables (Etienne Branquart, Belgium; Silvia Saudyte, Lithuania; Jim Latham, UK)
- Tentative description of PFAs various outputs according to their total economic value (Cristina Montiel Molina, Gloria Dominguez Torres, Spain)
- Landscape and wider issues (Cristina Montiel Molina, Gloria Dominguez Torres, Spain)
- Naturalness (Jan-Carl Welzholz, Germany)
- Key terms (Andreas Schuck, Markus Lier, Germany)
- Definition of forests (Georg Frank, Austria)

3.4 Harmonisation and improvement of information on European PFA – international dimension – Working Group 2.

The principal aim of the Working Group 2 is concentrated on Task 2 of the action: enhancement of the quality and clarity of information on PFA at the European level, by delivering input to the three following Work Packages:

- Clarifying and presenting options to harmonise „Protected Forest Area" terms in collaboration with the IUCN international system of protected area management categories;
- Analysing the current procedure for reporting to international organisations and especially the procedures for PFA and identification of problem areas when using international classification systems;
- Clarifying the use of the UN-ECE Timber Committee „Temperate and Boreal Forest Resources Assessment (TBFRA)" classification of „forest" and „other wooded land" with focus on protected forest areas.

Similar to WG 1 the working-group is a diverse mixture of scientists and representatives of administrations of all 25 countries involved in the action, both from forestry and nature protection backgrounds. They represent in other words a wide range of approaches to conservation of biodiversity in forests, and always try to produce input from their country perspective but in an impartial, unprejudiced and scientifically sound way.

The main activities of WG2 concentrate on the following issues:

- Analysis of international classification systems
- Comparison between TBFRA, MCPFE, EEA and personal estimates of the country delegates
- Evaluation of classification systems
- Proposals how classification systems could be improved to provide more harmonised data on protected forests in Europe.

3.5 A clearing house mechanism for European Protected Forest Areas – Working Group 3

The description of the Action, its progress, and the preparation and presentation of the results to the user community is of major importance. The World Wide Web allows making information available in a cost-effective and pertinent fashion. Internet technology also allows for the production of interactive databases and discussion forums, which can be made open or closed to public use. The project website is used as an essential communication, management and dissemination tool for the Action. The website is established and maintained by the European Forest Institute in Joensuu, Finland. For further details see http://www.efi.fi/projects/coste27

The main activities of Working Group 3 are the following:

- Database construction and accessibility via website - glossary on forest terms and definitions, PFA Terminology Database, PFA Bibliography Database, building up on existing data and infrastructure of COST E4 Document management for WG 1 and 2 - Data collection for ongoing tasks
- Data collection on PFA maps - Analysing the existent GIS based Information on PFA
- Elaboration of metadata and links to organisations, processes and DB dealing with PFA
- Elaboration of keyword lists related to protected forest areas
- Contribution to metadata initiatives (e.g. IUFRO Global Forest Information Service) Collecting references on literature related to PFA.

4 Problem areas and discussion

At the current state of the action it is not possible to present final results, even not first results. Without anticipating the final discussion in the working groups the following problem areas recognised can be stated:

4.1 Common Databank on Designated Areas CDDA – Questionnaire and preliminary analysis by COST E27

On the whole, the CDDA has been seen positively by the national experts, if completed and regularly updated. It has been indicated by the experts, that some substantial weakness, however, should be repaired, if of use also for specific PFA monitoring and assessment: The information about individual protected areas is small, includes just name of the reserve, category, size, geographical position. More information about protection objectives,, vegetation types, forest distribution, other wooded land and open land, habitat types, regional and national assignation, representativity, etc. is needed. It was found that some countries lists of categories are complete, but most are incomplete regarding some categories, or categories mentioned are no longer valid. In most cases, the categories are based upon the Nature Conservation Act are registered, but those on other legislations are not. There are some difficulties to distinct between Designated Areas on behalf of nature protection and protective functions. Guidelines for unambiguous assignations are required. The number of areas generally is not complete or not recently up-dated. It is almost impossible to control the completeness of the reported objects. Time of updating and source of information should be noted. The information about size of areas is doubtful, as it is not clear, if area overlapping or double counting (several protection categories set upon the same area) have been excluded. The categories mentioned were known to the correspondents. They are "useful" categories. It is beyond the main scope of COST Action E27 to create improved and complete data sets. CDDA is, however, a good way for improving co-operation between nature protection in general and forest protection and should therefore be continued. A balance between input and benefit must be aimed at.

4.2 Analysis of existing classification systems of PFA in Europe

Working Group 2 has compared and evaluated both the MCPFE and IUCN categorisation system. In an internal discussion paper both systems are described, compared and evaluated, using the results of TBFRA, the MCPFE's State of Europe's Forests 2003, and the input from the country experts of COST Action E27, collected by means of a questionnaire and country reports. The goal of the discussion paper is to produce interpretation guidelines that can be used to provide more harmonised data on protected forests in Europe.

In order to evaluate the usefulness, potential and drawbacks of both classification systems for the reporting on PFA in Europe, the country experts of COST Action E27 were asked to provide some input, using a standardised format (questionnaire). They were first asked to evaluate the reported figures and to produce alternative figures based on the COST E27 country reports and best professional judgement. Based on these results they were requested to point out the main sources of difference between the reported figures. All country experts were asked to study the classification systems again from their national focus, and point out possible problems, difficulties or shortcomings of the existing systems, and to bring forward suggestions for improvement.

4.3 Some preliminary output from the PFA questionnaires

The results provided by the different sources are differing widely. In the replies of the country representatives, MCPFE-classification is commonly mentioned to be more precise, more flexible and adapted to the European situation. It is generally considered to be better adapted for the reporting on PFA classes used in Europe (which was expected, as it was especially developed for this purpose).

Contrary to what was expected, however, the figures for MCPFE are almost as divergent as for TBFRA. In some cases, the expert estimates were closer to the MCPFE-reported figures, but in other cases, they were more in line with TBFRA, or even strongly divergent from both reporting approaches. Even on quite strictly defined protection categories (like strict reserves) reported figures are sometimes even of a different order of magnitude. Therefore, one can state that up to now, no harmonised and comparable dataset on PFA in Europe is available.

The comments on the comparisons given by the country experts explain how these strong differences can occur. Although the results are widely divergent, almost all experts state that the reported figures are indeed

reliable estimates (up to 20 % error), or even more precise figures. The information was mostly gathered by official scientific or administrative bodies, using reliable data sources. National forest inventories are not commonly used as a source for this kind of detailed information. Most of the information is based on national official or NGO-databases, GIS-layers and analysis, etc. In some cases even a specific study was ordered to provide the required data. A lack of reliable data is therefore not the main cause of the divergent figures. Slight changes or differences are sometimes explained by new developments since the time the TBFRA-data were gathered: some new protected areas that have been declared or expanded (e.g. NL: rapid increase of Strict Nature Reserves). Also, differences in delineation of 'forest' are also pointed out as a minor explanatory factor for the differences. A lack of reliable data is therefore not the main cause of the divergent figures.

Almost all correspondents however state differences in interpretation as the main reason for the largely differing figures. Figures can indeed be strongly differing, depending on the strictness of interpretation of the definition, both in IUCN- and MCPFE-systems. Minor differences in interpretation can indeed produce major differences in results.

4.4 Further development and harmonisation of PFA classification is needed

In order to produce reliable and comparable data on PFA in Europe, further clarification of the classification systems is needed. As interpretation differences are so important, it is also advisable to include a harmonisation phase in the reporting process, in order to harmonise the interpretation of the different classes by the country reporting bodies.

Both the IUCN and the MCPFE classification systems are unlikely to be altered - they are internationally accepted and endorsed. Clarifications and guidelines on the criteria to be used are needed to prevent further differences in interpretation. The discussion paper of COST E27 Working Group 2 makes an attempt to give some guidance for correct interpretation for the purpose of more harmonised assessments and reporting of PFA, in order to avoid differences through wrong interpretation. However, a harmonisation phase which brings together the focal points responsible for national reporting will still be necessary, as it is impossible to eliminate all imaginable differences in interpretation.

4.5 Need for assessment and valuation of the 'inclusive' approach to forest biodiversity conservation within multifunctional forestry

Both TBFRA (IUCN) and MCPFE- systems are restricted to areas which are formally designated as protected/protective areas and do not include other areas protected under statutes and mechanisms such as forest regulations, or with multifunctional management under certain 'ecological' restrictions.

COST Action E27 agrees with the 'segregation' approach to forest biodiversity conservation, as outlined in both IUCN and MCPFE-guidelines. The assessment of the amount of forest that is exclusively or primarily managed for biodiversity conservation is an important indicator of the 'performance' of countries, and should therefore be reported in its most clear and strict sense.

At the same time, the Working Group stresses the need for a complementary assessment of the conservation status and ecological management standards that are included in daily practice in the forests outside legal reserves, protected landscapes and protective forests i.e. in commercial forestry and other forest uses. Indeed, many countries/forest administrations make important efforts to implement conservation measures in their daily multifunctional management. These efforts are not to be included in the reporting procedures on PFA.

Moreover, while not providing 'reporting means' for this inclusive approach, countries might be tempted to force these efforts in the reporting on protected forest areas, in order to get them reflected in international overviews. As these areas are probably covering at least 80 % of the total forest area, these efforts are crucial to the overall forest biodiversity (maybe even more important than the protected areas), and should therefore also be assessed, through a clear set of criteria and indicators.

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