

Preface

The origins of forest inventories are linked to national needs for information about forest resources and to inform forestry policies formulation. In Europe, some information was produced in countries such as Belgium, France and United Kingdom in the 19th Century in line with these national objectives. The first statistical National Forest Inventories (NFIs) were designed in countries such as Norway, Sweden and Finland more than one century ago in order to obtain a precise evaluation of national forest timber resources. Most western European countries adopted various methodologies for their NFIs between the 1960s and 1990s in line with their national definition of forest and the economic interest of their wood resource. Finally, other countries set up NFIs in the years from 2000 to answer international agreements and commitments following the Rio Earth Summit in 1992.

National forest monitoring processes have been formed over time and are influenced by the historical, cultural, political and economic context in which they were developed. Forest is defined by law for some countries; others use productivity criteria and most of them utilise tree crown coverage, sometimes with different thresholds as a defining feature. Sampling techniques are now used across Europe, and inventory cycles are commonly employed even if the methodologies and the length of cycles are not the same. The total number of sampling plots visited in one inventory cycle in Europe is more than half a million plots (excluding the Russia Federation). Therefore, NFIs constitute the main source of forest information in terms of exhaustiveness and precision. Nevertheless, due to different national needs, definitions and methodologies, important harmonisation work is needed to facilitate using this full set of plot information and to obtain comparable data that can be aggregated at European level.

The role of forests is continuously growing and diversifying. Starting with the production of wood, forests are nowadays recognised as important reservoirs of

carbon and biodiversity. Forest soils are also increasingly recognised as an important component of the ecosystem. Over time NFIs broadened their scope, and new variables were collected step by step. The utilisation of NFI information for national purposes remains an important function, but international reporting is increasing in importance, particularly after the Rio Earth Summit in 1992. The challenge for NFIs to answer all these reporting exercises is greater than in the past.

New political needs have also arisen, such as intensive use of energy wood to fulfil renewable energy targets (EU 2030 objective of 27 % of renewable energy). The evolution of technologies such as utilisation of wood chips, pellets and briquettes have obliged those responsible for designing and implementing NFIs to reconsider their way of thinking in terms of “wood resources”. It is no longer sufficient to estimate growing stock as “stem volume” because now more compartments of a tree are utilised by the wood industry for producing these new kinds of energy wood. On the other hand, NFIs are obliged to look outside of the traditional sources of wood within forest areas, to those areas outside the forest, as a possible source of additional wood resources. If we would like to increase the use of wood for energy purposes, NFI teams will have to investigate new domains to estimate wood resources outside of the forest with sufficient accuracy.

People responsible for NFIs across Europe gathered in Vienna in 2003 in order to find a way to face these new challenges together and to increase the visibility of NFIs as key actors for both production of information and the knowledge and expertise on how to deal with this information. They created a network of NFIs called “European National Forest Inventory Network” (ENFIN). The ENFIN members submitted a joint proposal for developing research work on the harmonisation of NFIs to the COST office—European Cooperation in Science and Technology—to receive funding for meetings and collaborative activities. A total of 27 European countries joined the COST Action E43: “Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting”. In addition, the Joint Research Centre Institute for Environment and Sustainability as EU institution, the FIA program of the U.S. Forest Service and Scion from New Zealand as non-COST countries joined this COST Action E43. NFI representatives from several other countries such as the US participated in the meetings, highlighting the importance of this subject for production of information and international reporting.

The main objective of this COST Action E43 was to improve and harmonise the concepts and definitions of the existing national forest inventories in Europe in such a way that the inventories will provide comparable forest resource information. The other objectives were (i) to support new inventories in such a way that inventories will meet national, European and global level requirements in supplying up-to-date, harmonised and transparent forest resource information; and (ii) to promote the use of scientifically sound and validated methods in forest inventory designs, data collection and data analysis. The main outputs were a SPRINGER book “National Forest Inventories: Pathways for common reporting” and a Special issue of *Forest Science* (Vol 58, 2012).

Thanks to this success and the cohesion of the NFI group, ENFIN presented a new COST Action in 2010 called COST Action Usewood focusing on the question of comparable data in terms of availability of wood in Europe on a sustainable basis. This question is highly relevant to define global change mitigation strategies and targets for biomass energy as adopted at national and European level, and to support the proposal of an increased use of wood as a post-Kyoto decision. Future scenarios at EU-level highlight a deficit of wood supply compared to wood consumption. Major issues to be clarified by this Action were the potential supply of tree biomass, trees outside forest, and the economic, social and ecological conditions that will determine the wood supply. This COST Action aims at improving the information and methodologies based on the NFIs, in order to reduce the given uncertainties on the potential sustainable wood supply. Such harmonised information is urgently needed to improve the calculation basis for decision makers in the forest, environment, and in the wood and energy sectors.

COST Action “Usewood” involved 27 European countries plus the United States of America as a non-COST member country. NFIs worked closely together with international organisations and institutions such as United Nations and the European Commission. The substantive work was carried out in meetings, workshops and a number of scientific missions involving early stage researchers trained and supervised by senior scientists. Each country actively participated in the work of collectively building questionnaires, filling in these questionnaires and writing the country reports contained in this book. The active participation of forest inventory experts directly involved in practical and scientific work stimulated discussion and promoted successful outcomes. The official duration of the Action was from end of July 2010 to October 2014, but the publishing work through scientific articles and books continued into 2015 and 2016.

The members of COST Action Usewood collected a large amount of information from the NFIs of the participating countries and agreed to compile national methods to estimate wood resources in a single book. In addition to the member countries participating in the COST Action “Usewood”, country reports were also submitted by some of the most significant forestry countries around the world. As a result, this volume includes NFI reports from 28 COST member countries plus Argentina, Brazil, Canada, Chile, China, Ecuador, Japan, New Zealand, Republic of Korea, Peru, the Russian federation, and the United States of America. The forests of these countries comprise seventy percent of the total global forest surface. Most of the reports follow the same structure. The first part of each country report comprises a brief history of the NFI, sampling methods and periodicity, data collection, processing, reporting and use of results on wood resources. A second part contains a description of the land classification, the variables used to estimate wood resources, assessment of wood resources defining forest available for wood supply, wood quality, assessment of changes and other wooded land and trees outside forests.

This information was collated into this book, thanks to the active participation of NFI experts. The authors and editors hope that forest researchers and all those in the community interested in wood resources worldwide will find this information interesting and useful. Furthermore, one of the main aims of this book is to be an essential source of information for people planning a new forest inventory or thinking about modifying the existing one.

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