Technical information

“Framework contract for the provision of forest data and services in support to the European Forest Data Centre”
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1.1 The French National Forest Inventory (FNFI)

1.1.1 Presentation of the NFI

The French NFI is an independent public institution under the administrative supervision of the French Ministry of Agriculture. Its mission is to conduct the permanent inventory of French forests. It establishes statistics about forests, moorlands, hedges, poplar stands and isolated trees. It draws maps and collects ecological and dendrometrical data all over France. It stores raw data in databases and produces maps, statistics and reports. FNFI is therefore at the forefront on topics such as inventory design, data collection, database management, data computing, Web reporting, and "dynamic" mapping. It offers high quality information in a wide variety of fields and formats to its users. These competencies rely on more than 40 high-level experts (including 15 seniors).

For the French NFI, *efficiency*, *data management* and *new technologies* are not only words, they represent concrete results.

In the field of data processing, FNFI's experienced professional team uses up-to-date technologies, to develop numerous applications, for example, a shared platform to help French regional forest actors to share geographical information. This application lets them describe their information using a metadata database, visualise maps and cross geographical data. The first generation of this platform is based on Dublin Core Metadata for description and a Web Map Service for visualisation.

1.1.2 FNFI involvement in ENFIN, Forest Focus, INSPIRE and other international forest networks

At the European level, FNFI is actively implicated in many forestry dossiers. It is a member of **ENFIN** (European National Forest Inventory Network) and closely involved in the **COST Action E-43 on "Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting".** The main objective of this Action is to improve and harmonise the existing national forest resource inventories in Europe. Experts from the French NFI are taking part in each of the three working groups:

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

Moreover, FNFI director, Claude Vidal, is chairman of the working group 1. An engineer takes part in short-term missions from this group whose mission is to propose reference definitions and define harmonisation proceedings.

The French NFI took part in the development of the **NEFIS** project (Network for a European Forest Information Service). One of the experts was involved in the settlement of metadata and controlled vocabularies standards, another one in data preparation and provision. During this project, the experts acquired an experience in thesaurus building as well as norm choice and adaptation. They also studied practical situations with the introduction of metadata and data from the French NFI into the system.

As NEFIS was intended to prepare the ground for **EFIS** (European Forest Information System) to become a European node of **GFIS** (Global Forest Information Service), it gave the opportunity to the French NFI to be aware of the European and International forest community contexts.

FNFI dynamism is also expressed in actions dealing with the **Forest Focus** regulation. For the French part of the European forest monitoring network (16 x 16 km systematic grid), this institution is in charge of the Web application for the reception, validation and storage of Level I and Level II data. The FNFI is the data administrator of this network. Still within the **Forest Focus** framework, FNFI is associated to the French National Focal Centre for forest-fire data management. One of the FNFI team members is also taking part in the Ground Vegetation and Crown Condition expert panels, and was co-author of the 2003 technical report on the Intensive Monitoring of forest ecosystems in Europe (DeVries *et al*. 2003).

In relation to **INSPIRE**, FNFI is declared as a **L**egally **M**andated **O**rganisation (LMO) and proposed one expert in the Metadata group. The European National Forest Inventory Network (ENFIN) declared itself as forest **S**patial **D**ata **I**nterest **C**ommunity (SDIC). On both sides, FNFI will follow the elaboration of the directive proposal and share its knowledge of forest data.
With these implications, FNFI proves another time its will to be involved in the new promising projects turned towards the Future.

The French FNFI is the main provider of forest-related data in France. It provides information to the FAO for the Forest Resource Assessment (**FRA**) and to the UNECE for the Temperate and Boreal Forest Resource Assessment (**TBFRA)** and the **MCPFE** Criteria and indicators.
But its missions are not restricted to data production. It also takes part in the working groups defining the results to be presented. It contributes to the setting up of the joint questionnaire FAO/UNECE/Eurostat/ITTO on production and trade of forest products, and in debates on sustainable forest management in Europe (workshops, data provider for a LIFE project). Moreover, the director is the vice-chairman of the UNECE/FAO Team of Specialists on "Monitoring forest resources for sustainable forest management in the UNECE region. He also participated in the task force preparing the MCPFE criteria and indicators report.

FNFI is participating in the **INTERREG** programme on sustainable forest management in Western Europe (France, Ireland, Portugal and Spain). Its main contribution to this project is the development of a carbon sinks evaluation method. It also computed results based on his data.

1.2 The consortium

Thirteen countries are involved in the project. The consortium is lead by the French National Forest Inventory, with others 8 countries as co-contractors and 3 countries as sub-contractors. The consortium has the following organisation:

Project leader

French National Forest Inventory

Co-contractors:

Finland: Finnish Forest Research Institute (METLA)
Austria:University of National Ressources and applied life sciences Vienna (BOKU)
Switzerland: Swiss Federal Institute for Forest, Snow and Landscape Research (WSL)
United Kingdom: Forest Research
Denmark: University of Copenhagen- Faculty of Life Science – Forest and Landscape
Sweden: Swedish National Forest Inventory
Spain: Forest Technology Center of Catalunia
Norway: Norwegian Forest and Land Institute

Sub-contractors:

Romania: Forest Research and Management Institute (ICAS)
Czech Republic: Forest Management Institute
Italy: Italian Academy of Science of Forstale

1.3 Problem understanding

1.3.1 European Union forest information needs

European administrations and policy makers need comprehensive data on forest resources at European level as highlighted in the EU Forest Strategy document (Council Resolution of 15 December 1998) and emphasized again in the EU Forest Action Plan (COM(2006)302 final). A harmonised long-term monitoring of forest is needed to support the EU institutions in following and orienting the EU policy and to support European forest sector professionals and forest industrial sector. Furthermore, comprehensive information on forest assets is vital for European Institutions in order to report to international engagements such as Kyoto protocol, Convention on Biological Diversity (CBD) and the landscape preservation action accepted by the Council of Europe. Europe has become more and more economically and politically integrated. Decision-making is done not only at national level but also at local-regional and global level. Therefore, comparable forest resource information is of vital importance for proper forest, forest industry and environment decision-making. Such comparable forest resource information is also useful and could be expanded to cover the indicators endorsed at the 4th Ministerial Conference on the Protection of Forests in Europe (MCPFE).

When decision-making is based on quantitative estimates of the amount and condition of the forest resources, it is thus necessary to have harmonised methods to quantify the resources and to monitor their condition. Moreover, the definitions of each of the concepts in each Member States should be such that each member can provide comparable data, or at least that data can be made comparable by means of harmonisation., harmonised.

1.3.2 Current situation on forest resources assessment and forest monitoring

Information on forest resources has traditionally been used for forest policy decision making at national and regional levels. Practically, all Member States collect forest information through national forest inventories (NFIs). Each NFI is designed to provide information relevant for local and national level decision making, policy formulation and monitoring of forestry and relevant sectors, as well as for forestry planning in smaller geographical or political units at the sub-national level. During the past decades, the scope of forestry has become wider and the information needs have increased. The monitoring of forest resources for assessing the vitality of trees and forests, forest biodiversity and the role of forests in global carbon cycle has become an important issue. NFIs already provide information on all or some of these topics.

In addition to forest inventories at the national level, other monitoring efforts were established in Europe by the European Commission. In particular, two regulations on the monitoring of the effect of atmospheric pollution and forest fires were established in 1987 and 1992, respectively. These were the Reg. 3528/86 on the Monitoring of Atmospheric Pollution in Forests and Reg. 2158/92 on Forest Fire Prevention, the latter being complemented by Reg. 804/94 for the establishment of an information system for forest fires, the so-called Common Core Forest Fires Database.

The FAO and the International Union of Forest Research Organisations (IUFRO) collect and agree on globally accepted concepts and definitions used in forest inventories. FAO has also collected the global level forest resource information since 1947. Since the beginning of 1950's, various regional and global surveys have been conducted every five to ten years. As knowledge on the forest resources has improved at national levels and as technology has advanced, the Global Forest Resources Assessments have increased in breadth and quality. Forest Resource Assessment 2000 and 2005 (FRA 2000 and FRA 2005) are so far the most comprehensive in terms of the number of references used and information analysed on forest cover, forest state, forest services and non-wood forest products (NWFP). FRA 2000 applies for the first time a single technical definition of forest at the global level, based on 10 percent crown cover.

In spite of the globally agreed definitions, some countries do not necessarily apply them, or, it may take time to move to the use of commonly agreed definitions and concepts. More practical work is needed to implement common definitions than what is possible from FAO and UNECE/FAO side, e.g. to interpret the rather general level definitions. This is particularly the case when dealing with NWFP, e.g., with nature conservation and biodiversity, but also to some extent in the case of basic forest variables, like forest area and growing stock and the increment of the growing stock. The lack of commonly agreed definitions leads to the situation that direct comparison between countries is still not possible and that regional level information is unreliable and cannot be used for proper decision-making. Examples of differences are differences between forest definitions (e.g. minimum tree crown cover), in minimum diameter of trees to produce volume and increment estimates.

1.3.3 National Forest Inventories Harmonisation

Comparable forest resource information is of vital importance for proper forest and environment decision making and to fulfil monitoring and reporting obligations at EU and international level. To respond to these requirements, European national forest inventories established an informal co-operation network ENFIN in Vienna in June 2003. The network was considered necessary forum to share knowledge and to demonstrate to the European forest information users the possibilities of NFI to respond to European forest information needs. A COST action funding proposal was launched shortly after the first ENFIN meeting and was selected by COST Office (COST Action E43 on Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting). Each member of the proposed consortium is also member of ENFIN and actively participate to the COST action.

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

The action entered into the force in June 2004 for 4 years and has been extended until end of 2008. So far, 29 countries have signed the memorandum of understanding and participate actively in the work of the action. The E43 has three working groups focusing on 1) harmonised definitions and measuring practices of forest inventories, 2) harmonised estimation procedures for carbon pools and carbon pool changes, and 3) harmonised indicators and estimation procedures for assessing components of biodiversity by means of NFI data. The action has held eight joint working group meetings and nine management committee meetings as well as organised eleven short-term scientific missions. It has produced summaries of the state-of-arts of national forest inventories and their data comparability concerning basic forest resource parameters, carbon pool change reporting and capability to report biodiversity indicators. E43 has also written six scientific articles (actually accepted or under review) for what is called references for forest inventory concepts and definitions and presented possibilities to produce comparable results when the definitions of national forest inventories vary.

E43 has over one hundred participating persons from 27/28 or 29 check! European countries and also participants from non-COST countries like USA or Japan. It also integrates to its work FAO, UNECE/FAO, MCPFE and DG JRC of European Commission. In order to provide European level harmonised data, all European country has to be involved. An obvious restriction for the practical work is the limited possibilities of COST office to fund more than meetings. Several short term scientific missions have launched the work, identified the problems and the future work to be done.the work. However, much more work is needed to finalise the harmonisation process. Most of the work has been done on voluntary basis without external funding. According to JRC requests and priorities, this framework contract is an opportunity to continue and enhance harmonisation work on forest resource in order to improve the quality and reliability of data on European forests.

ENFIN and COST action have offered a good opportunity to establish confidence relationships between each forest data provider. Thanks to that, a shared database with metadata has been created to carry out studies on harmonisation. A confidential agreement was signed by each data owner to provide the data in this database.

1.3.4 Other harmonisation projects

The need for comprehensive and reliable forest information at the European level concerns several topics corresponding to the multiple functions of forests. To be able to provide these types of data, National Forest Inventories collect information, store and analyse them. To ensure the comparability of the results, NFIs work together toward the harmonisation of indicators. Two examples of ongoing projects financed by the European Commission, DG Joint Research Centre, are ProAlp and MASCAREF.

PROALP
ProAlp started in November 2006. It aims at proposing harmonised indicators of the protective function of forests in the Alpine space. It is lead by the Austrian NFI (BFW) and the French NFI (IFN) In this project, the NFIs from five countries work together with experts in the relations between forests and hazards. They selected together indicators revealing the protective function of forests at the landscape level, scale which is compatible with NFI statistical design. The NFIs from countries in the Alpine space are different. So a status of available information for computing the chosen indicators was established. The further steps of the project are to establish the methodology to compute the indicators although the input data slightly differ. Then examples of harmonised indicators will be provided to JRC. The proposed methodologies are based on statistics and modelling on one hand, and on remote sensing analysis combined with kNN algorithm on the other hand.

MASCAREF
The consortium is involved in the study under EEC 2152/2003 Forest Focus regulation on developing harmonized methods for assessing carbon sequestration in European forests funded by the EC-Joint Research Centre.
The project duration is 2007 to 2009.
All Member States of the European Community (EC) are parties to the United Nations Framework Convention on Climate Change (UNFCCC) and to its Kyoto Protocol (KP). The countries must monitor and report their anthropogenic emissions and removals of greenhouse gases (GHGs), including sources and sinks related to forest activities such as afforestation / reforestation, deforestation and forest management. The EC as a Party to the UNFCCC defined a "Mechanism for monitoring Community greenhouse gas emissions and for implementing the Kyoto Protocol". Currently, all E25+ members of the EC report their greenhouse gas inventories to UNFCCC and EU. Under the EU scheme, the individual countries' GHG inventories are submitted to JRC, which performs their quality analysis and transfers them to European Environmental Agency (EEA). The idea is to develop harmonization and quality control procedures, serving to establish comparability between national estimates on the one hand, and aid to the improvement of completeness, accuracy, consistency, comparability and transparency in the national and EU-wide GHG inventories for forestry related activities

The overall objective of the MASCAREF project is to facilitate the development of a monitoring scheme for carbon sequestration in the forests of the EU. Specifically, the MASCAREF project aims at aiding:
i) Strengthening and harmonizing the existing national systems to better meet the requirements of international monitoring and reporting of greenhouse gas emissions and sinks,
ii) Improving the comparability, transparency and accuracy of the greenhouse gas inventory reports of the LULUCF sector of Member States, as implemented in the EC Monitoring Mechanism.

FOREST FIRES
The European Community (Institute for Environment and Sustainability of the Joint Research Centre) and the French NFI, following the Invitation to Tender No 2005/S 176-174127 of 13/09/2005, have entered a contract the subject of which is a service on “Development of a simple and efficient method for field assessment of fire severity”. This applies to fires of at least 50 ha. The FIFN’s tender was submitted in partnership with the Spanish Ministry of Environment and the Portuguese Instituto Superior de Agronomia. The contract was signed on 04/09/2006 for duration of two years.

The objectives of the tasks being carried out are:

- To test the feasibility and propose a methodology for the systematic collection of additional forest fire information currently not recorded in the common core fire database. The data to be recorded for all the fires should be used for the assessment of fire severity, burned biomass and burning efficiency as well as post-fire soil erosion.
- To test the feasibility and propose a methodology for the collection of GPS location of fires, during or after the end of the fire campaign.

Their content is:

- Compilation of a state of the art review regarding methodologies and collected parameters.
- Elaboration of a manual and a comprehensive field guide for forest fire severity assessment in Europe.
- Actual application of the methodology to a number of fires.
- Definition of specifications for the collection of a precise GPS location for each forest fire.

VEGETATIVE REGENERATION

Shifting climatic conditions will have an important influence on patterns of natural regeneration in forests and woodlands and overall fecundity. Under the new environmental conditions that evolve, certain tree species will struggle to regenerate successfully, while others will thrive. Mechanisms of regeneration may also alter significantly (i.e. altered balance of vegetative regeneration as compared to sexual regeneration from seed). Where trees can be considered as keystone species in forest ecosystems (strongly influencing the structure and composition of stands), changes in patterns of tree species recruitment have important implications for local biodiversity.
A work package aims to assess how regeneration (and overall tree species fecundity) are monitored in National Forest Inventories across Europe. Bridging functions that can be used to harmonise assessments across Europe will be proposed, particularly among tree species with a European-wide distribution. The basis of this work is a questionnaire that has already been circulated and responses received on the methods of monitoring regeneration in European NFI’s.

USE OF NATIONAL FOREST INVENTORIES TO DOWNSCALE EUROPEAN FOREST DIVERSITY SPATIAL INFORMATION

The project "Pilot study on the use of National Forest Inventories to downscale European forest diversity spatial information in five test areas, covering different geo-physical and geo-botanical conditions", also known shortly as "forest downscaling" or just "downscaling" (contract 382340 F1SC following tender 176-174125 launched by the Joint Research Centre of the European Commission, Institute for Environment and Sustainability located in Ispra (VA, Italy), that entered in force the 21st of November 2006).
The study aims to address the feasibility to integrate National Forest Inventories data and remote sensing derived data to downscale large-scale aspects of forest biological diversity and check if compositional and structural changes acknowledged from remotely sensed data bases are linked to possible changes in forest biodiversity.
The rationale of the study is that the use of information derived from remote sensing data combined with terrestrial sampling based inventories may be a feasible low cost approach for a European wide forest biodiversity assessment and monitoring system. Such a system should be able to monitor and report the status and the changes in the level of biodiversity in forest ecosystems at different geographical scales.
Remotely sensed databases (CORINE Land Cover 2000 and 1990 available at 25 ha mapping unit, Landsat TM based forest maps at 25m pixel resolution) enable to compute and monitor every 10 years or less indicators of forest biodiversity at landscape level acknowledged within the MCPFE process (MCPFE, 2003b) and the Convention on Biological Diversity.
The project was structured as follow. The first year of activities is mainly devoted to the selection of test sites (located in five different biogeographical regions of Europe), to prepare the first draft bibliographic review, to define the main outlines of the methodology to be adopted in the project and to the acquire and harmonise raw data in selected test sites.
The final analysis will combine multitemporal and multiscale forest spatial pattern maps with geocoded NFI data in order to study, analyse and model the relationships between these two different sources of information. Other GIS-based ancillary sources of information will also be used in the analysis, if available.

1.4 A new European context

1.4.1 Forest part of LIFE +

In 2004 the European Commission published a proposal for a new instrument for 2007-13. The LIFE+ Regulation brings together a number of programs that operated between 2000 and 2004: LIFE-Environment and LIFE-Nature Programs, Forest Focus, the Urban Program and a number of other smaller funding streams from Directorate General for the Environment. LIFE+ provides specific support for the development and implementation of Community environmental policy and legislation, in particular the objectives of the Sixth Environmental Action Program and resulting thematic strategies.

The FutMon and the FutDiv project proposals under the Life+ Regulation
The first call for proposals was launched in the autumn 2007 and two main proposals were submitted from the forest inventory and monitoring communities in Europe. For the first time, National Forest Inventories and the European forest monitoring network (Level 1 and Level 2) sent joint applications to the European Commission. The two submitted projects were the FutMon project "Further Development and Implementation of an EU-level Forest Monitoring System " and the FutDiv project "Future forest biodiversity monitoring in Europe".

The main aim of the FutMon project is to create a pan-European forest monitoring system which can serve as a basis for the provision of policy relevant information on forests in the European Union. More specifically, the objectives of the FutMon project are to: (i) build capacities for coordination of a harmonised forest monitoring, using synergies by linking existing and new monitoring mechanisms at the national, regional and Community level; (ii) collect quantitative and qualitative forest data related to climate change, air pollution, biodiversity, and forest condition as a possible contribution to the European Forest Data Centre (EFDAC) of the European Commission (EC) as well as for dissemination to other authorised stakeholders; (iii) contribute with information needed for sustainable forest management in the form of data related to the improved pan-European Indicators for Sustainable Forest Management as adopted by the Ministerial Conference on the Protection of Forests in Europe (MCPFE); (iv) provide a network to other projects also aiming at meeting information needs of EC; (v) scientifically analyse data and the provision of respective reports focusing on forest conditions and forest soil conditions in relation to air pollution, climate change, carbon sequestration, and biodiversity.

The objectives of the project will be pursued by means of a comprehensive networking approach. This approach will make use of the fact that in Europe several forest monitoring mechanisms are established. A large-scale (Level I) and an intensive (Level II) forest monitoring system as well as the essential harmonised monitoring methods and standards are existent as developed by the International Cooperative Programme on Assessment and Monitoring of Air Pollution Effects on Forests (ICP Forests) under the United Nations Economic Commission for Europe (UNECE). In close cooperation of ICP Forests and EC, the assessment of qualitative forest information at Level I and Level II has been well established – in the EU-Member States under several Regulations. Under the expired Regulation "Forest Focus" additional information was assessed at Level I and partly Level II within the project BioSoil. At the national level also quantitative forest information is regularly assessed by means of National Forest Inventories (NFIs), their harmonisation being pursued by the European Forest Inventory Network (ENFIN). Each of the systems mentioned meets specific information needs of national and international environment and forest policies. In order to meet the more comprehensive future information needs of EC and other stakeholders, the proposed project FutMon will revise the individual systems and integrate them in the years 2009 and 2010. The resulting system will be implemented and its functioning will be tested in the subsequent implementation phase in the years 2011 to 2013.

The project involves 39 beneficiaries in nearly all EU-Member States. Nearly all associated beneficiaries are responsible for forest monitoring and partly for National Forest Inventories in their countries. Many of the associated beneficiaries are actively involved in the harmonisation of NFIs in Europe.

The FutMon project will serve as the basis for the FutDiv project which more specifically is aimed at forest biodiversity. The objectives of the FutDiv project are to: (i) develop, setting-up and test in the field an integrated system to detect and evaluate changes in biodiversity in forests in Europe, assessing key indicators of biodiversity at European scale, according to harmonized methods; (ii) provide scientifically sound tools for monitoring and assessing forest ecosystems, forest habitats, forest flora and fauna and the factors, pressures and responses that impact on it, in particular in relation to achieving the target of halting biodiversity loss within the Community by 2010, as mentioned into the EU Commission Communication COM(2006)216; (iii) provide data and information on status and trend of forest biodiversity at EU scale and at different scales of analysis, in particular on forest habitats included into Natura 2000 network.

FutDiv will be based on the set of biodiversity indicators mentioned in several EU official documents (European Commission Communication COM(2006)216 for halting biodiversity loss, EEA SEBI2010 Report 2007, EEA Forest Types Report 2006, SEBI2010 Forest Status Indicator Report). FutDiv will build on activities like assessments of stand structure, ground vegetation, deadwood, epiphytic lichens and forest types that have already been conducted on different levels at European scale (EU Level II and Level I plots, UN-ECE ICPs Forests and IM, LTER-Europe sites, National Forest Inventories and remote sensing data). The main project action aims at the integration and coordination of all suitable networks at National and European level. The project will select a core list of biodiversity indicators for reporting biodiversity in the main international processes. After exploring the availability of such data at different scales of space and time, available data will be collected from existing networks into a common database: they will be analyzed and used to evaluate the quality of the data and its use to monitor temporal and spatial changes in biodiversity. A harmonized methodology will be developed and a monitoring design will be proposed and tested with the aim of building a system for the future monitoring trends in forest biodiversity in the EU. A first cause-effect statistical analysis will be conducted at EU level, on the basis of available data and of sampled data during the project implementation.

In more details, the project will be implemented by mean of several actions. First a comprehensive collection of available data and methods (tree condition, forest structure, ground vegetation, deadwood, epiphytic lichens) from existing networks (ForestBIOTA Level II plots, BioSoil Level I plots, National Forest Inventories, LTER sites, ICP IM sites, Natura 2000 forest sites). Collection of information as concerns Natura2000 sites included into the mentioned networks.
This first action is followed by an action on network design: integration, harmonization and partly restructuring of existing monitoring and inventorying networks, to achieve a network representative for a number of biodiversity key factors at EU level, taking into account Eco-Regions, Natura2000 forest habitats and the relevant forest types (sensu EEA, 2006). Selection of a subset of NFI plots at National level, merging with Lev. I plots, selection and integration of core sites for cause effect statistical analysis (Lev. II plots, IM and LTER sites), on the basis of plots and sites as proposed by the ABs of the 14 participant Member States. Integration of all datasets with multi-scale and multi-temporal remotely sensed images.

A core set of biodiversity parameters will the be elaborated to be sampled in the new integrated network, and development of harmonized methods at EU level, taking into account the existing trans-national and national approaches. A provisional working list of indicators and harmonized methods is already available, thanks to the first results of the collaboration between national experts from EU/ICP Forests and NFIs. SEBI2010 criteria and recommended indicators (EEA Report, 2007) will be applied for the final selection and development of the indicators. The indicator based on vegetation will contribute also to assess status and trend of threatened plant species and of invasive alien plant species. Additional parameters related to forest and deadwood invertebrates, naturalness/environment quality and epiphytic lichens at the large scale will be tested and integrated. Specific specialists will coordinate and advise the work as concerns the different indicators.

Further, the new monitoring scheme will be tested in the field in 2010-2011, in particular, sampling the core set of parameters in the new integrated network, at different levels/scales of investigation, with specific monitoring intensities and with methods adjusted to the respective assessment intensity, implementing a multi-level and multi-functional monitoring approach, allowing for the up- and downscaling of results. A set of additional parameters (environmental quality, invertebrates) will be tested; the rest of parameters, previously tested in the frame of pilot projects ForestBIOTA and BioSoil, will be extended to new scale levels, using amended protocols suitable for the respective scale.

Database management and set-up, scientific evaluations of the data from actions 3 and 6 (current biodiversity state, spatial variability, temporal trends wherever earlier data are available); integration into the European Forest Data Center (EFDC), managed by JRC, at the end of the project.
Finally, cause-effect statistical analysis at EU level. Evaluation for possible up-scaling of intensive monitoring data at EU level and relationship with results for the representative large scale networks. Evaluation of statistical relationships between attributes of biodiversity and main pressure factors. Data from core sites as well as external and/or pre-existing data on the main pressure factors for biodiversity (air pollution, deposition, climate, etc.) will be used. Remotely sensed information will provide additional information at landscape level (fragmentation, connectiveness etc.). Results of the JRC pilot project on down scaling forest information will be utilized. Cross comparison of data coming from different scale of investigation.

A multi-oriented reporting of results (for policy makers, broad public, scientific community, national experts and forest managers). Evaluation of the test phase and final proposal of methods and monitoring design for reporting status and changes in forest biodiversity in Europe.

1.4.2 EFDAC

The European Forest Data Centre (EFDAC) has been established as the focal point for forest related data and information in Europe. This decision was taken in the end of 2005 by the European Commission's DG ENV, DG JRC, ESTAT and the European Environment Agency (the so-called "group of four" or G04) to establish ten environmental data centers in Europe. Each environmental data centre will act as the primary data contact point for DG ENV in order to fulfill its information needs. It will have the task of ensuring that the collected data fit DG ENV's requirements, that data collection is organized in an efficient way, that the necessary quality assurance is performed and that all relevant existing data are accessible to other Go4 parties. It will thus have the primary responsibility for organizing the availability and quality of the data required for policy.

The requirements of DG ENV in relation to the EFDAC are at the one hand to receive scientific and technical support for issues in relation to the proposed European Forest Action Plan and for the development of European datasets, and at the other hand the availability of a suitable IT facility that allows management of and access to the forest data and information collected during the course of providing the scientific and technical support. Scientific and technical support should include the specification of guidelines for the identification of risk areas and of associated guidelines on data issues (quality, data-exchange formats) and the production of maps of risk for the different soil threats in the EU.

The European Forest Data Centre (EFDAC) will be developed and implemented as the single and central point for forest information at European level in support to relevant EU policies and as the basis of the European Forest Monitoring System proposed in the EU Forest Action Plan. The implementation of EFDAC will contribute to enhancing data harmonization and to streamlining data collection and reporting to international commitments such as the Ministerial Conference of the Protection of Forest in Europe (MCPFE), the FAO Global Forest Resources Assessment (GFRA) and the UN Convention on Biological Diversity (CBD). EFDAC will be built on the basis of the information systems currently existing or under development and in compliance with the guidelines of the Infrastructure for Spatial Information in Europe (INSPIRE). In particular, these systems are the European Forest Fire Information System (EFFIS), the Forest Focus Data Platform, and the European Forest Information and Communication Platform (EFICP). New methods and tools developed for forest and natural hazards monitoring (forest fires, storms, etc) will decisively contribute to the further development and implementation of the Global Monitoring for Environment and Security (GMES) initiative.

The EFDAC data centre is thus expected to foster provision of available data, information tools and to offer possibilities to plug this data into relevant modeling systems. The concept of the Environmental Forest Data Centre will be compliant with the envisaged Shared Environmental Information System.

The envisaged sources for the forest information that will reside at the EFDAC will include the JRC in-house data on forest like the EU-Forest Focus database on Forest Ecosystems and on Forest Fires, the forest mapping information, results from EU funded forest related projects. The EFDAC will be involved in:

• Operation and further development of the European Forest Fire Information System (EFFIS).
• Research and development of advanced modelling techniques, indicators and scenario analysis in relation to forest and forest biomass mapping, biodiversity and climate change.

• Assessment of forest resources in Europe, including the development of high-spatial resolutions forest maps (25 m) for 1990, 2000, and 2005 contributing to the CORINE landcover project and the FAO Forest Resources Assessment 2010.
• Follow-up of Forest Focus and support to the future monitoring of forest under the LIFE + programme.
• Finalisation of the European Forest Information and Communication Platform (EFICP).
• Support to the EU Enlargement and Integration Programme and the European Neighbourhood Policy.

The EFDAC IT facility hosts will host forest related products: datasets, documents, services and other types of information such as maps and graphs and provides web-based tools for the access to and the update of its contents.

1.5 Description of the proposed methodology for the provision of forest data and service

1.5.1 Technical proposal

The aims of this framework contract are i) to broaden and develop the knowledge base of the EFDAC hosted by the JRC, ii) to provide a perspective on forest information at a European level by producing work and advice on issues that are potentially relevant to EU forest related policies.
The need of the JRC is to ask the consortium for thematic analysis services or data processing services.
From our point of view, these two requested services are linked, a thematic analysis being often based on a preliminary data processing activity. So, the description of the proposed methodology doesn't separate the two cases. The data gathering is just detailed in a specific chapter. The overview of the process is described in the figure below. The points 1) and 2) are discussed between JRC and the project manager in due time and possibly meeting.

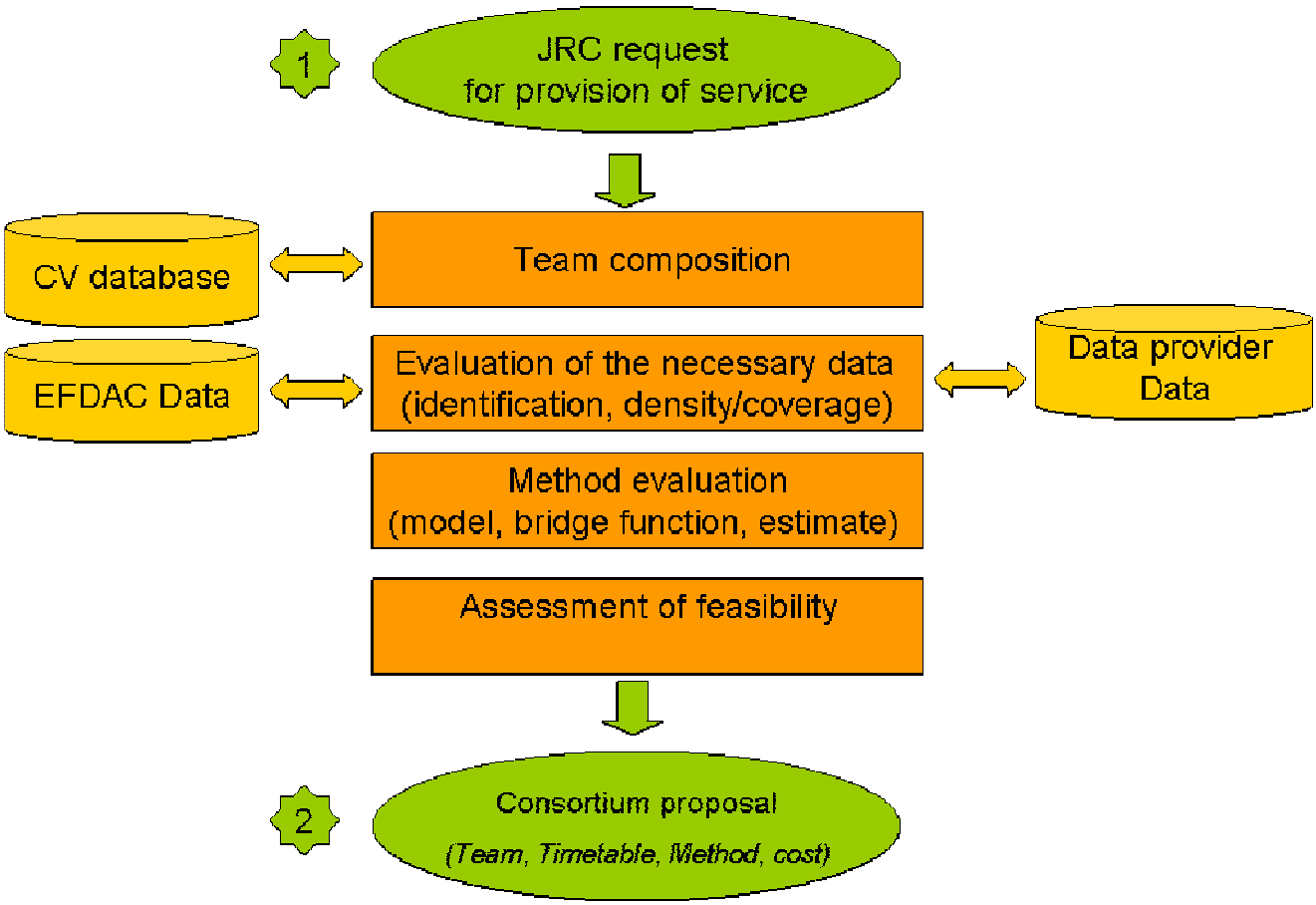


Figure 1: Process for generating a proposal

Because science and technology are in a state of continuous and rapid evolution and knowledge is often fragmented and dispersed, the consortium is in a position to assimilate information from a broad collection of experts and forest organizations in order to supply the JRC with up-to-date and high quality scientific and technological information and data on a range of forest related issues. Our strategy is to provide experts for a large panel of thematic aspects. Most of these experts come from the consortium members (**co-contractors**). In complement, the consortium plans to extend this possibility to other experts (**sub-contractors**).
The consortium has already constituted a **CV database** with reference keywords. The consortium plans to develop a small web based application to fill the CV database in friendly way.

For each specific JRC request, the consortium will use this CV database to identify the best scientific or thematic experts. Then a project team is composed of **permanent members** (project manager, scientific manager and scientific thematic officer) of the consortium but also the **new incoming experts** linked to the specific topic.

In response to the JRC request, this project team assesses the feasibility to elaborate a technical proposal.
The first step of this feasibility study is the evaluation of the **necessary data** to provide the requested service.
If all data are available in the **EFDAC**, the density of information is satisfactory and the coverage large enough (from a European point of view), this first step can be considered as achieved.
If some of those criteria are not reached, the consortium will evaluate what kind of data is needed and how to get the missing data.

The second step corresponds to the evaluation of method to produce the deliverable. It will be discussed within the team and assessed and written by the scientific thematic officer.

Finally, the proposal carried out by the consortium (permanent staff + proposed experts) contains the following parts:

- A description of the competencies of the person(s) who will directly work on the topic;
- A timetable to complete the request,
- The number of person/days of work involved split by personnel competencies
- The itemised cost of the study or data provision service.
- The technical method proposed to reach the aims of the JRC request.
- The encountered limits (risk analysis)

1.5.2 Provision of the agreed service

Once the JRC has accepted the proposal, a specific contract is sent to the consortium to be signed in order to start the activity according to the agreed proposal.

A kick-off meeting is organized to formalize the methodology proposed by the consortium. During the course of the activity, information exchange will take place between the consortium and JRC. To facilitate the communication and the exchange, the FNFI will provide a Groupeware (collaborative web based software). Thus, it will be possible to share resources such as calendar, documents, forum if needed, etc.
One month before the end of the specific contract, the consortium provides a draft report containing an executive summary, the full analysis of the agreed request and the achieved results. In case of data request, a draft version of the dataset should also be presented.
The achieved results and the report or data will be presented and discussed during the final meeting.

Depending on the requested service, data for each member of the consortium will be provided. In addition, the data providers who have signed the "Declaration on Honour for providing data" will be requested for the same operation. A further investigation with other Member States, could be launched.
The permanent staff of the consortium have to contact each data owner and negotiate the access. The potential cost of these data is not taken into account in this proposal. The exchange format will be defined by the consortium.

Depending on the number of data providers and the number of datasets , the consortium plan to re-use the core of the Biosoil application to gather and check the incoming data. This generic system needs to be adapted to perform the configuration of each dataset into the central metadata base in a friendly way. This opportunity will be discussed during the first kick-off meeting of the framework contract.

The data pre-processing could consist in recoding operation, spatial aggregation, etc.
Whenever it is possible, the quality of the result will be assessed.
Depending on the data, the differences of definitions or protocol s between data providers, the consortium should have to harmonize or even develop models to produce an harmonized estimate.
All this bridging functions will be integrated in a software framework elaborated by the consortium in order to be centralized, maintained and re-used. This framework will propose a generic interface thank to heritage methodology.
This software architecture presented below will be discuss during the first kick-off meeting of the framework contract

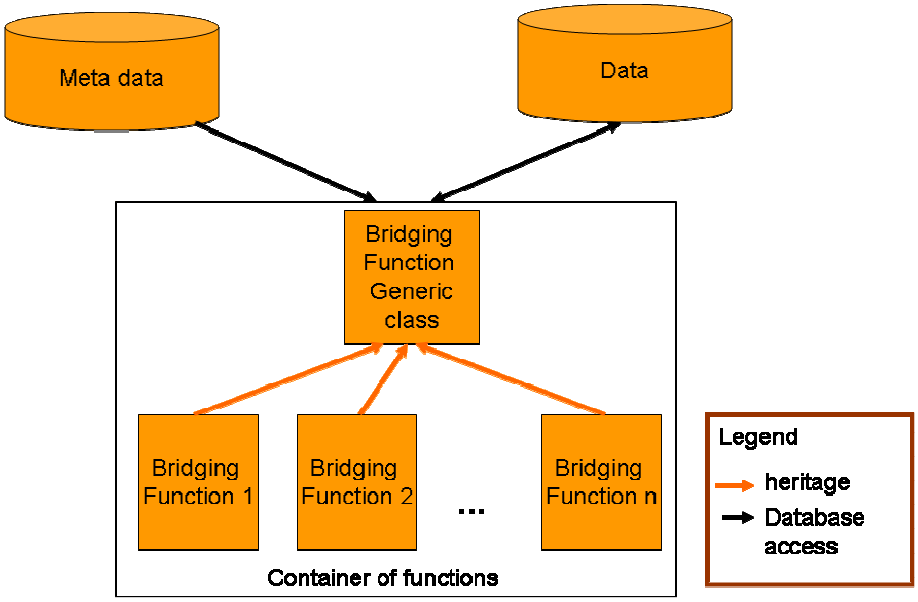


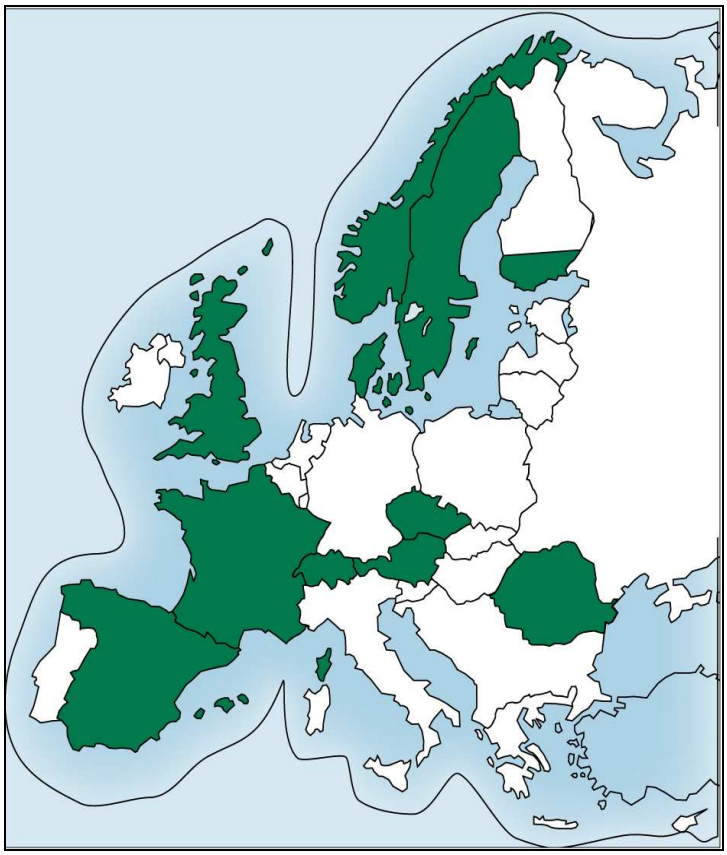
Figure 2: Generic framework for bridging functions

After the final meeting, the deliverables and/or datasets will be produced taking into account the comments received at the meeting.
Algorithms, tools and detailed specifications allowing a straightforward implementation of the final results at the JRC will be part of the deliverables.
Data will be delivered (i) in the agreed format, (ii) with structured metadata information following a predefined schema, (iii) with the relevant technical documentation (including quality assessment report).
The consortium propose to work in close contact with the JRC's data administrator of EDFAC to evaluate the possibility to import the data and metadata into the EFDAC. This possibility will allow to disseminate using the EFICP platform.
Whenever it is possible, this task could be proposed if it is required by the JRC in the technical proposal .

2 Geographical extent covered

2.1 Extent covered by the consortium members

Country	Forest inventory datasets	Whole country	List of NUTS regions
Austria	Austrian NFI 2000/2002, subset	YES	
Czech Republic	National Forest Inventory in Czech Republic 2001-2004 : aggregated data	YES	
Denmark	Danish Forest Inventory – Danish NFI	YES	
Finland	The 9th national forest inventory in Finland	NO	FI18 Etalä-Suomi (Southern Finland) FI181 Uusimaa FI182 Itä-Uusimaa FI183 Varsinais-Suomi FI184 Kanta-Häme FI185 Päijät-Häme FI186 Kymenlaakso FI187 Etalä-Karjala
France	National Forest Inventory	YES	
Norway	National Forest Inventory	YES	
Romania	National Forest Inventory	YES	
Spain	Spanish forest inventory	YES	
Sweden	NFI-Data	YES	
Switzerland	Swiss National Forest Inventory (LFI1) Swiss National Forest Inventory (LFI2)	YES	
United Kingdom	GB National Inventory of Woodlands and Trees I	YES	



Country	Area	Area with data	%
Belgium	30 518	0	0%
Czech Republic	78 859	78859	100%
Denmark	43 094	43094	100%
Deutschland	357 020	0	0%
Estonia	43 211	0	0%
Greece	131 625	0	0%
Spain	504 790	504790	100%
France	543 964	543 964	100%
Ireland	70 273	0	0%
Italy	301 333	0	0%
Cyprius	9 240	0	0%
Latvia	64 589	0	0%
Lithuania	65 300	0	0%
Luxembourg	2 586	0	0%
Hungary	93 029	0	0%
Malta	316	0	0%
Netherlands	33 873	0	0%
Austria	83 859	83 859	100%
Poland	312 685	0	0%
Portugal	91 906	0	0%
Slovenia	20 273	0	0%
Slovakia	49 035	0	0%
Finland	304 529		0%
Sweden	410 934	410934	100%
United Kingdom	243 820	229 977	94%
Bulgaria	110 550	0	0%
Romania	230 340	230340	100%
EU-27 territory	**4 231 551**	**2171050**	**51%**
Norway	386701	386701	100%
Lichtenstein	160	0	0%
Iceland	103 000	0	0%
Switzerland	41290	41290	100%
EFTA territory	**4 659 702**	**2 599 041**	**56%**

The consortium will provided data for **51%** of the total EU-27 territory and **56 %** of the EFTA territory

3 Detailed description of organisation and project management

The work of this framework contract will be carried out in two separate tasks, which, to some extent, depend on each other. The first task corresponds to data providing. The second one is related to reporting. If the contract is mainly linked to data providing a report on elaboration on the database and on metadata corresponding to harmonisation process will be necessary. If the contract is dealing with sudy necessiting reporting , normally data will also be needed.

The whole process of the proposal is modelled in the present chapter that constitutes a complete Quality Plan for the Project (PQP) defining a common reference point for all participants.
In this chapter the EC acronym stand for European Commission which means Land Management Unit of the Institute of Environment and Sustainability (Joint Research Centre, Ispra).

3.1 Description of project and its objectives

3.1.1 Aim of the framework contract

The objective of this framework contract is to broaden and develop the knowledge base of the European Forest Data Centre (EFDAC) hosted by the Joint Research Centre (JRC) of the European Commission which has been established to supply European Union decision-makers with processed, quality checked and timely policy relevant forest data and information within the EU and territories where EU policies are operating.

3.1.2 Expected results

The main expected results are the provision of services in response to JRC requests as define in the Invitation To Tender (ITT). According to the ITT, the consortium will have to participate in two meetings at the JRC 1) kick-off meeting and 2) final meeting. At the end of each contractual year, an activity report is provided to the European Commission in order to summarize activities performed during the year.

Those background activities produce steps and annuals reports presented in the following table where T0 represents the date of the contract signature by the JRC.

Deliverable type	Deliverable	Identification	Planned delivery date
Quality Document	Quality Plan of the Project	QPP	T0+4 weeks
Minute	Kick off meeting	M1	T0+4 weeks
Activity report	1st annual activity report	RY1	T0+12 months
Activity report	2nd annual activity report	RY2	T0+24 months
Activity report	3rd annual activity report	RY3	T0+36 months
Activity report	4th annual activity report	RY4	T0+48 months
Minute	Final meeting	M2	T0+48 months

In parallel with those background activities, the consortium is fully available to provide services in response to JRC requests.
For each request, a technical and financial proposal is provided to the JRC containing the description of the proposed service and the involved costs.
After approval by the JRC, a kick-off meeting is planned to formalise how the activity will be carried out and managed.
Specific deliverables will be identified for each request (database, spatial data, metadata, models developed in this framework,…)
At the end , a final meeting is organised to present the result of the activity and a final report is provided.

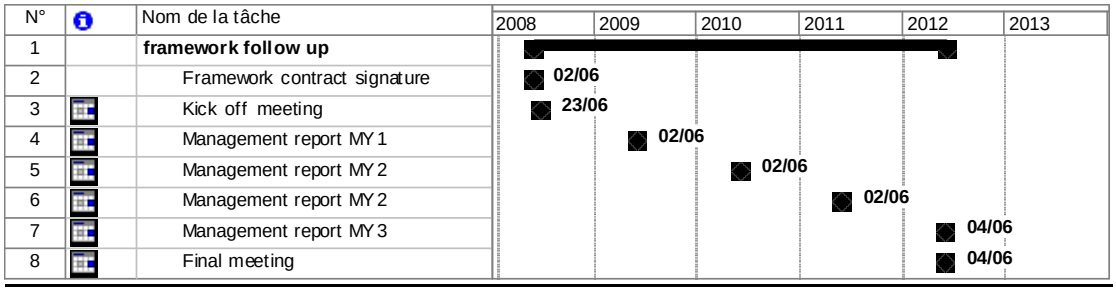
Such dedicated activities produce the results presented in the following table where (i) TR0 corresponds to the date of the service provision receipt, (ii) TV0 corresponds to the date of the coming into force of the specific contract.

Deliverable type	Deliverable	Identification	Planned delivery date
Technical and financial proposal	Technical proposal Financial proposal	TS	TR0+4 weeks
Minute	Kick off meeting	MS1	TV0+3 weeks
Service report	Result of the service provision	R1	TV0+duration of the service
Specific deliverables	Defined in the Technical proposal		TV0+duration of the service
Minute	Final meeting	MS2	TV0+duration of the service+ 1 week

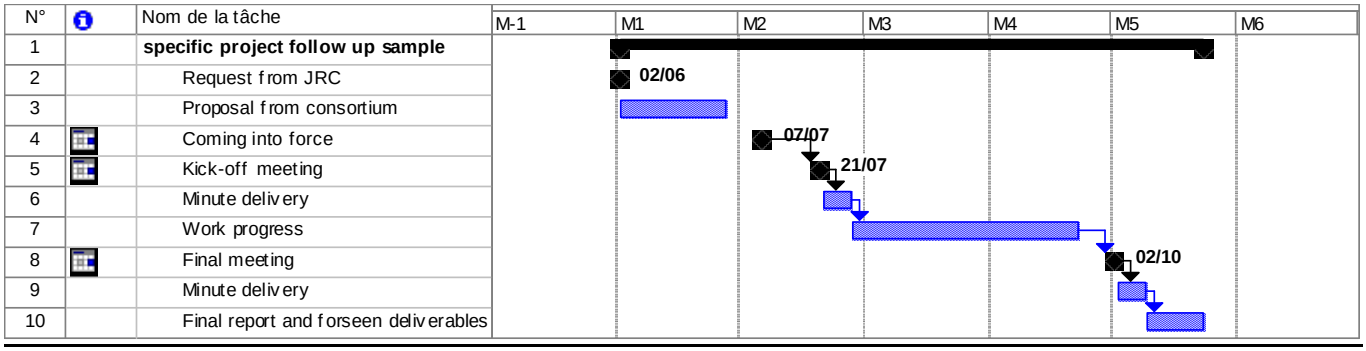
3.1.3 Temporal sequence (GANTT)

In term of schedule, the proposition meet the deadlines required in the ITT:

Background activities:



Specific activity



3.2 Staff description

3.2.1 Lead Project manager

Function (FNFI): DIRECTOR OF THE FRENCH NATIONAL FOREST INVENTORY
Name: Claude VIDAL
Task in the project: Project manager
Professional Experience: 33 years
Task in the project: Organisation, Plan, follow up, Meeting, Management, etc…
Relevant experience: Vice-chair of the UNECE/FAO Team of Specialists on "Monitoring forest resources for sustainable forest management in the UNECE region".
Leader of the COST E-43 working group 1 on "Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting"

3.2.2 Scientific manager

Function (BFW):	HEAD OF THE DEPARTMENT OF FOREST INVENTORY
Name:	Klemens SCHADAUER
Task in the project:	scientific manager
Professional Experience:	20 years
Task in the project:	statistical analysis, spatial analysis,
Relevant experience:	ENFIN group leader, vice chair of the COST E-43 action on "Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting", coordinator of the ProAlp project

Function (METLA):	PROJECT LEADER OF THE NATIONAL FOREST INVENTORY
Name:	Erkki TOMPPO
Task in the project:	scientific manager
Professional Experience:	38 years
Task in the project:	sample design, geostatistics
Relevant experience:	chair of COST E-43 action on "Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting", main research interests: non-parametric estimation methods for multi-source forest inventory purposes, use of dense pulse LIDAR data in forest inventory

3.2.3 Thematic scientific officer

Function (WSL):	LEADER OF THE RESEARCH GROUP INVENTORY DESIGN AND PLANNING
Name:	Adrian LANZ
Task in the project:	thematic scientific officer
Professional Experience:	20 years
Task in the project:	metadata and harmonisation tools
Relevant experience:	Deputy leader of the COST E-43 working group 1 on "Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting",

Function (SLU):	HEAD OF THE SWEDISH NATIONAL FOREST INVENTORY
Name:	Göran STAHL
Task in the project:	thematic scientific officer
Professional Experience:	22 years
Task in the project:	carbone issues
Relevant experience:	Leader of the COST E-43 working group 2 on "Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting", main research interests: carbon balances and effects of climate change, sampling techniques**,** inventory methodology**,** ecosystem modeling, incl. tree level models**,** environmental monitoring

Function (F & L):	SENIOR RESEARCHER AND PROJECT MANAGER AT THE DEPARTMENT OF FORESTRY AND WOOD PRODUCTS (DANISH NFI)°
Name:	Annemarie BASTRUP-BIRK
Task in the project:	thematic scientific officer
Professional Experience:	22 years
Task in the project:	biodiversity issues
Relevant experience:	Former leader of the COST E-43 working group 3 on "Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting", main research interests: forest biodiversity, forest inventory and monitoring, sampling design, multiple scale inventories including remote sensing.

Function :	RESEARCH OFFICER AT THE NORWEGIAN FOREST AND LANDSCAPE INSTITUTE
Name:	Stein Michael TOMTER
Task in the project:	thematic scientific officer
Professional Experience:	22 years
Task in the project:	data analysis and reporting

Relevant experience: Compilation and analysis of data on quantitative indicators for MCPFE Ministerial Conference, calculation and reporting of results from the Norwegian National Forest Inventory, National correspondent for reporting of forest statistics to FAO, UNECE and MCPFE

3.2.4 IT expert

Function (FNFI): HEAD OF THE INFORMATION SYSTEM DEPARTMENT OF THE FRENCH NFI
Name: Jean-Luc COUSIN
Professional Experience: 15 years
Task in the project: Database and software architecture design, Metadata (ISO19115-191139), OGC services, etc…
Relevant experience: Responsible of more than 15 projects during the last 10 years such as:
- Biosoil project management
- Design of the new NFI information system based on Metadata Database (more than 100 tables)
- Geoportails
- Project team up to 10 software developers.

3.2.5 GIS expert

Function (FNFI): HEAD OF THE GIS DEPARTMENT OF THE FRENCH NFI
Name: Marianne Duprez
Professional Experience: 10 years
Task in the project: development of GIS tools, geographical data management,
Relevant experience: co-production of GIS layers for the Geographical National Institute (IGN), production of the French national forest maps, management of GIS project based on interoperability, INSPIRE work following directive, calculation of indicators, setting out of dynamic mapping system on NFI website

3.2.6 Work repartition between FNFI and the members of the consortium

FNFI resources are used in the proposed tasks for the following contributions:
- Global project follow up
- Contact with the data providers
- Project follow up for the part dedicated to the FNFI
- Contact with the JRC and the relevant actors concerned by the project
- Expertise in database design, development, interoperability ISO/OGC, metadata (ISO19115,19139)
- Expertise in spatial representation
- Expertise in Forest inventory
- Expertise in thematic topic such as forest/growing stock, carbon, biodiversity, etc.
- Integration in the EFDAC (if needed)
- Software development if needed
- GIS treatment if needed

Members of the consortium resources are used in the proposed tasks for the following contributions:
- Contact with the JRC if needed
- Contact with the data providers if needed
- Expertise in harmonisation
- Expertise in Forest inventory
- Expertise in thematic topic such as forest/growing stock, carbon, biodiversity, etc.
- Expertise in statistical analysis
- Expertise in spatial analysis

3.3 Description of means of co-ordination and of the flow of information

3.3.1 Organisation

To ensure satisfactory progress of the project, the relationship between the European Commission and the consortium must be put on a formal footing.
Generally speaking, for the proposal, the responsibilities are the following :

- The European Commission (Land Management Unit of the Joint Research Centre, Ispra) is the owner of the project.
- The European Commission, as part of its responsibilities as owner of the project:
  - makes the fundamental decisions,
  - defines his needs and constraints,
  - chooses, among the different alternatives proposed, the solution to be implemented,
  - ensures that the choices made are appropriate to the needs of the owner,
  - directs and co-ordinates his staff and those of his own suppliers,
  - supplies the Consortium with the contractually stipulated items,
  - approves and accepts all deliverable supplies,
  - accepts the application as a whole by carrying out tests and analysing the results.
- FNFI, as the lead company of the consortium chosen by the European Commission:
  - manages the project,
  - is responsible for preparing the Meeting Agenda in consultation with the JRC and the Meeting Minutes.,
  - co-ordinates the consortium,
  - directs and co-ordinates his staff implied in the project,
  - assists the European Commission with acceptance and implementation of the delivered system,
  - provide expertise,
  - provide data,
  - is responsible of the annual report.

- the members of the Consortium:
  - provide expertise,
  - provide data,
  - plan and perform the activities specified in the contract,
  - assists the European Commission with acceptance and implementation of the delivered system,
  - take part of the written annual report.

European Commission participants

Management representative : *To be named by European Commission*
The Management Representative is vested with decision-making powers to arbitrate as necessary, particularly with regard to delivery times and costs. He participates in progress review meetings.

EC Project Manager (CPM): *To be named by European Commission*
The Project Manager appointed by EC Management is the "operational and day-to-day" contact person for the contact person for the Consortium Project Managers. His task is to organise and manage the project on the EC's side according to the directives and procedures drawn up in partnership with the Consortium.

He is responsible for:

- organising the provision, by the EC, of the items needed by the Consortium within the requisite periods,
- approving the documents issued by the Consortium,
- organising acceptances,
- overall monitoring of the progress of the project,

His availability and his presence in meetings are essential for the project.
He participates in project progress meetings. He has decision-making powers to arbitrate as necessary on operational and technical decisions.

Other participants:
The current proposal expects contribution from the EC for the following subjects:

- EFDAC expert
- EFICP expert

Consortium participants

Project Manager (PM): *(Claude Vidal)*
The Project Manager is responsible to the EC and the consortium for the satisfactory completion of all the project. Being responsible for the quality of the finished product and the process whereby it is obtained, he plays an essential role in the implementation of the Quality System.

Scientific managers(SMs): *(Klemens Schadauer, Erkki Tomppo)*
The scientific managers are experts in forest inventory methodology, statistical and spatial analysis for the satisfactory completion of the relevant tasks identified in the JRC specific or thematic requests.

Thematic Scientific officers (TSOs): *(Adrian Lanz, Göran Stahl, Annemarie Bastrup-Birk,Stein Michael Tomter)*
The thematic scientific officers are experts in forest data processing and analysis for the satisfactory completion of the relevant tasks identified in the JRC specific or thematic requests.

Project Team
The project team performs the various tasks assigned to them by the Project Managers.

The overall organisation of the project is summarised by the following diagram, describing the project structure and principal lines of communication between the EC and the Consortium.

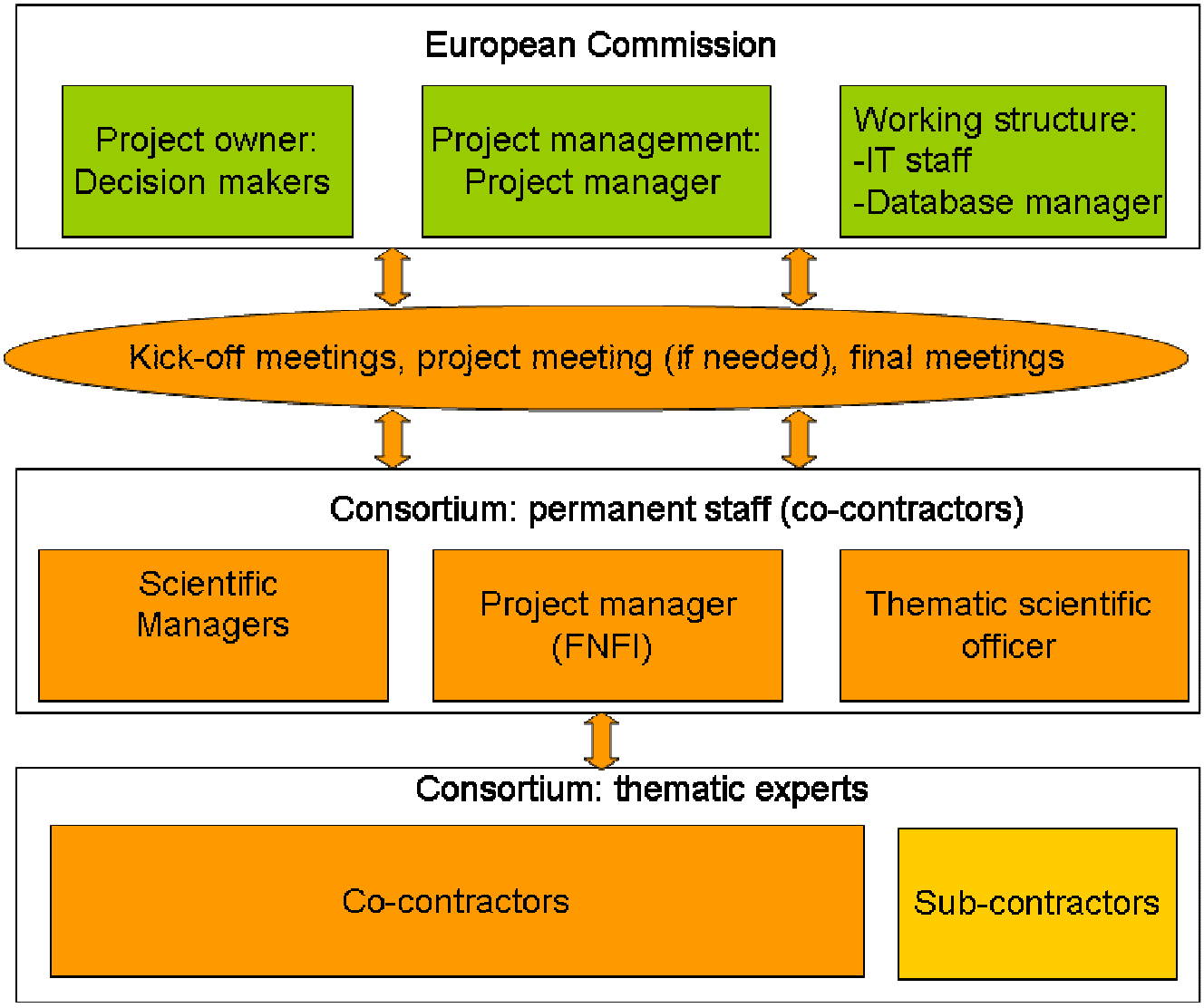


Figure 3: Project organisation

3.3.2 Project management and control

The project is controlled and managed by means of regular meetings between the EC and The Consortium:

- **Two Meetings for the framework contract**
  - **kick-off meeting** to formalise the framework contract management procedure;
  - **final meeting** to carry out an overview of the work completed
- **Project Meetings**, for specific contract
  - **kick-off meeting** to formalise how the activity will be managed and carried out;
  - **final meeting** to carry out an overview of the work completed

In addition, technical assistance may also be necessary, on topics such as:

- EFDAC integration
- EFICP integration

Kick off Meetings

Objectives: management of the contract, overall project status, identification of risks. These meetings represent the starting point of the framework contract or specific contracts for supplying data or services.

*Agenda***:**

- contractual status,
- follow-up of major risks,
- project progress (timescales, deliveries, monthly planning and forecasts)
- quality (quality objectives, review of quality-related actions, change requests, non-conformities and incidents, PQP status),
- project resources,
- outstanding issues,
- other business.

*Participants***:**

- For the EC: Management Representative
  Project Manager
- For Consortium: Project Manager, Thematic scientific officer, Scientific manager, IT expert if needed
- And other participants requested by the **EC** or the consortium.

Input documents: minutes of the previous meeting, monthly progress reports, event forms (incidents, non-conformities, change requests,...).

Output documents: minutes prepared by Project manager and submitted to the **EC** Project Manager for approval within 5 working days of the meeting. If no remarks are received within the next 5 working days, these minutes are deemed to be approved. Following approval, these minutes are contractually binding.

Final Meetings

Objectives: to present the result of the activity, to review and validate the work completed.

Agenda:

- result obtained
- production status:
  - review of work completed,
  - resolution of previously identified issues,
  - new issues identified during the previous meeting and action taken,
  - work forecast if necessary,
- functional, technical and organisational issues,
- quality issues:
  - review and agreement of changes to Project Quality Plan,
  - concessions (if necessary) against PQP,
  - review of quality actions, in particular **EC** approvals and acceptances,
  - review of quality of deliverables,
  - review of non-conformities,
  - review of change requests,
- other business,

Participants:

- **EC** Project Manager
- Project Manager, Thematic scientific officer, Scientific manager, IT expert if needed
- and other participants requested by the EC or the Consortium.

Input documents: minutes of the previous meeting, project reports, incident forms (incidents, non-conformances, change requests etc.).
Output documents: minutes prepared by lead project manager and submitted to the **EC** Project Manager for approval within 5 working days of the meeting. If no remarks are received within the next 5 working days, these minutes are deemed to be approved. Following approval, these minutes are contractually binding.

Technical assistance
A technical assistance could be necessary on topic such as:

- EFDAC system: to be aware of the available data, to provide the data into the system
- EFICP system : to be compliant with Metadata specification, or OGC service compatibility,

The schedule of assistance is defined during the kick-off meetings.

Communication:

Contact persons for each type of question
The following table shows the different contact persons for each type of question.

Type of question	**EC participant**	Consortium **participant**
Contractual	EC Project Manager	Project Manager
Operational	EC Project Manager	Project Manager
Project infrastructure	EC Project Manager	Project Manager
Non-conformance (sending)	EC Project Manager	Project Manager
Change request (sending)	EC Project Manager	Project Manager

Types of medium
The types of medium for the different documents exchanged between the Consortium and the EC (other than development documents) are as follows:

Medium	**Use**
Post, fax or e-mail	For contractual and commercial questions
Minutes	For meetings
Delivery note	For deliveries
Quality Control Form (QCF)	For all acceptance procedures: - cross-checks - internal approval or acceptance - EC approval or acceptance - etc.
Event Form (EF)	For incidents, change requests, non-conformances, requests for information or specific points of information (question/answer procedure)
Error Report Form (ERF)	For anomalie documentation, non-conformances
Test Report Form (TRF)	For anomaly documentation, non-conformances during EC reception phase

These documents are placed in the Management and Quality Assurance File kept by the Project Manager.

Written question/answer procedure
The question/answer procedure is summarised in the following table:

Origin of question	Responsible for sending	Responsible for receiving	Medium	Maximum response time
Consortium	Project Manager	EC Project Manager	Event Form (EF)	5 working days
EC	EC Project Manager	Project Manager	Event Form (EF)	5 working days

Handling of problems and follow-up
In case of an incident liable to jeopardise the success of the project (increase in cost, delivery time in doubt), the EC or the Consortium may demand an emergency Project Meeting to find a solution.
The solution formulated during the Project Meeting is to be validated at a Progress Meeting called for that purpose.

3.4 Observed procedures

3.4.1 Management risks

The risk analysis will be presented at the kick-off meeting of each specific contract.
The principle is to identify the majors risks in term of data and services (precision, harmonisation, for example) and to propose action to limit or avoid the effect.
Risk management is clearly part of the Project Manager job and is discussed during the EC progress meetings.

In term of tools, known risks are recorded in a table association describe below. Each action is followed by a particular actor (EC or project team) and a due date is defined.

Major risks	Actions taken

3.4.2 Delay analysis

Delivery date projections are clearly part of the Project Manager Job and discussed at the EC kick-off meetings.

In terms of tools, delivery date are computed with MS-Project that can take into account:
- Human resource allocation
- Constraints between tasks if needed

3.5 Re-use of proven results and software tools from past projects

The published results of the COST E43 action will be made available for that project. In particular, reference definitions, models and bridging functions developed within the action will be re-used mentioning the source and authors.

Depending on the number of data providers and the number of datasets , the consortium plan to re-use the core of the **Biosoil application** to gather and check the incoming data. This generic system needs to be adapted to perform the configuration of each dataset into the central metadata base in a friendly way. This opportunity will be discussed during the first kick-off meeting of the framework contract.

The FNFI has developed numerous methodologies to transform plot information into **spatial representation**. These process transformation could be used to produce maps to illustrate the results of the service provided or to feed the EFICP system.

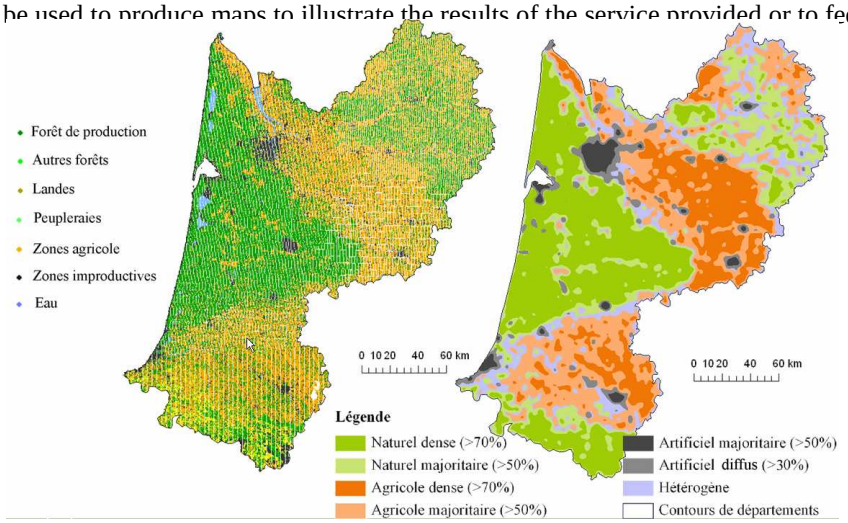


Figure 4: Spatial representation

3.6 Tools for quality management

Management of quality is also based on proper usage of tools.
These tools are predefined in order to share a common basis between all the participant of the project.

We divided the tools in 2 categories:

- Non technical tools for all products involving only office work
- Technical tools for all that concern computer products

3.6.1 Non-technical tools

If those products are exchanged for a read only purpose, they should be transmitted under PDF format.

Product type	**Tool**	**Product samples**
Office document	MS WORD 2003	Meeting report, Project report
Office sheet	MS EXCEL 2003	Project progress
Office diagram	MS POWERPOINT 2003	Meeting presentation
Project planning	MS PROJECT 2000	Project planning

3.6.2 Technical tools

If those products are exchanged for a read only purpose, they should be transmitted under PDF format.

Product type	**Tool**	**Product samples**
Database schema description	PowerAMC	Database schema
System Design if needed	MS WORD 2003	System Design

3.7 Tools for monitoring the project progress

The progress of the project is measured by delivery of products defined in the project (see section 3.1.3 Expected results, and section 3.2.4 Deliverable description for more details).

To organise the delivery process, the proposition include a document management system containing the applicable version of the deliverables as well as quality related documents (standard forms and procedures, quality plan, …).

The following sections detail the monitored elements and the system proposed to manage them.

3.7.1 Monitored elements

As required by the ITT, the monitored elements are documents defined as deliverables such as:

- Internal review meeting
- Project meeting
- Project reports
- System documents
- Software
- Data

The place of delivery is the Land Management Unit of the JRC, Ispra.

3.7.2 Document management

Document management system
This section describes the document management system required by the project.
Document management must fulfil 3 kinds of requirements:

- *Operational requirements*: the members of the project team should access reference documents and write the deliverables of the project
- *Quality plan requirements*: the project manager as well as audit team should be able to access all the documents defined in the Quality Plan of the project
- *European Commission requirements*: the European Commission or its delegates must access the different reports for validation in order to appreciate if work progress is correct

This means that all the documents of the project should be written in English.

Documents organisation

The organisation of the directory and sub-directories is as follow:

▪ Database	:	Database schema design file,
▪ Delivery	:	Delivery file including Delivery forms,
▪ Minutes	:	Meeting minutes divided according to meeting type,
▪ Exchanges	:	Copies of any document exchanged between the EC and the Consortium,
▪ Event	:	Event forms,
▪ Formats	:	Data format file,
▪ Initialisation	:	Quality documents such as PQP, initialisation, etc.,
▪ Mpp	:	MS Project plannings,
▪ Proposition	:	Proposition,
▪ Pvrc	:	Quality Control Forms for EC reception,
▪ Pvri	:	Forms for internal reception,
▪ Review	:	Project review,
▪ System Design	:	System design file,
▪ Test	:	Test file,
▪ Verification	:	Verification procedures file.

3.8 Quality control method for developing system modules

3.8.1 Overview

The proposed Quality System is based on close integration of the Management and Quality Assurance of the Project.

3.8.2 Validation, testing and internal acceptance procedures

The purpose of **validation or testing** is to demonstrate the conformity of a supplied item (document or product) with the requirements specified in the contract, whether these concern the operational, technical or quality aspects.
Testing is a validation procedure for which the Consortium is responsible. It is carried out in parallel with the design and development activities.

Review of a document by "external review"

The external review procedure plays as validation of final documents. It is based on the re-reading of documents by different participants having, in principle, different and complementary concerns (staff of the EC and the Consortium), and on a comparison of remarks during a meeting between the author and the reviewers.

The cross-checking procedure is as follows:

- The participants are chosen on a case-to-case basis at the Project Committee meetings.
- The documents in question are placed at the disposal of the participants by the Project Manager at least 5 working days before the validation meeting.
- The written remarks are collected at the validation meeting; for each remark, the group agrees whether or not it is necessary to do a correction.
- The Project Manager prepares the report, enters major reservations on a quality control form (QCF) and sends all the information to the participants concerned within 5 working days of the meeting.
- The Project Manager establishes the plan of corrections monitors their implementation and checks their effectiveness.

Software testing

In the context of the present project, the procedure comprises the following steps:

- definition of the test plan (scenarios, cases and planning of the test campaign),
- integration and testing (preparation, monitoring and corrections).

All of the items produced during this process (orientation, scenario, cases, test plan, test reports etc.) are placed in the **Testing file** prepared by each member of the Consortium and available for consultation from the Project Manager.

The project testing procedure and its inter-linking with the EC testing and acceptance activities are described later in this document.

Internal acceptance
After validation or testing, the Project Manager concerned by the development ensures that the stipulated checks have been carried out and the necessary corrections have been taken into account. He states the internal acceptance authorising the delivery.

3.8.3 EC approval procedure

Approval concerns interim supplies presented to the EC by the Consortium to gain his support and check that the project is on the right track. It is not a contractual procedure.

Following delivery, the EC has an approval period of 10 working days to make remarks or reservations, beyond which approval is deemed to be granted by default.

The EC must formally record his decision on the quality control form (QCF) included with the delivery:
- approval without reservation,
- approval with reservations recorded on the QCF and detailed if necessary on an incident form (lifting of reservations leads to approval),
- refusal.

Note: The EC approval procedure is also used for acceptance of the hardware and software installations and for training sessions.

3.8.4 EC acceptance procedures

Acceptance concerns a supplied item (document or product) officially delivered to the EC and whose acceptance by the EC discharges the obligation under the contract. Therefore it relates to a supplied item mentioned in the contract or in its appendices. This procedure does not necessarily need to take place at the end of the project. It may also concern a working unit during the course of the project.

For every acceptance, the EC must formally record its decision on a QCF included with the delivery:
- acceptance without reservation,
- acceptance with reservations recorded on the QCF and detailed if necessary on an incident form (lifting of reservations ads to acceptance),
- refusal.

Acceptance of a document
The EC states the acceptance of a final document following an external review procedure and the delivery by the Consortium of a document taking into account the remarks resulting from this procedure.

Following delivery, he has a period of 10 working days to make all its remarks in writing, beyond which period the document concerned shall be deemed to be accepted by default.
Acceptance can only be refused on the grounds that Consortium has failed to take into account the remarks ensuing from the cross-checking procedure.

The Consortium supplies a new version of the document within the same period following receipt of the EC's remarks.

Acceptance of software
The procedure is as follows:
- The Consortium supplies the item to the EC (delivery of a working unit or delivery of the finished product).
- The EC or the Consortium installs the software on the test platform stipulated for its acceptance.
- Following delivery, the EC has a period of 20 working days to carry out its own series of tests and inform the Consortium of all anomalies found in the form of reservations.
- The Consortium resolves the critical anomalies, if any, within the period indicated on the anomalies form.
- The EC states acceptance, with any reservations.

- The Consortium resolves any major anomalies and plans the correction of minor anomalies.

Modifications are managed as described in the section “Change management”.

The types of anomalies are described as follows:
- “critical” if functionality cannot be terminated without systematic manual intervention; it may prevent the completion of acceptance.
- “major” if functionality ends with a false result; it must be acted on immediately.
- “minor” if they could be resolved at a date fixed by mutual agreement.

In the absence of a written response from the EC within the acceptance period defined above, the item shall be deemed to be accepted by default.

If the EC puts the item into actual operation before the expiry of the acceptance period, acceptance shall be deemed to be granted.

3.8.5 Change management

Change management concerns all activities of formalisation, analysis, creating and checking, correction and upgrading of the software and its documentation.

Two types of events lead to modifications:
- the detection of non-conformance, either by the consortium during testing, or by the EC during its tests or during operation,
- a change request made by the EC during development.

These events are documented using event forms issued (or validated) either by EC or by The Consortium. The authorisations for the contact persons of the EC and of the Consortium are defined in the paragraph “3.3.2.4 Communication” (contact persons for each type of issue).
The Consortium will estimate the costs and timescales for the change within 5 to 10 working days, depending on the scale of the request. Change requests will be reviewed during EC Progress Meetings. If the change request is accepted (costs, expense of contract amendment, planning etc.), the EC representative will sign the event form to approve the request.

3.8.6 Delivery management

The results of the service are supplied to the EC:
- either for approval (for interim documents),
- or for acceptance (for supplies discharging obligations under the contract).

Note: the presentation of a document to the EC during a cross-checking procedure is not regarded as a delivery; in this case, the document reverts to “draft” status. The documents shall be updated and changed to “applicable” status for the final delivery.

Every delivery is accompanied by a delivery note in two sets, one of which must be stamped by the EC Representative and returned to the Consortium for the purposes of acknowledgement of receipt.

The delivery note contains:
- the references of the delivered supplies,
- the references of the data media supplied,
- the list of non-conformances corrected for the delivery,
- the list of remaining non-conformances,
- the delivery time and conditions of approval or acceptance.

The following table summarises the different characteristics of the deliveries, depending on their nature:

Nature	Medium and quantity	Conditions of delivery, receipt and installation.
Delivery of document for EC approval	Paper: 1 set unbound	Letter sent to EC Project Manager

Nature	Medium and quantity	Conditions of delivery, receipt and installation.
Delivery of document for EC acceptance	Paper: 1 set unbound Electronic medium: 1 set (supplied after acceptance, once the document has been fully finalised)	Letter and medium sent to EC Project Manager
Delivery of IT product for EC acceptance	Electronic medium supplied by the EC	Medium sent to EC Project Manager Installations are carried out by the EC

Deliveries of applications supplied or purchased by the Consortium follow the same principle. The data medium and the documentation are those supplied by the developer.

3.8.7 Management of items owned by the EC

The list of items supplied by the EC is as follow:

- Formats description
- Legacy data
- Description of the JRC computer infrastructure

Documents supplied by the EC

The EC supplies documents to the Consortium, not later than the agreed date defined during the Kick off meeting, in an applicable version with a version number and accompanied by a delivery note.
The Consortium has a period of 5 working days to state acceptance or submit all its remarks in writing.
The **EC** supplies a new version of the documents within the same period following the return of the Consortium remarks.

Software or data supplied by the EC

The **EC** will supply the Consortium with software and/or data to be integrated into the project by the Consortium.
In the testing environment, the Consortium checks the conformity of the objects supplied by the EC and presents him with all of the anomalies found in the form of reservations, not later than 20 working days after the last delivery.

Acceptance shall be stated following verification of correction of critical anomalies and major anomalies and planning of remaining minor corrections.

Modifications are managed as described in the Change management section.
The definition of anomalies is identical to that described in **EC** acceptance procedures.

3.9 Any additional object or method intended to contribute to better quality

3.9.1 Quality forms

DELIVERY NOTE

Issuer:	Company / Division:	IFN	Signature:
	Business Unit n° / Business Unit:		
	Name		
	Date of delivery		

IDENTIFICATION OF DELIVERABLES

Title :	
Reference :	

Version :		**Media :**	Paper:		items(s)
Date:			Magnetic:		items(s)
Status :			Email:		item(s)

DELIVERY CONTENTS

Ref	Description
1	

The deliverables described above have been made available today for:

☐ Acceptance (contractual deliverables)
☐ Approval (other deliverables)

The JRC has a period of 10 working days to document reservations or comments using the Quality Control Form accompanying the delivery.

JRC RECEIPT ACKNOWLEDGEMENT

Date :	**Name:**	**Signature:**

QUALITY CONTROL NOTE

Form no : QC…….. ☐ Registered ☐ Allocated ☐ Closed

Issuer:	Company / Division:	INF	Signature:
	Business Unit n°/ Business Unit:		
	Name		

DELIVERABLE

Title :	
Reference :	

Version :		Date:		Status:	

QUALITY CONTROL: ACTION REQUESTED

Consortium	JRC
☐ Acceptance of deliverable	☐ Approval of interim deliverable
☐ Other (define)	☐ Acceptance of contractual deliverable
	☐ Other (define)

In respect of the delivery dated ……., the person authorised to accept the deliverables has a period of 10 working days to document any reservations or comments using the table below.

N°	Reservation/remark	Acceptance, corrective action or Event Form ref

ACCEPTANCE (please tick the appropriate box)

☐ The items identified above are accepted without reservation
☐ The items identified above are accepted subject to the reservations given above
☐ These reservations must be addressed and lifted by
☐ The items identified above are rejected (see observations above)

Date, name and signature of authorised representatives

	Project Manager		**JRC**
Date :			
Name:			
Signature:			

EVENT FORM

Form no : QC…….. ☐ Registered ☐ Allocated ☐ Closed

Issuer:	Company / Division:	INF	Signature:
	Business Unit n°/ Business Unit:		
	Name		

EVENT TYPE

☐ Question ☐ Incident ☐ Non-conformity ☐ Complaint ☐ Change Request

EVENT CATEGORY

☐ Hardware ☐ Software ☐ Documentation ☐ Production

☐ Methods ☐ Tools ☐ Personnel ☐ Other (define)

EVENT DESCRIPTION

(Attach all relevant annexes)

CURATIVE ACTION

Analysis of problem : (possible curative actions, impact on costs, timescales, personnel)

Action approved : ☐ Yes ☐ No ☐ Other (define)

Date : Name and signature of approver :

Curative action plan :

Description	Resp	Date	Status

Acceptance of outcome : (curative action implemented and effective)

Date, name and signature of authorised representatives

	Project Manager		**JRC**
Date :			
Name:			
Signature:			

4 Acronyms

COST E21	Contribution of Forests and Forestry to Mitigate Greenhouse Effects : Action E21
EC	European Commission
EFI	European Forest Institute
EFIS	European Forest Information System
EICF	European Institute of Cultivated Forest
EUROSTAT	Statistical Office of the European Communities
FAO	Food and Agriculture Organisation
IEFC	European institute for cultivated forest
NFC	National Focal Centre
FNFI	French National Forest Institute
NEFIS	Network of European Forest Information Systems
TBFRA	Temperate and Boreal Forest Resources Assessment
UNECE	United Nations Economic Commission for Europe