

Integrate+

Project proposal

Establishing a European network of demonstration sites
for the integration of biodiversity conservation into
forest management



Project proposal

Establishing a European network of demonstration sites for the integration of biodiversity conservation into forest management (Integrate+)

prepared for the

**Federal Ministry for Food,
Agriculture and Consumer Protection (BMELV)**

by the

**European Forest Institute –
Central European Regional Office (EFICENT-OEF)**

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Executive summary

The background: Forest management in Europe has traditionally focused on timber production. Recently, forest management increasingly seeks to adopt and embed conservation of biodiversity as a new management priority in commercially managed forests. Managed forests in Europe are primarily used in their phase of economic maturity considering mainly yield and market based criteria. However, it is often early and late development phases of a forest that hold a rich diversity of niches and species due to their long habitat continuity and structural diversity. Recently, several practice approaches in Europe have raised attention where forest reserves and other set aside areas together with single habitat attributes are integrated into commercially managed forests as a system of cross-linking of habitats. These practical approaches draw their motivation both from extensive research outcomes and comprehensive tacit knowledge.

The aim: The aim of the Integrate+ project is to establish demonstration sites in main forest types in Europe with a focus on implementation of integrative concepts to allow for transnational exchange of experiences. By building on a qualification framework and developing innovative IT tools including mobile training software applications practitioners will be enabled to perform virtual tree selection exercises under different scenarios and forest management strategies. The tools will give them immediate feedback of their decisions in terms of ecological and economic impacts. The European network of demonstration sites provides unique opportunities for field visits. They allow interested audiences to receive first hand information on practical approaches for integrating conservation aspects into commercially managed forests on a large scale.

The impact: Integrate+ will raise awareness and create visibility for integrative forest management approaches in Europe and support policy dialogue between different interest groups. The principle of "seeing is building better understanding" will find application. Taking into account societal demands it will create increased acceptance with the general public that biodiversity can well be incorporated in managed forests alongside timber production. Integrate+ intends to communicate that targeted measures to enhance biodiversity conservation can be embedded in managed forests at a larger scale and are not only achieved through protection measures. The project will further contribute to laying the foundation on how integrative management can be implemented by closing knowledge and skill gaps and increasing organisational capacities. Besides creating a better understanding for selecting particular integrative management approaches in other countries it will contribute to building an extensive network of practitioners and experts.

Duration: 37 months

Cost: (incl. Overhead): 1 542 411 Euro

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1. Rationale

Forest management in Europe has traditionally focused on timber production. To date, timber production has remained the leading governing principle in most European forests. At the same time, forest management increasingly seeks to adopt and embed conservation of biodiversity as a new management priority in commercially managed forests. This is to coexist with the traditional priority of timber production, but also with various other ecosystem services which have become more and more important within the last decades (Wagner 2005).

Managed forests in Europe primarily are used in their phase of economic maturity considering mainly yield and market based criteria. Consequently forest phases of late development, degradation or stand break down are virtually lacking or exist only sporadically and on a small scale (Müller et al 2007). It is often these development phases of a forest that hold a rich diversity of niches and species due to their long habitat continuity and structural diversity (Jonsson et al 2005; Vandekerckhove et al 2005). To date, forest management has attempted to reconcile these goals (biodiversity conservation and timber production) in concepts such as close-to-nature forestry and continuous cover forestry. These concepts follow a multipurpose forest management which can serve as a baseline to secure forest land as the most extensive landscape element with a remarkable degree of naturalness (Winter et al 2005). They do, however, in most cases favour the selection of tree species with high economic value and base on shortened rotation periods. Therefore, even close-to-nature forest management concepts can provide suitable habitats only for a limited range of the forest dwelling species on the long term. On the other hand, establishment of new strict forest reserves continues to be seen critically for several reasons. Following a path for large protected forest areas may imply a trend towards the segregation of forest use and conservation – a system that is not common for most European cultural landscapes.



Fig.1 Integration of conservation aspects into commercially managed forests

Recently, several practice approaches in Europe have raised attention where forest reserves and other set aside areas without official protection status (e.g. small biotopes), standing and lying dead wood and veteran trees, large gaps and openings (including causes such as natural disturbances) and structured forest edges are integrated into commercially managed forests as a system of cross-linking of habitats (Bollmann 2011). These practical approaches draw their motivation both from extensive research outcomes and comprehensive tacit knowledge. These truly integrative forest management approaches have the potential to serve as good practice

examples for a growing community of forest managers who see these as good management alternatives based on the growing demands towards forests including a need for qualified training in forest ecology to ensure sound decision making in the field.

2. Project aims, structure and logic

2.1 Aims of Integrate+

The INTEGRATE+ project aims to establish, link, monitor, analyse and maintain a network of demonstration sites in main forest types in Europe, with a focus on the integration of conservation aspects into commercially managed forests on a large scale. It will present practices of implementing integrative concepts and encourage transnational exchange of experiences

By building and utilising demonstration sites as a reference and training network for forest and conservation managers / practitioners, a qualification framework will be developed describing skills, knowledge and competences a practitioner should acquire in order to achieve such a qualification.

Innovative IT tools will be developed as mobile training software applications for use in the demonstration sites. These mobile applications will enable users to perform virtual tree selection exercises under different scenarios and forest management strategies giving them immediate feedback of their decisions in terms of ecological and economic impacts. The results are directly visible on-site and can immediately be re-evaluated. This will enhance learning success through direct feedback and improve decision making capacities.

The European network of demonstration sites provides unique opportunities for field visits allowing interested audiences to receive first hand information on practical approaches for integrating conservation aspects into commercially managed forests on a large scale.

The target audiences of Integrate+ are foremost forest/conservation managers and practitioners from European countries. The project will in addition give strong emphasis towards engaging policy and decision makers, nature conservation and forest industry by means of targeted workshops and demonstration site field visits.

2.2 Project logic

The Integrate project '*Forest biodiversity in managed and unmanaged forests and its assessment through criteria and indicators*' (2011-2013) supported by the Federal Ministry for Food, Agriculture and Consumer Protection (BMELV) provides with its outcomes the conceptual and scientific framework for the establishment of a European network of demonstration sites for the integration of biodiversity conservation into forest management. The project has brought together the state of the art knowledge from science to practice and thus laid the foundation for a dedicated network of scientists and practitioners who will ensure meeting the overall aims of Integrate+.

EFI has long standing expertise on the creation and maintenance of software for scientific needs, including the well known modelling tools such as EFISCEN and ToSIA and many different databases for scientific information. Additionally EFI cooperates with the Computer Science department of the University of Eastern Finland, which allows utilisation of students for bringing in fresh ideas and competences and carrying out innovative software development projects.

The question of language for Integrate+ is a central topic to consider in particular when dealing with networks of practitioners and forest managers. While English as a language for the main joint training exercises and field visits is generally established, the use of the local languages for the final training products is crucial. Integrate+ therefore envisages the provision of at least a second local language for the main products and encourages the project partners to invest in translations

to other languages. The use of different languages in the IT products has already been tested and implemented in other EFI products (e.g. ToSIA).

Project partners

The role of project partners will be to identify and provide demonstration sites. They have a central role in hosting and supporting training events. They will conduct conservation activities for demonstration purposes and have an important role in developing a qualification concept. They will further host excursions for various stakeholder groups, take part in the production of the documentary film and implement accompanying research activities. In close cooperation with the project team, the project partners will develop research questions and topics in order to allow the initiation and implementation of PhD and MSc projects.

In the course of the preparation of the Integrate+ proposal, the following entities have stated a clear interest to participate as collaborating partners (see also Fig. 2):

Partner	Description	Link
StMELF / BaySF	Bavarian Ministry for Food, Agriculture and Forestry and the Bavarian State Forest Enterprise	http://www.stmelf.bayern.de/
Irstea	French Research Institute of Science and Technology for Environment and Agriculture	http://www.irstea.fr/
WUR Schovenhorst	Wageningen University and Schovenhorst Estate, Netherlands	http://www.wageningenur.nl/
SBB	Dutch Forest Service / Staatsbosbeheer	http://www.staatsbosbeheer.nl/
Alterra	Alterra Green World Research, Netherlands	http://www.wageningenur.nl/en/Expertise-Services/Research-Institutes/Alterra.htm
WSL	Swiss Federal Research Institute for Forest, Snow and Landscape	http://www.wsl.ch/
SCA	Svenska Cellulosa Aktiebolaget is Sweden's largest forest company and has a land holding of approx 2.6 million hectare	http://www.sca.com/
CZU	Faculty of Forestry and Wood Sciences at Czech University of Life Sciences	http://www.czu.cz
Forst BW	State Forest Enterprise of Baden-Wuerttemberg	http://www.forstbw.de/
CTFC	Forest Sciences Centre of Catalonia	http://www.ctfc.cat/
BF-Uni Lj	Department of Forestry at the Biotechnical Faculty of the University of Ljubljana, Slovenia	http://www.bf.uni-lj.si/
Tapio	Tapio consulting services provide solutions for efficient and sustainable forest management and bioeconomy both for public and private sector (Finland)	http://www.tapio.fi/
ecolinnea	Consulting service providing creative solutions for financial support of maintaining, increasing the value and cross-linking of forest habitats and landscapes (Switzerland)	http://www.ecolinnea.ch/
Croatian Forests Ltd.	Croatian State forest management enterprise	http://www.hrsume.hr/index_flash.html

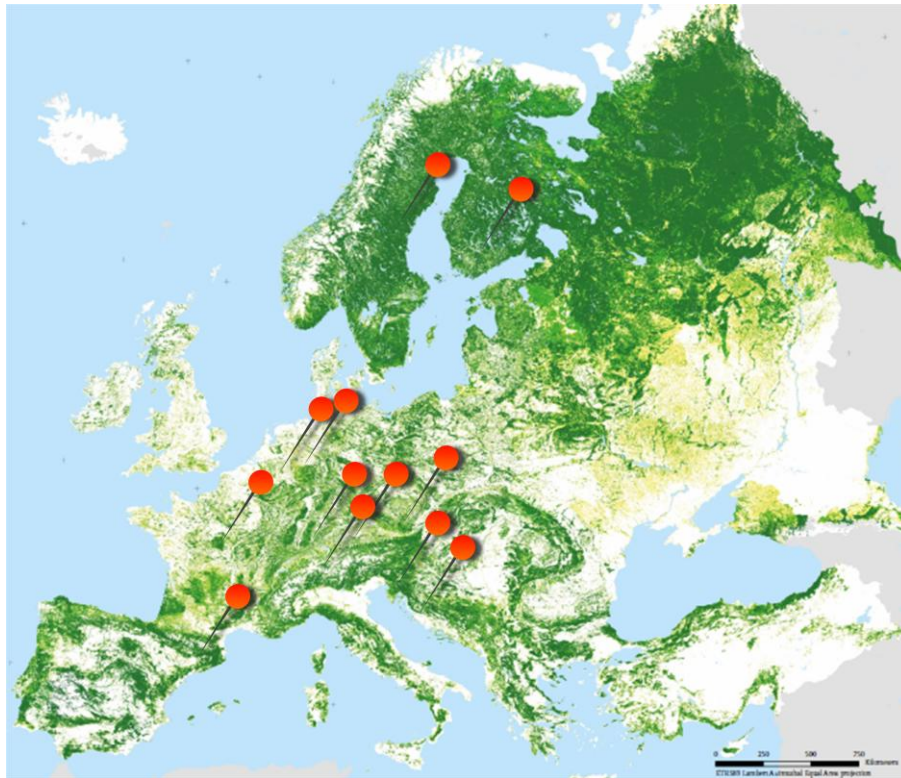


Fig. 2. Geographic scope of Integrate+ and locations of collaborating partners

Integrate+ will have a strong involvement of private companies (see e.g. ecolinnea, Tapio) as end-users from the beginning of the project. In return for their knowledge input, these small businesses will benefit from the products the project is generating to serve their client base: IT products, methodology of establishment of training sites and training materials.

2.3 Project structure

The project structure is built on two main pillars (WPs 1 and 2) around a set of core work packages (WPs 3, 4 and 5), supported by a strong partner network (Fig. 2). WP 1 identifies, establishes and develops demonstration sites in selected forest types throughout Europe. It builds the basis for all research and training activities, as well as field visits for a wider audience. WP 2 provides a qualification concept for vocational training of forest managers. It serves as input for WP 3 thus supporting the development of training materials and curricula. The R&D work package (WP 4) has the role of providing the necessary tools for the training and simulation exercises. It supports all project activities through scientific back-up. Extensive communication and dissemination material (WP 5) ensures the visibility and impact of the project outcomes. WP 6 Project Management (not shown in Fig. 3) will cover the administrative aspects of the project towards the contracting body, ensure the timely preparation of the deliverables and monitor the progress of work package activities.

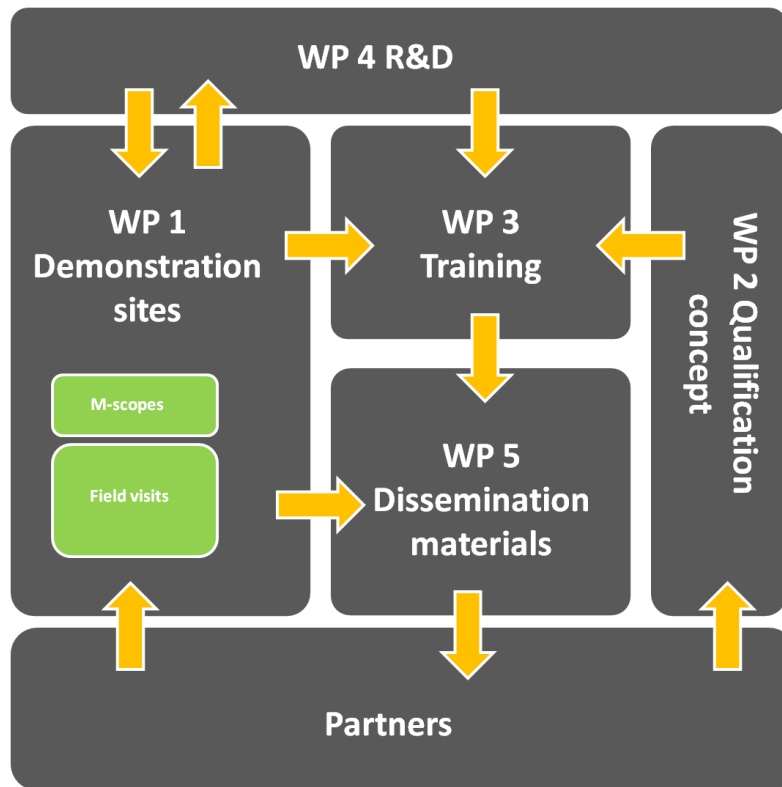


Fig.3 Project logic and structure of Integrate+

2.4 Impact of the project

Political impact

The Integrate+ project will raise awareness and create visibility for integrative forest management approaches in Europe. The demonstration of practice examples in the field will provide a strong tool to inform policy makers and support policy dialogue between different interest groups. The principle of “seeing is building better understanding” will find application. Resembling a unique set of tools for policy support, the practice examples will serve as an operational back-up of policy, being scientifically based and supported by data and documentation of various management scenarios. It will ensure the engagement of the practice community in the discussion.

Impact on society

Awareness and increased acceptance is created with the general public for forest management taking into account societal demands on forests other than timber production. The project will communicate that targeted measures to enhance biodiversity conservation can well be embedded in managed forests at a larger scale and not only achieved through protection measures. Thus the general public will be better educated and receptive for a broader portfolio of policy decisions favouring biodiversity conservation in forests.

Scientific impact

Through establishing and maintaining a network of practice examples scientists will have a unique opportunity for gathering information and data on management decisions and to address research questions related to trade-offs and conflicts of interest in integrative management. The science-based IT Tools will support and demonstrate impacts of management decisions to practitioners.

Impact on forest management

The project supports laying the foundation on how integrative management can be implemented on a large scale by closing knowledge and skill gaps and increasing organisational capacities. Trained and educated forest managers will act as multipliers to raise awareness and acceptance of integrative management concepts. Besides creating a better understanding for selecting particular integrative management approaches in other countries a network of practitioners will be established.

3. Work Package description

Work Package number	1	Starting date	Month 1
Work Package title	Demonstration sites		
Objectives The establishment of a network of demonstration sites in WP 1 aims at serving as a show case for field visits and simulation exercises mainly targeted at (but not limited to) forest managers, decision makers and scientists. The network will allow to demonstrate tools and initiatives developed and applied to integrate conservation aspects into commercially managed forests. An important target of WP 1 is the visualization of management effects, respectively the assessment and valuation of ecological and economic trade-offs that accompany integrative forest management approaches. This goal is supported by the development of a criteria catalogue for the selection of habitat features and structural elements. It will be based on latest scientific knowledge and direct expert consultations.			
Description of work The identification of key habitat elements and structures is a crucial pre-requisite for the integration of biodiversity conservation aspects into commercial forest management. Forest managers are often not trained to identify these elements and structures supporting species diversity. They may simply lack the abilities for recognition and assessment or how to consider them both in forestry operations and planning procedures. Recent scientific findings are entering many practical approaches for integrative conservation measures throughout Europe. Such practical approaches accompanied by science represent a pool of good practice examples. Therefore WP 1 seeks to: • identify • establish (including mapping, inventory and developing a criteria catalogue) and • develop (based on review, user feedback and monitoring) a network of demonstration sites covering a broad range of selected European forest types where different integrative measures are being practiced. The demonstration sites will include selected sites for field visits and excursions for a wider audience, as well as permanent plots based on the French Marteloscope (M-scope) ¹ approach within the forest in which tree measurements and associated software are linked to provide a framework for in-forest training. That will include for example marking and selection of trees and habitat structures. The demonstration sites will be the basis for the training exercises and field visits (WP 3). a) identification of demonstration sites The identification of suitable sites both for training and demonstration will be conducted in close cooperation with the project partners. Two levels of demonstration sites are planned: 10 sites for training (M-scopes) and 10 further sites for field visits/study tours and promoting concepts/approaches for integrated forest management. Tailored excursion guides and information packages for respective audiences will be developed. Target groups include forest practitioners, forest owners, policy makers and conservationists. It is planned to increase the number of both training and study tour demonstration sites in the course of the project in order to capture a broad spectrum of sites and integrative management approaches throughout Europe. The selected demonstration site network will include a range of European forest types and different ownerships to depict a broad picture and to demonstrate the wide usage of this adaptive tool. b) establishment of demonstration and training sites The demonstration sites for field visits and excursions consist of selected forest stands where specific			

¹ For M-scopes see Brucciamacchie 2006; Niedermann-Meier et al 2010

structures, management activities or systems and their effects can be demonstrated to a wider audience. Depending on the target audience for such field visits, tailored information packages will be provided (WP 5).

The demonstration sites for training and simulation exercises (M-scope) are one hectare rectangular plots in which a complete enumeration is carried out and the species and DBHs of every tree greater than 7.5 cm is measured and recorded. The location of each of these trees is mapped and recorded, and an identifying number provided. The stand will be calibrated to set the 'target' rate of removal, and volumes will be calculated. The methodology includes appraisal of the economic impact of the marking process and this part of the methodology requires price-size information by species and quality class and increment data by size-class to be derived. The focus will be to record information on the ecological value of each stem in order to assess the impact of this aspect of management on economic outcomes.

The structural key elements of biodiversity will be assessed and documented in a comprehensive criteria catalogue. This set of criteria will serve as baseline information for the detailed description of the sites and be integrated in the development of training manuals (WP 5) and the mobile application to be developed under WP 4. The criteria catalogue focuses on those structures, which allow assessment from the ground within reasonable time and effort. Results from the INTEGRATE project, relevant literature and a workshop involving various experts on certain species groups will enable the project team to develop and publish the criteria catalogue. The catalogue will be produced in the early phase of the project and continuously developed and adapted throughout its running time. The criteria catalogue is to be seen as a living document, allowing to incorporate timely new scientific and tacit knowledge to ensure that varying management goals and property relations can be adequately addressed.

c) development of demonstration sites

In the course of the project the demonstration sites will be consistently developed, embedding experiences and knowledge of partners and latest research results for use in the dissemination material. It is strongly encouraged to include local knowledge and expertise to complement the criteria catalogue and to develop specific training modules for each site.

Adaption of inputs, training styles and concepts are part of the further development of the demonstration sites. As training courses take place, they are evaluated and feedback is collected. Based on this input the demonstration sites and concepts can be adapted and adjusted.

The development of the demonstration sites includes also activities like specifying logistics, partner agreements, required infrastructure, etc.; in general, developing the standard operating procedures for training sessions.

Deliverables

- D1.1 Development of a comprehensive criteria catalogue for the assessment of structural key elements for biodiversity (Month 7)
- D1.2 Template for the detailed description of the demonstration sites (Month 12)
- D1.3 Establishment of 10 M-scope training sites in collaboration with project partners (Month 24)
- D1.4. Establishment of 10 demonstration sites in different European countries for field visits, study tours and for promoting concepts/approaches for integrated forest management (Month 24)

Work Package number	2	Starting date	Month 4																											
Work Package title	Qualification Concept																													
Objectives																														
WP 2 "Qualification Concept" will develop standards and qualifications for vocational training in integrative forest management.																														
The concept will be built on standards of competence, tailored to fit two competence levels in forest management (i.e. operational and planning level forest manager, EQF levels 4 and 6). The standards developed in WP 2 will be used as guidance documentation for developing and designing training materials (handbooks, manuals), curricula and evaluation of learner competencies.																														
Description of work																														
EFICIENT has experience in developing competency based qualification standards building on the 'European Qualification Framework' (EQF ²). The standards of competency will serve as a benchmark and evaluating tool for assessing the competence of learners. The standards build the reference for training materials and the actual training. The EQF is a voluntary reference system that is outcome based. The emphasis on 'learning outcomes' differs from the traditional approach to training that rather emphasizes inputs; an example for that being the number of training hours one has to have to get a qualification. EQF can be applied for a wide range of vocational training. It is acknowledging prior learning and is not designed to replace national qualifications systems, but to supplement the actions at national level by facilitating professional knowledge and experience exchange between countries. The EQF is making these standards applicable and comparable being accredited beyond national borders. The EQF sets qualifications into a series of reference levels (1 – 8), from basic to advanced. The eight reference levels are described in terms of learning outcomes: they are split into <i>knowledge</i> , <i>skills</i> and <i>competence</i> .																														
Simplified EQF level description:																														
<table><tr><th>EQF Level</th><th>Knowledge</th><th>Function / task</th></tr><tr><td>1</td><td>Basic general</td><td>Assist</td></tr><tr><td>2</td><td>Basic factual</td><td>Do / Support</td></tr><tr><td>3</td><td>Principles, concepts</td><td>Supervise</td></tr><tr><td>4</td><td>Factual and theoretical</td><td>Manage</td></tr><tr><td>5</td><td>Comprehensive, specialised</td><td>Decide</td></tr><tr><td>6</td><td>Advanced</td><td>Plan</td></tr><tr><td>7</td><td>Highly specialised</td><td>Strategy</td></tr><tr><td>8</td><td>Most advanced</td><td>Vision</td></tr></table>				EQF Level	Knowledge	Function / task	1	Basic general	Assist	2	Basic factual	Do / Support	3	Principles, concepts	Supervise	4	Factual and theoretical	Manage	5	Comprehensive, specialised	Decide	6	Advanced	Plan	7	Highly specialised	Strategy	8	Most advanced	Vision
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7	Highly specialised	Strategy																												
8	Most advanced	Vision																												
EQF levels are not necessarily linked to a job position. The level of autonomy in completing a certain task may vary across different countries. In some countries a harvester operator may have some level 4 skills and competencies that elsewhere only a forest manager might have.																														
WP 2 is targeted towards forest managers and owners in order to enhance their knowledge and understanding of possible options for integrating structures and features in managed forests that support an enhancement of biodiversity and the related consequences. Furthermore it supports closing existing skill gaps.																														
WP 2 provides input to WP 5 in which training and dissemination materials are developed.																														
a) competency levels																														
In a first preparing step, the relevant EQF competency levels are identified. An investigation will be made on the availability of national qualifications systems that address the integration of biodiversity measures into regular forest management. They will be compared with requirements set out in the EQF																														

² EOF: http://ec.europa.eu/education/lifelong-learning-policy/eqf_en.htm

competency levels. Target is to select two levels (preferably EQF levels 4 and 6) for the development of applicable standards.

b) definition of competencies, skills and knowledge

The required competencies, skills and knowledge for these 2 levels will be defined and formulated jointly with the project partners. It will lay out the performance required and the knowledge needed to support activities in the context of integrative forest management.

c) development of a qualification standard

Based on the two steps a) and b), the project will develop a full set of qualification standards for the competency levels. They will be used to define the respective learning outcomes. This implies that the competency standards will support the work-based training and qualifications at a particular level of activity.

Deliverables

- D2.1 Comparative analysis report on national and EQF levels (Month 10)
- D2.2 Review of skills, knowledge and competencies for selected competence levels (based on the requirements of the project partners. (Month 18)
- D2.3 Set of Qualification Standards *Integrative Forest Management* (emphasis biodiversity) for two competence levels (Month 24)
- D2.4 Competence Evaluation Template for *WP5* (Month 28)

*EOF: http://ec.europa.eu/education/lifelong-learning-policy/eqf_en.htm

Work Package number	3	Starting date	Month 16
Work Package title	Training and Field Visits		
Objectives			
The main objective of WP 3 is to facilitate improved knowledge and information sharing, exchange of experience and ideally collaboration among scientists and forest managers on integrative conservation practices and research in forest ecosystems through a training and exchange visit system. It will enable and motivate forest managers to travel to other countries facing similar challenges, in order to gain and share professional experience. WP 3 complements national training schemes and aims at promoting networking amongst forest managers and researchers across borders.			
Description of work			
Timely information exchange and collaboration among scientists are essential in expanding the knowledge needed to address key questions on managing biodiversity conservation aspects in forests. However, the integration of forest managers themselves in this process plays a key role in monitoring and characterizing the changes taking place on site. WP3 will support to quickly move new scientific evidence into implementation and improved decision making. The target audiences of Integrate+ are as described in Chapter 2 foremost forest and conservation managers and practitioners from European countries but will give considerable emphasis towards engaging policy and decision makers, nature conservation and forest industry by means of workshops/seminars and demonstration site field visits. The approach under WP 3 is to explore on-the-ground needs for information and developing management practices in close partnership between scientists and managers. This will be achieved through: • professional exchange visits • field visits and seminars • joint training exercises a) professional exchange visits Exchanges are tailored to the operational needs and focus of the forest manager. Exchange visits can be planned between 2-5 working days depending on the type of activities to be accompanied. Participants will be exposed to new environments and conditions, broadening their expertise and stimulating new approaches. Following the exchange, visitors and host organisations will receive a “Certificate of Achievement” documenting their participation in the exchange visit programme. The exchange participants will form the core element of a vibrant <i>Integrate+ network</i> and serve as ambassadors for integrated conservation forest management in their respective locations. Types of activities • learning different tools and techniques • attending training courses and simulation exercises at a host organization • observing the operational and planning structures of the host organization b) field visits and seminars The dialogue between scientists and practitioners will be ensured through 2 targeted seminars, on-site meetings and well-defined field tours aimed at emphasizing: • the science-management partnership model, • the emergence of a general framework concept on managing for conservation aspects and, • how participants anticipate concepts they have seen applicable/adaptable for their local			

conditions and circumstances.

Proposed components of the field visits and the 2 seminars will include the locations of the on-going science-management partnerships established in several case studies of the Integrate II project. Sharing this experience will be valuable, especially through direct interaction with scientists and forest managers involved in existing best-practice examples. Harvesting of and applying intrinsic local forest/conservation knowledge and expertise is an added value of this activity.

c) joint training exercises

The network of demonstration sites (WP 1), especially the M-scope training sites, will serve as the show case and provide the infrastructure for the tailored training exercises demonstrating initiatives to integrate conservation aspects into commercially managed forests on a large scale. The training exercises provided within WP 3 are based on the training manuals (WP 5) and the mobile tools developed for field applications (WP 4): The training exercises are modelled around the qualification concept developed in WP 2.

The training focus will be level specific (competence levels developed in WP 2) and includes operational and planning aspects of integrative conservation practices in forest management.

Deliverables

- D3.1 Organisation of 4 professional exchange visits in the course of the project (start Month 16 – continuous)
- D3.2 Organisation of 4 field visits and 2 seminars (start Month 16 - continuous; Seminar 1: Month 24 and Seminar 2: Month 32)
- D3.3 Organisation of 6 joint training exercises with partner organisations (start Month 16 – continuous)

Work Package number	4	Starting date	Month 3
Work Package title	Research and development		
Objectives This WP has two main objectives. The first aims at developing innovative mobile IT tools (including e.g. a mobile application for a tablet computer /smart phone) to be used in the field training exercises. The second targets to link inventory and monitoring data from the demonstration sites to highly relevant research questions. This will allow making use of the unique and comparable data set to scientifically address and back-up practical management approaches in the frame of two accompanying PhD and 2 MSc projects.			
Description of work: a) IT development As a supplement to the demonstration sites established in WP 1 and the training and simulation activities implemented under WP 3, innovative IT products (mobile applications) will be made by EFI software developers . The developed software will enable virtual tree selection exercises under different scenarios and forest management strategies, and gives direct feedback on economic impact and ecological effects. Users will in this way be able to review the impacts of their decisions in the field through immediate access to a detailed description of the selection criteria for habitat features and structural elements, as well as wood quality and economic values which have been developed for each of the demonstration sites. This will be supported by the integration of the manual / handbook developed in WP 5 and a 3D growth model (e.g. SILVA, PROGNAUS, BWINPro) into the mobile application. The added value of this approach is that personal preferences and choices during tree selection are directly visible on-site and the effects of the selections can immediately be re-evaluated, especially where trade-offs may need to be made. The possibility to change/review decisions in the field based on immediate feedback received using the mobile application brings cost savings through increased productivity of work through not needing to go back to the office to review the impacts of the decisions and eliminate the need to revisit the field for decision revision. The IT solution will be designed from the beginning with usability specialists, to ensure an easy to use end product. As a part of this process the software will be developed as early prototypes in the first year of the project and will be further refined based on user feedback. A comprehensive database will be built which includes all measured data and available information assessed in the demonstration sites. An interactive web portal for Integrate+ (IWP+, WP 5) seamlessly integrates with the database entries generated by the simulation exercises in the demonstration sites to give participants / partners an open window into sharing their forest management operations. With IWP+, stakeholders from within and outside the network get a single, inclusive environment to view and share near-real-time analysis on trade-offs, selection choices and effects, anytime, anywhere via secure web access. This dynamic database will be maintained and developed by the project team. The data will be stored on a server with restricted access. b) research activities For testing and monitoring management treatments the establishment of reference areas without any treatments is planned on selected sites within the network. Two PhD studies will accompany Integrate+ from the second year of the project. In close collaboration with project partners, a first PhD project will model the economic and ecological impacts of management treatments within a given time frame for managed and unmanaged areas. A second PhD will focus on comparisons between silvicultural systems and its consequences on biodiversity relevant structures across different countries and across different environmental gradients. The results will be published in peer reviewed journals concentrating on the evaluation of the relevance and efficiency of particular management strategies and thus support the further refinement of the criteria catalogues and training guides			

Additional PhD studies may be initiated in the context of Integrate+. Further topics will be defined in collaboration with the project partners and the Integrate+ teams' extensive network of forest research organisations and universities. They may encompass fields such as IT, ecology and social sciences. For these additional studies funding will be sought together with research institutions outside the Integrate+ project budget. It is important to ensure a research component within the Integrate+ project since a scientific basis expressed through publications will support the project objectives and argumentation and increase the interest for research institutes to collaborate.

Two master studies with an overarching theme and goal are planned by making use of the established demonstration sites. For this purpose a common research approach / research question will be applied. Every thesis is planned as stand-alone outcome but will represent a value added for the Integrate+ project with regards to its WP activities and overall analysis and synthesis. It is envisaged to conduct a targeted study on how visitors value biodiversity measures to increase the value of forests apart from timber products. The precise topics, however, are to be defined jointly with project partners in the course of the project. Match funding acquisition and joint supervision will be sought with the projects' research partners.

Deliverables

- D4.1 Mobile application for field training exercises and demonstration purposes; Month 10 (first test version); iterations until Month 14 (draft version); further refinement until Month 35 (final version)
- D4.2 Database structure developed for hosting all measured data from training sites and supporting material; Month 12 (first test version); iterations until Month 14 (draft version); refinement until Month 35 (Final version)
- D4.3 Two accompanying PhD studies outlined within Integrate+ (Month 14 – finalised after the end of the project; PhD progress reports Month 37)
- D4.4 Two pre-defined MSc studies (to be defined jointly with partners; no budget implications; report on outcomes Month 37)

Work Package number	5	Starting date	Month 3
Work Package title	Communication and dissemination		
Objectives The objective of WP5 is to elaborate products for disseminating and communicating the project outcomes tailored towards the targeted actors and stakeholders.			
Description of work Communication and dissemination will be a centrepiece of the project. Focus in all products will be on the practical implementation of integrative measures in forest management and their communication to a wider public. Target audiences for the various products are: • professionals (forest and conservation managers) • forest owners • policy and decision makers • researchers • general public There is a range of crucial products for communicating and disseminating Integrate+ outcomes addressing those audiences with specific contents. To ensure that the different products are consistent and complementary to one another, a communications master plan will be developed. The plan will lay out the type of products, what they should contain, how they can be combined in a modular way and in which form they will be communicated and disseminated to reach in an effective manner the intended target audiences. a) training material package (handbook /manuals) Training material for the simulation exercises (WP 3) will be structured to meet the requirements formulated in the qualification concept (WP 2). This process facilitates the compilation and adaptation of training contents in handbooks and manuals. One prominent outcome will be the handbook ‘habitat structures on trees’ as print version and as a digital module included in the mobile application (WP 4). A comparable handbook which will serve as template exists as an on-line source for ‘park and garden trees’ ³ . Besides the extensive handbook a condensed version will be made available in the form of a pocket guide. Other materials included in the training package are instructions on how to apply the training tools and a manual on how to use the simulation exercises at the forest planning level with regards to integrative management approaches. b) m-learning tools (tutorials) In addition to the training material package the project will develop m-learning tutorials on specific aspects of habitat tree selection and other integrative measures. The term m-learning covers learning with portable technologies including but not limited to notebooks, mobile phones and tablets. It focuses on the mobility of the learner, interacting with portable technologies, and learning that reflects a focus on how a user gets more mobility. The creation of on-the-spot and in-the-field learning material that predominately uses smart phones with special software becomes an important part of informal learning. Using mobile tools for creating learning aides and materials is convenient in that it is accessible from virtually anywhere. M-learning, like other forms of e-learning, is collaborative. Sharing is almost instantaneous among everyone using the same tailored learning contents, which leads to the reception of instant feedback and tips. In addition, it is simple to utilize mobile learning for a more effective and entertaining experience. c) image format movies			

³ <http://naturschutz-und-denkmalspflege.projekte.tu-berlin.de/pages/leitfaden-biotopholz.php>

A set of 6-10 short training videos (5-10 min) in image format are planned with specific content to support the learning process. The videos will be taken by a contracted film crew at the demonstration sites, involving local partners, trainers and specialists for certain measures or species groups. The videos will be enriched with interviews (sub-titled local language) and animations showing basic principles of integrative measures. In addition, a documentary film (30-40 min) will be produced to illustrate the concept and approaches of integrative forest conservation in managed forests to a wider public. This documentary will follow a detailed screen-play and will make use of scenes taken from the training videos where possible.

d) publication of outcomes

It is planned to produce a publication with the preliminary topic:

- selection of good practice examples based on the demonstration sites with the aim of emphasizing the science-management partnership.

The publication will base on collective expert reviews from science and practice that intend to bridge the gap between research findings and experiences gained from day to day forest management and how they may embedded in a policy context. The publication plans to provide fact based information for effectively translating scientific and practical know-how to forest management. The scope of the publication will cover experiences from Europe as well as relevant input from other regions.

e) information packages

Illustrative information packages for all demonstration sites (including those for training exercises and field visits), and the core project outputs will be developed and tailored for the different target groups being policy and decision makers, professionals, forest owners, conservation specialists and the general public. They will be distributed broadly at relevant events and based on mailing lists already existing and which are further developed in the course of the project.

f) Interactive web portal IWP+

A comprehensive website will be developed from the very beginning of the project and will serve as an interactive portal, where all relevant information and data within the frame of Integrate+ will be stored, managed and made accessible. A logical structure will guide the users through the portal and a restricted area allows access to surveyed data and project outcomes (see database developed in WP4).

Deliverables

- D 5.1 Interactive Web Portal IWP+ established (Month 6)
- D 5.2 Dissemination and communication master plan (Month 9)
- D 5.3 A set of m-learning tools for field applications (Month 15)
- D 5.4 Manual for forest planners on integrative measures (Month 24)
- D 5.5 A set of image format training videos (Month 28)
- D 5.6 Handbook and pocket guide on habitat structures (Month 31)
- D 5.7 Publication on good practice examples (Month 33)
- D 5.8 Documentary film (Month 36)
- D 5.9 Information packages (continuous)

* <http://naturschutz-und-denkmalspflege.projekte.tu-berlin.de/pages/leitfaden-biotopholz.php>

Work Package number	6	Starting date	Month 1
Work Package title	Project Management		
Objectives			
The general objective of Work Package 6 'Project Management' is to assure efficient administrative and scientific coordination and management of the project. In order to achieve this goal, the following specific objectives are to: • implement and maintain project management structures, including administrative, logistic and financial issues • monitor progress and quality control along the work plan and its milestones and deliverables • enable effective information flow, communication and decision-making • manage risks and resolve potential problems • ensure timely reporting to the contracting organization • organise regular meetings of the Integrate+ Steering Group.			
Description of work			
The EFI including its Regional Offices has an extensive track record and profound experience and capacity for supporting and managing international research projects. The technical management includes all aspects of communication, collaboration and coordination to meet the technical and quality targets of the project. Project management will guarantee an effective project implementation (recruitment, work plan expressed through the inception report, internal follow up on WP activities etc.), the organizing of internal project meetings and support to external events. It will ensure timely submission of deliverables, and interaction with and reporting to the contracting party.			
General administrative and financial management			
The general administrative and financial management will implement measures for a successful functioning of the entire project. It includes: • day-to-day management and administrative activities that are needed for a successful execution of the project, including the communication to the project partners and the contracting organization • responsibility for budgetary tasks including monitoring and reporting of project costs			
Scientific management and monitoring			
The overall scientific management will include procedures for project planning, implementation, progress, monitoring and quality evaluation. The scientific management and monitoring includes the following activities: • coordination of work package activities between the project leading organization and its project partners, in accordance with the work plan, to ensure satisfactory and effective task-orientated collaboration and task timing • proper and efficient internal document, data, information and knowledge exchange including project partners • ensure completion of submissions, reviewing, submitting and summarizing of information and results • activate the Integrate+ Steering Group (ISG+) by organizing the attendance of its members to one physical and regular virtual meetings per year. Physical meetings will be combined with field trips/seminars in order to efficiently use time and resources. The ISG+ will consist of representatives from the project partners and be supplemented by scientific experts			

- coordinate external communication with regional to international stakeholders, practitioners, policy-makers as well as society. This will be guaranteed by developing in close collaboration with WP5 a detailed communications plan describing targeted dissemination means, products and events including a well designed time schedule
- support WP3 in the organisation of events to be implemented in the course of the project. They include professional exchange visits, training exercises, field visits and two seminars

Deliverables

- D6.1 Inception report (Month 3)
- D6.2 Progress and financial reports (based on the requirements of the contractor)
- D6.3 Final report (Month 37)
- D6.4 Presentations and dissemination of outcomes to relevant fora, organizations, authorities (continuous)
- D6.5 Maintenance of web portal and other visual communication material including brochures, handouts in various languages etc. (continuous)

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5. Project Timeline (with deliverables)

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
WP 1				Expert workshop		D1.1					D1.2								
WP 2									D2.1								D2.2		
WP 3																			
WP 4									D4.1 test version		D4.2 test version		D4.1; D4.2 draft versions						
WP 5						D5.1		D5.2						D5.3					
WP 6			D6.1																

Month	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
WP 1					D1.3; D1.4													
WP 2					D2.3			D2.4										
WP 3					Seminar 2							Seminar 2		D3.1; D3.2; D3.3 (see remarks)				
WP 4															D4.1; D4.2		D4.3; D4.4 (see remarks)	
WP 5					D5.4	demo sites guide ready (see remarks D5.9)		D5.5 (see remarks)			D5.6		D5.7			D5.8	D5.9 (see remarks)	
WP 6																	D6.3 (D6.2, D6.4; D6.5: see remarks)	

Remarks

D3.1; D3.2; D3.3: start in Month 16 and finalised by Month 34; Seminar 1: Month 24; Seminar 2: Month 32

D4.3: 2 PhDs start in Month 14 and finalised after project end; progress report on PhDs delivered in Month 37

D4.4: agreed upon with partners in course of project (no budget implication); report on outcomes Month 37

D5.5: by Month 28 all training videos available

D5.9: takes place throughout the project lifetime; demo site guides ready by Month 26

D6.2; D6.4; D6.5: take place throughout the project lifetime