Proposal full title: **Multipurpose trees and non-wood forest products a challenge and opportunity**

Proposal acronym: **STAR TREE**

Type of funding scheme: Collaborative Project (large-scale integrated project targeted to SMEs)

Work programme topics addressed: KBBE.2012.1.2-06: Multipurpose trees and non-wood forest products for an innovative forestry in rural areas

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Date of submission: 15-11-2011

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1 SCIENTIFIC AND TECHNICAL QUALITY, RELEVANT TO THE TOPICS ADDRESSED BY THE CALL

1.1 Concept and objectives

1.1.1 Background

Natural resources are a key element for the European and the global economy, and for the **quality of our life**. The growing global population and the related growing demand for commodities together with the negative impact of climate and land use change are expected to further increase the pressures on resources, which could jeopardise their sustainable supply (EC 2011).

To better respond to this challenge, Europe has set a clear and ambitious strategy (**Europe 2020 Strategy**) to base its economy on a smart, sustainable and inclusive growth. Part of this concept is to initiate the development towards an innovative, resource efficient and bio-based **(bio-economy)** European economy. This concept foresees the sustainable production and conversion of renewable biomass, for a range of food, health, fibre and industrial products and energy, where renewable biomass encompasses any biological material to be used as raw material. Such a development should contribute to economic growth and the creation of jobs, while mitigating climate change effects and providing effective responses to address the need for carbon neutral energy. In this framework, **European forests** (35% of the EU's landmass) **provide multiple goods (wood and non-wood) and services** (capturing 10% of EU's CO_2 emissions, being the main host for biodiversity, providing high-quality water) to rural communities and society in general. The forest-based sector in Europe delivers a wide variety of bio-based products which represent 8% of the EU's manufacturing and provides income for about 16 million forest owners and creates 3-4 million jobs, many of them in rural areas. In this context, **European forests and the forest-based sector play an increasingly important role in fostering smart, sustainable and inclusive growth in Europe** based on the production of eco-services and eco-efficient products from wood and non-wood-based products.

Up to now the forest-based sector has been mainly build around wood based products due to the great relative economic importance of wood and the well structured and competitive value chains based on such raw material (wood products, pulp and paper, bio-energy). However, the full potential of **non-wood forest products** (**NWFP**) (e.g., forest fruits, mushroom, cork, pine kernels, acorns, medicinal herbs, essential oils, chestnuts etc.) which are defined as "*products of biological origin other than wood derived from forests, other wooded land and trees outside forests*" (FAO 1999) needs to be unlocked, especially in regions where wood is not the most profitable product or in order to increase the socio-economic opportunities and competitiveness of rural economies. However, **unlocking the full potential of NWFP requires** (i) new knowledge and tools to optimise the sustainable provision and profitability of NWFP and services from multipurpose trees (MPT), (ii) better understanding on the potentials of markets for NWFP and of the role of innovation processes for new products and services.

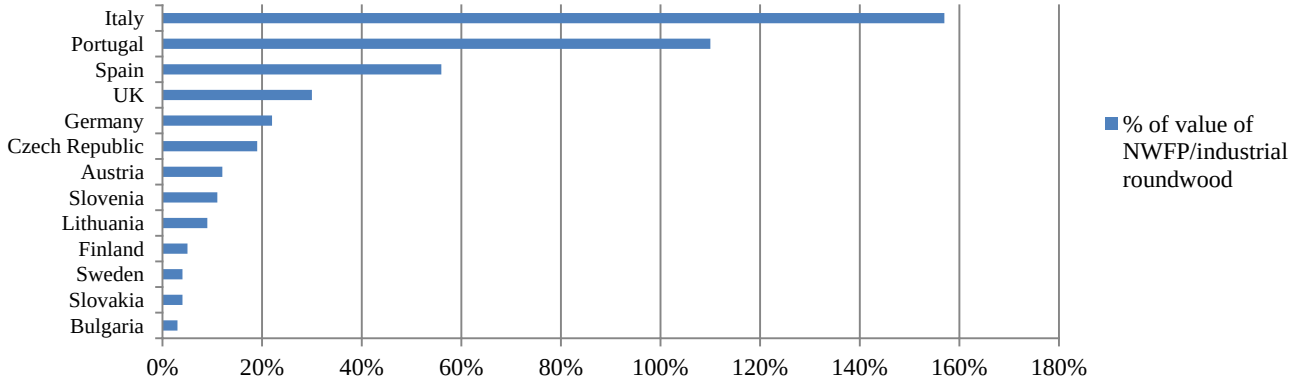


Figure 1.1.a: Annual value of NWFP as % of the annual value of industrial roundwood in selected EU countries (source: FAO 2005 and 2010)

According to the Millennium Ecosystem Assessment (Schvidenko 2005) report more than 150 NWFP are of importance in the international trade. The latest report on the state of Europe`s forests (Forest Europe, UNECE and FAO 2011), reported that the total value of NWFP in the Forest Europe region reached 2,763 million EURO, of which 83% was generated by plant products. This value represents around 10% of the value of roundwood, which is quite important considering the existing gaps in data collection and missing NWFP. In addition, there are significant differences in the access, utilisation and importance that are ascribed to the production of NWFP. In

particular in the **Mediterranean region**, where an immense diversity of NWFP exists, and the profitability of wood is lower, the value of NWFP is representing a considerable part of the total forest production (Figure 1.1.a).

In recent years, **EU Rural Development Policy** (EU 2005) has aimed at fostering the development of a market for non-wood forest products and services. The reform of Common Agriculture Policy (CAP) strongly prefers diversifying the rural activities and generating new non-agriculture based incomes in the rural areas of EU member states. In this context, the incomes from non-wood forest products and services are a significant source for local people in those regions.

However, **lacking information, capacities** and **knowledge** at different stages of the **NWFP value chain**, often prevents realising the full potential of NWFP and MPT in generating wealth in rural areas in the context of a bio-based European economy (Niskanen *et al*. 2007). Therefore, considerable improvements in all segments along the NWFP value chain are needed (Figure 1.1.b).

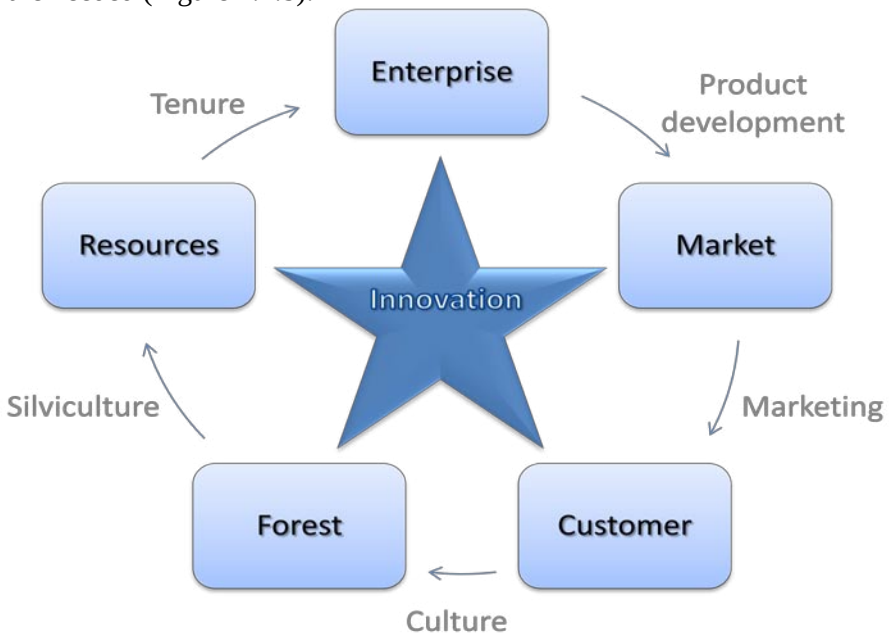


Figure 1.1.b: Different aspects of a NWFP value chain considered in STAR TREE

To ensure a sustainable and optimal provision of relevant forest products and services, **forest management** requires tools to quantify the joint production of **wood and NWFP** and the impacts of forest management and environmental conditions (including climate change and emerging biotic and abiotic threats) in their provision as well as the tradeoffs between them. This means a shift from wood-based to multi-products forest management, which maximises the profitability of relevant products and services rather than only wood production or timber profitability. This also implies developing specific silvicultural guidelines to operationalise the concept of **multipurpose trees**, which means that the same tree is managed and used for more than only one purpose (e.g., chestnut trees can be used for production of wood, tannins and chestnut fruits).

Further, for stimulating business opportunities based on NWFP and MPT different measures at various levels are needed to ensure an efficient marketability from the perspective of consumers' behaviour and patterns, taking into account European as well as other markets. In particular a clear link and organisation between different actors along the value chain is important. The **enterprises** (e.g., SME) need to have the capacities to develop **innovative approaches for creating new products and services in order to target emerging markets and new potential consumers**. At the same time targeted **policies** and **regulations** (e.g., well defined property rights), and well functioning **institutions** have to be in place to ensure the emergence of an efficient European **NWFP value chain**.

STAR TREE recognises the importance of **multi-purpose trees** and **NWFP** in the context of strengthening and diversifying the economic activities in the rural areas. Thus, START TREE is based on an integrated approach that will address the above mentioned elements, identifying shortcomings and proposing solutions to enhance the **management, product development, innovation, multi-stakeholder dialogue and marketing** of NWFP and MPT.

1.1.2 Objectives

The ultimate goal of the STAR TREE project is **to provide better understanding, knowledge, guidance and tools to support relevant stakeholders** (e.g., forest owners, resource managers, enterprises, decision makers, other public and private entities) **in optimising the management of multi-purpose trees and developing innovative approaches for increasing the marketability and profitability of NWFP for a more competitive rural economy.**

To reach this overall goal STAR TREE will:

- Develop new **knowledge and tools** to optimise the **sustainable and joint provision** of wood, NWFP and related services as well as the management of MPT in a climate change context.
- Advance the understanding on the **socio-economic importance** and the potentials of **markets** for NWFP, including the role of public and private actors in supporting the **innovation processes** for new products and services based on **consumers**' behaviour and patterns;

  Establish solid strategic partnerships between key research organizations and specialised SMEs working on NWFP in Europe to ensure and **speed up the transfer of research and innovations to markets.** Such partnership will be based on an interactive, multi-scale and feedback-based approach and it will cover the whole NWFP value chain.

In this respect STAR TREE will strive to:

- Generate sound empirical data that will contribute to a better general understanding of the **current situation (strengths, weaknesses, threats and opportun**ities) in the **NWFP sector** in different regions across Europe;
- Involve relevant **stakeholders** along the value chain of NWFP and MPT to better understand their needs and preferences, and provide them with custom-tailored **solutions**;
- Develop **decision support tools and management guidelines** for optimizing **the management of MPT and the provision of wood and NWFP and related services;**
- Provide a proper understanding of the current structure and dynamics of the NWFP **market**, and its possible future development;
- Generate innovative tools that will guide small and medium enterprises (SME) in the development of successful **marketing strategies** to increase their competiveness;
- Identify existing **policies and institutions** at the European, national and regional level, affecting the NWFP sector, and propose adjustments to **foster** the **competiveness** of the sector at different scales;
- Provide extended knowledge about **innovation** systems and processes in the NWFP sector and about the **roles of** different **public and private actors** in supporting them;
- Generate an comprehensive overview of **innovative** NWFP examples, and develop and disseminate ideas on **new NWFP;**
- Generate an **information source** and **support materials** for relevant stakeholders that will facilitate an optimal utilization of opportunities offered by MPT and NWFP.

1.1.3 STAR TREE concept

STAR TREE will generate new **knowledge** and **tools** that will support the **conservation** and **sustainability** of forest resources, and a **sustainable rural development**, through a stronger utilisation of **business opportunities** based on **MPT** and **NWFP**. Through this STAR TREE mainly aims at showing how NWFP and MPT can contribute to improving **quality of life** in **rural areas**, without jeopardising the **sustainability** and **conservation of natural resources** (including forests). This requires that STAR TREE draws on a balanced methodological approach that will simultaneously consider **social** needs and **ecological** potentials.

To reach this target and to provide adequate knowledge, and tools, the needs of different stakeholders will have to be identified, and about the potentials and limitations of the natural resources at different levels (see Figure 1.1.c). STAR TREE will rely on strong **stakeholder engagement** in a set of carefully chosen regional and in-depth case studies.

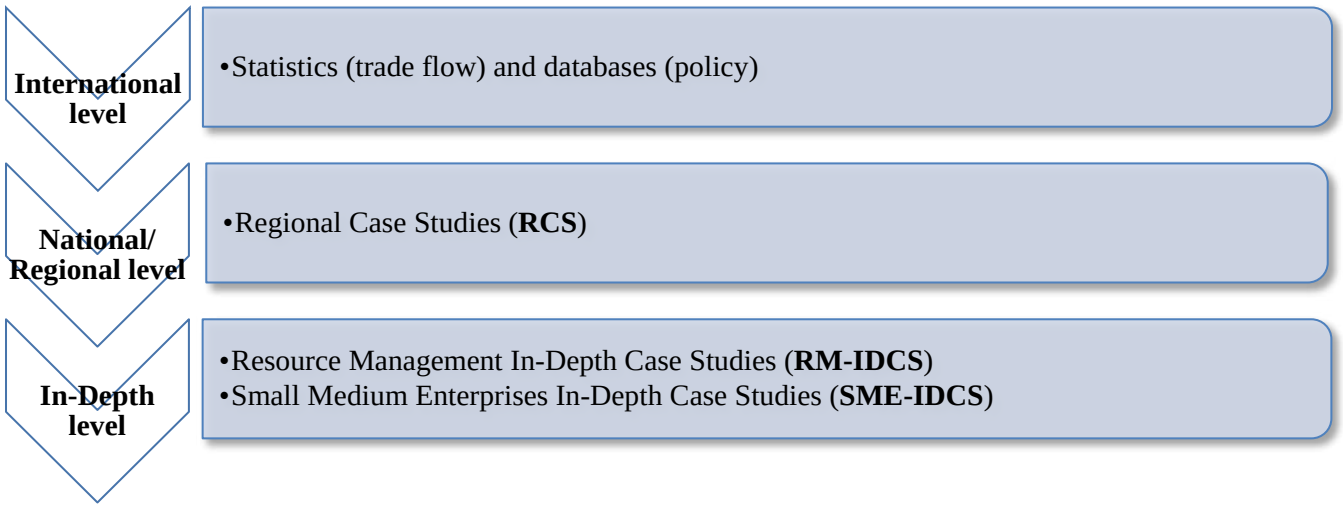


Figure 1.1.c: STAR TREE work levels

The STAR TREE **regional case studies** (RCS) were selected (see figure 1.1.d) to reflect the variation of the **importance of MPT** and **NWFP** (gradient from north to south), the development of the **NWFP sector** (e.g., territorial marketing in Italy, mass products in Finland, processing in Romania) in addition to the wood sector, reflecting different **socio-economic** (e.g., economic development, demography, traditions and cultural aspects) and **policy** contexts (e.g., definition of property and use rights), and **ecological** characteristics, which are all factors that significantly influence the role that MPT and NWFP play in improving the quality of life in the rural areas. Finally, an important criterion for RCS selection was also the access to data and the existence of relation (established network) between regional key stakeholders and STAR TREE consortium partners.

Figure 1.1.d: STAR TREE regional case studies

The selected RCS (for details see Annex 1) will serve several purposes: (i) as examples for generating an **overview of the NWFP sector** at the regional and European level, (ii) to identify **innovative approaches** in management and use of MTP and NWFP, that will help to generate new knowledge by using them as **in-depth case studies** (see next page for further explanation); (iii) as units for **action research** proposed by regional SMEs and supported by academic researchers which will explore the relevance of the project to praxis; (iv) serve as an excellent basis for **stakeholder engagement, consultation,** and **exchange of knowledge** and **experience** between STAR TREE partners and regional stakeholders; (v) for **validating**, **disseminating** and **communicating** general and specific guidelines and recommendations developed in the project.

The RCS will offer a good basis for the collection of general characteristics of the NWFP sector and the identification of stakeholder needs. However, to generate knowledge and tools that will support a sustainable rural

development through a stronger utilisation of enterprise opportunities based on NWFP and MPT more specific and detailed approaches are needed. This will be achieved through a number of **in-depth case studies** (IDC), which will serve two specific aims. On one hand, IDC studies should provide empirical data to develop and test **improved management strategies** for **MTP and NWFP**, and on the other hand they should serve to gather detailed information about **marketing strategies**, **innovation structures** and **processes**, **stakeholder relation** and **roles**, development of **new NWFP**, etc. To fulfil all this data needs, two types of IDC studies will be developed. **Resource management IDC** (RM-IDCS) for the development of improved management guidelines and tools, and **Small and Medium Enterprises IDC** (SME-IDCS), which should provide input for the development of guidelines and tools for marketing, innovation and policy development, and for testing new approaches (action research).

The RM-IDCS will work on a set of selected MPT species and NWFP at the **stand and forest management unit (FMU) level**. Their main goal is to develop guidelines and tools for an improved management of selected MTP species and NWFP (see Table 1.1.a). The work in RM-IDCS is organized as shown in Figure 1.1.e: initial analysis of forest management guidelines will reveal gaps and modelling needs; leading to development of improved models; which are then employed in decision support tools to provide new silvicultural recommendations for NWFP management (Figure 1.1.e). The RM-IDCS were selected in the same regions as RCS.

Table 1.1.a. STAR TREE Resource Management in-depth case studies

Country	MPT species[1]	NWFPs
Finland	PS, PA, BP	*Boletus edulis,* Bilberry, Cowberry
Germany	CS, J, S, PrA,	Chestnut, Walnut, *Sorbus* spp., Cherry, Blueberries, Sallow thorn fruits, Ginkgo leaves
Latvia	PS, PA, BP, Sa,	Mushrooms, berries, wild honey, birch juice, foliage, hunting products, sauna scent
Portugal	QS, PP, QS, QR	Cork, Pine nuts, Mushrooms
Spain	PS, PN, PH QS, PP, MP	Cork, Pine nuts, Mushrooms
Turkey	PP, CS, T,BL	*Boletus edulis,* Thyme, Pine nuts, Chestnut

[1] AI-Alnus (*Alnus incana*); AM-Chockeberry (*Aronia melanocarpa*); BL-Bay leaves (*Laurus nobilis*);BP-Silver birch (*Betula pendula*); C-Hazel (*Corylus sp.*); CS-Chestnut (*Castanea sativa*); FA-Buckthorn (*Frangula alnus*); J-Juniper (*Juniperus sp.*); JR (*Juglans sp.*);LT-Lime tree (*Tilia sp.*); MP-maritime pine (*Pinus pinaster*); MS (*Malus sylvestris*); VM (Vaccinium myrtillus), H (Hippophae rhamnoides), G (Ginkgo biloba), PA -Norway spruce (*Picea abies*); PH-Aleppo pine (*Pinus halepensis*); PN-black pine (*Pinus nigra*); PPy (*Pyrus pyraster*); PP-Umbrella pine (*Pinus pinea*); PrA (*Prunus avium*); PS-Scots pine (*Pinus sylvestris*); QPe (*Quercus petrea*); QR-holm oak (*Quercus rotundifolia*); QRo (*Quercus robur*); QS-cork oak (*Quercus suber*); Sa-Willow (*Salix sp.*); S-Rowan (*Sorbus sp.*); T-Lime tree (*Tilia sp.*).

The work conducted in the RM-IDCS will integrate **silvicultural** measures, **growth** and **yield models** and **simulation-optimisation procedures** (Figure 1.1.d) to find innovative, best- balanced, most efficient and at the same time practically feasible ways to manage and produce non-timber products and services, and valuable wood at the same time.

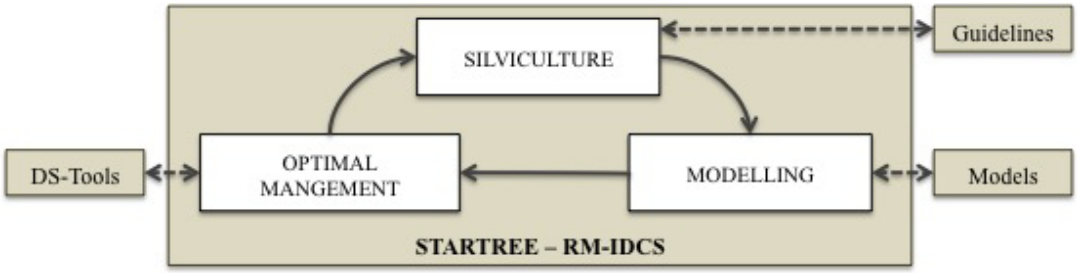


Figure 1.1.e: Work flow in RM-IDCS

For the implementation of SME-IDCS, we selected **enterprises** (SME) active in the NWFP and rural development sectors (Table 1.1.b). All the selected SME are also STAR TREE partners. However, STAR TREE aims to provide knowledge and guidelines based on the exploration of the most innovative companies in the sector. It is therefore of utmost interest for STAR TREE to get these companies as partners in the project and involve them as SME-IDCS. As it is impossible to know them before hand, it is planned to identify them across Europe and to involve them in the second half of the project. It is foreseen to involve up to **5 additional SME-IDCS**.

Learning by doing is a powerful way of getting to grips with the complexities of intervening in real world issues. Thus the enterprises involved in SME-IDCS will also be used to conduct **action research** where innovative approaches will be used to develop new or improved products or approaches.

Table 1.1.b: STAR TREE SME In-Depth Case Studies

Country	SME	Main activity	Planned action research
Austria	Asamer Handler & Co OG	NWFP development	Development of a NWFP gourmet food line
Germany	FVL Forestry Association Lüneburg GmbH	Forest owner association	Development of an innovation strategy and marketing plan for NWFP
Finland	Joensuun Tuote ja Vihannes Ky	NWFP trade	Development of an innovation strategy
Italy	Associazione tutela Marroni di Castione	Chestnut production	-
	Magnifica Communità di Fiemme	Forest management and mushroom picking control (sales of picking permits), information on wild mushrooms	-
Spain	Instituto de Restauración y Medio Ambiente S. L.	Rural development projects and NWFP trading	Development of a smart phone application for mushroom pickers
	Foreco Tech	Development of business opportunities for SME in rural areas	Development of business plans
UK	Llais y Goedwig	Forest alliance	Development of a regional brand for NWFPS
	Reforesting Scotland	Support to small scale forestry and development of NWFP enterprises	Reflective learning of regional branding initiatives in support of small scale forestry enterprises and NWFP producers

1.1.4 Topics addressed by the call

STAR TREE will address all topics identified in the call KBBE.2012.1.2-06 (Table 1.1.c).

Table 1.1.c: Topics addressed in the call and how STAR TREE will address them

Topic identified in the call	STAR TREE activities addressing these topics
"*generate new knowledge and tools (e.g. new silvicultural approaches, forest management practices, decision support systems, guidelines, etc.) to optimise the provision of multiple goods and services from multipurpose trees in rural areas*"	The knowledge related to the importance of the MTP and NWFP and development of management guidelines and tools for them is at the core of **WP2**, building on the data collected in WP1.
"*integrated approach will be taken to address priority issues concerning the selected multipurpose tree(s), such as the sustainable management of forests/orchards, adaptation to climate change, protection from pests and pathogens, etc.*"	**WP 2** will develop management guidelines for a number of selected MTP species (e.g., chestnuts, pines, cork oak, walnuts, and cherries) and NWFP (mushrooms, berries, aromatic plants). These guidelines will also consider trade-offs between goods and services, and abiotic and biotic factors that can influence the production capacity and stability of the forest under changing climatic conditions.
"*explore and enhance the socio-economic contribution of these trees to rural areas*"	Task 2.3 in **WP2** will use simulation-optimisation systems to analyse the profitability of the selected MTP and NWFP under different management regimes, and identify the best alternatives. **WP3** will analyse the current market situation at the different levels and develop guidelines for improved marketing strategies of NWFP. **WP5** will present innovative approaches and new NWFP products that positively contribute to product diversification, while WP4 will propose institutional adjustments fostering these developments.
"*new management practices needed to maximise the profitability of non-wood forest products*"	**WP2** will provide a framework for evaluating the possible economic trade-offs between NWFP and other environmental service in adapting forest management. In the selected case study regions.

Topic identified in the call	STAR TREE activities addressing these topics
	WP3 will explore the possibilities and recommend the strategies (e.g, territorial marketing) to increase the added value of NWFP.
"*approaches required to ensure their [non-wood forest products] commoditization and marketability from the perspective of consumers' behaviour and patterns*"	**WP 3** will explore how to better satisfy consumers needs through enabling or improving the communication among SME (e.g., creating local networks). **WP4** will explore the roles of policies, regulations (e.g., property rights) and institutions (e.g., business support) in facilitating the commoditization of NWFP.
"*taking into account European as well as other markets*"	**WP 3** will analyse the trends in the international trade network of NWFP, which will help to identify the countries of origin and destination and the changes in the past 15 years.
"*innovation approaches for creating new products and services*"	**WP3** will explore the possibility to move from mass products (e.g., mushrooms, chestnuts) to product bundles (complementary products; e.g., chestnut picking and degustation tours). **WP 5** (Task 5.1) will collect examples of innovative approaches and new NWFP products. **WP1** will provide for action research by SMEs for creation on new products.
"*crucial roles that various actors play in supporting the development and implementation of new market offers*"	**WP 3** will identify the roles different stakeholder have in NWFP market, which affect SME marketing strategies; **WP 4** will study institutions and policies affecting the provision and consumption of NWFP, and will look at the role of public and private actors in producing institutional change; **WP 5** will analyse innovation systems and processes, identify involved actors and their roles, and develop innovation support materials for relevant actors in the innovation systems. **WP1** will provide insights derived from strengthening the role of forest owner and trade (SME) associations.

1.2 Progress beyond the state-of-the-art

Considering the objectives and the concept, the STAR TREE would mainly address five main components of successful development of the potential and utilisation of MPT and NWFP: people (stakeholder engagement), forests (resource management), economics (economy and marketing), institutions, and innovation (systems and processes).

1.2.1 People: Stakeholder engagement

Traditionally, **scientific research** can be described as theory-driven research and evaluation (e.g., Rossi and Freeman 1993; Weiss 1998), which emphasizes that research is theoretically based, methodologically rigorous, scientifically objective, and uses valid and reliable data collection instruments. This ensures the defensibility of the results but may overlook their utility and the public's perception regarding their validity (e.g., Ziman 1991).

To **enhance public perception** regarding the **utility** and **validity of the results**, researchers also may employ a "consumer based research and evaluation" approach (Bledsoe and Graham 2005). This requires meaningful **involvement of external stakeholders** in the development and review of research to capture their informational needs and to ensure the utility of results for a broader external audience. Involving stakeholders in the research development process also encourages the development of goodwill, trust, and commitment between key groups and the sponsoring organization (Powell et al. 2006). However, involving the stakeholders in the development of science research is challenging and requires a departure from traditional theoretical approaches to research. The difficulties of inter- and trans-disciplinary research are well documented since long (Jantsch 1972, Thompson Klein 1990). In recent years, however, the methods for effective research cooperation with stakeholders have been improved significantly (Weiss et al. 2011).

In situations where stakeholder involvement is deemed important, researchers need to embrace **multiple theoretical approaches**. By using multiple approaches, science researchers emphasize the primary purpose and benefits of each approach while mitigating their potential weaknesses. In other words, by using multiple approaches, researchers may maintain the rigorous and scientific nature of their work to ensure defensibility, but they also may improve the utility and acceptability of the results to both internal and external stakeholders by employing participatory processes during the developmental stages.

The following theoretical **benefits of stakeholder involvement** during the formative stages of research have been identified (Powell and Vagias 2010):

- Improves research (public involvement and review can improve the validity, clarity, and appropriateness of research).
- Ensures the utility of the results for stakeholders.
- Builds trust through informal and formal communication processes.
- Enhances organizational commitment (by internal and external stakeholders).
- Notifies and informs the public regarding the purpose of the study and improves support for research (including heightened participation if the study is seen as valid).
- Builds acceptance of scientific results by internal and external audiences (if seen as legitimate and defensible).
- Builds public understanding and science literacy (through active public involvement and partnerships).
- Supports adaptive ecosystem management (facilitates the use of results for adaptive management).

STAR TREE is aiming at improving life quality in rural areas by providing new opportunities through use and commercialisation of MTP and NWFP, and simultaneously enhancing the conservation and sustainability of forest resources. This means that the project's outputs would have a direct impact on the numerous stakeholders being directly or indirectly involved in the provision or use of MTP and NWFP. Therefore it is an **imperative** that the project understands and addresses the needs, preferences and fears of relevant stakeholders. Thus, STAR TREE is going **beyond the common stakeholder engagement approach** that is often taken in research projects (also commonly known as the **3I approach** or **I**nvite, **I**nform, **I**gnore) by dedicating a special effort to bridge the gap between science and praxis. This means that already from the very beginning of the project there will be a strong stakeholder engagement that will be maintained throughout the whole project life. Furthermore by having SMEs as full consortium partners we are moving beyond engagement to active participation by representative stakeholders in the project.

STAR TREE will explicitly identify and involve key stakeholders across the different case studies, to benefit from their input in the formulation of specific stakeholder oriented questions that should be addressed by the project. The surveys across the case studies will themselves imply that the results of STAR TREE will integrate the views and values and concerns of numerous stakeholders representative of their broader groups in Europe. Finally, STAR TREE will undertake an excellent coordinated dissemination effort across Europe.

To ensure the professional interdisciplinary cooperation and the cooperation between research, practice partners and stakeholders in the project, a **professional communication** company is involved as a partner. Furthermore, the WP leaders have strong experience in interdisciplinary and practice oriented research with stakeholder cooperation.

1.2.2 Forest: Resource management

In many parts of Europe there are **great potentials** to improve the production and utilization of NWFP and services. From forest management perspective, there exist needs for the **development of innovative silvicultural** and **management approaches** relying on both integrated and segregated production approaches. However, these developments require knowledge about the production possibilities of MPT and NWFP and of the trade-offs particularly with respect to income from timber production.

The **ecology of NWFP** is **diverse** as they represent a wide range of products from not only **non-woody parts of trees** (e.g. resins, fruit) and **understory plants** but also from other taxonomic kingdoms such as **fungi**. Also abiotic factors that shape the ecology and dynamics of forests vary from temperature limitations in boreal and high mountain areas, to water limitations in the continental and Mediterranean regions. Because of their characteristics (e.g., like large diversity, lack of systematically collected data, timber production dominated approach in forest management) are the **production possibilities poorly known**. The state-of-the-art, outlined by Calama et al. (2010) is that there is a **lack of systematic inventory data** on NWFP and very **few models** to predict the yield of NWFP in Europe (see also the results of the COST action FP0603: http://www.isa.utl.pt/def/fp0603forestmodels/). Some models are available for e.g. cork, pine nuts, berries, mushrooms and resins, but often the **models are region-specific and their utilization in practice has been limited**. Difficulties related to creation of yield models result from high annual variability (masting), spatial variability, large and small-scale spatial variability, non-normality, lack of correlation with traditional forest characteristics, little known autecology and lack of systematic data on production. It is also known that winter warming and increased summer precipitation as a consequence of climate change can reduce flowering and berry production (Bokhorst et al., 2008), but the relationships between

yield of berries and climate variables are not fully understood (Wallenius, 1999). Therefore the potential of the models to predict changes in productivity are hampered by their limited capability to address climate change related impacts (e.g. droughts, bark beetle infestations, forest fire ignition) additionally (Lindner et al. 2010)

In forest resource management and planning, **models** (e.g., regeneration, growth and yield, mortality) are a **key factor to predict forest stand development**, because of the long time horizons they can provide. Models need to be accompanied with **new yield models for NWFPs and MPT**. As a result, traditional forest planning tools such as yield tables and simple timber focused growth simulators are not able to meet the information demands of contemporary forest management, which should include not only wood but NWFP as management objectives. The **models and tools** need to be **multi-objective** by nature and they need to consider all future incomes and costs from the forest (Pukkala 2009), i.e. the timber-cutting incomes from intermediate and final cutting as well as e.g. yearly income from certain NWFP.

Existing models for NWFP as well as the existing few examples on optimizing the joint production of wood and NWFPs based on simulation-optimization approaches were reviewed by Calama et al. (2010). This paper exemplifies the **lack of systematic data on NWFP, models, management strategies and specific decision tools** to address NWFP in forestry decision making at the different scales (from stand to the forest landscape level). **Decision Support Systems** (DSS) have proved to be suitable platforms, for the integration of information, models and methods required to support the above outlined complex forest management problems (e.g. Borges et al. 2003; Reynolds et al. 2005). The benefit of the DSS approach is that the user can focus on identifying the decision problem, exploring the decision space and on searching for suitable courses of action instead of handling a set of individual models and tools.

In this context, STAR TREE project's **forest resourc**e related work will go beyond the state-of –the-art by:

- Establishing new protocols and guidelines for **collecting systematic data** on NWFP for modelling purposes as well as input in forest management planning.
- Preparing guidelines for developing models to **predict the production on NWFP** as well as developing new models to predict the production of NWFP for selected case studies,
- Demonstrating for a set of specific cases how **DSS based on simulation-optimization systems**, which integrate appropriate models for NWFP, can be used to generate optimal stand forest management strategies to maximise the profitability derived by the joint production of wood and different NWFP.
- Analysing the **production possibilities of MPT and NWFP** as well as the **trade-offs** with respect to income from timber production
- Adjusting existing and developing new **management guidelines to integrate MPT and NWFP** as specific management objectives that consider their ecological and economic dimensions for different parts of Europe.
- Identifying **successful combinations of NWFP and ecosystem services** at forest management unit (FMU) level and within a particular socio-economic situation.
- Analysing the **impacts of climate change and different biotic and abiotic risks** in the sustainable provision of NWFP and the conservation of MPT.

1.2.3 Economy and Marketing

During the last three decades NWFP trade has increased both at domestic and international level (FAO 2007). The NWFP use gradually changed into a copious businesses scaling up from local to national or even international level (Marshall et al. 2006, Sills et al. 2011, Simula 1999).

This changed NWFP market structure and dynamics has had two main impacts. On one hand it strongly affected **enterprises' operating environment and business opportunities** (e.g., migration to low cost labour countries) (Sitta and Floriani 2008, Cunningham 2011, Voces et al. 2011); while, on the other hand it fostered the development of two different **NWFP product groups**. The **demand driven** products are standardized goods easily available in a national or international market and mainly, while **supply pushed products** are special or complementary goods usually sold at local or regional level and rarely at international level. The main differences between the two product typologies is the complementarity that a given product has with other local good

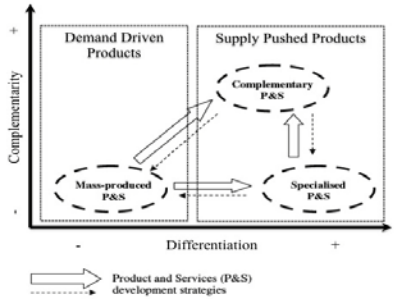


Figure 1.2.a. Evolution of NWFP production (modified from Pettenella et al. 2007)

and services and the product differentiation level in a given market.

Numerous studies have explored NWFP market evolution in developing countries (Kusters and Belcher 2004, Sunderland and Ndoye 2004), but very few have been conducted in Europe (examples are, Croitoru 2007, Turtiainen and Nuutinen 2011) and there are even less that address the scale and structure of NWFP markets (those that are available are mainly at local or regional level, like Secco et al. 2009, Cai et al. 2011, Voces et al. 2011, Weiss et al. 2011). The **absence of the studies** is mainly because of missing information (Vantomme 2003).

However, **accurate NWFP data** could represent an indispensable source for understanding the **NWFP market structure and its evolution**, and would be relevant for **decision making** (e.g., multilateral or bilateral negotiation, EU integration progress), understanding the economic and fiscal balance (e.g., payment statistics, accounting), and **developing marketing strategies** at enterprise, regional, national or international level (Eurostat 2008). For example, Sitta and Floriani (2008) showed how that entrance of new EU members, forced Italian companies, working in the NWFP sector, to move to new locations, with lower labour cost and simplified import procedures, to reduce their production costs. Although this example only refers to a single NWFP, without using standardized methodologies, it shows the potential that is hidden behind the statistics.

The understanding of the **market and its functioning is a key element for STAR TREE** that will strongly support the elaboration of guidelines and tools for developing successful **marketing strategies** for relevant stakeholders (e.g., forest owners, SME). To overcome missing knowledge about the NWFP market, STAR TREE will go beyond the state of the art by applying innovative methods, like the **Network Analysis.** This method is a powerful tool to understand the structure of a NWFP market. The use of Network Analysis (NA) is a new approach to study complex interactions in the International Trade Network (ITN) (Hoff 2004; Baker 1984; Borgatti et al. 2009) or to describe net-system business at local level (Secco, Pettenella in Maso 2009; Maso, Matilainen in Pettenella 2011). However, **NA does not evaluate the economic dimension of trade, but rather the structure of the trade relationships** (economic fluxes) inside a network (international or local market level) (Figure 1.2.b). The SNA is in particular useful to analyse horizontal supply chains (supply pushed products), but is of limited use for vertical supply chains (e.g., demand driven products), where it is mainly applied for describing production bottlenecks along the supply chain.

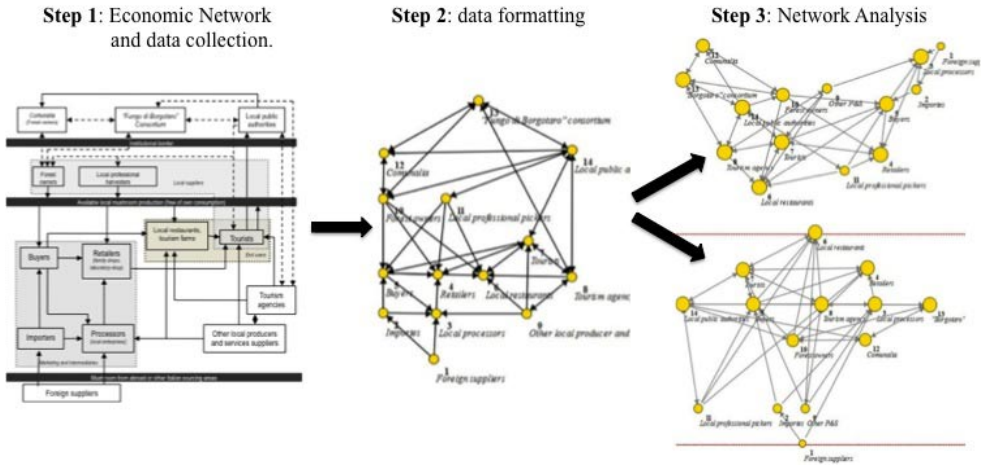


Figure 1.2.b: Steps in a Network Analysis

Therefore, STAR TREE will apply **multiple methods** to explore the structure and dynamics of the NWFP markets at different levels: (i) **NA analysis,** (ii) **traditional market analysis** (market macro- and micro-environment**)** and (iii) **participatory methods** (Delphi questionnaires). By applying NA at international level for selected NWFP products (Barigozzi, Fagiolo in Garlaschelli 2010), we will explore: **triangulation effects** (Magee 2008; Egger in Larch 2008), **effects of institutions** and **law implementation** (Subramanian in Wei 2007), **roles of countries** (provider-consumer) within the ITN (Bhattacharya, Mukherjee in Manna 2007; Bhattacharya et al. 2008). The same information will also obtained by traditional market analysis, based on accountability of input/output flow. Finally the Delphi method (Kuo, Hsiao in Yu 2005) will provide stakeholders' opinion on NWFP trade and market. The outputs from the different approaches will be used to draw final conclusions about the **current and potential future NWFP market structure and dynamics**.

Understanding the market structure and dynamics is one of the preconditions for **improved NWFP commoditisation the development of successful market strategies** (Kotler in Armstrong 2011; Jobber 2009, Surhone, Timpledon in Marseken 2010; Peattie 1995). However, it was shown (Mantau et al. 2001) that to be able to understand and implement the opportunities offered by the market, **enterprises and forest owners still lack capacities**. Therefore, STAR TREE will develop guidance and tools (**marketing training course and guidelines**) for development of **marketing strategies** at different scales (local, regional or international) and stakeholders (SME, forest owners).

1.2.4 Institutions

Despite the recognition that NWFP play an important role in the livelihood of rural populations and local economies, the analysis of institutional aspects related to NWFP provision and consumption have been mainly studied in the context of developing countries (e.g. analysis of governance structures for managing rural communities livelihoods by Ineichen, 2010; Rista et al., in press), whereas in developed countries and particularly in Europe these studies are not abundant (e.g. FAO, 1995). Yet **institutions – that is, policies, regulations, policy instruments, property rights, cultural norms and traditions – are of paramount importance for NWFP sector development**. For example, Janse and Ottitsch (2005) clearly demonstrate that property rights, forest policy goals, financial instruments, legislation on land use and nature protection are influential on NWFP provision. In Europe, the notable exceptions are the aspects related to **ownership and property rights**, which **have been extensively studied during the past decades** (e.g. Saastamoinen 1999; Niskanen et al. 2007, Aizpurua and Galilea, 2000; Cesaro et al., 1998; Glück, 2002; Bouriaud, 2002; Indufor/Eco, 2001; Kissling-Näf et al., 2002; Kissling-Näf and Bisang, 2001; Rekola, 2004, Schmithüsen, 2000; Schmithüsen, 2004; Bauer et al, 2004; IUFRO R.G.6.13, several years). **Property rights play a prominent role for market development and innovation** (Bouriaud, 2007). In many countries, by law, NWFP may not be included in the content of the private property rights over forests, e.g. right to collect berries and mushroom remain in the public domain (everyman's right - Finland, Sweden, Bulgaria, Romania, Norway and Lithuania) (FAO, 2004). In other cases, such as for example Italy, market demand for chestnuts, hazelnuts, mushrooms, truffles and berries is so high that almost all the regional administrations introduced property rights to control their harvesting (Petennella et al. 2005).

Going beyond property rights, there are few direct policies, regulations or policy instruments specifically targeting NWFP, however, many policies and regulations from other related sectors (e.g., trade, transport, infrastructure, food, agriculture, and industry) have indirect impact on NWFPs. A systematic identification and assessment of policies and approaches toward strengthening the role of NWFP sector through coherent policies has been largely absent from the literature (e.g. FAO 1995). In addition, **informal institutions such as cultural traditions and norms play an important role in NWFP sector**, yet they have hardly been studied in the European context. In addition, due to their variety and to the large range of uses in which NWFP are employed, **many actors are involved** in the NWFP value chain from the provision and harvesting stage, to the stage of final consumption. While these actors play an important role in resolving problems affecting access to and use of resources, technology assessment and transfer, and organization of the framework in which NWFP sector activities take place, their roles and responsibilities specifically concerning NWFP sector, as well as the interactions between different actors leading to changes in institutional setup have received very little attention from researchers (e.g. FAO 1995).

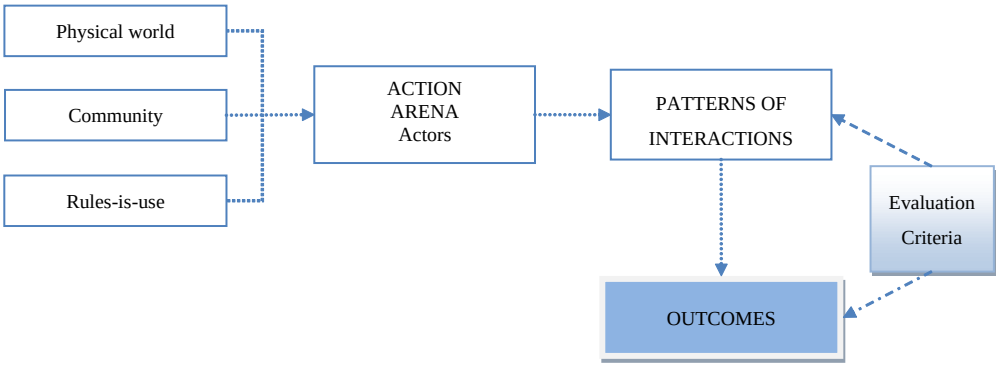


Figure 1.2.c: Institutional Analysis and Development Framework (Ostrom 1999)

In this respect, an institutional analysis and development framework (Figure 1.2.c), adopted in this project, provides a means to study the behaviour of multiple participants, including those who are directly involved in the policy

situation and have an interest in policy outcomes (Ostrom 1999). Institutional analysis has already proven fruitful when dealing with such complex issues as for example, climate change, deforestation, local common goods and international environmental conventions (e.g. Ostrom 1990; Ostrom et al. 1994; Gibson et al. 2000; Young 2002; Young et al. 2005; Young et al. 2008; Dolsak and Ostrom 2003). It has also been identified as a key for understanding the regimes of forest resource utilisation (Kissling-Naf and Bisang, 2001).

This project will address the above mentioned gaps and will provide **a clear picture of the role of institutions** – **both formal** (e.g. policies, regulations, policy instruments) **and informal** (e.g. norms, cultural traditions) – in shaping the production and consumption of NWFP sector so as to enable decision-makers to take into account institutional aspects affecting the provision and market potential of NWFPs in a more systematic way. Moreover, by focusing on institutions on different levels (international, national, regional and local) and in different sectors, as well as on the their interactions, the project will **advance the knowledge of institutional constraints and opportunities for NWFP sector development** and **provide suggestions on whether, how and which institutional adjustments can be made** in order to overcome constraints and realize opportunities that would lead to the enhanced competitiveness of the sector. The institutional change needed to facilitate NWFP-based entrepreneurship depends on how actors interact with each other when a particular institution is altered in practice (Scott 2001). In this vein the project will help to **understand the roles of different actors, both from public and private sectors, as drivers of institutional change** and provide guidance on how this can be achieved.

1.2.5 Innovation

Forest related research has had a dominating focus on timber production. While the booming bio-energy sector has received strong attention recently, other **non-wood forest goods and services are still quite neglected**. This is true for practice and policy as well as for research and education. Within research it is true for the fields of forest management as well as policy and economics.

Innovation and entrepreneurship research in forestry is a relatively new field in Europe. It has strongly been advanced by the work of the European Forest Institute Project Centre INNOFORCE since 2001 (Rametsteiner et al. 2005) and by the COST Actions E30 “Economic integration of urban consumers' demand and rural forestry production” (Niskanen 2006) and E51 “Integrating Innovation and Development Policies for the Forest Sector” (Weiss et al. 2011). Within these three European research networks, innovation has been conceived in a broad understanding, in such as **innovation was understood in a systemic way** and the studies covered innovations in timber but **also non-wood forest goods and services**. This work is therefore highly relevant for the call and the study of innovation in the proposed project thus will be based on this existing knowledge. At the same time, the previous research also showed that still much more research is carried out in the timber and bio-energy sector. Regarding other forest products the innovation and entrepreneurship related knowledge is still in an initial state. The knowledge which exists so far indicates that **innovation processes in the non-wood sector differ quite strongly** in many aspects: The sector relies on different knowledge sources; there are different policies that influence the innovation processes, and partly different actors active and relevant for the support of the innovations. Furthermore, the **traditional forest sectoral innovation system hardly supports innovations in non-wood products**, and there are strong barriers that specifically exist in this sector (Buttoud et al. 2011). This project will therefore provide a significant advance in methods of innovation research and in new findings about innovations in non-wood forest goods and services and land-related resources.

In addition to the limited existing scientific knowledge about innovation in the non-wood sector, the study may rely on general innovation research, particularly in the fields of traditional sectors, ecosystem services and regional innovation systems. Hypotheses and insights from innovation systems and regional governance research (Braczyk, Cooke and Heidenreich 1998; Breschi and Malerba 1997; Hirsch-Kreinsen and Jacobson 2008; Böcher 2008) were proven to be relevant in the field of innovations in territorial goods and services (Weiss et al. 2011).

The project will **advance the knowledge about innovation systems and processes in the field of non-wood products** in the following aspects:

- innovation potentials and trends in new non-wood products and MPT
- understanding of the formulation and implementation of policies aiming at the support of innovations and start-ups in the non-wood sector, including the effect of innovation support instruments
- understanding of the role of different public and private actors, including the land-owners, rural companies, service providers, interest groups, policy makers, research, training and education organisations, etc.

- understanding the role of the institutional frameworks for the development and implementation of innovations
- understanding the role of innovation system functions such as information provision, coordination of actors as well as financing and other incentives
- practical recommendations, guidelines and tools for innovation support, for companies and institutional actors

The proposed innovation research in the project is **promising** because it is based on the best existing knowledge on innovation processes in the sector, it uses up-to-date scientific knowledge and approaches from innovation research and it looks at all relevant policy fields and actors beyond the traditional forest sector, for instance, rural development policies and organisations active in regional development.

Table 1.2.a summarises the progress beyond the state of the art expected from the STAR TREE project.

Table 1.2.a Summary of the progress beyond the state-of-the-art expected in STAR TREE

State-of-the-art / Shortcomings	How STAR TREE extends the state of the art
People: Stakeholder participation	
Decision-makers and stakeholders rarely explicitly identified or involved in research design	Explicitly identifies and involves representatives of stakeholders in the regional case studies
	Empirical data collected will reflect preferences and positions of the relevant stakeholders
Forests: Resource management	
Data and models for MPTs and NWFP are scarce; models are rarely included in Decision Support Tools and used in practice.	New data are collected for modelling; models are linked to Decision Support Tools.
Forest management planning is still too much wood production oriented.	Using Decision Support Tools, the joint production of wood and NWFP is considered to produce more efficient multiple-use forest management strategies for stand and FMU levels.
Production of NWFP and trade-offs with respect income from wood production are unknown	New information on production, profitability and trade-offs increase the utilization of NWFP in Europe. They can become a significant source of incomes for rural development. This offers new possibilities for enterprises operating at NWFP markets as well as local citizens and tourists.
Silvicultural guidelines focus on a sustained wood yield production mainly.	Improved guidelines taking into account the combined production of NWFP, wood and services will allow forest resource managers to apply new management strategies.
Economy and marketing	
No information about European/international market structure	The project will study the main trade streams for common NWFP, exchanged in the international trade network understanding the market structure.
There are few studies exploring the actors relation in the regional market	SNA approach will be used to understand the market structure as basic information to develop new strategies, and to raise the resilience and stability of regional and local markets.
No study address the forest owner as first economic actor of the supply chain	The project will study the strategy to enhancement role of forest owner in NWFP supply using market-based mechanism as self-standing economic tool in rural areas.
Few works have explore the role of territorial marketing in NWFP promotion	Understanding the NWFP characteristics is essential to promote different product in the market. The territorial marketing will be used to increase the stakeholder awareness to enhance the use of NWFP at local or regional level.
Institutions	
NWFPs are well analyzed in the context of subsistence economies, developing countries and sustainable natural resource management	NWFP will be analyzed as an innovation and entrepreneurship opportunity in the context of multi-functional forestry in European context
NWFP were analyzed in COST E30 as local/regional case-studies of innovation	Institutions at multiple scales (international, national, regional, local) as well as their interactions will be analysed to identify

	potential directions of developing enabling policies
Property right on NWFP are usually unclear in Europe	The screening of NWFP property rights will help the policymaker and companies to operate in the sector.
The economic and institutional linkages has rarely studied in NWFP sector	The project will develop new potential avenues for improved coordination between institutions and entrepreneurs targeting the start-up of new business opportunities on the bio-economy
Innovation processes and systems	
Traditional forestry innovation systems focus on timber but not on NWFP and Services.	The project will develop specific knowledge on innovations in NWFP and aims to enhance the awareness of stakeholders for their potential.
Explicit innovation policies hardly exist in the forest sector.	The project assesses existing policies and will develop new policy options and means for innovation support.
Territorial goods and services of forests are hardly seen as business fields by most forestry companies and decision makers.	The project will collect examples of innovative enterprises and products that illustrate the business potentials. It will analyse how to develop new products and how to support innovation processes by policy makers and institutional actors.
There is a lack of knowledge and understanding of innovation processes in the NWFP sector.	The project analyses innovation systems on regional, national and European level. It will analyse innovation processes in enterprise and regional cases.
There is a lack of innovation oriented policy means in forest policy, and in particular a lack of systemic support approaches.	The project will analyse existing policies, including bad and good examples, It will develop guidelines for systemic innovation support. A set of systemic policy instruments for innovation support in the NWFP sector will be developed.
There is a lack of intersectoral communication of forest sector actors.	The project foresees the collaboration and interaction with all relevant actor groups in the value chain and with sectors relevant for NWFP markets.
There is a lack of understanding of important role that institutional actors play for innovation in the sector.	The project will analyse the roles of public and private actors in innovation systems and will communicate the findings to all relevant actors. Guidelines and tools for each actor groups will be developed.
NWFP are in most cases plants and fruits and only in some cases the focus is on substances and resources.	The project will try to extent the potential for substances and resource substitutes. Therefore new client groups will be asked for their needs and the biological potential in NWFP for this purpose will be analysed.

1.3 S/T methodology and associated work plan

1.3.1 Overall strategy of the project

The STAR TREE project is composed of 7 work packages (WPs) of which WP 1 to 5 are Research and Development oriented, WP 6 covers dissemination and communication and WP 7 is dedicated to management and coordination. WP 1 represents the participatory pillar of the project as it builds a strong relation between the project and the identified relevant stakeholders at the regional level and provides relevant data for other WP. WPs 2 to 5 are building the other source of knowledge pillar for the project, developing solutions (models, methods and tools) for the issues identified through the stakeholder engagement (see also Pert diagram in section 1.3.4 and the detailed project structure in Annex 2). There is a permanent flow of information between and within these two pillars that will ensure that the developed solutions are integral and providing useful and relevant answers for the stakeholders at the regional and local level.

- In **WP 1 case study coordination** and **stakeholder engagement** take place, and is considered as a key element in this stakeholder driven Project. WP 1 will coordinate the stakeholder engagement and consultation process. Further, it will organise and assist in the implementation of regional, in-depth case studies and action research studies. For all of these case studies WP 2 to5 will provide the data collection or implementation methodology. WP 1 will also secure timely provision of the gathered data and secure their adequate storage. In the last phase of the project all the data and reports created by WP1 will be transferred to WP6 and integrated into the STAR TREE dissemination pack.
- **WP 2** will develop guidelines and tools for a balanced and sustainable **resource management**, which equally and simultaneously considers the production of wood and NWFP and services. New silvicultural systems development will be supported by a combined use of growth models and decision support tools. This WP will develop the data collection methodology and use the in-depth case studies for data collection and model testing. Tools and guidelines developed in WP2 will be transferred to WP6 to be integrated into the STAR TREE dissemination package.
- **WP 3** will increase the understanding of current and potential development of the **economy and markets** (international, national and regional) of NWFP. Based on the knowledge gained through market structure and dynamics analysis, regional and in-depth cases studies (WP1) it will develop tools that will help SME to establish more successful marketing strategies. To harmonise data collection procedures in case studies (WP1) it will closely cooperate with WP 4 and 5. The developed tools will be transferred for integration into the STAR TREE dissemination package in WP6.
- **WP 4** will work on improved understanding of the roles of **institutions** (e.g. policies, regulations, policy instruments, informal norms) in the NWFP sector development. The institutions will be analysed at the international, national and regional level. This WP will rely heavily on data collected in regional case studies (WP1). For this data collection it will provide the methodology that will be harmonised with WP3 and WP5 to ensure strong synergies. The final recommendations about policy and institutional adjustments that would foster the development of the NWFP sector will be also transferred to WP6.
- **WP 5** aims to derive practical recommendations and tools for **innovation** support, which will be mainly achieved through understanding the innovation processes in the NWFP sector, documenting new forest products and new business models, organisational or marketing methods, etc. The WP will partly rely on the data collected in the regional cases studies (WP1), for which it will provide the methodology. However, it will also collect data directly from other sources. It will also actively participate in the implementation of action research (WP1) by developing innovation strategies for a number of selected cases. Finally, the tools and recommendations will be integrated into the STAR TREE dissemination package in WP6.
- **WP 6** will develop and coordinate the **dissemination** and communication activities. To develop a sound and effective dissemination approach tailored to the needs of relevant stakeholders, it will closely collaborate with WP1, where the stakeholder engagement and the case studies will take place. WP6 will also synthesize the findings and recommendations of WP 2 to 5 and will integrate it into a targeted-dissemination package (guidelines, web portal, electronic and printed publications) that can easily be used by different relevant stakeholders.
- **WP 7** is responsible for the project **coordination and management** including the organisation of project meetings, reporting, and tracking of work progress, deliverable submission, and financial control.

1.3.2 Project planning

Figure 1.3 a: Gant chart: the approximate timing of STAR TREE activities

WP/Task	Project month															
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48
WP 1: Case study coordination and stakeholder engagement																
Task 1.1: Regional NWFP sectoral mapping			M				D M									
Task 1.2: In-depth case studies						M										
Task 1.3: Stakeholder co-operation and engagement					M		D									
Task 1.4: Action research						M								M D		
Task 1.5: Data handling and dissemination			M		M					D			M	M		D
WP 2: Resource management																
Task 2.1: Silviculture of MPT and NWFP				D M										D		
Task 2.2: Modelling of MPT and NWFP				D								D M				
Task 2.3: Economics and optimal management of MPT and NWFP				D								D		D M		
WP 3: Economy and Marketing of NWFP																
Task 3.1: Current NWFP market environment			M	D		M		D		D M	M					
Task 3.2: Future development of the NWFP market							M				D	D				
Task 3.3: Recommendations for SMEs												M		D		
Task 3.4: Recommendations for NWFP sector												M		D		
WP4: Institutional dimensions of NWFP																
Task 4.1. Formal institutions shaping NWFP development				M	M		D									
Task 4.2. Understanding business establishment conditions							D									
Task 4.3. Informal norms, values, stakeholder perceptions of the institutional role				M	M		D									
Task 4.4. Alternative institutional changes and their impacts													D			
Task 4.5. Policy recommendations														D		

Legend: D- deliverable, M-milestone

WP/Task	Project month															
	1-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48
WP5: Innovation structures and processes																
Task 5.1 Collection of examples of European innovation in NWFP enterprises				D								D				
Task 5.2 Analysis innovation policies at European and national levels							MD									
Task 5.3: Regional analysis of innovation systems									D							
Task 5.4 Analysis of innovation processes at project/enterprise level										D M						
Task 5.5 Synthesis innovation analysis													D M			
Task 5.6 Innovation strategies, recommendations and support materials														D M		
WP 6: Dissemination & Exploitation																
Task 6.1 WP6 Planning & Coordination		D D		M							D					
Task 6.2 Science-Science					D											D M
Task 6.3 Science-Information-Policy																D
Task 6.4 Science-Practice, B2B, B2C, and C2B											M			M		D
WP 7: Project coordination and management																
Task 7.1: Financial and administrative management and reporting	D D					M						M				M
Task 7.2: Scientific management and monitoring																
Task 7.3: Organisation of project meetings and workshops	D M		M		M		M		M		M		M		M	M

Legend: D- deliverable, M-milestone

1.3.3 Detailed work plan

Table 1.3 a: Work package list

Work package No[1]	Work package title	Type of activity[2]	Lead participant No[3]	Lead participant short name	Person-months[4]	Start month[5]	End month[5]
1	**Case study coordination and stakeholder engagement**	**RTD**	**16**	**WRL**	**411**	**1**	**48**
2	**Resource Management**	**RTD**	**6**	**ISA**	**186**	**1**	**42**
3	**Economy and Marketing of NWFP**	**RTD**	**2**	**UNIPD**	**72**	**1**	**42**
4	**Institutional dimension of NWFP**	**RTD**	**5**	**CTFC**	**76**	**1**	**42**
5	**Innovation systems and processes**	**RTD**	**3**	**BOKU**	**82**	**1**	**42**
6	**Dissemination & Exploitation**	**OTHER**	**1**	**EFI**	**107**	**1**	**48**
7	**Project Coordination and Management**	**MGT**	**1**	**EFI**	**35**	**1**	**48**
				TOTAL	**969**		

1 Work package number: WP 1 – WP n.

2 Please indicate one activity per work package:

RTD = Research and technological development (; DEM = Demonstration; MGT = Management of the consortium; OTHER = Other specific activities, if applicable in this call including any activities to prepare for the dissemination and/or exploitation of project results, and coordination activities) According to the description of the funding scheme given previously.

3 Number of the participant leading the work in this work package.

4 The total number of person-months allocated to each work package.

5 Measured in months from the project start date (month 1).

Table 1.3 b: Deliverables List

Del. no.	Deliverable name	WP no.	Nature[6]	Dissemination level[7]	Delivery date[8]
D 1.1	Report presenting synthesis of regional sectoral reviews to describe the "State of the European NWFP sector"	WP 1	R	PU	PM 20
D 1.2	High quality data and information for use by WP2-5	WP 1	O	RE	PM 30
D 1.3	Effective communication strategies for engaging stakeholders	WP 1	R	RE	PM 20
D 1.4	Research results based on a synergistic combination of theory and praxis	WP 1	R	PU	PM 42
D 1.5	Five SMEs with enhanced economic and ecological sustainability	WP 1	R	PU	PM 42
D 1.6	RCS and IDC database	WP 1	O	RE	PM 46
D 2.1	Review on the current silvicultural management for the selected MPT and NWFPs in the in-depth regional case study areas	WP 2	R	PU	PM 12
D 2.2	Description and critical analysis of existing models that will be used as a starting point	WP 2	R	PU	PM 12
D 2.3	Protocols for new data collection in the in-depth case studies	WP 2	R	RE	PM 12
D 2.4	Identification and description of existing decision support tool	WP 2	R	PU	PM 12
D 2.5	Report describing the improvements in the models for NWFPs	WP 2	R	PU	PM 36
D 2.6	Expert system to identify successful combinations of NWFPs and ecosystem services	WP 2	O	PU	PM 36
D 2.7	Revised silvicultural guidelines for the selected MPT and NWFPs to increase the profitability of their management in regional case study areas	WP 2	R	PU	PM 42
D 2.8	Description of the new decision support tools for simulation-optimization of forest management combining wood and NWFPs	WP 2	R	PU	PM 42
D3.1	NWFP in the International market: current situation and trend	WP 3	R	PU	PM 12, 24
D3.2	The regional market of NWFP: current situation and effect on SME	WP 3	R	PU	PM 28
D3.3	Trends, rural impacts and future developments of regional NWFP market	WP 3	R	PU	PM 32
D3.4	Rural development and SME: the bridge between natural capital and NWFP economy	WP 3	R	PU	PM 36
D 3.5	Training, Guidelines and Product evolution: basic tools for SME	WP 3	O	PU	PM 40
D 3.6	NWFP sector recommendation	WP 3	R	PU	PM 42
D4.1	The role of institutions in NWFP development: current state and historical changes	WP 4	R	PU	PM 20
D4.2	Business establishment conditions in selected regions	WP 4	R	PU	PM 20

[6] **R** = Report, **P** = Prototype, **D** = Demonstrator, **O** = Other

[7] **PU** = Public; **PP** = Restricted to other programme participants (including the Commission Services); **RE** = Restricted to a group specified by the consortium (including the Commission Services); **CO** = Confidential, only for members of the consortium (including the Commission Services).

[8] Measured in months from the project start date (month 1).

Del. no.	Deliverable name	WP no.	Nature[6]	Dissemination level[7]	Delivery date[8]
D4.3	Informal institutions and stakeholder perceptions of institutional role in selected regions	WP 4	R	PU	PM 20
D4.4	Institutional changes and their impacts	WP 4	R	PU	PM 36
D.4.5	Policy recommendations	WP 4	R	PU	PM 42
D 5.1	Database of innovative examples for new forest products	WP 5	O	PU	PM 20, 36
D 5.2	Report on new forest products and promising chemical substances	WP 5	R	PU	PM 20
D 5.3	Analysis of innovation related policies on European and national levels	WP 5	R	PU	PM 20
D 5.4	Regional innovation system analysis report	WP 5	R	PU	PM 26
D 5.5	Innovation analysis report on enterprise level	WP 5	R	PU	PM 30
D 5.6	Implementation analysis of innovation policies	WP 5	R	PU	PM 39
D5.7	Innovation system analysis	WP 5	R	PU	PM 39
D 5.8	Innovation strategies, recommendations and support materials	WP 5	R	PU	PM 42
D6.1	STAR TREE website	WP 6	O	PU	PM 4
D6.2	Dissemination plan	WP 6	R	RE	PM 6
D6.3	STAR TREE conceptual paper on multi-purpose trees and NWFP in Europe	WP 6	R	PU	PM 15
D6.4	Exploitation plan	WP 6	R	RE	PM 32
D6.5	STAR TREE dissemination package	WP 6	R	PU	PM 48
D7.1.	Research contract and Technical Annex	WP 7	R	RE	PM 1
D7.2	Consortium agreement	WP 7	R	RE	PM 2
D7.2	Plenary project kick-off meeting minutes	WP 7	R	RE	PM 3
D7.4	Annual Research and Financial Reports	WP 7	R	RE	PM 18, 36, 48
D7.5	Final Research and Financial Report	WP 7	R	RE	PM 48

Table 1.3 c List of milestones

Milestone number	Milestone name	Work package(s) involved	Expected date [9]	Means of verification[10]
M 1.1	Preparation of protocols for RCS	WP 1, 3,4,5	PM 9	Protocols on STAR TREE website
M 1.2	Database structure agreed	WP 1	PM 9	Database & data entry notes prepared
M 1.3	RCS database complete	WP 1	PM 15	Data available to consortium members
M 1.4	Regional stakeholder groups formed	WP 1	PM 16	First meetings held
M 1.5	In-depth case study protocols agreed	WP 1, 3,4,5	PM 18	Protocols on website
M 1.6	EU State of the NWFP sector report	WP 1, 3,4,5	PM 20	Report on website
M 1.7	IDC database complete	WP1, 3,4,5	PM 39	Data available to consortium members
M 1.8	Database of NWFP models and supporting data complete	WP 1,2	PM 42	Data available to consortium members
M 1.9	Action research proposals agreed	WP1	PM 18	Proposals available on website
M 1.10	Action research completed	WP 1	PM 40	Reports on website
M 2.1.	State of the art: silviculture, models and decision support tools	WP 2	PM 12	State of the art report available
M 2.2.	Improved models and expert system	WP 2	PM 36	Improved models developed
M 2.3.	New decision support tools and silviculture guidelines	WP 2	PM 42	New decision support tools and silviculture guidelines developed
M 3.1	Data collection method at different scales	WP 3	PM 9, 18, 20	Data collection questionnaire delivered to WP 1 for implementation
M 3.2	Preliminary NWFP market structure: basic information for marketing strategy	WP 3	PM 27, 31	Draft deliverable D.32 and D3.3 available
M 3.3	Concept of the training course on marketing	WP 3	PM 34	Concept of the training course on marketing developed and available for WP 3 partners
M 3.4	Concept of the territorial marketing guidelines	WP 3	PM 34	Concept of the territorial marketing guidelines developed and available for WP 3 partners
M 4.1.	List of information to elicit from case study responsible partners elaborated and submitted to WP1	WP 4	PM 9	List submitted to WP 1
M 4.2.	Information elicitation guidelines	WP 4	PM 9	Guidelines prepared and submitted to WP 1
M 4.3.	Stakeholder interview structure	WP 4	PM 9	Stakeholder interview structure defined
M 4.5.	Information on national and regional policies, regulations and policy	WP4	PM 13	Information available for analysis

[9] Measured in months from the project start date (month 1).
[10] Show how you will confirm that the milestone has been attained. Refer to indicators if appropriate. For example: a laboratory prototype completed and running flawlessly; software released and validated by a user group; field survey complete and data quality validated.

	instruments collected			
M 4.5	Interviews with stakeholders implemented	WP4	PM 15	Interviews completed
M 5.1	Innovation analysis – basic elements	WP5	PM 20	Completion of: D 5.1v1, D 5.2 and D 5.3
M 5.2	Innovation analysis – case studies	WP5	PM 30	Completion of: D 5.4 and D 5.5
M 5.3	Innovation analysis – synthesis	WP5	PM 39	Completion of: D 5.1vn, D 5.6 and D 5.7
M 5.4	Innovation strategies	WP5	PM 42	Completion of: D 5.8
M 6.1	Web portal including CoP and databases operational	WP 6	PM 12	Released by PC
M 6.2	STAR TREE Marketplace operational	WP 6	PM 32	Released by PC
M 6.3	Series of dissemination workshops finalised	WP 6, 1	PM 42	Meeting minutes accepted
M 6.4	Final scientific conference held	WP6, all	PM 48	Conference report adopted
M 7.1	Kick-off meeting organised	WP 7	PM 3	Kick-off meeting minutes
M 7.2	Project meetings organised	WP 7	PM 7, 13, 19, 25, 31, 37, 43, 48	Minutes of the meetings
M 7.3	Intermediate progress reports delivered to the European Commission	WP 7	PM 18, 36,48	Progress report
M 7.4	Final scientific and financial report delivered to the European Commission	WP 7	PM 48	Final report

Table 1.3 d: Work package descriptions

Work package number	1		**Start date or starting event**		Month 1		
Work package title	**Case study co-ordination and stakeholder engagement**						
Activity Type[11]	OTHER						
Participant number	1	2	3	4	5	6	7	8
Participant short name	EFI	UNIPD	BOKU	UHAM	CTFC	ISA	METLA	INIA
Person-months per participant	14.5	16.5	13.5	10.5	14.5	16.5	16.5	14.5
Participant number	9	10	11	12	13	14	15	**16**
Participant short name	IWW	SFI	USV	SILAVA	KTU	FORECO	FAO	**WRL**
Person-months per participant	14.5	15.5	13	15.5	16.5	40.5	3	**39.5**
Participant number	17	18	19	20	21	22	23	24
Participant short name	LlyG	Plan-Sinn	JTVK	IRMA	FVL	AH&Co	INFRO	RS
Person-months per participant	21.5	17.5	13.5	31.5	21.5	6.5	2.5	21.5

Objectives

The overall objective of the project is to provide a holistic analysis of the European NWFP sector and its' potential to support rural development for the benefit of SMEs, forest managers and policy makers. In this respect, the aim of WP1 is:

- the generation of a consistent and coherent dataset to facilitate inter-regional comparisons and the synthesis of findings across Europe and
- the integration of theory and praxis which requires close co-operation and understanding between academic and relevant stakeholders.

Description of work

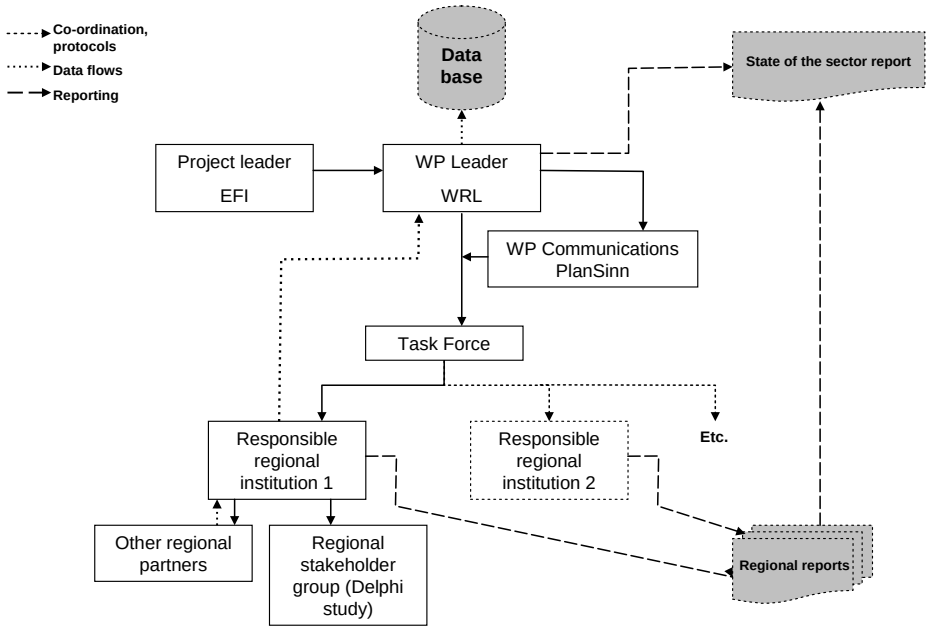
This WP requires considerable co-ordination of partners, activities and data flows. WRL will take overall responsibility for oversight of surveys, data collection, data flows and quality. PLANSINN will assist WRL with communications between the WP leaders, case study responsible partners and facilitate training events when needed. To facilitate communication and monitoring a Case Study Task Force will be formed, made up of named representatives of the case study responsible partners and the WP1 leader. The six monthly General Assembly meetings will be central to this WP and will be used to co-ordinate activities, provide training and facilitate interchange of ideas between project partners.

Several SME partners are associations which represent forest owners or community woodland groups. These have a strong interest in the regional surveys and will take on the role of lead partner for their regional survey. Involvement with the project will serve to provide these partners with an overview of the NWFP sector, data, an opportunity to meet with regional and national stakeholders which they will use as an evidence base for advising members and to drive policy changes (if required). In at least two cases (LlyG and RS) the project is providing an opportunity to undertake work the partner had aspired to but had not yet been able to secure funding.

Task 1.1: Regional NWFP sectoral mapping (WRL, EFI, UNIPD, BOKU, UHAM, ISA, METLA, SFI, USV, SILAVA, KTU, FORECO, LlyG, PLANSINN, IRMA, FVL, RS)

This is the main activity for the first year of the project and is the vehicle for the collection of 'broad and shallow' data for 13 NUTS2/3 regions in 12 countries across Europe. The work in each region will be led by a lead partner (Case Study Responsible-CSR) and co-ordinated through a Case Study Task Force made up of representatives of CSR (see Figure 1.3.d.1 and Task 1.3).

Figure 1.3.d.1 Organisational schema for Task 1.1



Task 1.1.1: Development of common data collection methodology for regional case studies

WP2-5 will provide protocols to collect the information they consider appropriate to describe and evaluate the status of NWFP resource, enterprises and innovation in the regions. The data to be collected will include; silviculture practices, forest management methods, policies, institutions, property rights, markets, innovation and the contribution of NWFPs to rural livelihoods (see the relevant WP 2-5 descriptions for further details). The contributions from each WP will be consolidated into a simple set of questionnaires and secondary data collection. To keep things practical and focussed, the survey will use a simple questionnaire administered by SME and academic partners utilising a bottom-up, enterprise focus will be used for the bulk of the survey (so self-assessment of profitability will be preferred to avoid detailed questions about costs and prices). Regional and national data will be obtained from a desk reviews and interviews with key stakeholders. Training in the application of the protocols will be done during the second General Assembly meeting (PM6).

Task 1.1.2: Regional case studies data collection

The CSR for each region will undertake the survey together with any other regional partners and relevant stakeholders. Data will be forwarded to WRL for quality assurance and entry into the project database for dissemination to all project partners.

Task 1.1.3: Regional sectoral overview

There are two perspectives which provide a basis for analyses and reporting of these data: each country will prepare an overview to a common template and each WP will do an inter-regional comparison in their area of specialisation. Both perspectives will be drawn together into a 'state of the NWFP sector' report for Europe. This will provide a solid basis for the deeper investigations to be pursued in the second and third years of the project and a basis for interpolating and contextualising the results of these studies.

Task 1.2: In-depth case studies (WRL, UNIPD, CTFC, ISA, METLA, INIA, IWW, SILAVA, KTU, FORECO, LlyG, JTVK, IRMA, FVL, AH&Co, RS)

Besides the broad and shallow data collected under Task 1.1 each WP will also require detailed data to be collected

in the form of in-depth case studies.

Task 1.2.1: Development of data collection methodology for in-depth case studies
WP2 (Resource management) is concerned with the development of forest management systems for MPT and NWFP which will require multi-season data and so work will commence on the 6 Resource Management In-Depth Case Studies (RM-IDCS) early in the project (PM 12). The in-depth protocols to be used by this WP will be agreed among the WP2 partners and communicated to other WPs through the Case Study Task Force.

WP3-5 focus on the development of enterprises being active in the NWFP sector and so are able to share data collected for 8 enterprise level case studies commencing in PM15 after the completion of the regional surveys. The preparation of protocols for the in-depth data collection will follow that established for the regional surveys. The data collection protocols provided by WP 3-5 will be consolidated into a single package and applied to all Small and Medium Enterprise In-Depth Case Studies (SME-IDCS) by the CSR.

Task 1.2.2: In-depth case studies data collection
To ensure consistency in the use of these more complex methodologies and to maintain data quality, training and supervisory visits will be provided alongside regular consortium meetings. Collection of in-depth data requires a commitment to the project especially from SMEs where data may be commercially sensitive. Data will be collected in confidence and stripped of any sensitive details before being entered into the project's master database for dissemination. Case studies are likely to be provided from within the project partners but it will also be possible to undertake work on especially interesting cases revealed by the regional surveys.

Task 1.2.3: In-depth case study reports
The detailed analysis of the data collected in each case study will be undertaken by the responsible WPs.

In addition, for WP3-5 a short description of each case study will be prepared. These short, easy to read descriptions of each enterprise will be disseminated to SMEs and stakeholders working in rural development. All case study partners will be invited to consortium meetings related to their case study and provided with reports. These reports should be available by PM30.

Task 1.3: Stakeholder co-operation and engagement (WRL, EFI, UNIPD, BOKU, UHAM, ISA, METLA, SFI, USV, SILAVA, KTU, FORECO, LlyG, PLANSINN, IRMA, FVL, RS)

Experience from previous projects suggests that continued SME and stakeholder co-operation with large and complex projects depends on being able to provide activities and information of real benefit to them. If we are able to maintain the interest of our partner SMEs and stakeholders then we can be more confident that our research is relevant to the needs of our beneficiaries while at the same time learning about how to most effectively convey messages. Although stakeholder relations have been formulated here as a separate task it is the ethos of the whole project. Thus, the consortium meetings will provide opportunities for field excursions for SME partners for direct information exchange as well as opportunities for interaction between SMEs and academic partners. Other opportunities for engagement initiated by the SMEs will also be provided (e.g., SME clinics - where SMEs can ask for specific advice or assistance from project partners).

PLANSINN will assist in the development and maintenance of relations with SMEs and other stakeholders. In practical terms this means they will be given responsibility for:

- moderation of consortium workshops including co-ordination of any training events, facilitation of excursions, collection of feedback from participants and reporting on outcomes
- development and maintenance of effective communications between project partners with an emphasis on maintaining open access to smaller or peripheral stakeholders
- advice on the outward-looking face of the project
- reflection on the communication process

Beyond our project partners there is the wider community of stakeholders (e.g., SMEs and interested public and private entities) which we wish to engage in the project- as data providers, sources of ideas, actors and beneficiaries

of the project. Communications with stakeholders will be facilitated by PLANSINN and will conform to best practice as described in:

- Global Reporting Initiative G3.1 'Sustainability Reporting Guidelines' (http://www.globalreporting.org/reportingframework/g3guidelines/) and
- AccountAbility AA1000SES Stakeholder engagement standard 2011 (http://www.accountability.org/standards/aa1000ses/index.html).

Task 1.3.1: Forming of a Case Study Task Force for WP1

The Task Force will communicate the plans of regional and in-depth case study partners, monitor progress with data collection and communicate key findings to other WPs to inform the development and implementation of the project. PLANSINN will assist WRL with communication between all those active in this WP with an emphasis on regular, efficient and targeted messages, through emails, Skype, newsletters and meetings, etc. to ensure rapid learning about and revision of project activities.

Task 1.3.2: Regional stakeholder analysis

The term stakeholders can mean different things depending on context – in the interest of clarity the project will adopt the definition provided by the Global Reporting Initiative: "Stakeholders are defined broadly as those groups or individuals: (a) that can reasonably be expected to be significantly affected by the organization's activities, products, and/or services; or (b) whose actions can reasonably be expected to affect the ability of the organization to successfully implement its strategies and achieve its objectives." Identifying these stakeholders will take place early in the project (PM2-4). Guidance will be given to each regional partner on how to prepare the stakeholder lists and to prepare a baseline assessment of their awareness and interest in NWFPs. PLANSINN will assist with this by running workshops on stakeholder analysis at the first Consortium meeting.

Task 1.3.3: Establishment of regional stakeholder groups

By PM6 each regional partner should have invited a small set (not more than 10) of stakeholders to join a Regional Stakeholder Group (RSG). This group will be kept informed of progress with the project, provided with reports, participate in the consultation and knowledge exchange process, participate in the regional results validation meetings, and invited to Consortium meetings within their country. The stakeholder group should include policy decision makers and business advisors alongside prominent forest managers and entrepreneurs.

Task 1.3.4: Stakeholder knowledge exchange events

For those stakeholders who are partners in the project and for those in the RSGs by invitation the project will provide regular exchanges with counterparts in other partner countries. These will run alongside the 6-months Consortium meetings and will be hosted by the local CSR partners. These events will provide an opportunity for peer-to-peer exchange and learning and to observe the process of adoption and innovation within project stakeholders.

Task 1.3.5: Stakeholder consultation process

Towards the end of the regional surveys (M15-26), regional stakeholder workshops will be held in each region to present the results of the survey and to apply the Delphi study described in WP3 (Task 3.2). The results of this study will be included in the final report. Other consultation meetings may be held as required during the course of the in-depth case studies especially for those aspects related to policy, regulation and innovation systems.

A training course will be organised to prepare the Case Study Responsible partners for the preparation and implementation of the multi-stakeholder events. This training course will be organised at the third consortium meeting (PM 12).

Task 1.4: Action research

Learning by doing is a powerful way of getting to grips with the complexities of intervening in real world issues. The project therefore includes some action research commencing in M15. Action research is a win-win for both the academics and SMEs as they both get something of value – the SME gets the chance to take a leading role in design and implementation of actions to enhance their enterprise while the researchers get the chance to closely observe innovation enterprise development processes focussed on issues arising from WP3-5. Practical research of

this type will serve to demonstrate the relevance of the project to praxis in a convincing manner to wider stakeholders and project beneficiaries.

The topics for Action research will emerge as we develop our relationships with SMEs and our understanding of the innovation process. However, we anticipate that we are likely to be working on some, if not all, of the following ideas arising as the project develops.

- Work with an SME to development new product lines (AH&Co)
- Design, undertake market research, launch and monitor reactions to regional branding for NWFPs (RS and LlyG)
- Develop iPhone and Android apps for mushroom pickers and associated activities (IRMA)
- Development of business planning tools for SME start-ups with a regional enterprise support agency (FORECO)

The choice of subjects and partners for Action research will be decided in a transparent manner at Consortium meetings.

The Action research will involve a mix of specialist advice and work by academic partners and practical work by SME partners and in some, exceptional cases, small sub-contracts for skills not contained within the project consortium. Monitoring and recording the Action research is central to the learning process and we will develop protocols and training for project partners involved with this task.

Task 1.5: Data handling and dissemination

The project hinges around the timely provision of good quality data to the WPs. The collection of the main data gathering activities into one WP is intended to manage the flow of data into the project. Handling it effectively after collection requires that project partners use the same data entry and verification systems. A be-spoke database application is the best way to do this and such a system will be designed complete with meta-data once the data collection protocols have been decided. Training in the use of the application will be given for any partner not familiar with the use of relational databases. Once entered all data will be uploaded to the Master database held by WRL and run through a data verification process (logic checks). The database will be accessible though password protected from the project website. Standard queries and output forms will be prepared to meet the needs of the WPs, SME partners and others wishing to access the data.

The project anticipates the creation of three databases for; the regional surveys, forest stand and NWFP yield data and for the in-depth enterprise case studies. Other, more qualitative information such as the results of the Action research will also be curated by WRL in a form which can be searched and queried.

Deliverables (brief description and month of delivery)

D 1.1 Report presenting synthesis of regional sectoral reviews to describe the "**State of the European NWFP sector"** (PM20)

D 1.2 High quality data and information for use by WP2-5 (PM30)

D 1.3 Effective communication strategies for engaging stakeholders (PM20)

D 1.4 Research results based on a synergistic combination of theory and praxis (PM48)

D 1.5 Five SMEs with enhanced economic and ecological sustainability (PM48)

Table 1.3 d: Work package descriptions

Work package number	2	**Start date or starting event**		Month 1	
Work package title	**Resource management**				
Activity Type[12]	RTD				
Participant number	1	3	5	**6**	7
Participant short name	EFI	BOKU	CTFC	**ISA**	METLA
Person-months per participant	2	11	20	28	27
Participant number	8	9	12	13	14
Participant short name	INIA	IWW	SILAVA	KTU	FORECO
Person-months per participant	28	28	14	20	8

Objectives

WP2 overall objective is to develop silvicultural guidelines, models and decision support tools to enhance the profitability of MPT and NWFPs management by combining wood and NWFP. This main objective will be achieved by pursuing the following specific objectives:

- Review how MPT and NWFPs are currently considered in forest management and what management guidelines, models and decision support tools are available for them.
- Develop and improve growth and yield models for MPT and NWFPs selected as in-depth case studies and link the models into forest simulators.
- Provide decision support tools including optimization capabilities and analyse the economics and management of MPT and NWFPs.
- Develop new silvicultural guidelines to increase the profitability of the management of MPT and NWFPs in regional case study areas.

Description of work

NWFP comprise a wide range of products from not only non-woody parts of trees (e.g. resins, fruit) and understory plants but also from other taxonomic kingdoms such as fungi. Due to this large diversity, lack of systematically collected data, traditional timber production dominated approach in forest management; their production potential is poorly known. In addition, at present there are very few models for NWFP in Europe (Calama et al. 2010). Decision support tools to optimise the NWFP production are very scarce as they require scientific knowledge and models to predict the effect of different management options on their provision. Therefore to fully acknowledge the challenges and opportunities derived from MPT and NWFP it is critical to develop silvicultural guidelines, models and decision support tools for a combined production of both wood production and increased production of MPT and NWFP. The work will concentrate on preselected MPT species and NWFP (see Table X) through Resource Management in-depth case studies (RM-IDCS), which will be conducted only in selected countries. The work-flow of WP 2, linkages between main tasks and RM-IDCS are shown in Figure 1.3.d.2.

[12] Please indicate one activity per work package:
RTD = Research and technological development; DEM = Demonstration;MGT = Management of the consortium; OTHER = Other specific activities, if applicable (including any activities to prepare for the dissemination and/or exploitation of project results, and coordination activities).

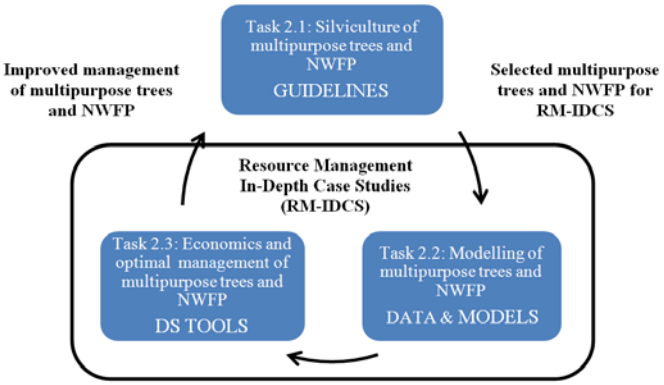


Figure 1.3.d.2: Work flow and linkages between Tasks in WP 2 and its Resource Management In-Depth Case Studies (RM-IDCS)

Task 2.1 Silviculture of MPT and NWFP (IWW, CTFC, ISA, METLA, INIA, KTU)

The selected MPT species and NWFP of in-depth case studies will be thoroughly analysed in order to promote their production through silvicultural management. Silvicultural techniques (for the whole production cycle of MPT either from establishment to harvesting in even-aged stands or during a rotation for uneven-aged systems) will be described according to a protocol prepared within the project. The impact of different silvicultural measures on wood production and timber quality as well as on NWFP will be studied by field measurements and through the use of models (to be developed under task 2.2). In this framework, empirical data will be collected and demonstration plots for best silvicultural management practices for the combined production of wood and NWFP will be established by all the partners involved in the task. At the end of the project silvicultural guidelines to promote the economics of MPT and NWFP will be available for practitioners.

Subtask 2.1.1: Current silvicultural management for the selected MPT and NWFP

In the beginning of the project, all participants will review the current silvicultural management for MPT and NWFP in regional case study areas. Their quality will be analysed and deficiencies and gaps identified.

Subtask 2.1.2: Silvicultural guidelines for the selected MPT and NWFP to increase the profitability of their management in regional case study areas

Based on existing knowledge and new research results achieved within this project innovative and economically attractive options of MPT management will be developed in close connection to Task 2.2 which will provide models to forecast stand development and the production of NWFP under different silvicultural schemes and to Task 2.3 which will implement the models into decision support tools to identify the optimal management strategies on tree-, stand- and forest management unit (FMU) levels. Several hypothesis will be considered, from the development of single tree oriented planting systems, inspired by agro forestry system designs, to close to nature single tree management systems with focus on fast valuable wood production and rewarding production of NWFP. Tree-species mix will be adapted to regional and local conditions, possible plant-plant interactions (allelopathic effects, nitrogen fixation), which lead to synergistic or antagonistic effects on plant growth, will be taken into account. Silvicultural guidelines will be developed for different stand types for multipurpose forest production in the case study areas.

Task 2.2 Modelling of MPT and NWFP (INIA, CTFC, ISA, METLA, INIA, KTU, IWW)

The existing growth and yield models for the selected NWFP and MPT will be analysed in the beginning of the project in order to identify the needs for improvement and the gaps. The existing models will be improved and new ones will be developed by collecting empirical data or by using expert evaluations. The partners involved in this task will collaborate among them in order to share their expertise in data collection and modelling of NWFPs. METLA has a large expertise with berries, CTFC with mushrooms, INIA and ISA with cork oak and pine nuts. In addition to empirical data, expert modelling will be also applied to mushrooms. Expert evaluation helps to find out the main factors affecting the production of NWFP while the empirical data are needed especially to determine the effect of stand characteristics and silvicultural treatments on NWFP. Immediately after the conclusion of the analysis of existing models, a workshop, joining all the partners involved in WP2, will be organized for discussion of the methodologies for model improvement and the corresponding data needs.

The available models are too much directed for particular regions or stands. Calama et al. (2010) discussed the

main factors and challenges limiting the development of classical empirical models for NWFP and reviewed the existing models for the main NWFP in Europe: cork, pine nuts, berries, mushrooms and resins. Their conclusion is that there are actually very few models for non timber products in Europe, due to the lack of systematically collected data, together with some challenges which make it difficult to develop predictive models for non-timber products. This project, by collecting empirical data on NWFP and by developing new models, will give an important contribution to fill this gap.

Subtask 2.2.1: Description and critical analysis of existing MPT and NWFP models

The growth and yield models available for the species occurring in the case studies will be inventoried and their ability to fulfil the project needs will be assessed. In some cases there are forest growth models available for the target species but seldom are the NWFP considered in the same model.

Subtask 2.2.2: Improvements in the models for NWFP

The objective is to integrate all the knowledge available in order to obtain models that predict, in an integrated way, the yield of multiple products that can be obtained from the forest ecosystem. Some existing models will be improved according to this previous analysis and new models or modules for existing models will be developed when needed. The modelling activities related to the prediction of NWFPs will in some cases require the collection of empirical data and/or the use of expert evaluations. For more detailed description of modelling activities, data needs and tree species as well as NWFP, see Table 1.3.d.1. Modelling of NWFP has to be based on the tree, stand and site characteristics so that the models can be linked into forest planning models and stand simulators to be developed in Task 2.3. That will enable the analyses on the joint production of timber and NWFP.

Table 1.3.d.1: The in-depth case studies in different countries: tree species and NWFPs considered and state-of-the-art in modelling.

Country	Tree species[1]	NWFPs	Silviculture guidelines for NWFPs production (yes, some, no)	Models available (yes[2], no)		Data needs (no need, new data, complement existing data)
				trees	NWFP	
Germany (IWW)	CS	Chestnut	no	no	no	new
	J	Walnut	no	no	no	new
	S	*Sorbus* spp.	no	no	no	new
	PrA	Cherry	no	yes	no	complement
Spain (INIA)	QS	Cork	yes	yes	yes	complement
	PP	Pine nuts	yes	yes	yes	complement
	MP	Resin	yes	yes		complement
Spain (CTFC)	PS; PN; PH	Mushrooms	some	yes	yes	complement
Portugal (ISA)	QS	Cork	some	yes	yes	complement
	PP	Pine nuts	no	yes	yes	complement
	QR	Mushrooms	no	yes	no	new
Finland (METLA)	PS	*Boletus edulis*	no	yes	no	new
	PA	Bilberry	no	yes	yes	no need
	BP	Cowberry	no	yes	no	no need
Latvia (SILAVA)	PS	Foliage extraction	some	yes	no	complement
	PA		some	no	no	complement
	Sa		no	no	no	new
	BP	Juice	some	no	no	new
		Mushrooms	no	no	no	new
Turkey (KTU)	PP	*Boletus edulis*	no	no	no	new
	CS	Thyme	no	no	no	new
	BL	Pine nuts	some	yes	no	complement
	T	Chestnut	some	yes	no	complement

[1] BL-Bay leaves (*Laurus nobilis*);BP-Silver birch (*Betula pendula*); CS-Chestnut (*Castanea sativa*); J (*Juglans sp.*); PrA (Prunus avium), MP-maritime pine (*Pinus pinaster*); PA -Norway spruce (*Picea abies*); PH-Aleppo pine (*Pinus halepensis*); PN-black pine (*Pinus nigra*); PP-Umbrella pine (*Pinus pinea*); PS-Scots pine (*Pinus sylvestris*); QR-holm oak (*Quercus rotundifolia*); QS-cork oak (*Quercus suber*); Sa-Willow (*Salix sp.*); S-Rowan (*Sorbus sp.*); T-Lime tree (*Tilia sp.*).

[2] even if the model needs to be improved (which is always the case) is indicated as yes

Task 2.3 Economics and optimal management of MPT and NWFP (METLA, CTFC, ISA, INIA, KTU,FORECOTEC, BOKU, IWW)
Models developed under task 2.3 will be linked into forest simulation-optimisation systems in order to analyse the profitability of the production of the selected MPT and NWFPs. The systems will be used to optimise the joint production of timber and NWFPs in stands growing on sites where the potential NWFP yield is high. In optimisation, soil expectation value (SEV) with the given discounting rate can be used as the objective function. SEV is defined as the net present value of all future costs of and incomes from both timber and NWFP production.

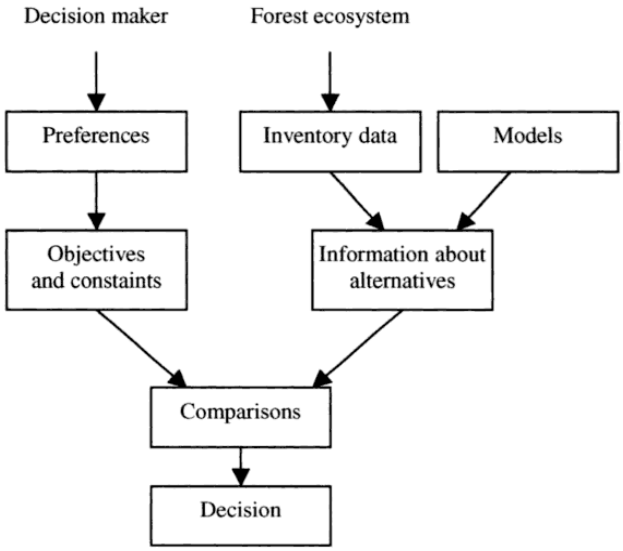


Fig. 1.3.d.3. The elements of forestry decision making (adopted from Pukkala 2002). In STAR TREE particularly the model part will be improved to provide better preconditions for comparisons (i.e. providing an optimal solution for stand- or FMU-level) and better informed and preference based conscious decisions and information.

In the cases where there are no suitable growth- and yield models, experts will evaluate the outcomes of feasible silvicultural alternatives for the stand level with respect to relevant variables using multi-criteria decision support (MCDS) techniques to find the best alternative. Trade-off analysis will be conducted to examine the trade-offs of NWFP production on other ecosystem services besides timber. This will include an analysis of compliance and constraints within the concept of SFM and ES, and potentials for management adaptation following these concepts in operational terms (i.e. forest management unit - FMU). A framework for testing multi-functionality of FMUs with regard to forest goods and services in case study areas will be developed (BOKU, EFI, KTU, ISA). The framework will allow identifying successful combinations of NWFP and ecosystem services within a particular socio-economic situation. See Figure 1.3.d.3 how the activities of these tasks will contribute to decision-making. A number of management strategies including various silvicultural regimes will be developed and tested with the forest management models to provide essential options for the decision makers. Thus, it will be possible for forest owners to choose between several options that are candidates for development, by comparing their relative success in different socio-economic situations.

All partners involved in the task have some expertise on the development of ecosystem based multiple use models that allow users to test various forest management strategies but NWFP are seldom considered in conjunction with wood production. This task will join the existing expertise to develop improved systems with this capacity. Based on the results of the task, silvicultural guidelines will be revised to increase the profitability of the management of NWFPs and MPT in regional case study areas.

Subtask 2.3.1: Identification and description of existing decision support tools
Existing forest decision support tools (e.g., expert and knowledge based systems), multi-criteria techniques as well as communication and visualization tools will be identified and described.

Subtask 2.3.2: New decision support tools for simulation-optimization of forest management combining wood and NWFP.

Growth and yield models developed/adopted for the MPT and NWFP selected for the in-depth case studies will be integrated into simulation-optimization systems that will be used to create and revise silvicultural guidelines for forestry practise. FORECO will provide a stand-level optimization tool in which the different NWFP models from Spanish and Finnish RM-IDCS can be integrated. This will allow creation of optimal stand-level solutions (forest management guidelines for stands) showing the joint production possibilities of timber and NWFP. These optimizations will be conducted by CTFC and METLA. Ecosystem based multiple use forest management simulation-optimization model developed by KTU will be modified and enhanced to allow better combination of wood and NWFP and their economics for a given case study area (FMU). In other countries, other existing decision support tools, identified in task 2.3.1 and possibly further improved, will be utilized in the tasks of their RM-IDCS. The aim is to increase the overall profitability of the forest, at stand and forest management unit levels, by taking into account also the yields of MPT and NWFPs without jeopardizing the conservation of forest ecosystems in the long run.

Subtask 2.3.3: Expert system to identify successful combinations of NWFP and ecosystem services

The information identified and generated in the regional case studies in WP 1 will provide a sound basis for developing a framework for assessing different combinations of NWFP and forest ecosystem services. The aim is to analyse the trade-offs for the forest owner in providing ecosystem services and NWFP considering the particular socio-economic situation at the FMU level in different regional contexts. Based on the findings of the regional case studies in Task 1.1. and Task 5.1. the strengths and weaknesses as well as threats and opportunities related to each ecosystem service will be assessed. Bayesian Believe Networks (BBN) will be constructed to combine and synthesize expert knowledge and quantitative data on the interaction of species composition, management regime and provision of ecosystem services. Multi-criteria analysis techniques will be used to allow expressing preferences (e.g. weighting of indicators) and support forest owners to choose between several options that are candidates for development, by comparing their relative success in different socio-economic situations. Based on the results from other tasks of WP 2, multiple use forest management plans (for the FMU level) can be developed by stakeholders based on the expert knowledge provided taking into account the forest management objectives and conservation targets set.

Deliverables (brief description and month of delivery)

D 2.1 Review on the current silvicultural management for the selected MPT and NWFPs in the in-depth regional case study areas (PM 12)
D 2.2 Description and critical analysis of existing models that will be used as a starting point (PM 12)
D 2.3 Protocols for new data collection in the in-depth case studies (PM 12)
D 2.4 Identification and description of existing decision support tool (PM 12)
D 2.5 Report describing the improvements in the models for NWFPs (PM 36)
D 2.6 Expert system to identify successful combinations of NWFPs and ecosystem services (PM 36)
D 2.7 Revised silvicultural guidelines for the selected MPT and NWFPs to increase the profitability of their management in regional case study areas (PM 42)
D 2.8 Description of the new decision support tools for simulation-optimization of forest management combining wood and NWFPs (PM 42)

Tables 1.3 d: Work package descriptions

Work package number	3	**Start date or starting event**			Month 1
Work package title	**Economy and Marketing of NWFP**				
Activity Type[13]	RTD				
Participant number	**2**	3	4	5	23
Participant short name	**UNIPD**	BOKU	UHAM	CTFC	INFRO
Person-months per participant	44	3	16	6	3

Objectives:
The main objective of WP3 is to provide knowledge about the current structure and dynamics of the NWFP market and about the potential development at different scales. by describing:

- production patterns and trade development paths for different NWFP;
- existing and potential marketing strategies and related regulatory issues affecting NWFP economy;
- impacts on rural development in terms of added value, employment creation, distributional effects, integration processes, financial constraints, transaction costs, risk and uncertainty for the selected case studies.

General description
Understanding NWFP market structure development is critical information for all stakeholders involved in the NWFP supply chains at different scales (Vantomme 2003; Sitta in Floriani 2008). Thus, WP3 will describe the market environment and trends for the most common traded NWFPs, using quantitative and qualitative data from: (a) databases available at international level (e.g., COMTRADE, EUROSTAT, FAO DB on NWFP), (b) literature review (including grey literature), (c) information from selected case study regions and (d) SME and strategic actor surveys.

The NWFP **market macro- and micro-environment** will be analysed in the selected regional case studies. The macro-environment will be analysed with regard to the main driving factors, such as demography, technology, political, cultural and natural resources; while, the micro-environment will be explored, both at regional and enterprise level, considering the economic nature of the product (i.e., private, club, common or public goods; product's structural aspects of managing excludability and rivalry via product design), involved supply chain actors (special reference to forest managers), added value creation, employment effects and distribution; co-benefits and costs (market and non market) associated to the NWFPs value chain, the general market structure (i.e. the level of concentration and horizontal and vertical integration), and the main elements of marketing strategies (e.g., market segmentation and consumer behaviour, product development, pricing and contracting, distribution and networks, product and enterprise communication).

In a second step, **socio-economic relationships of NWFP market actors** will be described and different NWFP market structures compared by using the **Social Network Analysis**, (Hanneman and Riddle 2005, Pettenella et al. 2007, Ter Wal and Boschma 2009, Scott 2000).

Finally, also the **market governance structures** will be explored (Cashore 2009) by analysing the role of public institutions (regulations and transaction costs, support services, public procurement policies), associations, and other formal and informal networks. A comparative analysis of the governance structure performances (Secco et al. 2009) will be prepared for demand driven (e.g., cork, foliage, berries) and supply pushed products (specialized products sold locally and complementary products) (Pettenella et al. 2007).

Task 3.1: Current NWFP market environment (UNIPD with all CSR)
The market structure has been deeply explored in the forestry sector with regard to wood-based material, but only few large-scale studies have been carried out related to NWFPs. Only at regional or local level good examples do exist (Kangas and Markkanen, 2001, De Romàn and Boa, 2006). Nonetheless, understanding the fluxes between

[13] Please indicate one activity per work package:
RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium; OTHER = Other specific activities, if applicable (including any activities to prepare for the dissemination and/or exploitation of project results, and coordination activities).

supply and demand areas helps to fill the knowledge gap, for a sector conditioned by asymmetry of information. Because the data needs to be separated according to the aggregation level, the task will be structured in three scale levels: international, regional (NUTS 2) and SME in-depth case studies. The information gathered in Task 3.1 will be coordinated with WP 1 Tasks 1.1 and 1.2.

Subtask 3.1.1: The International Trade Network (ITN) for NWFP
To analyze the international trade network for NWFP (raw or processed), data from different international database will be used (e.g., COMTRADE, EUROSTAT, FAO). The extracted information will be based on Harmonized System (HS) or Combined Nomenclature (CN) product codes, whenever possible. Using the SNA approach the international and European NWFP economic network, by mapping EU countries' import and export data. This map will provide an overview of the international exchange channels and the spatial organization of the supply chains. Moreover the historical market dynamic will be provided by conducting the analysis for the period 1996-2011. Trade development paths will be described for different groups of NWFP to gain understanding on existing bottlenecks, triangulation effects and important NWFP streams (Barigozzi et al., 2010, Squartini et al., 2011a, Squartini et al., 2011b) (UNIPD). The findings and results of the present international market situation will be reported in the first part of the D3.1 in PM 12. The information collected in this subtask will be also used in WP 4 Task 4.3.

Subtask 3.1.2: The regional NWFP market: meaning and dimension
In this subtask the importance of NWFP markets at regional level (NUTS 2) will be explored. Existing data will be gathered using, wherever possible, NACE (Statistical Classification of Economic Activities in the European Community) code (e.g. A.2.3.0, "Gathering of wild growing non-wood products") and other official regional statistics on quantity and value of demand driven (UHAM) and supply pushed (UNIPD) NWFPs. The information on the market environment (see before) will be summarized by a set of indicators (Seeland and Staniszewski, 2007) (UNIPD and all CSR). The information gathered will be used in WP 4 Task 4.2 to underpin the political findings and shared with WP 5 Task 5.3 for the innovation process definition.

Subtask 3.1.3: Traditional and Net-System approach for NWFP production: SME market and marking
This subtask will work at the SME-In-depth case study (SME-IDCS) level. Each selected SME will be described according to the general economic characteristics (turnover, employees, production, values, performance indicators, etc.), marketing strategies (at enterprise and product level) and linkage with other actors involved directly or indirectly in NWFP supply chain. Moreover, formal (contract or prescribed by law) and informal (information, know-how source, ...) networks between the given enterprise and public institutions, forest owners, associations and other types of actors involved in the NWFP supply and promotion. To collect the needed information a questionnaire will be elaborated and submitted to the selected SME (Maso et al., 2011). The collected information will be shared with WP 5 Task 5.4.

The results of subtasks 3.1.2 and 3.1.3 will be reported in the D3.2.

Task 3.2: Future development of the NWFP market (UNIPD and UHAM)
Future market trends and marketing perspectives of NWFP will be addressed both for demand driven and supply pushed NWFPs. The different trend projections will be estimated based on a selected set of parameters (market micro- and macro-environment – for examples see Task 3.1). In addition, a Delphi panel questionnaire targeting strategic actors at different level will be developed (Harrison, 2001, Patari, 2010, Jonsson, 2011). The outputs of the applied methods will be compared to check the output reliability.

Subtask 3.2.1: ITN future trends and EU NWFP market resilience
The data collected in Task 3.1 will be analyzed with linear models to estimate mid-term market trends (up to 5 years). The outputs will be compared with the results of the Delphi questionnaire that will be conducted with regional key actors working on international trade markets. Finally, the resilience of European NWFP sector will be analyzed by comparing the extra-EU imports (UNIPD). Based on the policy scenario analysis in WP 4 Task 4.4 specific economic projection will be delivered. The results of Subtask 3.2.1 will be used to update the D3.1 in PM 24.

Subtask 3.2.2: The regional NWFP market: rural impact, market dimension and trends
At the regional level the economical impacts of NWFPs on the rural development will be estimated by linking the supply (forest managers and pickers activities) (input from WP 4 Task 4.4 on NWFP property rights will be used to

understand the implication in terms of economic opportunities for pickers and forest managers) to the present and potential future needs of SME (NWFP industrial processing, intermediaries, distribution and potential industrial branches) (UHAM) and other local economic activities (restaurant, B&B and other accommodation facilities, sport and recreation, organization of cultural events, environmental education, etc.) (UNIPD). Moreover, synergy and integration problems will be identified, with special focus on the role of social capital as a driving force in the development of strategies for rural development ("NWFP-based territorial marketing"). For this purpose, a Delphi questionnaire will be delivered to a set of key-stakeholders in the region (UNIPD with all CSR). Local dynamic of NWFP economy will be analyzed according to the three phases of product development (NWFP "Coping", "Diversification", "Specialization") (Kusters and Belcher, 2004), to describe possible development paths and scenarios, which are also in relation to governance issues (e.g., changes in property rights regimes, use of instruments to promote and support local development) (UNIPD with all CSR). The findings and scenarios will be included in D3.3.

Subtask 3.2.3: SME and rural development: linkage with the natural capital and strategic actions to protect their market

Finally, the economic rent and the potential linkages to NWFP will be analyzed at the regional or SME level. This analysis will help to understand how market barriers for excluding aggressive and standardized mass-market NWFPs can be organized. The economic rents may be explored from both, the supply or demand side. On the supply side (regional level), the economic rent is the minimum payment a forest owner will accept to change the forest production factors for a specific new production asset, based on local specific market and framework conditions, and other factors (knowledge and motivation) (UHAM). On the demand side (SME level), economic rent might be defined, as the additional price the final user will pay to cover the maintenance cost of a local environment, culture and tradition. Especially from the demand side, the rent may be reinforced by the use of marks, origin labels, certifications, patents and copyrights, while on the supply side new governance strategies will be addressed (UNIPD with all CSR). D3.4 will contain the results and findings of this sub task.

Task 3.3: Recommendations for SME *(UNIPD and UHAM/INFRO)*

Subtask 3.3.1: Professional marketing training course design (INFRO)

A professional marketing training course (specifically addressed to forest owners) on marketing activities for different products will be developed, implemented and launched. The course will be designed as highly interactive. Each training unit (pricing and contracting) will contain information, working group activities, presentations and discussion of results. Power Point Presentations with full text explanation will make the course accessible to a broader audience of trainers and users, including forestry schools and universities.

Subtask 3.3.2: SME Marketing guidelines (UNIPD and UHAM)

In this subtask marketing guidelines for SMEs will be developed. They should provide guidance on successful marketing approaches, with regards to the product type. For example, for demand driven and supply pushed products a set of indicators (Secco, Pettenella in Maso 2009) will be compared to understand the most cost-efficient practice in a given context.

Subtask 3.3.3: The role of product design and marketing strategy for marketability (UHAM and INFRO).

Goods are mostly still seen as homogenous entities under static conditions. The design of a product (e.g. bundling) and the marketing strategy (e.g. values) have great influence on marketability and market success. Product design and marketing strategy may actively change the economic character of goods and its value. This subtask will explore the theoretical background (characters and structures) of this process.

The results of subtasks 3.3.1, 3.3.2 and 3.3.3 will be forming the D3.5.

Task 3.4: Recommendations for NWFP sector (UNIPD and UHAM)

Finally, recommendations for the NWFP sector will be delivered, describing three main areas (Boschma in Frenken 2011):

- the clustering of economic activities (whether are path or place dependent process, hence indirectly the future evolutionary branching) (UNIPD-UHAM),
- the externalities provide by the aggregation process (product specification vs. diversification, product life cycle as product of marketing strategy or real need, knowledge development and the role of network to transfer innovation) (UNIPD-UHAM-BOKU) and

- the role of institutions in regional development (in terms of conditioning vs. determining SME behaviour, law compliance both for pickers and SME and institution-SME co-evolution patterns) (UNIPD-CTFC)

The results (recommendations developed in this task will form the D3.6.

Deliverables

D3.1. NWFP in the International market: current situation and trend (PM12 (preliminary version), PM 24 (final version))
D3.2. The regional market of NWFP: current situation and effect on SME (PM 28)
D3.3. Trends, rural impacts and future developments of regional NWFP market. (PM 32)
D3.4. Rural development and SME: the bridge between natural capital and NWFP economy. (PM 36)
D3.5. Training, Guidelines and Product evolution: basic tools for SME (PM 40)
D3.6. NWFP sector recommendation (PM 42)

Table 1.3 d: Work package descriptions

Work package number	4		**Start date or starting event**		Month 1		
Work package title	**Institutional dimensions of NWFP**						
Activity Type[14]	RTD						
Participant number	1	2	3	**5**	11	14	15
Participant short name	EFI	UNIPD	BOKU	**CTFC**	USV	FORECO	FAO
Person-months per participant	3	7	4	**36**	10	12	4

Objectives

The overall aim of this work package is to understand the role of institutions – that is, policies, regulations, policy instruments and informal norms – in the provision and consumption of NWFP. Specific objectives are:

- To understand how the abovementioned institutions shape the production and consumption of NWFPs, and clarify the underlying causes and reasons for that;
- To understand whether and how the abovementioned institutions can be changed and what is the role of public and private actors in institutional change that promotes the diversification of forest activities and fosters the competitiveness of the NWFP sector in Europe

Description of work

The lack of institutional capacity – that is, the capacity of policies, regulations, policy instruments and informal norms to address relevant NWFP issues – has been recognized as a major constraint in NWFPs development (e.g. FAO 1995; Niskanen et al. 2007). Therefore, this work package will focus on institutional and organizational aspects supporting the development of NWFP sector. The study will cover the following two dimensions: (i) formal institutions, such as policies, legislation, property rights arrangements, and policy instruments affecting directly or indirectly NWFP provision and consumption; (ii) informal institutions such as cultural norms and traditions related to NWFP. Analysis will rely on the institutional analysis and development framework (Ostrom et al. 1994; Ostrom 2005). Institutions will be analysed at different scales (international, national, regional, local) and a historical perspective as well as future development paths will be discussed.

Task 4.1. Formal institutions shaping NWFP development (CTFC, BOKU, USV, FAO, EFI)

This task will focus on the identification and analysis of policies (FAO), property right regulations (USV), other regulations and policy instruments (e.g. standards, certification schemes, access fees, collection licences etc.) (CTFC) in order to identify how they shape the provision and consumption of NWFPs in Europe. Analysis will be done at different scales (international, national, regional) and across different sectors (e.g. food, environment, trade, rural development) in order to identify and study policies, regulations and policy instruments that directly or indirectly affect NWFPs. The further detailed analysis of those policies relevant for innovation and rural development will be carried out under Task 5.2 in WP5 (BOKU). Historical perspective on the evolution of policies, regulations and policy instruments will be developed and its economic impact at national and regional scales will be identified using input provided by Task 3.1. in WP3 (UNIPD).

Information for this task will be recompiled using desktop literature overview, complemented by the exploration of existing policy databases compiled in the course of previous studies (e.g. the EFORWOOD project policy database, the NEWFOREX database of policy instruments) or international sources of information (e.g. FAOLEX, FAO National Forest Policy database). Moreover, information on national and regional level institutions will be provided by partners responsible for the regional case studies under the guidance of WP1.

The analysis undertaken in this task will help to understand the institutional constraints and opportunities for

[14] Please indicate one activity per work package:
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NWFP sector development, as well as shed light on the underlying causes and reasons for their existence. The output will be documented in D4.1, which will contribute to the "State of the European NWFP sector" report elaborated by WP1. Moreover, policies, regulations and policy instruments studied in this task will form part of the project web portal, and after the end of the project will be incorporated into the EFI Information Portal on Forest Policies, Institutions and Instruments maintained by the coordinator (EFI).

Task 4.2. Understanding business establishment conditions (FORECO)

This task will focus on formal conditions (e.g. financial, legal) and requirements for the start of a business (e.g. ease or difficulty and length of time for starting a business, access to credit, etc.) and the availability of institutional support for this endeavour in the countries in which regional case studies are carried out. Cross-country comparison of business establishment conditions will be performed in order to provide insights into the factors shaping business performance in different regions and make suggestions for the improvements of business environment.

The information on regional requirements will be collected by partners responsible for the regional case studies under the guidance of WP1, whereas WP4 will be responsible for the preparation of the information elicitation guide (M4.2) submitted to WP1 for regional cases overview.

The output will be documented in D4.2, which will contribute to the "State of the European NWFP sector" report elaborated by WP1.

Task 4.3. Informal norms, values and stakeholder perceptions of the institutional role (CTFC)

The task will focus on the identification of informal norms, cultural traditions and other forms of "informal institutions" that shape the values and motivations of the actors related to NWFP provision and consumption. For this purpose, (individual or group) interviews with selected stakeholders (e.g. forest owners, entrepreneurs, forest officers, policymakers) at different scales (European, national, regional and local) will be conducted.

In addition, stakeholders relevant for the selected SME in-depth case studies will be interviewed to elicit their perceptions on the institutions affecting their NWFP related activities, explore their behaviour within these institutions, and identify possible gaps and the causes for these gaps between intended institutional outcomes, and actual practices and outcomes. This will serve to understand the perceived constraints and opportunities stemming from existing institutions at multiple levels.
Stakeholder interviews will be conducted by case study responsible partners within the activities envisaged for stakeholder interactions in WP1. WP4 will be responsible for the elaboration of the interview structure (M4.3), for assisting case study responsible partners in interview preparation and analysis of the results. The interviews will be implemented within WP1.

Task 4.4. Alternative institutional changes and their impacts (CTFC, UNIPD)

Critical issues hindering NWFP sector or enterprise development identified in previous tasks will be studied in order to understand whether, how and which institutional adjustments can be made in order to overcome constraints and realize opportunities to enhance the competitiveness of the NWFP sector. Options for the modification of policies, regulations, policy instruments and whenever possible, of informal norms, will be elaborated covering institutions at different scales (international, European, national, regional, local) and they will be validated within the stakeholder consultation process (implemented within WP1). Moreover, the roles of public and private sector actors will be discussed in order to understand their influence on the process of institutional change. The implications of these options on NWFP production and consumption, land use, as well as other related spheres will be discussed. Furthermore, a number of these options will serve to produce institutional scenarios for the analysis of future economic developments of NWFP sector implemented in WP3 (Task 3.2) as well as to set up recommendations for SME and NWFP sector (Tasks 3.3. and 3.4).

Task 4.5. Policy recommendations (CTFC)

Based on the output of the previous task, the results of the analysis of future development scenarios performed within WP3, and the implications of WP2 research on the provision side of NWFP for policy, a comprehensive set of policy recommendations will be elaborated in view of allowing for diversification of the traditional wood-producing forestry and fostering competitiveness of NWFP sector (D4.5.)

Deliverables

D4.1. The role of institutions in NWFP development: current state and historical changes (M20)
D4.2. Business establishment conditions in selected regions (M20)
D4.3. Informal institutions and stakeholder perceptions of institutional role in selected regions (M20)
D4.4. Institutional changes and their impacts (M36)
D.4.5. Policy recommendations (M42)

Table 1.3 d: Work package descriptions

Work package number	5		**Start date or starting event**		Month 1	
Work package title	**Innovation systems and processes**					
Activity Type[15]	RTD					
Participant number	1	2	**3**	4	5	6
Participant short name	EFI	UNIPD	**BOKU**	UHAM	CTFC	ISA
Person-months per participant	3	1.5	42	9	1	1
Participant number	10	11	12	13	14	16
Participant short name	SFI	USV	SILAVA	KTU	FORECO	WRL
Person-months per participant	1.5	5	1.5	1.5	4.5	1.5
Participant number	17	19	20	21	22	24
Participant short name	LlyG	JTVK	IRMA	FVL	AH&Co	RS
Person-months per participant	1.5	1.5	1.5	1	1.5	2

Objectives

The overall aim of this work package is to get a better understanding of the innovation processes in the management of MPT and in the production of NWFPs, the roles of the actors in the innovation systems, and to develop practical guidelines and tools for innovation support. The specific aims are the following:

- assess innovation systems and innovation processes relevant for the development and marketing of new forest products on European, national, regional and enterprise levels;
- collect innovative examples for new forest products across Europe;
- develop innovation strategies for new forest products for different types of companies and for relevant institutional actors.

Description of work

Forestry policies and innovation systems typically focus on timber and wood products but hardly at other goods and services of forests (Rametsteiner et al. 2005; Mavsar et al. 2008). Regional innovation systems are often more relevant for supporting the development and implementation of NWFP (Kubeczko et al. 2006; Weiss et al. 2011). Many authors see a large unused potential for NWFP to support rural development and income of land owners and rural enterprises (Niskanen 2006). Innovation processes in the field of NWFP are, however, not studied in detail although innovation is the core process necessary for a further development of this sector. This WP thus aims at an in-depth study of innovation processes and innovation systems in the NWFP sector in Europe. Emphasis is given to success factors for innovations and practical support tools, but includes also barriers and the reasons for failures (Buttoud et al. 2011).

The work has close links to WPs 3 and 4, also uses the STAR TREE regional and enterprise case studies for collecting empirical data, conducts further data collection specifically within the WP, and aims at practice relevant outputs for which purpose it works closely with the company partners of the project as well as with further stakeholders.

The analyses are done from policy analysis and innovation system perspectives (Edquist 1997; Asheim and Gertler 2005). A multi-layered approach is taken (enterprise, regional, national and European levels). The analysis steps roughly rely on an extensive collection of innovation cases across Europe (Task 5.1), the analysis of innovation policies (Task 5.2), of innovation systems in the case regions (Task 5.3), innovative enterprises (Task 5.4), a synthesis analysis (Task 5.5) and the development of practice relevant tools (Task 5.6).

[15] Please indicate one activity per work package:
RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium; OTHER = Other specific activities, if applicable (including any activities to prepare for the dissemination and/or exploitation of project results, and coordination activities).

Task 5.1 Collection of innovative examples for new forest products across Europe (BOKU, UHAM, EFI, USV, FORECO, and CSR)

Throughout the project life time, innovative examples for new forest products will be collected. For this work, various methods are used including web and literature search, expert interviews, surveys and collaboration with practice journals. Examples should be innovative in terms of the types of innovation defined by OECD: new products or processes, new organisational methods, or marketing. In addition, attention is put on institutional and social innovations. The examples will be collected throughout Europe and are used for various purposes, including: screening for detailed case analyses under Task 5.4 or use as illustrative and show case examples in the support materials produced in Task 5.6. The work will be organised in two sub-tasks according to their applied methodology.

Sub-task 5.1.1. Examples for innovative NWFP enterprises (BOKU, UHAM, EFI, and CSR)

The focus in this sub-task is to collect innovative cases in the broadest sense and by using multiple methods for screening written articles or databases as well as personal interviews, stakeholder workshops or attending conferences. The local hosts will support to collect examples in their (or also neighbouring) countries because of their knowledge of national languages. The collection is not restricted to the regional level and it may start with the kick-off meeting and can last close to the end of the project by filling the database. All examples are documented in a web database which shall be established as a prototype after the first year and finalised in the third year (although the case collection as such will go on) (D 5.1).

Sub-task 5.1.2. Examples for new NWFP (UHAM, and CSR)

This sub-task will focus on examples for new products and will be done in two parts. One specific interactive method will be the collaboration with national or regional professional journals: In collaboration with forestry journals in those countries of regional case studies, a call to the readers for sending in examples of innovative forest products will be published. These examples are then further studied under task 5.4 and used in 5.6. In exchange, the "best" examples as well as analysis results from the project will be described in stories by the journals. The local hosts will support the work because of their knowledge of national languages and their better access to the journals. A side benefit of the collaboration will be to promote the project's topic and to disseminate project results. This part is lead by a marketing expert from UHAM. Another part is the screening of publications, and web sources for new developments in the field of chemicals from trees and other forest plants by a biologist expert. The work will comprise the screening of chemical substances and their potential for substituting non-renewable resources as well as utilization studies for the most promising substances. These new markets are still a challenge for forest enterprises. The outcome will provide information on the potential (together with market research "industrial buyer") outline the possibilities and provide support and solutions in this area. The outcome will be a complete list of ingredients and substances of forest trees and plants and a short publication on best practice examples. The sub-task results will be documented in a new forest products report (D 5.2) and used for further analyses in the WP.

Task 5.2 Analysis of innovation policies at European and national levels (BOKU and CSR)

The policy analysis on European and national levels will study all policies relevant for innovations in the use of MPT and NWFP, with a special focus on innovation and rural and regional development policies. The work will cover international and EU policies and the countries in which regional case studies are carried out. It will analyse relevant regulations, financing instruments for innovation, diversification and sustainable rural development and informational instruments such as statistics, planning and extension services. The data collection will be carried out in cooperation with WP 4, Task 4.1, but the analysis in WP5 will particularly focus on the innovation policies. Task 5.2 analyses the policy contents while the study of their implementation on the ground is included in Tasks 5.3 and 5.4. The task is carried out by BOKU in collaboration with the hosts of the regional case studies with regard to the national policies. A report will be produced on the innovation policy analysis which provides the basis for a scientific article (D 5.3).

Task 5.3: Regional analysis of innovation systems (BOKU, USV and CSR)

In the regional STAR TREE case studies which are coordinated by WP1, a full analysis of the innovation systems (IS) that are relevant for non-wood forest products will be carried out. The importance and roles of sectoral (incl. forestry, agriculture, tourism, etc.) and regional innovation systems of various types (e.g., provincial innovation support structures, but also local ad-hoc/grass-roots innovation networks) on different geographical-

administrational levels will be studied. The analysis includes, besides of actors and policies of the regions, also the influences from higher levels (EU, national). The IS analysis on local level thus allows also for an implementation analysis of innovation policies (by this adding on to the policy analysis in 5.2). The analysis of IS includes the following features: i) relevant public and private actors and their roles in the innovation process, ii) the institutional frameworks such as legal regulations, policies and markets, and iii) their interrelations. The analysis will carve out strengths and weaknesses of the innovation systems, as well as fostering and hindering factors for innovation in new forest products. The study will take account on successful examples but will also be able to draw conclusions from failures. The regional IS analysis report (D 5.4) will include a comparative analysis of the studied regions , will feed into Task 5.5 and will be the basis for a scientific article.

Task 5.4 Analysis of innovation processes on project / enterprise level (BOKU, EFI, USV and CSR)

By using selected innovation projects and innovative enterprises, the processes behind these innovations will be analysed in this task. The selection will be done from the collection of innovative examples in Task 5.1, from the STAR TREE enterprise case studies (Task 5.3), but also from additional projects in the STAR TREE case regions as well as outside of these regions. The data collection in the case studies of the STAR TREE regions will be done by the local hosts if they have experience with qualitative methods of social science, otherwise by the core WP partners (BOKU, EFI, USV). The core WP partners will also collect the cases in other countries. They will collect the case studies particularly in those countries where they have good command of the local language. Local language is preferred because many actors on local level are not fluent in English. Otherwise English has to be used. The data collection guidelines from Task 5.3 are used. Interesting projects will be such that fit to the MPT and NWFP covered in the project. They shall be innovative projects that have the potential to increase the income of land owners and that are potentially transferable to other forests, land owners or traders. The selection criteria are in general to choose i) projects from different European regions in order to compare different ecological and institutional framework conditions, ii) cases that document pioneer projects or late projects, allowing to map the different conditions for the development and the diffusion phases of innovations, iii) successful and failed examples in order to better carve out the crucial factors for success, and iv) examples representing all innovation types according to OECD. A full IS analysis will be carried out (cp. Task 5.3) but a specific focus will be put on three dimensions of innovation processes: information, coordination and financing. The innovation analysis report on enterprise level (D 5.5) will include the comprehensive analysis of the mentioned elements, will feed into Task 5.5 and will be the basis for one or more scientific articles.

Task 5.5 Synthesis innovation analysis (BOKU, EFI, USV)

On the basis of Tasks 5.2, 5.3 and 5.4 a comprehensive and comparative analysis of the relevant innovation systems is carried out. This will include the analysis of policy implementation, the comparison of regions, innovation fields and product types, the analysis of the roles of actors, the analysis of the three dimensions of innovation processes, as well as overall conclusions. The central questions for the conclusions are: roles of institutional environments, roles of actors, roles of policies and support instruments, roles of innovation system types, and success factors. The synthesis parts will be reported in two deliverables with differing theoretical lenses: An implementation analysis of innovation policies (D 5.6) and an innovation system analysis (D5.7). Scientific articles will focus on the different theoretical backgrounds (policy analysis or innovation theories) and on different aspects of innovation processes: regional comparison, comparison of product types, roles of public and private actors, roles of innovation support instruments, and dimensions of innovation processes.

Task 5.6 Innovation strategies, recommendations and support materials (FORECO, BOKU, EFI, USV)

The innovation strategies, guidelines and support material for companies and institutional actors will be developed on the basis of the comprehensive analyses in the WP, and in collaboration with practice partners from within the project and external stakeholders. This work is coordinated and facilitated within WP1 (stakeholder interaction and action research). A number of products will be developed which shall support the work of companies and other actors active in innovation processes. For each innovation support product, a certain project partner company will take the lead. External stakeholders for whom the product should be of practical use (such as forest owners' organisations, service providers, regional development agencies, national or regional governments, etc.) will be invited to take part in the development process.

- Guidelines and recommendations will equally address private actors and political decision makers on various administrative levels. These are developed with broad stakeholder participation under Task 1.3.

- Prototypes for innovation strategies, business plans or product lines will be developed for different types of companies (small and large forest holdings, processors/traders, from different product types, etc.) and service providers (extension services, interest groups, associations, etc.). These are particularly developed under coordination in Task 1.4 (action research with partner companies).
- Support materials will be prepared primarily for web-based dissemination in order to guarantee broad outreach. It is planned to establish a publicly accessible online database of innovation cases in forestry (coming from Task 5.1) with an innovation tool-kit (all of which will further be maintained after the life-time of the project by EFI).
- Articles will be prepared for the collaborating practice journals (see Sub-task 5.1.2). They will present those new forest product cases collected through the journal campaign but also further information such as other interesting case examples, analysis results and the support tools developed in this task. Articles will be offered for practice journals in all partner regions and countries as well as for web-publication.

The development of the outputs is done in collaboration with the WPs 2-4 and is coordinated with WP6 which provides the tools for the dissemination. The work will be documented in a report (D 5.8).

Deliverables

D 5.1 Database of innovative examples for new forest products (1st required version in PM 12, to be regularly updated, final version in month 36)

D 5.2 Report on new forest products and promising chemical substances (PM 20)

D 5.3 Analysis of innovation related policies on European and national levels (PM 20)

D 5.4 Regional innovation system analysis report (PM 26)

D 5.5 Innovation analysis report on enterprise level (PM 30)

D 5.6 Implementation analysis of innovation policies (PM 39)

D5.7 Innovation system analysis (PM 39)

D 5.8 Innovation strategies, recommendations and support materials (PM 42)

Tables 1.3 d: Work package descriptions

Work package number	6	**Start date or starting event**	Month1
Work package title	**Dissemination & Exploitation**		
Activity Type[16]	OTHER		

Participant number	**1**	2	3	4	5	6	7	8
Participant short name	**EFI**	UNIPD	BOKU	UHAM	CTFC	ISA	METLA	INIA
Person-months per participant	22	3	3	3	3	3	3	3
Participant number	9	10	11	12	13	14	15	16
Participant short name	IWW	SFI	USV	SILAVA	KTU	FORECO	FAO	WRL
Person-months per participant	3	2	2	2	2	6	3	4
Participant number	17	18	19	20	21	22	23	24
Participant short name	LlyG	Plan-Sinn	JTVK	IRMA	FVL	AH&Co	INFRO	RS
Person-months per participant	4	12	4	4	4	4	4	4

Objectives

- to identify target users and their requirements and expectations towards improved decision support in multi-purpose trees and NWFP
- to synthesize new knowledge gained in the project and to tailor dissemination activities towards different needs and scales: science, policy, business as well as case studies, regions, countries
- to provide a portal facilitating knowledge exchange, information services, social learning, and regionalised business interactions

Description of work

STAR TREE is a project of high practical relevance involving science, policy, stakeholders, and practitioners (i.e., landowners, managers, processors, traders) at a common stage and agenda. This implies a high demand towards communication, coordination, and visibility. STAR TREE aims at taking respect of this heterogeneity by an instrument mix in dissemination to address the following issues:

- Synthesizing science knowledge and merging multi-disciplinary science to one coherent picture of multi-purpose trees shall serve to overcome the current situation of fragmented, inconsistent and incomplete knowledge on MPT and NWFP in Europe
- Overcoming implementation barriers between policy and practice in SFM and rural development by fulfilling a translational task between policy and practice, and science to practice by a tailored publication strategy and communication means, that comprise face-to-face exchange (e.g., workshops), target-specific dissemination material (e.g. policy briefs, operational guidelines), and new media (Facebook, Twitter)
- Facilitating communication to and between target groups and establish a portal for knowledge exchange and business interactions beyond the lifetime of the project.

[16] Please indicate one activity per work package:
RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium; OTHER = Other specific activities, if applicable (including any activities to prepare for the dissemination and/or exploitation of project results, and coordination activities).

Task 6.1 WP6 Planning & Coordination (EFI)
This task will take responsibility of coordinating dissemination and exploitation activities throughout the regions, case studies, and best practice examples. It supports the tailor-made generation of specific outcomes for different targets groups, and the creation of stringent STAR TREE 'brand' to project-inside and outside communities. T6.1 will be responsible for project PR, press releases and other media interactions.

It will develop guidelines for communication activities, stakeholder interaction, and publications as well as quality control to any published material in the context of the project, in particular steering towards direct applicability of project deliverables (public) for the final STAR TREE dissemination package. It will take care of a harmonised and balanced dissemination strategy, and a consensual exploitation strategy that takes into account the interests of the involved stakeholders and business partners in particular. This will include safeguarding that dissemination will operate on regional level in relevant national scientific and non-scientific journals.

It will build on a corporate design (logo, visual image, templates, project newsletter) so as to secure that dissemination and outreach material will have a uniform and easily recognizable visual image. It takes care and provides steering so that stakeholder interaction and dissemination is coordinated and planned in a resource-efficient manner to prevent interaction overflow. This implies also seeking multiplicators for STAR TREE activities whenever possible (e.g., partner networks, local authorities, universities, schools).

Subtask 6.1.1: STAR TREE webportal (EFI)
The STAR TREE web portal will be designed and implemented as internal and external communication means and to foster visibility of the project with a strong focus on practical use (e.g. visualisation elements, consulting tools, regional customisation) incl. web 2.0 communication means. It will be technically implemented as project website, intranet with file sharing, and web based Community of Practice (CoP) The construction and establishment of the portal will be done step by step and negotiated with consortium partners, stakeholders and interested business partners to make it fully instrumental to the needs at the end of the project. All products of STAR TREE shall be made available and promoted, incl. regionalised guidelines, publications, project reports.
The web portal will be linked to all major initiatives and projects dealing with MPT and NWFP as well as relevant policies and instruments of the EU (e.g. cohesions funds, rural development programmes, national subsidy programmes). The webportal will be maintained at least three years after project termination by EFI, after having prepared a business solution for the long-term maintenance.

Task 6.2 Science-Science (EFI, all)
This task is to respond to the gaps and shortcomings in current scientific literature on integral assessment of MPT and NWFPs in Europe. Scientific articles at the core of this task shall be coordinated (publications strategy, timing, journal, target groups), and interdisciplinary publications involving more than one research group will be fostered to take full account of the cross-cutting nature of the project. A consortium-based position paper will be conceptualised and written in the early stage of the project to create common basis of understanding and to create a reviewed high-level reference for the project and beyond.
STAR TREE aims at particular involvement of young scientists who shall be given a platform for specific activities, e.g., YS forums around project meetings, and a special panel on a final STAR TREE scientific conference that will be held at the end of the project.
As well, researchers of consortium will transfer project findings, and education and training packages in their teaching to secure the long-term impact of the project on scientific level.

Task 6.3 Science-Information-Policy (EFI, all)
Information on multi-purpose trees and NWFP is incomplete, fragmented, and inhomogeneous. It will be of great support to and from other organisations and platforms to comply with international definitions and reporting standards in order to streamline the generation of new knowledge and information, and to make projects results applicable to a broad range of decision makers without additional translation efforts. Examples are schemes of UNECE, FAO, Forest Europe or the EFI price portal, incl. contributions (e.g., statistical enhancements, from WP3) to major reporting schemes (e.g., EUROSTAT, Pan-European SFM C&I, FRA).

STAR TREE will take special focus on translational work of scientific results to be applicable for policy- and decision-makers. Vice versa, findings on institutional gates and barriers are identified and analysed, from which an institutional quality assurance (QA) system will be drawn (from WP4) and communicated to the stakeholder panel.

Proven EFI publication series such as policy briefs and the series "What science can tell us" shall give particular support to this task.

Task 6.4 Science-Practice, B2B, B2C, and C2B (EFI, PLANSINN, all)
One of the main tasks of STAR TREE is to foster implementation of new research and innovation transfer into practice. This will require the identification of current targets groups, and the attraction of new actors and players. T6.4 will coordinate a database with contact information that shall be fed with inputs from other WPs (e.g. pools on case study actors, scientific community, policy makers and stakeholders), and from interactive further development with support of the involved people (snowball principle). The STAR TREE Portal will be developed and tailored to foster B2B, B2C, and C2B interactions by sharing information on regional and international value chains, chains of custody, customers (supply & demand), and information on best practices and feasibility studies gained from the project (STAR TREE Marketplace). Building on the WP deliverables, it will provide all relevant outputs of the project in a compact STAR TREE dissemination pack, in particular technical briefs for managing NWFP, and electronic management and marketing guidelines (STAR TREE Pathways) that synthesize the findings of all WPS to operational recommendations, incl. demonstration of new regional NWFP and improving SMEs (WP1), silvicultural guidelines ('Wood and more') and production opportunities (WP2), marketing trainings and territorial guidelines (WP3), and innovation and best practices for NWFP ('innovation generator') and potentials for product substitution (WP5).

STAR TREE Community of Practice (CoP) will be installed to maintain the outcomes and lanes of communication of the project beyond its lifetime. The CoP portal shall foster and manifest business partnerships, maintain and update databases (e.g. innovation database, experts & customers) and secure feedback between science and practice on professional, continuous level.
To improve physical interaction, awareness and visibility a series of workshops is planned to communicate interim and final project results during the project lifetime. This shall facilitate mutual social learning processes and will be coordinated and planned in WP6, while implemented mainly in WP1.

Deliverables

D6.1 START TREE website (PM 4)
D6.2 Dissemination plan (PM 6)
D6.3 STAR TREE conceptual paper on multi-purpose trees and NWFP in Europe (PM 15)
D6.4 Exploitation plan (PM 32)
D6.5 STAR TREE dissemination pack (PM48)

Tables 1.3 d: Work package descriptions

Work package number	7	**Start date or starting event:**	Month 1
Work package title	**Project Coordination and Management**		
Activity Type[17]	MGT		
Participant number	**1**		
Participant short name	**EFI**		
Person-months per participant	35		

Objectives

The main objective of WP7 is to assure efficient administrative and scientific coordination and management of the entire project. This goal will be achieved through the following specific objectives:

- Implement and maintain the central project management structures, including administrative, logistic and financial issues;
- Monitor progress and control quality of the project along the work plan and its milestones and deliverables;
- Enable effective information flow, communication and proper decision-making within the project consortium,
- Oversee the contractual links between partners;
- Ensure the financial and scientific reporting to be sent to the European Commission, according to the terms of reference of the contract,
- Schedule and secure the organisation and planning of project meetings,
- Manage risks and resolve potential problems.

Description of work

The project management must enable the effective cooperation and communication among members of a large consortium composed of people with different professional and cultural backgrounds. In addition, the management team must critically follow the progress of the project, implementing contingency measures if necessary, and control the allocation and use of financial resources. Moreover, it will manage unexpected situations and resolve problems potentially arising during the course of the project, being scientific, technological, or political. It will also ensure a proper decision-making process within the consortium.

The tasks described in WP7 will be executed by the Project Coordinator (PC) and the Project Office (PO), the latter consisting of a Project Manager (PM), a Financial Officer (FO) and a part-time Communication and Dissemination Officer (CDO). The Project management and coordination team will get further support from the communication, legal and research support team of the EFI.

Task 7.1 Financial and administrative management and reporting (EFI)

The administrative and financial management includes the Coordinator's administrative and financial responsibilities, his links with the EC administration as well as with the financially responsible person and administration at each partner institution. The general administrative and financial management will implement measures for a successful functioning of the entire project and it includes:

- day-to-day management and administrative activities needed for a successful execution of the project, including the communication to the administrations of the individual partners as well as the EC administration;
- Responsibility for all budgetary task, follow-up of EC payments etc.;
- Monitoring and reporting of project costs in order to control the costs incurred and EC support granted, both by project, by WP, and by partners;

[17] Please indicate one activity per work package:
RTD = Research and technological development; DEM = Demonstration; MGT = Management of the consortium; OTHER = Other specific activities, if applicable (including any activities to prepare for the dissemination and/or exploitation of project results, and coordination activities).

- Maintenance of the Consortium Agreement;
- Assistance to individual project partners on administrative and financial issues.

Task 7.2 Scientific management and monitoring (EFI)

The overall scientific management will include procedures for project planning, implementation, evaluation of progress, as well as risk and contingency planning. This task is executed by the PC, the PO, and the Project Management Team (PMT). The PMT is chaired by the PC. The Coordinator will be the intermediary between the European Commission and the individual partners. With the help of the Project Office (PO), the Coordinator will ensure that all tasks assigned to him as described in the Grant Agreement and the Consortium Agreement (see also section 2.1) will be undertaken. The scientific management and monitoring includes the following activities:

- Establishing and managing the projects intranet site that will be hosted by EFI's extranet server. The intranet site offers excellent possibilities for team work on scientific reports and papers, and also serves as a repository of meeting materials including minutes and presentations, and both final and draft documents under development;
- Activating and controlling the risk and contingency plan. Since this project has an extreme level of integration and cooperation between participants, a minor delay in one critical task can have serious consequences for the timely finalisation of the project deliverables. Therefore, an R&D early warning procedure will be worked out;
- Preparation and coordination of detailed work plans for the different WPs and tasks, e.g. for each project task, subtask and period;
- Coordination of scientific activities between partners, in accordance with the work plan, to ensure satisfactory and effective task-orientated collaboration and task timing within the consortium;
- Proper and efficient document, data, information and knowledge exchange, circulation of relevant information from the partners, the PC and the Project Management Team (PMT), meeting minutes of the different consortium meetings, workshops etc.; including the distribution of periodical progress and WP reports before the General Assembly (GA) meetings among all partners;
- Ensure timing and completion of submissions, reviewing, submitting and summarizing of information and results and other deliverables (including financial statements and certifications) at all levels and periods;
- Coordinating external communication with regional to international stakeholders and policy-makers as well as society, in close cooperation with WP6.

A core partner in monitoring progress and securing quality is the Project Management Team (PMT), as described in Section 2.1. The Coordinator and the PMT meets every six months, prior to which the WP Leaders compile progress reports with input from all participating WP partners. These reports are shared among all partners two weeks prior to the PMT meetings among. They also form part of the information used by the coordinator to write the annual reports for the commission. The PMT will establish and run an internal quality control system including an internal peer-review system for all major publications and products generated in STAR TREE. This will be managed by the project office in cooperation with the WP leaders.

Task 7.3 Organisation of project meetings and workshops (EFI)

The Coordinator will oversee the scheduling, preparation, organisation and facilitation of the GA and PMT meetings, and secures that PMT and GA meeting minutes are made available to all partners. The PO will be responsible for preparing and organizing the project meetings. The STAR TREE consortium members will meet every six months at the general assembly (GA). During these meetings, the progress achieved for each WP will be reported and discussed. The GA will make all necessary decisions under its responsibility to make the project successful (see section 2.1.1). The General Assembly will include parallel sessions within WPs and between WPs, as well as a meeting of the PMT and meetings between the project representatives and the regional stakeholder group (RSG) of the region where the GA takes place. Furthermore, the GA will also be used to organise different internal training sessions (e.g., training on data collection procedures, training on organisation of multi-stakeholder events and consultation meetings) that are needed for the successful and efficient implementation of the project. The PMT will additionally meet every month in a Skype or video-conference to discuss the current development of the project, to monitor its progress, and to prepare decisions for the GA.

Deliverables

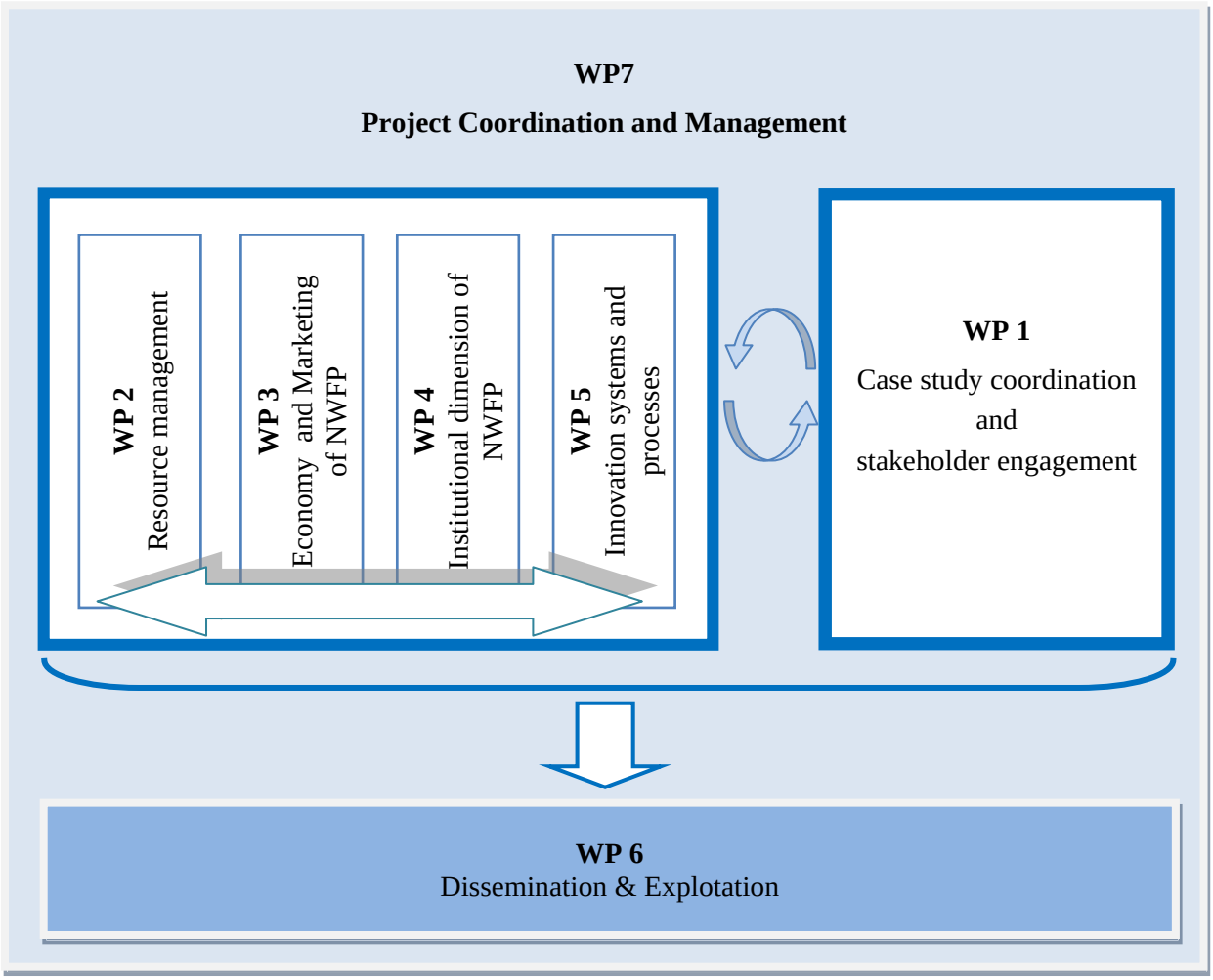
D7.1 Research contract and Technical Annex (PM 1)
D7.2 Consortium agreement (PM 2)
D7.3 Kick-off meeting minutes (PM 3)
D.7.4 Intermediate progress reports to EC (PM18, 36, 48)
D7.5 Final Research and Financial Report (PM 48)

Table 1.3 e Summary of staff effort

Participant no./short name	WP1	WP2	WP3	WP4	WP5	WP6	WP7	Total person months
P1 EFI	14.5	2	0	3	3	22	35	79.5
P2 UNIPD	16.5	0	44	7	1.5	3	0	72
P3 BOKU	13.5	11	3	4	42	3	0	76.5
P4 UHAM	10.5	0	16	0	9	3	0	38.5
P5 CTFC	14.5	20	6	36	1	3	0	80.5
P6 ISA	16.5	28	0	0	1	3	0	48.5
P7 METLA	16.5	27	0	0	0	3	0	46.5
P8 INIA	14.5	28	0	0	0	3	0	45.5
P9 IWW	14.5	28	0	0	0	3	0	45.5
P10 SFI	15.5	0	0	0	1.5	2	0	19
P11 USV	13	0	0	10	5	2	0	30
P12 SILAVA	15.5	14	0	0	1.5	2	0	33
P13 KTU	16.5	20	0	0	1.5	2	0	40
P14 FORECO	40.5	8	0	12	4.5	6	0	71
P15 FAO	3	0	0	4	0	3	0	10
P16 WRL	39.5	0	0	0	1.5	4	0	45
P17 LlyG	21.5	0	0	0	1.5	4	0	27
P18 PLANSINN	17.5	0	0	0	0	12	0	29.5
P19 JTVK	13.5	0	0	0	1.5	4	0	19
P20 IRMA	31.5	0	0	0	1.5	4	0	37
P21 FVL	21.5	0	0	0	1	4	0	26.5
P22 AH&Co	6.5	0	0	0	1.5	4	0	12
P23 INFRO	2.5	0	3	0	0	4	0	9.5
P24 RS	21.5	0	0	0	2	4	0	27.5
Total	411	186	72	76	82	107	35	969

1.3.4 Project's Pert diagram

Figure 1.3.a: Pert diagram showing how the work packages of STAR TREE are interlinked and integrated (a more detailed diagram is available in Annex 2)



1.3.5 Risks and risk coping in the work plan

All research carries a certain level of risk and the consortium has assessed how specific risks to this project can best be managed should they arise. The risk assessment Table 1.3.f addresses the main risks associated with each Work Package and what contingency management measures are foreseen. A contingency budget is foreseen, as explained in section 2.1 under risk assessment.

Overall, we are confident that we can deliver the STAR TREE project with low levels of risk overall:

- The knowledge base available to the project is very strong: The consortium holds all expertise necessary to carry out the proposed tasks, as shown by their involvement in other similar projects. The consortium can build on extensive knowledge from previous EU projects in the same field.
- These skills, technology, data and models, combined with the 'know-how' of the consortium members, provide a strong basis on which to deliver the planned outcomes of STAR TREE.
- STAR TREE provides for intensive stakeholder engagement activities using a collaborative action research approach that ensures their perspectives help to inform activities across all WPs. This will enhance the quality and relevance of project outputs, and increase levels of uptake by potential end-users and their willingness to engage with the project. The areas chosen for the case studies are all covered by earlier or present projects by the respective consortium partners. As such, the carefully designed stakeholder engagement measures in STAR TREE will benefit from the available data and stakeholder networks of the individual partners by increasing the willingness of stakeholders to engage fully with the project.

Table 1.3.f: Overview of the main anticipated risks and contingency measures per Work Package

WP	Risk	Risk contingency
1	Insufficient stakeholder engagement	Case studies have been selected where partners have already an established relationship with relevant stakeholders. The professional management and moderation of stakeholder engagement is done through a communication company in the consortium which follows the whole project.
	Developed data collection methodologies are inconsistent	WP1 leader will be responsible and coordinate the elaboration of a common data collection methodology package.
	Lacking capacities for sound data collection in case studies	A series of training courses is planned to adequately prepare case study responsible. Permanent assistance will be given from WP 2-5 leaders to solve potential data collection problems.
	No interest of SME for participation in action research	The SME selected for action research are full consortium members and will from start be strongly integrated into the consortium work. Careful elaborated schedule of project activities at the beginning of the project will facilitate SME to allocate sufficient capacities.
2	No data is available for management guidelines and tools development	Case studies responsible have been carefully selected to have access to sufficient data ready to use.
	Creation of improved or new empirical models is difficult (modelling difficulties due to weak correlations with forest characteristics etc.).	Several partners have long experience on modelling NWFPs. In addition, expert knowledge can be used to support empirical models. Partners will collaborate so that extensive modelling and optimization knowledge can be transferred to new regions of Europe.
3	Insufficient reliability of international data on trade	Data will be collected in WP3 through the official international database, but they will be used to find trade flows, instead of traditional accountability. This will avoid problems such as threshold limit or late reporting: main problems of intra European statistics. Finally data reliability will be crosschecked using key stakeholder interviews.
	Insufficient regional data on NWFP companies	The explanatory power and coverage of available statistic of company records will use just to select potential NWFP stakeholders. Interview will be delivered to a subset of companies to collect strategic information on market structure and problems of statistical reporting.
	Lacking capacity to collect economic sensitive data in local or regional market	In depth case studies will provide opportunities to explore formal economic linkages as well as the development of a methodology to reach this strategic information.
	Low new marketing tool	On supply pushed products, we will describe the overall performance of

WP	Risk	Risk contingency
	acceptance	territorial marketing instead of single SME self organization, improving the relationship network.
	Insufficient forest owner involvement in the NWFP supply chain	The fragmentation of land ownership and changes in land forest management will be targeted offering new economic tools that cover opportunity cost.
4	Insufficient information regarding policy instruments operating on ground and informal norms	Partners and case studies have been carefully selected to have access to the required information.
	Insufficient stakeholder participation in in-depth interviews	Stakeholders participating in the regional stakeholder consultation processes will be engaged. Stakeholders from SMEs are partners in the project strongly integrated with the rest of the partners.
	Unforeseen shift in political priorities away from NWFP sectoral issues	Stakeholder engagement at different levels is envisaged in order to raise awareness of the importance of NWFP sector
5	Lack of innovative examples	Diverse sources will be used to assure sufficient quantity and quality of data on innovative cases. The search covers the whole of EU and neighbouring countries. Budget reserved for the inclusion of additional innovative partner companies at a later stage during the project lifetime.
	Language barriers in collecting data on national, regional and enterprise levels throughout Europe.	Collaboration with local hosts in RCS. These will furthermore act in data collection in neighbouring countries if the language is the same. Use of the large and experienced international EFI network partners in the collection of data, (e.g. EFI Regional Offices, FOPER project network in SEE countries).
	Lack of practice orientation, lack of knowledge about the practice target groups.	Practice companies and organisations from various relevant activity fields which are the target groups of the project are included in the consortium (NWFP companies, regional development consulters, interest groups, semi-public organisations, etc.). Regular stakeholder panels with professional moderation. Action research with practice companies.
	Lack of industry interest in forest based substances	The biological analysis of potential substances will be carried out before the interviews. Thus, some possible utilization is demonstrated.
6	Lack of compliance of project outcomes with dissemination strategy	Early sharing and agreement on dissemination plan, clear communication of tasks and responsibilities, early identification on targets groups and their demands, create ownership for the STAR TREE dissemination package among the consortium partners
	Failure of finalising the dissemination package due to delayed deliverables	It is planned to finalise all deliverables 6 month before the end of the project to have sufficient time for polishing the end product.
	Poor, heterogeneous or divergent quality of project outputs	Quality control of all forms of published material, and steering of customized products and outcomes to be used for the dissemination package
7	Not meeting the planned schedules (delays)	The coordinator has excellent experience in managing research projects, and the communication needed to ensure timely delivery of the outcomes. The coordinator will be assisted by and experienced project office staff, which will manage and coordinate all financial and legal administration. The Consortium Agreement will include detailed procedures for tracking progress and outline contingency plans that will be triggered in the unlikely event that any serious delay is identified.
	No communication between WPs	Regular PMT meetings and GA are a guarantee that there will be a constant and efficient communication between WP leaders. A professional communication company is assigned with this specific task.
	Lack of capacities	All consortium partners have other appropriately qualified staff that can replace the initial staff in the case of any unforeseen events.
	Loss or misuse of data	The coordinating organisation will keep electronic records on password protected servers with off-site backup.

2 IMPLEMENTATION

2.1 Management structure and procedures

The STAR TREE project is a consortium of 24 partners from 11 countries and 2 international organisations. Such an elevated number of partners require highly effective and adaptive management procedures that ensure a successful achievement of the STAR TREE objectives. To enable an efficient project management the management structure of this project will be kept simple to secure a transparent decision making process. Furthermore, the STAR TREE management structure is based on clearly defined responsibilities of all involved partners and facilitates cooperation within the project and with external stakeholders. The STAR TREE project management will be clearly defined in a Consortium Agreement and will be organised as follows (Figure 2.1.a):

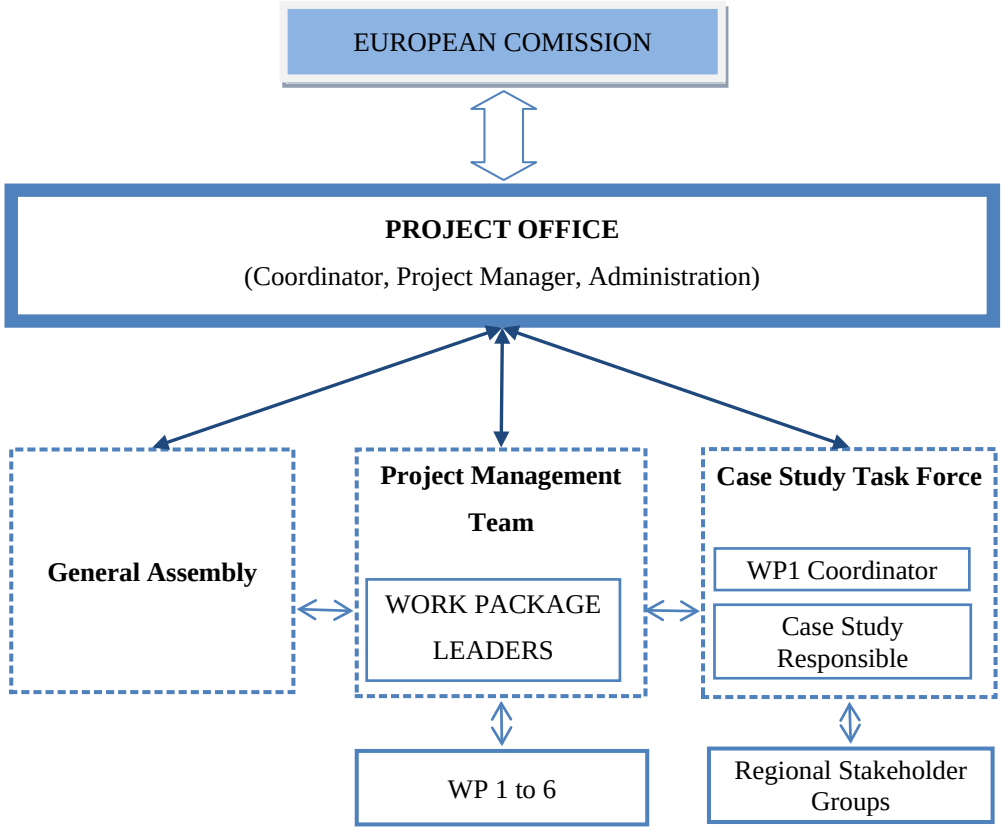


Figure 2.1.a: Management structure of STAR TREE

2.1.1 Management structure

Project Coordinator (PC)

The STAR TREE PC is responsible for the overall project coordination and management. The primary role of the PC is to represent STAR TREE Consortium towards the European Commission (EC) and to supervise the overall technical and scientific progress of the project. The PC will be assisted by a Project Office (PO). The PC will be responsible, among other tasks, for:

- Performing, together with the PMT, the scientific leadership of the project;
- Organise, prepare agendas and chair the PMT and the GA and taking all actions to enable proper decision making and prepare the Minutes of these meetings;
- Ensuring smooth operation of the project: work plan maintenance, monitoring project progress, analysing results and quality of output with respect to deliverables and milestones, identification of problems and consequences for future research; enhancing optimal interaction between WPs and communication between partners;
- Set up the administrative procedures for the project and for the reporting to the Commission
- Preparing and submitting all required periodic progress reports;
- Communicating all information in connection with the project to the EC;
- Ensuring quality and relevance of the contents of the project website;
- Communication and public relations to external parties and other EC-funded projects;

- Monitor the partners' compliance with contractual obligations;
- Implement the decisions of the Project Management Team together with the WP leaders.

Further details of the PC's responsibilities will be elaborated in the Consortium Agreement during the negotiation phase.

Project Office (PO)

PO supports the coordinator in his daily business and is responsible for handling administrative and organizational tasks. The PO furthermore deals with legal, financial and secretarial matters as well as serving as the contact point for media and the public. The PO is led by the coordinator and it consists of a Project Manager (PM), a Financial Officer (FO) and a part-time communication and dissemination officer (CDO). All PO have a long track record in co-ordinating or assisting of international projects, including EU projects, and are highly professional The PO staff members will be provided by EFI and only the PM will be partly financed by STAR TREE. Following activities belong to the responsibilities of the PO members:

- Transferring the advance payments and further payments to the participants as per the provisional budget and the actual expenses approved by the GA;
- Ensuring that the Grant Agreement with the EC will be signed by the authorized legal representative;
- Preparing, updating, and managing the Consortium Agreement;
- Day-to-day financial, administrative, contractual and ethical management of the project;
- Overseeing the promotion of gender equality in the project;
- Preparing project documents for the Coordinator;
- Organization of GA and PMT meetings;
- Implementation of decisions made by the Coordinator and the General Assembly;
- Obtaining audit certificates (as and when required) by each of the Contractors;
- Monitoring and illustration of the Project status and data of the beneficiaries;
- Offer help-desk facilities to other consortium members.

The PO members will further be supported by highly experienced support staff in the areas of project administration, legal and financial issues, and public relations and communication.

General Assembly (GA)

The GA is the highest discussion forum and decision-making body of the STAR TREE. It is responsible for taking decisions of major importance that are determining the long term strategy and development of the project. These decisions are related to the project strategy, progress, major project and budget revisions, if needed, exchange of tasks, budgets and staff, intellectual property, dissemination strategies, communication, interaction with other projects and programmes, and measures towards partners that are not accomplishing their contractual obligations. GA will have the following powers (to be defined in detail in the Consortium Agreement):

- Approve major strategic decisions important for the implementation of the project;
- Approve integration of new partners (contractors) into the EU contract and the Consortium Agreement;
- Agree upon the project's budget in accordance with the EU Contract and approving potential reallocations of budgets.

GA is composed of one representative per participating institution. This representative will be elected at the project kick-off meeting. Meetings of the GA are held twice a year, unless the interest of the project may require additional meetings. In this case, the GA meetings are held by decision of the coordinator or by at least 50% of its members. The GA makes decisions by consensus but when this cannot be achieved simple majority is followed with casting vote for the coordinator in case of equality of votes.

Project Management Team (PMT)

The PMT is the main management and decision-implementing body of the STAR TREE. PMT will be composed of the Project coordinator (chairing) and the WP Leaders (WPL) of WP1-6. The following specific tasks belong to the responsibilities of the PMT:

- prepare decisions to be taken at the GA;
- follow-up the implementation of the decisions made by the GA,
- approve detailed work plans, as implemented during the project's progress,
- approve the periodic and financial reports for the European Commission,
- decide upon the change and exchange of tasks between the project partners and propose respective amendments in Annex I of the EU Contract,

- propose to the Partners possible amendments of the terms of the EU Contract,
- decide upon proposals from the Project Office for the allocation of the Project's budget in accordance with the EU Contract and proposing reallocations of the Partners' budgets,
- decide upon possible proposals from the Project Office regarding defaulting Partners etc.,
- decide on the long term detailed work plans, as implemented during the project life,
- survey ethical and gender issues

The PMT meetings will be held on a regular basis as felt appropriate and necessary, but at least 2-3 times per year, combined with the GA meetings. Furthermore, the PMT will also hold additional monthly meetings by video- or teleconferences. The same decision making principles are applied as in the GA.

Work package leaders (WPL)
The WPL are all members of the PMT. The project is divided into 7 WPs where every WP is headed by a WPL. The WPL has a proven track record regarding the specific topic and in leading international activities successfully. The WPL is responsible for the management and technical co-ordination of the WP on a day-to-day basis. The WPL will translate decisions of the PMT into daily management tasks, call meetings with the WP participants whenever necessary (but by default twice per year), and report results and potential critical issues to the GA and PMT. Specific responsibilities of the WPLs are:

- Design of a detailed work plan for their WP;
- Assign tasks for individual members of the WP;
- Monitor the progress within each WP, including milestones and expected outcomes of the WP;
- Organise WP-specific meetings to ensure proper execution of the work programme;
- Prepare the 6 monthly interim reports and annual consolidated reports of their WP, which are input for the intermediate reporting of STAR TREE to the Commission at months 12, 24, 36 and 48;
- Participate in PMT meetings;
- Report results and critical issues to the PC.

The WPL consists of the following persons:
WP1: Jenny Wong, WRL
WP2: Margarida Tomé, ISA
WP3: Davide Pettenella, UNIPD
WP4: Irina Prokofieva, CTFC
WP5: Gerhard Weiss, BOKU
WP6: Bernhard Wolfslehner, EFI
WP7: Robert Mavsar, EFI

Case Study Responsible (CSR)
One of the central parts of the STAR TREE are the regional case studies, which are well distributed throughout Europe. In the case study regions, stakeholder groups will be established. In order to ensure a good communication between researchers and stakeholders, a CSR is appointed in each case study. All CSR have good contacts to regional and national stakeholders, which is essential for the successful implementation of the project. The CSR are all guided by the WP1 coordinator and will work with him in the Case Study Task Force. The specific responsibilities of the CSR include:

- Coordinate the implementation of regional case studies;
- Conduct a regional stakeholder analysis;
- Initiate the Regional Stakeholder Groups (RSG);
- Provide contacts between regional stakeholders and PMT;
- Ensure that stakeholders are fully engaged as partners throughout the project;
- Organise and run a series of stakeholder knowledge exchange events and workshops throughout the project;
- Disseminate information about the project and its progress to regional stakeholders;
- Stimulate interaction between scientists and local stakeholders in implementing stakeholder consultation process at the regional level;
- Ensure that the approach is participatory, reflective, emergent, flexible, iterative and systemic.

CSR are persons that already have good contacts and relationships with stakeholders in their respective case study region (RCS):
RCS1: North Karelia (FI): Mikko Kurttila (METLA) RCS7: Suceva (RO): Laura Bouriaud (USV)

RCS2: Latvia (LV): Toms Zālītis (SILAVA)
RCS3: Lower Saxony (DE): Udo Mantau (UHAM)
RCS4: Styria (AT): Gerhard Weiss (BOKU)
RCS5: Osrednjeslovenska (SI): Marko Kovač (SFI)
RCS6: Trentino – Alto Adige (IT): Davide Pettenella (UNIPD)
RCS8: Bursa (TR): Emin Baskent (KTU)
RCS9: Weals (UK): Adam Thorogood
RCS10: Catalonia (SP): Jose Antonio Bonet (CTFC)
RCS11: Castilla y Leon (SP): Javier Flórez (IRMA)
RCS12: Alentejo (PT): Margarida Tomé (ISA)
RCS13: Serbia: Margaret Shannon (EFI)

Regional Stakeholder Groups (RSG)
An important part of the STAR TREE is the exchange of knowledge and information with key regional stakeholders. Therefore, in each RCS, a RSG is formed which is typically consisting of not more than 10 representatives recruited from regional stakeholder and decision makers. The group is formed and initiated by the CSR. They are expected to meet formally between one and two times per year, although informal contact with RSG members will be more frequent. Further, members of a RSG will be invited to take part in stakeholder oriented sessions during GA if that is organised in their region. The tasks of the RSG are to:

- Supporting the CSR in defining the main issues that should be addressed in the RCS;
- Participate in the regional stakeholder consultation process;
- Provide critical feedback on the conclusions and recommendations for the RCS;
- Support project dissemination activities.

2.1.2 Management Procedures

Management of information exchange and communication
Excellent communication with project partners and stakeholders is of great significance for the STAR TREE. The PC will continuously inform partners about project status, technical issues, work planning and other relevant and important issues. Internal communication will be maintained through project meetings as described in Table 2.1.a), telephone, video conferencing and e-mail communication, regular progress reports and projects website.

Table 2.1.a: STAR TREE meeting table

Responsible	Frequency	Participants	Purpose
PC	weekly	PO members	PO meeting: • Day to day management
PO	12/year	PMT members	PMT phone meetings • Brief reports on results and progress • Critical issues coming up • Planning and action on research, IP and dissemination strategy
PMT	2-3/year	GA members	GA and PMT meeting: • Project planning, progress and reporting • Strategic decision making • Stakeholder integration
WP1 leader	4/year (PM1-24) 1-2/year (PM24-48)	CSR	Case Study Task Force meeting: • RCS planning, coordination, progress and reporting • RSG integration activities planning, coordination, progress and reporting
WPL 2-5	2/year	WP partners	WP meeting: • WP activities planning, progress and reporting • Inter-WP activities planning
CSR	1-2/year	RSG members	RSG meeting: • Project and RCS results, progress and activities • Information exchange and dissemination support

At regular intervals, each WPL will be required to communicate briefly by email to the PC and other WP members, necessary information related to the progress of their WP. This information will be regularly integrated into the annual project reports by the PC so that the progress in all activities can be continuously monitored. Project results, deliverable reports, meeting minutes and other news will be published on the intranet part of STAR TREE's internet site. The intranet site will serve as a web based communication and management tool. The PO will develop templates for project reporting and publications, and for the documentation of meetings. The following project reports are foreseen:

Table 2.1.b: STAR TREE reporting table

Responsible	Report what?	Report to:	Frequency
All partners	Short progress report	WPL	4/year
CSR	Short progress report	WPL 1	4/year
WPL	Short WP progress report	PMT	4/year
WPL	Interim WP progress report	PMT and GA	2/year
WPL	WP progress report	PC	Annual
PC	Progress report	EC	PM 18, 36, 48
PC	All reports	All partners	asap

Decision making structures

The final responsibility for project management decisions lies with the Project Coordinator. Administrative issues related to daily management and monitoring of progress are decided in the PO and partners will be informed, as necessary. Larger issues will be dealt with in PMT phone meetings and major strategic decisions with an impact on the long term strategy, work and resources of STAR TREE will be discussed at the two annual GA meetings and decided upon in the two annual physical PMT-meetings. The PMT meeting agendas will be drawn up by the PC and sent to the PMT members 1 week before phone meetings and 2 weeks before the two annual physical PMT-meetings. All members may request to place an issue on the agenda, and the PC ensures that minutes will be made available to all partners. If issues arises that requires urgent consideration, the PC can call a PMT phone meeting with 1-2 days notice with this specific issue as the only agenda item. The PMT will strive to reach consensus in all decisions, but where majority ruling is not feasible the vote of the chairman (PC) is decisive. During the negotiation phase, the decision making structure and procedures will be defined in greater detail in the Consortium Agreement.

Administrative risk management

Administrative risk management aims covers all project activities and aims at a timely response to issues, resource needs and delays that were not foreseen in the planning phase. The risk management includes monitoring, communicating and evaluating the progress within the separate WP's and Tasks, and the overseeing of the timely production of the specified deliverables. The WP leaders are responsible for the planning and control of progress within their WP, and for preparing the progress reports, cf. Table 2.1.b. The PMT will provide planning and control tools at the start of the project, will evaluate the project progress, and if necessary will propose necessary actions, including possible reallocation of resources, when critical deliverables are expected to be delayed. Successful handling of unforeseen developments requires that financial resources are available for re-budgeting and re-prioritisation. To that end, the PC at the beginning of every project year withholds 3% of all partners' budget for the coming year, i.e. 3% of the total budget for that year. These funds are then available for possible redistribution if the PMT decides so. If no unforeseen events requiring redistribution come up, the 3% are released towards the end of the year as appropriate. The status of all deliverables and milestones will be registered in a project progress database at the internal project website and with the PO. This risk management effort will ensure that the PC and individual WP leaders at all times handle events as they show up.

Consortium Agreement

A Consortium Agreement will be prepared, approved and signed by all consortium members and come into force at the start of the project. The function of the Consortium Agreement is to specify the organisation of the work between the partners and the decision-making procedures, to organise the management of the project, to establish quality assurance rules, to define rights and obligations of parties, including their liability and indemnification, and to supplement the provision of the EU contract concerning access rights and to set out rights and obligations of the parties supplementing but not conflicting with those of the EU contract. The Consortium Agreement will also include rules for the potential addition or replacement of consortium partners.

Dissemination and knowledge exchange

Dissemination and communication towards stakeholders at different geographical levels are of major importance in STAR TREE and are the responsibility of all project partners, but in particular by the PMT and PC. The coordination and management of these activities will be in particular addressed in WP6, where all issues related to Dissemination and Communication of results are coordinated. The detailed description of the dissemination activities of STAR TREE is given in Section 3.2.

2.2 Individual participants

P.01.	European Forest Institute (EFI)

The European Forest Institute (EFI) is an international organisation established by European States. The purpose of the Institute is to undertake research on the pan-European level on forest policy, including its environmental aspects, on the ecology, multiple use, resources and health of European forests and on the supply of and demand for timber and other forest products and services in order to promote the conservation and sustainable management of forests in Europe. EFI excels in carrying out projects on relevant forest issues at the European level, and has a track record of over 30 projects carried out for the European Commission DGs during the past few years. EFI has currently app. 130 member organisations (both research organisations and end-users of research) in Europe and beyond. EFI employs app. 45 person years of researchers and support staff at headquarters and 5 Regional Offices.

Key persons involved

Robert Mavsar is deputy head of EFIMED and senior researcher in forest economics. He has a degree in forestry and holds a PhD in economics, and has more than 10 years of research experience mainly related to environmental, forest and fire economics. He has excellent experience working in (FIRE PAARADOX, EXIOPOL, CREEA, NEWFOREX) and coordination (FORVALUE, MASIFF) EU funded research projects.

Bernhard Wolfslehner is EFICEEC Head of Office and work area leader for forest ecosystem management and has more than 10 years of research experience in sustainable forest management, indicator development, and multi-criteria analysis. Currently he is active in several FP7 projects. In the FP7 proposal ARANGE –he is responsible for stakeholder interaction and dissemination.

Marc Palahi is Assistant Director in Policy Advice and Head of the Mediterranean Regional Office. He has more than 10 years of experience in scientific research on forest management including non-wood forest products. He is currently coordinating the Think Forest – a high-level science-policy forum, chair by former Sweden's prime minister of Sweden, Goran Persson, and involving Members of the European Parliament and key person from the European Commission. Such forum will be use to disseminate the results of STAR TREE.

Margaret Shannon is the coordinator of the EFI FOPER project in Southeast Europe, aimed at promoting capacity building in forest policy and education. Dr. Shannon's research interests are in evolution of participatory processes in forest and natural resource policy, planning and management. She chairs the IUFRO WG on Forest Policy and Governance and is a Deputy for the new IUFRO Division 9 on Forest Policy and Economics.

Sergey Zudin is a senior software developer at EFI with MSc in Forestry and in Applied Mathematics. His fields of expertise are software design and development, databases, web applications design and development and GIS.

Simo Varis is a software developer at the EFI. His current main responsibilities are designing and development of databases and web applications, and administration of the database server.

Mercedes Rois-Díaz is MSc on Forest Sciences works as Office Manager of EFIMED and Policy Advice Office. She is specialized in project administration and management. Amongst others she was responsible for project management partner (e.g., NEWFOREX, CREEA) and consortium level (e.g., MEDFOREM, MASIFF, AGORA).

Anu Ruusila is Communications Manager at EFI. She has 13 years of experience in communication in the field of forest research and forest sector at the European level. She leads the EFI Communication Team and is responsible for the Institute's media relations and printed materials.

Minna Korhonen, is the Managing Editor at EFI. She has more than 10 years of experience in publishing in forest science. She has managed several publications series aimed at different audiences.

***Mavsar, R.**, S. Ramcilovic, **M. Palahi**, G. Weiss, E. Rametsteiner, S. Tykkä, R. v. Apeldoorn, J. Vreke, M. v. Wijk and G. Janse (2008): Study on the Development and Marketing of Non-Market Forest Products and Services (FORVALUE). Study Report for DG AGRI, Study Contract No. 30-CE-0162979/00-21.*

*Weiss, G., Ramcilovic, S., **Mavsar, R** (2011) Financing mechanisms for forest ecosystem services in Europe and their implications for forest governance. Allg. Forst- u. J.-Ztg., 182 (5/6), 61 – 69.*

***Palahi, M.**, Pukkala, T., Bonet, J.A., Colinas, C. Fischer, C.R., Aragón, J.M. 2009 Effect of the Inclusion of Mushroom Values on the Optimal Management of Even-Aged Pine Stands of Catalonia. Forest Science, Volume 55, Number 6, pp. 503-511(9).*

***Wolfslehner B.**, Vacik H. (2011) Mapping indicator models: from intuitive problem structuring to quantified decision-making in sustainable forest management. Ecol. Ind. 11:274-283*

*Dominguez G. and **Shannon** M. (2009) A wish, a fear and a complaint: understanding the (dis)engagement of forest owners in forest management. European Journal of Forest Research. ISSN 1612-4669 (Print) 1612-4677*

P.02.	University of Padua (UNIPD)

The Department LEAF is a multidisciplinary structure acting in the fields of agricultural and forestry policy, economics, rural appraisal, ecological silviculture, water resources, mechanization in agriculture and forestry and phyto-pathology. The department is located on the Campus Agripolis, a centre of excellence in the field of research and technology transfer. Here, there is a close cooperation between the Faculty of Agricultural Science, the Faculty of Veterinary Science, the Regional Agricultural Services, the State Institute for Animal Health and other public and private organizations. Currently, the permanent research and teaching staff in the department consists of 16 full professors, 19 associated professors and 10 researchers. The department's personnel include 19 technicians, 2 librarians and 14 administrative employees. The department also hosts 31 PhD students involved in different PhD programs. Scientists and students working in LEAF have direct access to 28,000 books and to more than 8,000 on-line journals and 700 specialized periodicals kept in the departmental library.

Key persons involved

Davide Pettenella is professor of forest economics. He has 31 years of research experience in the area of forest economics and forest products marketing.
Paola Gatto is professor of forest economics and forest appraisal. She has 24 years of experience in this filed. **Laura Secco** is a senior researcher in forest economics and has 14 year of experience in the areas of forest policy and forest products marketing.

***Pettenella D.**, Daly-Hassen H., Jemal Ahmed T. (2010) Economics instruments for the sustainable management of Mediterranean watersheds. Forest Systems, 19 (2), 141-155*
***Pettenella D.**, Cai M., Vidale E. (2011) Income generation from wild mushrooms in marginal rural areas. Forest Policy and Economics, 13, 221–226*
***Pettenella D.**, Cesaro L. and **Gatto P.** (eds) (2008) The multifunctional role of forests. Policies, methods and case studies. European Forestry Institute, EFI no. 55, 2008, p. 380.*
*Weiss G., Ollonqvist P., **Pettenella D.** and Slee B. (eds) (2011) Innovation in forestry: territorial and value chain relationships. CAB International, Oxfordshire, p.331.*
***Pettenella D.** and **Secco L.** (2006) Participatory processes in forest management: the Italian experience in defining and implementing forest certification schemes. Swiss Forestry Journal, 10, p.445-451.*
***Gatto P.**, Defrancesco E., Runge F., Trestini S. (2008). Factors affecting farmers' participation in agri-environmental measures: A northern Italian perspective. Journal of Agricultural Economics, vol. 59; p. 114-131.*
***Gatto P.**, Zocca A., Battisti A., Barrento M.J., Branco M., Paiva M.R. (2009) Economic assessment of managing processionary moth in pine forests: A case-study in Portugal. Journal of Environmental Management, vol. 90; p. 683-691.*

P.03.	University of Natural Resources and Life Sciences, Vienna (BOKU)

BOKU (Universität für Bodenkultur Wien) comprises 14 departments, is attended by approx. 8000 students and has approx. 1.300 permanent staff in teaching and research. The university focuses on renewable resources and searches ways of ensuring a sustainable, economic feasible and environmentally sound management of natural resources by allying the competences of the natural, engineering, economics and social sciences. The **Institute of Forest, Environmental and Natural Resource Policy** (INFER) is situated at the Department of Economics and Social Sciences (http://www.wiso.boku.ac.at/infer.html) and is dedicated to problem-oriented research and teaching on the political processes, instruments, and institutions in the field of forest, environmental, and natural resource policy. In the recent decades it has been strong in leading and contributing to national and international research projects, for instance, leading the FP6 IP GoFOR on "Forest Governance" and the COST Action E51 on "Integrating Innovation and Development Policies for the Forest Sector". One of the two Working Groups focused on innovations in the field of territorial goods and services of forests which include NWFP. The institute is also active in policy advice on national and international levels and was leading or involved in numerous EC tenders, including the "Study on the development and marketing of non-marketed forest products and services" (FORVALUE) for EC DG Agriculture (2008). In this study, BOKU was responsible for the overview and assessment of economic instruments for the provision of NWFP, including new forest products such as fruits or chemicals. The **Institute of Silviculture** (http://www.wabo.boku.ac.at/waldbau.html)at the Department of Forest and Soil Sciences (DWB) has a long record of scientific research in silvicultural techniques as well as management strategies for multi-purpose forest resource management. It provides expert advice and consulting services for the implementation of scientifically based practical applications of silvicultural Know-How, including ecosystem modelling and multi-criteria planning for decision support in forest management. It leads or contributes substantially to a number of European projects, including EFORWOOD, FUNDIVEUROPE, CONES, MOTIVE, etc.

Key persons involved

Gerhard Weiss (INFER), senior researcher, was the head of EFI PC INNOFORCE and chairing the European COST Action E51. He has more than 15 years of experience in natural resource policy research, teaching and advice, and has published numerous related journal articles and books or book chapters. He has been coordinator of numerous national and international projects or project parts. His specific fields of interest are integrated land-use policy, forest policy, sustainable development policy, and innovation policy. In the field of sustainable development and innovation he has specifically been studying new financial mechanisms for safeguarding territorial-based goods and services including recreation, bio-energy and non-wood forest products (e.g., FORVALUE project for DG AGRI; BEFOFU project in BiodivERsA ERA-net). He has strong experience in conducting scientific as well as practice-related research and consultancy projects on national and particularly international levels. His experience covers team leadership and specifically the management of international and interdisciplinary research networks.

Harald Vacik (BOKU, DWB), Associate Professor for Silviculture. His main research interests include multi-purpose forest management planning and decision making, multi-criteria decision support and development and application of C&I for sustainable forest management. He has been actively involved in several European scale (EFORWOOD, MOTIVE, FUNDIVEUROPE) and national research projects and initiatives on the development and application of multi-purpose decision support systems for balancing interests on natural resources as well as non-wood forest products. He coordinates the workgroup on Knowledge Management in the ongoing COST action (FP0804) related to Forest Management Decision Support Systems (FORSYS) and is deputy head of the IUFRO Group 04.03.03 on Information management and information technologies.

*Buttoud G, I Kouplevatskaya-Buttoud, B Slee, **G Weiss** (2011): Barriers to institutional learning and innovations in the forest sector in Europe: Markets, policies and stakeholders. FPE 13 (2011) 124–131.*

*Buttoud G, I Kouplevatskaya-Buttoud, B Slee, **G Weiss** (2011): Barriers to institutional learning and innovations in the forest sector in Europe: Markets, policies and stakeholders. FPE 13 (2011) 124–131.*

***Weiss G.**, Pettenella D., Ollonqvist P. and Slee B. (eds.) (2011): Innovation in Forestry: Territorial and Value Chain Relationships. CABI. 320 pp.*

*Lexer M.J., **Vacik H.**, Palmetzhofer D., Oitzinger G. (2005): A decision support tool to improve forestry extension services for small private landowners in southern Austria, Computer and Electronics in Agriculture, 49, 1: 81-102*

***Vacik H.**, Lexer M.J. (2001): Application of a spatial decision support system in managing the protection forests of Vienna for sustained yield of water resources. For. Ecol. Manage., Volume 143, (1-3): 65-76.*

P.04.	University of Hamburg (UHAM)

The Centre of Wood Sciences is part of the Faculty of Mathematics, Computer Science and Natural Science at University of Hamburg (UHAM). The Centre undertakes research, education and consultancy services in the area of forestry and forest products industry. The University of Hamburg is one of the biggest universities in Germany with about 40,000 students. At the Centre of Wood Sciences in Hamburg are roughly 300 students. The Centre of Wood Science has three major divisions (Wood Biology, Wood Technology and Forest Economics). The main expertise of the centre is in wood sciences, but a several studies have been carried out in the field of NWFP as well.

Key persons involved

Udo Mantau is professor in Forest Economics. Before his university career he was leading a market research department in a marketing company of the C. Bertelsmann concern. As a researcher he has been working in the field of market research, econometric modelling and marketing for many years. He published a book on recreational and environmental markets for forest enterprises. Major projects in the last years dealt with regional capacities of the wood industry in Germany and Europe, biomass potentials and trade flows. He developed the Wood Resource Balance which is today commonly used to give a total view on the potential and consumption of wood resources and a wood flow analysis. Before that he was studying the marketing processes for recreational and environmental forest goods and services from forest enterprises.
Jörg Fromm is professor in Wood Biology. He has carried out studies on the potential of NWFP for resource substitution in the field of nutrition and medicine. He published a book on the biology of trees and is teaching seminars on NWFPs in Wood Science course of studies at the University of Hamburg.
Ulrike Saal and **Florian Schubert** are research assistants at the centre of wood science, experienced in the fields of market research, marketing and NWFP.

Mantau U., *Sekot W., Merlo M., Welcker B. (2001) Recreational and environmental markets for forest enterprises: a new approach towards marketability of public goods. Wallingford: CABI Publishing, 541 S.*
Mantau U.*, Mertens B., Welcker B., Malzburg B. (2001) Case studies on the marketing of recreational and environmental goods and services from forests, special issue of the FLO-journal AFZ in German, editor MANTAU, U., AFZ Der Wald 2001, 106 S.*
Mantau U.*, Wong J., Curl S. (2007) Towards a taxonomy of forest gods and services, Small-scale Forestry 6:391-409*
Mantau U.*, et al. (2010) EUwood - Real potential for changes in growth and use of EU forests. Final report. Hamburg/Germany, June 160 p.*
Matyssek R., ***Fromm J.****, Rennenberg H., Roloff A. (2010) Biologie der Bäume – von der Zelle zur globalen Ebene. (Biology of trees - from cells to the global level. UTB-Verlag, 343 S.*

P.05.	Forest Sciences Centre of Catalonia (CTFC)

The Forest Sciences Centre of Catalonia (CTFC) is a forest research and training center located in the Catalan Pre-Pyrenees in the town of Solsona with an annual budget of 8 million EUR and over 100 employees. Its main tasks are applied forest research, university training and education and knowledge transfer. The CTFC has an extensive record of participation in European projects, e.g.: EFORWOOD (FP6-518128), FIRE PARADOX (FP6-018505), EXIOPOL (FP6-037033-2), SCALES (FP7-ENV), NEWFOREX (FP7-243950), SmallForest (Eurobiodiversa) among the recent ones and coordination of the COST Action E45 and the Sylvamed project (2511/2G-MED09-410).

Key persons involved

José Antonio Bonet, Antoni Olivera, Juan Martínez de Aragón and **Carlos Colinas** are PhD in forestry; professors at the University of Lleida and researchers at the CTFC. Specialists in non-wood forest products (focused on mushrooms and black truffles), participating in different national and international projects, publishing more than 50 scientific and divulgate articles.
Daniel Oliach is a Forestry Engineer, combines research at the CTFC with his role as Secretary of the Association of truffle producers in Catalonia and the Spanish Federation of truffle producers.
Sergio de Miguel is a Forestry engineer with a valuable international experience in forest management and planning, with special focus on modelling of forest stand dynamics and optimization methods.
Christine R. Fischer holds a MS Forest Science is specialist in mycorrhizal fungi; responsible for certification service for seedlings used in Black Truffle cultivation.
Irina Prokofieva is senior researcher with a PhD in Economics. Her main expertise lies in the fields of general economic and environmental policy. She has participated in several national and European projects, and acted as an expert in the FORVALUE project for the DG Agri. Currently she is leading a WP on policy tools for sustainable provision of forest goods in the NEWFOREX project, and is involved in Sylvamed and SmallForest projects.
Elena Górriz is a researcher, forest engineer. She has worked in several international projects in the field of analysis of economic incentives in forest management, science-policy interface, stakeholders' participation and communication as well as capacity building with third countries

Górriz E. *and* ***Prokofieva I.*** *(2011) Analysis of three economic incentives for the provision of forest goods and services in Catalonia (Spain). Spanish Journal of Rural Development, vol. II, Special number 1, 75-86. DOI: 10.5261/2011.ESP1.08*
Pülzl H., ***Prokofieva I.****, Berg S., Rametsteiner E., Aggestam F., Wolfslehner B. (2011) Indicator development in sustainability impact assessment: balancing theory and practice. European Journal of Forest Research. DOI 10.1007/s10342-011-0547-8.*
Martínez de Aragón J.*, Riera P., Giergiczny M.,* ***Colinas C.*** *(2011) Value of wild mushroom picking as an environmental service. Forest Policy and Economics. DOI:10.1016/j.forpol.2011.05.003*
Bonet J.A.*, Palahí M.,* ***Colinas C.****, Pukkala T., Fischer C.R., Miina J.,* ***Martínez de Aragón J.*** *(2010) "Modelling the production and species richness of wild mushrooms in pine forests of Central Pyrenees in north-eastern Spain". Canadian Journal of Forest Research, 40: 347-356 (doi:10.1139/X09-198).*
Palahí M., Pukkala T., ***Bonet J.A.****,* ***Colinas C.****, Fisher C.R.,* ***Martínez de Aragón J*** *.(2009) Effect of the inclusion of mushroom values on the optimal management of even-aged pine stands of Catalonia. Forest Science, 55(6): 503-511.*

P.06.	Technical University of Lisbon (ISA)

Instituto Superior de Agronomia (ISA) is one of the faculties of the Universidade Técnica da Lisboa (Technical University of Lisbon). Our core business is Higher Education, Research & Development and Technology Transfer mainly in the scientific fields of Agriculture, Forestry and Natural Resources, Food Science and Engineering, Animal Production, Environmental Engineering, Biology and Landscape Architecture.
Presently our scientific work includes 88 Research & Development projects (15 international) and many others involving Technology Transfer. We are leader partner in 3 international projects funded by the EU and in 48 national projects. Most of our partners in international projects belong to the EU but we participate in several research networks with other countries, namely Australia, New Zealand, USA, Brazil and Chile. Our experience in Research & Development projects with international teams has more than 20 years and during this period we were project leader of several large and very large teams.

Key persons involved

ISA's team will include two main fields of expertise: i) silviculture and growth modelling; 2) management modelling and decision support systems.
The first research field, led by **Margarida Tomé**, includes researchers – e.g. **Luís Fontes, Paula Soares, José Tomé, João Palma** – with expertise on growth and yield modelling, from empirical to process-based models. The team has been the responsible or participated in the development of most of the forest growth models available in Portugal. One of the present research topics is the hybridization of traditional growth and yield models with process based models.
José G. Borges leads the researchers from the second field – e.g. **Jordi García-Gonzalo, João Palma** – dealing with management modelling, mathematical programming and heuristic approaches to address spatial optimization and risk management, on collaborative planning approaches and on hybrid decision systems.

*Calama R., Mutke S., **Tomé J**., Gordo J., Montero G., **Tomé M.** (2011) Modelling spatial and temporal variability in a zero-inflated continuous variable: the case of cone production in Mediterranean stone pine (Pinus pinea L.). Ecological Modelling 222: 606-618.*
*Paulo, J. A., **Tomé, M**. (2010) Predicting mature cork biomass with t years of growth based in one measurement taken at any other age. Forest Ecology and Management 259: 1993-2005.*
*Madureira, L., Nunes, L. C., **Borges, J. G.** and Falcão, A. O. (2011) Assessing forest management strategies using a contingent valuation approach and advanced visualisation techniques: A Portuguese case study. Journal of Forest Economics (in press)*
*Marques A., **Borges J. G.**, Sousa P. and Pinho A.M. (2011) An enterprise architecture approach to forest management decision support design. An application to pulpwood supply management in Portugal. European Journal of Forest Research*
*Costa A., Oliveira A. C., Vidas F. and **Borges J. G**. (2010) An approach to cork oak forest management planning in Southwestern Portugal. European Journal of Forest Research 129: 233-241.*
*Calama R., **Tomé M.**, Sánchez-González M., Miina J., Spanos K., Palahi M. (2010) Modelling Non-Wood Forest Products in Europe: a review. Forest Systems 19(SI): 69-95.*

P.07.	**Finnish Forest Research Institute (METLA)**

Metla is an independent, governmental research organisation. Metla conducts research about forest nature and environment, the different uses of forests, forestry and the forest cluster. Research is organised into problem-oriented projects and multi-disciplinary research programmes. The total number of currently running research projects is over 150. Metla employs 800 people, of whom 300 are researchers. One of Metla's on-going research programmes "Well-being from forests" focuses directly on topics relevant to STAR TREE. All researchers described below are actively participating to the programme. Owing to its modern equipment and facilities as well as strong internal support services, Metla offers an excellent framework for challenging international research projects. Metla is currently participating to about 15 EU funded projects.

Key persons involved

Mikko Kurttila is an acting professor of forest planning at Metla and a Docent of Forest Planning at the University of Helsinki. During his 16 year researcher career, he has done research related to multi-objective forest planning methods and decision support systems and family forest ownership studies, which are of great relevance for the STAR TREE. He has published about 50 articles in peer-reviewed publications and over 70 other scientific writings. He has lead and participated to several multidisciplinary projects funded e.g. by Finnish Academy and ministries. In addition, Prof. Kurttila participates to recently launched "TraCoPi" Lifelong Learning EU Programme project, which aims to develop program-based planning of natural resources, which also is relevant for the STAR TREE. He will be the responsible person from Metla and he will participate in WP 2 as well as in case studies that take place in Finland.
Jari Miina has over 20 years' experience in modeling and simulation, and optimization of stand management. He has published about 50 peer-reviewed scientific articles. In recent articles, he has modeled the production of NWFPs, and optimized joint production of timber and bilberries.
Kauko Salo is a specialist in multiple use of forest. He has researched succession, composition, diversity, structure and yield of macrofungi and vegetation including wild berries. He is the leader of annual forecast and inventory system of wild berry yields. During his 33 year career in Metla he has published 99 scientific articles, guides and books and written 216 bulletins, posters and articles about Finnish nature, wild berries and mushrooms. He has been a coordinator of the working group "Edible forest products" of IUFRO Division 5 in 1995-2005. (WP2).
Tuija Sievänen has internationally recognized expertise in recreation monitoring methodology, e.g. visitor counting and surveys and national recreation demand inventories, and recreational behaviour studies recreation research. She has led the national recreation demand inventory studies since 1997 in Finland. Most important research products are national outdoor recreation statistics and recreation prognoses. She has published more than 20 scientific, peer-reviewed articles and about 140 other research reports. She is a coordinator of IUFRO Division 6. In this project she will analyze the volume of NWFP collection activities from recreation perspective (private household use of NWFP) in the Finnish regional case study (WP1).

Kangas A., Kangas J. and ***Kurttila M.*** *(2008) Decision support for forest management. Managing Forest Ecosystems, Volume 16. Springer. 222 p.*
Miina J*., Hotanen J.-P. and* ***Salo, K.*** *(2009) Modelling the abundance and temporal variation in the production of bilberry (Vaccinium myrtillus L.) in Finnish mineral soil forests. Silva Fennica 43(4): 577-593.*
Miina J., *Pukkala T., Hotanen J.-P. and* ***Salo K.*** *(2010) Optimizing the joint production of timber and bilberries. Forest Ecology and Management 259(10): 2065-2071.*
Calama R., Tomé M., Sánchez-González M., ***Miina J.****, Spanos K. and Palahí M. (2010) Modelling non-wood forest products in Europe: a review. Forest Systems 19(Special Issue): 69-85.*
Pukkala T., Lähde E., Laiho O., ***Salo K.*** *and Hotanen, J-P. (2011) Performance of even-aged vs. uneven-aged managements in multifunctional forestry. Canadia Journal of Forest Research 41: 851-862.*
Sievänen, T. *(2004) Recreation: Inventory, monitoring and management. In: Burley, J., Evans, J. & Youngquist, J.A. (eds.). Encyclopedia of forest sciences. Elsevier, p. 958-964*

P.08.	National Institute for Agricultural and Food research and Technology (INIA)

INIA is an autonomous Public Research Organisation ascribed to the Ministry of Science and Innovation. The Center for Forestry Research (CIFOR) belongs to INIA. The CIFOR-INIA is conceived as a specialized forest research centre, whose objective is to enhance the knowledge base on the forest environment, management multifuncionality, inventory analysis and conservation of the genetic diversity present in forest and the selection, characterization and propagation of genetic material, damage caused by biotic agents or environmental disturbances and finally, the raw materials and products derived, optimizing the technology employed in the processing and adaptation of these material for different uses. CIFOR-INIA works in close collaboration with public research organisations, universities and Technological centres through mixed R&D projects.

Key persons involved

Isabel Cañellas has a PhD in forestry; she is project leader on different subjects: forest dynamics, natural regeneration, stand structure and growth. IUFRO Deputy coordinator of Division 1 Silviculture since 2006. Coordinator of Silviculture and Sustainable Forest Management of the Centre for Forest research.
Rafael Calama has a PhD in Forestry. Specialist in forest modeling, forest adaptation to global change and management of noon-wood forest products. Researcher at CIFOR-INIA. Leader of the forest modeling group at the Spanish Society for Forest Science.
Sven Mutke holds a PhD in Forestry with ongoing projects on NWFP such as pine nuts, resin tapping or dehesas (agroforestry systems). Liaison Officer for Stone Pine in the FAO/CIHEAM Research Network on Nuts.
Mariola Sánchez-González holds a PhD. in forestry. Her main research topics are the application of semiparametric statistical approaches for forest data analysis and the development of growth and yield models for sustainable forest management.
Mario Soliño is PhD in Applied Economics (University of Vigo, 2006). His research areas fall within the field of environmental economics: environmental valuation and sustainable management of natural resources (with special mention to forestry).
Jose Ramon Adrados is PhD in Forestry. Specialist in the quality of cork and cork manufacture process. Researcher at CIFOR-INIA.

***Calama R., Mutke S.**, Tomé J.A., Gordo F.J., Montero G., Tomé M. (2010) Modelling spatial and temporal variability in a zero-inflated variable: the case of stone pine (Pinus pinea L.) cone production. Ecological Modelling. 10.1016/j.ecolmodel.2010.09.020*
***Calama R.**, Tomé M., **Sánchez-González M.**, Miina J., Spanos K., Palahi M. (2010) Modelling Non-Wood Forest Products in Europe: a review. Forest Systems 18 (Special Issue on Forest Modelling): 69-85*
*Gea G., **Cañellas I.** (2009) Analysis of holm oak intraespecific competition using gamma regression. Forest Science 55(4): 310-322.*
*Gea G., Cherubini P., **Cañellas I.**, (2011) Tree-rings reflect the impact of climate change on Quercus ilex L. along a temperature gradient in Spain over the last 100 years. Forest Ecology and Management 262 (2011) 1807–1816*
***Mutke S.**, Gordo J., Chambel M.R., Prada M.A., Álvarez D., Iglesias S., Gil L. (2010) Phenotypic plasticity is stronger than adaptative differentiation among Mediterranean stone pine provenances. Forest Systems 19(3).*
***Sánchez M., Calama R., Cañellas I.**, Montero G., (2007) Variables influencing cork thickness in Spanish cork oak forests: A modelling approach. Annals of Forest Science 64:301-312*
***Soliño M.** (2010) External Benefits of Biomass-e in Spain: An Economic Valuation. Bioresource Technology, 101(6): 1992-1997*

P.09.	**Albert Ludwigs University of Freiburg- Institute for Forest Growth (IWW)**

The main research fields of the Institute for forest growth (IWW)/Albert- Ludwigs-University, Freiburg (Germany) are studies on growth of trees in their environment, the development of decision tools for controlling tree growth and the provision of basic methods for investigating tree growth. The IWW takes part in various national and international mainly transdisciplinary scientific research programs. IWW played an active role in several national and international research projects on growth controll (see http://www.iww.uni-freiburg.de/research/controlling-forest-growth). One of the focal points within this field is research on growing valuable trees in forests and in agroforestry systems, which implies modelling single tree growth and development of species- specific and target oriented management tools. Various management guidelines based on specific growth models have been developed throughout the years for several European but also Asian or North American tree species with main emphasis growing valuable broadleaved tree species.

Key persons involved

Heinrich Spiecker is director of the institute for forest growth since 1992. His main research interests are: forest growth and the environment (growth dynamics, global change impacts); controlling forest growth: wood quality, wood quantity, biomass production; methods: tree ring research, laser scanning; agroforestry: valuable wood & energy wood production.

Johanna Storch is scientific staff and PhD student at the institute for Forest Growth since 2006. Her main research interests are: crown structure, branch development and natural pruning of Oak (*Q. petraea, Q. robur*) and Beech (*F. sylvatica*); artificial pruning of various valuable broadleaved tree species; growing valuable broadleaved tree species in Southern China; chances and benefits of valuable wood production within combined land use systems.

*Morhart C., Springmann S., **Spiecker H.**, Rehpenning P.E. (2011) Modern agroforestry systems combining valuable timber production and short rotation coppice - land use systems with high long-lasting carbon storage capacity. In: Freese, D. et al. (eds.): Proceedings of the International Workshop on Agroforestry - Ecological Benefits of Agroforestry, 15-17 June 2011, Cottbus, Germany, p. 39.*

*Springmann S., Rogers B., **Spiecker H.** (2011) Impact of artificial pruning on growth and secondary shoot development of wild cherry (Prunus avium L.). Forest Ecology and Management 261, 764-769.*

*Springmann S., Morhart C., **Spiecker H.** (2011) Astungsmethoden im Vergleich- Wertholzproduktion mit Wildkirsche. In: AFZ - der Wald, Jg. 66, H.*
6: 8-11

*Springmann S., Morhart C., **Spiecker H.** (2011) Astung von Edellaubbaumarten zur Wertholzproduktion. In: AFZ - der Wald, Jg. 66, H. 6: 4-7*

***Spiecker H.** (2010) Valuable wood production - An option for the future? Forestry Ideas, Vol. 16 (39): 11-18*

Engler B., Becker G., Spiecker H., Storch J., Dörr A., Schütt C., Makeschin F., Wolff M. (2010) ValWood: concepts for a combined production of valuable broadleaved trees for wood processing industry and fast growing tree species for energy, The International Forestry Review, Vol. 12 (5), p 216.

***Storch J.**, **Spiecker H**., Becker G., Dörr A., Engler B., Makeschin F., Wolff M. (2010) China auf dem Weg zu einer zukunftsfähigen Forstwirtschaft. Deutsch-Chinesische Zusammenarbeit an nachhaltigen Forstkonzepten. In: AFZ- der Wald, Jg. 65, H. 4: 40-43.*

***Spiecker H.** (2010) Wertholzproduktion in Agroforstsystemen. In: Bemmann, A. und Knust C. (ed.): Agrowood - Kurzumtriebsplantagen in Deutschland und europäische Perspektiven, Weißensee Verlag: 305-309.*

Langshausen J., (2009) Optionen der Wachstumssteuerung zur Produktion von Wertholz bei der Baumart Buche (Fagus sylvatica L.). Inaugural-Dissertation zur Erlangung der Doktorwürde der Fakultät für Forst- und Umweltwissenschaften der Albert-Ludwigs-Universität Freiburg i. Brsg.: 297 p.

***Storch J**., Dörr A., Bender B., **Spiecker H.** (2009) Guideline for valuable wood production in Agroforestry Systems. Institute for Forest Growth.*

P.10.	Slovenian Forestry Institute (SFI)

Slovenian forestry institute is a public research organization with 61 of research and administration staff. It has been founded in 1959 and has been continuously operating ever since. It's funding comes from a mixture of national and international (mainly EU) research projects. At the moment it consists of 6 departments, working on forest ecology, physiology and genetics, economics and organization, planning and monitoring of forests and landscape, silviculture and yield science, and forest protection.

Key persons involved

Marko Kovač is a senior researcher and the head of the department for forest and landscape management and monitoring, with over 20 years of research seniority. He made his Ph.D. in optimization of forest management planning system in Slovenia. He has been working in research projects dealing with the development of an approach how to include some of non-marketed forest products and services – recreation – in forest management planning. He has expert knowledge on integration of GIS into forest management, optimization of information value of various forestry databases, and policy analysis for forestry and landscape sector.

Anže Japelj is a postgraduate student (employed as a researcher) in an area of ecosystem services valuation and working in the forest and landscape management and monitoring department. He had been included in COST E45 group, where was gaining experiences in using methods for non-market valuation of forest goods and services. In addition he was one of the members of a working group, which conducted a valuation study on selected non-market goods/services in the framework of FireParadox project.

*Hočevar M., Hladnik D., **Kovač M.** (1992) Zasnova prostorskega informacijskega sistema (PIS/GIS) kot podlage za večnamensko gospodarjenje z gozdom in gozdnato krajino. Dela. [Tiskana izd.], 9, str. 153-167, ilustr. [COBISS.SI-ID 63610880]*

***Kovač M.** (2003) Velikoprostorsko strateško načrtovanje za trajnostni razvoj gozdov (1.del) = Large-scale strategic planning for sustainable development (Part 1). Gozd. vestn., 61, 10, str. 403-421, ilustr. [COBISS.SI-ID 1149862]*

*Mavsar R., **Kovač M.** (2002) Slovenia - the total economic value of Slovenian forests. V: MERLO, Maurizio (ur.), CROITORU, Lelia (ur.). Mediterranean Forests and People: towards the Total Economic Value : (DRAFT: distribution resticted to authors) : Padua, November. Padua: Contagraf, Padua University Press, 2002, 16 str., graf. prikazi, zvd. [COBISS.SI-ID 1058982]*

***Kovač M.**, Hočevar M., Mavsar R. (2005) A methodological approach for the improvement of biodiversity monitoring and management. V: MARCHETTI, Marco (ur.). Monitoring and indicators of forest biodiversity in Europe : from ideas to operationality. Joensuu: European Forest Institute, 2005, str. 421-430, ilustr. [COBISS.SI-ID 1495974]*

*Mavsar R., Kutnar L., **Kovač M.** (2005) Slovenia. V: MERLO, Maurizio (ur.). Valuing Mediterranean Forests : towards total economic value. Wallingford: CABI publishing, str. 263-278, ilustr. [COBISS.SI-ID 1496486]*

*Brack C., **Kovač M.**, Lund H. Gyde (ur.). (1998) IUFRO Guidelines for designing multipurpose resource inventories : a project of IUFRO Research Group 4.02.02, (IUFRO World series, Vol. 8). Vienna: International Union of Forestry Research Organizations. 216 str., ilustr., graf. prikazi. ISBN 3-901347-09-7. [COBISS.SI-ID 391590]*

*Planinšek Š., Ferreira A., **Japelj A.** (2011) A model for evaluation of the hydrological role of a forest = Model za vrednovanje hidroloških značajki šume. Šumar. list, god. 135, br. 5/6, str. 257-268, ilustr. [COBISS.SI-ID 3212710]*

*Planinšek Š., Ferreira A., **Japelj A.** (2010) Hydrological and protective services of forests - modelling on watershed level. V: FINÉR, Leena (ur.). Forest and abundance of water : focus on boreal forests and peatlands : abstracts and programme of the COST action FP0601 FORMAN workshop at the Finnish Environment Institute, Helsinki and Hyytiälä Forestruy Field Station, Finlad 6.-8.9.2010, (Working papers of the Finnish forest research institute, 168). Vantaa: Finnish Forest Research, str. 42. [COBISS.SI-ID 3019942]*

P.11.	University of Suceava (USV)

University Stefan cel Mare Suceava (USV) is a young university, impressively developed during the latest 15 years, starting with 900 students in 1990 to arrive now at 13000 students and more than 600 staff. Inside the USV, the research done by the staff of the Forestry Faculty addressed forest ecosystem management, forest management planning and infrastructure, nature conservation and forest policy and economics. USV is an active partner in international research projects (COST, FP7) and its main distinctive competence is in forest policy and economics in eastern European countries. Research experience exists also with silviculture and spatial modelling.

Key persons involved

Laura Bouriaud's area of expertise is forest policy analysis, property rights analysis and illegal logging. She studied the restitution and privatisation of forestland in eastern European countries to expand the analysis of the property rights systems in the context of innovation in wood processing industries. Ongoing research are addressing the question how private entrepreneurship and private forestry may develop in strongly regulated forest economies, and presence of governance failures, e.g. illegal logging, corruption. Laura Bouriaud was invited as key note speaker to the 9th conference Property rights, environment and forestry, Aix en Provence, France organised by the International Center for Research on Environmental Issues (http://www.icrei.org/), and has organised a panel on property rights in the International Association for the Study of the Commons European Meeting in Plovdiv, Bulgaria, 14th of September 2011 (http://www.iasc-commons.org/conferences/regional/2011-iasc-european-meeting). The experience on the analysis of property rights is highly relevant for conducting research on working group on Policy.
Liviu Nichiforel has experience on analysing property rights system and economic behaviour. His recent PhD degree dealt with the formation of prices for timber and the stakeholders behaviour in influencing the market. He was also involved in research regarding innovation in forest sector.
Marian Dragoi is used with environmental economics, operational research and system analysis, and environmental assessment (travel cost method, contingent valuation, conjoint analysis).

***Bouriaud L.**, Kastenholz E., Fodrek L., Karaszewski Z., Mederski P., Rimmler T., Rummukainen A., Sadauskiene L., Salka J. and Teder M. (2011) Policy and Market-related factors for innovation in forest operation enterprises. In eds G. Weiss et al., Innovation in Forestry: Territorial and Value Chain, CAB International 2011, pp. 276-293*
***Dragoi M.**, Popa B., Blujdea V. (2011) Improving communication among stakeholders through ex-post transactional analysis — case study on Romanian forestry. Forest Policy and Economics, Volume 13, Issue 1, January 2011, Pages 16-23*
***Nichiforel L.** and Schanz H. (2009) Property rights distribution and entrepreneurial rent-seeking in Romanian forestry: a perspective of private forest owners. European Journal of Forest Research, Volume 130, Number 3, pp. 369-381*
***Bouriaud L.** (2007) Property Rights Characteristics Relevant for Innovation and Enterprise Development in Small-scale Forestry. Research paper in Small-Scale Forestry, Springer Netherlands, ISSN 1873-7617 (Print) 1873-7854 (Online)*
*Duduman G., **Bouriaud L.** (2007) Managing innovation in wood harvesting and primary processing firms – case study of Suceava. Forestry Studies/Metsanduslikud Uurimused 46, Estonian University of Life Sciences, 89-101*
***Bouriaud L.** (2005) Causes of illegal logging in Central and Eastern European region. Small-scale Forest Economics, Management and Policy, 4(3): 269-292, 2005*
***Bouriaud L.**, Schmithüsen F. (2005) Allocation of property rights on forests through ownership reform and forest policies in Central and Eastern European countries. Swiss Forestry Journal, 156 (2005):8, 297-305 p.*

P.12.	Latvian State Forest Research Institute (SILAVA)

Latvian State Forest Research Institute "Silava" (LSFRI Silava) is one of the leading forest research institutions in Baltic region. Main tasks performed by LSFRI Silava is research on a sustainable and efficient production and utilization of forest resources for wood processing industries, bioenergy and recreation purposes. LSFRI Silava is a member of the International Union of Forest Research Organisations (IUFRO) since 1980 and a member of the European Forest Institute (EFI) since 1995. The institute is also a member of OSCAR network (For improved Nordic R&D co-operation in the field of operation systems in forestry) and CAR-ES network (Centre of Advanced Research – Environmental services).

Key persons involved

Jansons Āris is active in The Baltic Sea Region Bioenergy Promotion Project.
Lazdiņš Andis works in the development of the bioenergy and industrial charcoal (biocoal) production in the frame of The Baltic Sea Region Bioenergy Promotion Project.
Zālītis Toms works in the development of models for establishing and managing multifunctional plantations of broadleaves and energy crops.
Līviete-Zālīte Zane and **Donis Jānis** work in the development of innovative forest cultivation technologies for strengthening the efficiency and competitiveness of forestry production.

Jansons A. *(2010). Influence of growing conditions, age and stocking density on the deadwood of pine forest stands. Annual 16th International Scientific Conference Prooceedings Research for rural development, Volume 1, LLU, Jelgava: 227-233.*
Rytkönen A., Lilja A., Drenkhan R., Gaitnieks T., Hantula J. (2010). First record of Chalara fraxinea in Finland and genetic variation among samples from Åland, mainland Finland, Estonia and Latvia. Forest Pathology (published online 29.04.2010) DOI: 10.1111/j.1439-0329.2010.00647.x

P.13.	Karadeniz Technical University (KTU)

Karadeniz Technical University (KTU) is a large state university in Turkey founded in 1955 with 17 faculties over 60 departments and close to 50000 students. The Faculty of Forestry is the leading institution in forestry education and research in Turkey focusing on forest management decision support system, biodiversity conservation, forest fire, silviculture and NWFP. The faculty has a strong forest management lab equipped with information infrastructure and planning experts. The department has a strong collaboration with the Turkish Forest Service on the development of information systems, forest management plans, biodiversity conservation, fire management, and the inventory and management of NWFP. The department of forestry, KTU, has coordinated a number of international research projects on forest management related projects: AGORA FP7 (advancing Mediterranean forest research capacities) project, COST action of Post-Fire Forest Management in Southern Europe, COST action of Forest Management Decision Support Systems (FORSYS), Biodiversity integrated Forest Management Plans in Turkey by World Bank and habitat enhancement project in Turkey by BTC pipeline Co. KTU involved in developing the Mediterranean Forest Research Agenda (MFRA) and become a partner of Erasmus Mundus (MEDFOR) master project on the management of Mediterranean forest ecosystems.

Key persons involved

Emin Zeki Başkent is Professor of Forest Management, GIS and Operations Research over 20 years of experiences. He incorporated forest values into forest management plans and pioneered the development of spatial forest management concept in Canada. Involved in the FORMAN2000 forest management modelling, lead a GEF-II Biodiversity and Natural Resources Management Project, developed multiple forest management DSS (GISFORMAN, LANDMAN and ETCAP) to forecast forest developments and understand forest dynamics, developed a project to integrate NWFPs (mushroom and thyme) into forest management plans and involved in AGORA FP7 capacity building project. He is a highly Cited Author and a recipient of TUBİTAK scientific achievement award of 2004.

Salih Terzioğlu is Professor of plant biodiversity and NWFP over 15 years. Has worked in few projects such as "the anti-viral and anti-tumoral effects of endemic plant species", "Determination of Aromatic and pharmaceutical plants of Gümüşhane province", "Determining Biodiversity in Species and Ecosystem Levels by GIS", "Development of Plant Red List Assessment for the Caucasus Biodiversity Hotspot" and "Identifying Terrestrial Biodiversity of Uzungöl Special Protected Areas in NE Turkey". He has worked as a biodiversity consultant in GEF-II Biodiversity integrated forest management plans and BTC supported habitat enhancement project. He is a key trainer of a nature awareness project.

Hüseyin Fakir is an associate professor of plant biodiversity and NWFP with 15 years of experiences. He has been working mainly on flora and vegetation of plant species and focusing on pharmaceutical botany, NWFP, plant geography, essential oil extraction process and plant systematic. He has lots of experiences on the training of youths about the nature and plants over a number of years with research projects supported by TUBİTAK.

Derya Mumcu Küçüker is PhD student in forest management, working on the integration of wood and NWFP at KTU.

***Başkent E.Z.**, Başkaya Ş., and **Terzioğlu S.** (2008) Developing and implementing participatory and ecosystem based multiple use forest management planning, For.Eco. &Mgmt 256: 798–807*

***Başkent E.Z.** and Küçüker DM. (2011) "Inventory of NWFP", In Proceedings of 2nd International Symposium of NWFP, 8-11 September 2011, İsparta, Turkey*

*Barlı Ö., **Başkent E.Z.**, Türker. M. (2006) Analytical Approach for Analyzing and Providing Solutions for the Conflicts among Forest Stakeholders, For. Pol &Econ. 9, 219-236*

***Terzioğlu S**., Coşkunçelebi K. (2006) The role and importance of precise identification of plant taxa in the use of non wood plant products. 1st Int. NWFP Symposium, November, 1-4, 2006*

***Terzioğlu S.**, Anşin R., Kılınç M., Acar C. (2007) Vascular Plant Diversity in Solaklı Watershed in Northeastern Turkey. Phytologia Balcanica, 13(2): 213-222.*

*Yaşar S., **Fakir H.**, Erbaş S. (2009) Gas chromatographic analysis of essential oil of Phlomis armeniaca Willd. from Med. region in Turkey, Asian J. Chem.22, 2887-2890.*

*Korkmaz M., **Fakir H.**, Güller B. (2011) Consumer preferences for medicinal & aromatic plants: Surveys of urban consumer and sellers in Turkey. J of Med. Plan. Res.5(10): 2054-2063.*

P.14.	Foreco Technologies SL (FORECO)

Foreco Technologies SL (Foreco) is a leading company providing consulting services and software products based on its own research, technology and innovation activities. Foreco is specialised in developing tools for decision making in forest management planning applying the latest knowledge in forest inventory, forest modelling, optimization techniques and information technologies. Foreco Technologies has developed innovative information systems for forest management planning like ESCEN, MONTE or ARBOREX which are being used in Spain, Greece, Lebanon, Syria to support forestry decision making.
Foreco also participates in forest research and development projects and produces its own research and scientific articles that are published in refereed scientific journals (see below). Foreco received in 2006 the INNOVA award given by The Polytechnic University of Catalonia (Spain) to the most innovative company.
Foreco is also creating and developing new business models to exploit the emerging opportunities of the knowledge based bio-economy and the strategic role which plays the forest sector on it.

Key persons involved

F. Xavier Ballabriga is Senior economist and entrepreneur. He takes part in different SME,s and has a long experience in strategic business management consulting that he has performed through his own consulting company. Mr. Ballabriga has been Director General for Rural Development in the Government of Catalonia (1999-2003). Within the forestry sector he founded and chair the Forest Technology Centre of Catalonia during the period 1996-2004. From 2004, hi is also CEO at CEDRICAT Foundation, a non profit organization devoted to promote innovation and entrepreneurship in the rural areas.
Timo Pukkala has more than 20 years of experience in multi-objective forest planning, forest simulation and in developing forestry decision support systems combining the latest modelling, optimization and information technology methods, techniques and tools. He has a Professorship at the University of Joensuu (Finland).
Imma Pallarès is an agro-food industry engineer. She is directress of the Integrated Rural Development Centre of Catalonia and has worked and led a wide range of projects on this field, as socioeconomic analysis and labour market, rural planning and sustainable development, productive diversification, and marketing of non-wood forest products.

The FP6 integrated project EFORWOOD and FP7 collaborative project MOTIVE.
Foreco is nowadays developing forest simulators for Syria, Lebanon and Bolivia, while has developed decision support systems for several regions in Spain and conducted a Spanish level modelling study for the Ministry of Environment of Spain.
In addition, Foreco has done consultancy work for different Forest Research organizations like METLA, ALTERRA, EFI or CTFC.
***Pukkala T.**, and Trasobares A. Optimising the management of uneven-aged Pinus sylvestris L. and Pinus nigra Arn. mixed stands in Catalonia, north-east Spain. Annals of Forest Science 61 (8), 747-758.*
***Pukkala T.**, González J.R., Palahí M. (2005) Optimising the management of Pinus sylvestris L. stand under risk of fire in Catalonia (north-east of Spain). Annals of Forest Science 62: 493–501.*
***Pukkala T.**,González J.R., Palahí M., Trasobares A. (2006). A fire probability model for forest stands in Catalonia. Annals of Forest Science 63: 169-176.*

P.15.	Food and Agriculture Organization of the United Nations (FAO)

An intergovernmental organization, FAO has 191 Member Nations, two associate members and one member organization, the European Union. FAO is composed of seven departments: Agriculture and Consumer Protection; Economic and Social Development; Fisheries and Aquaculture; Forestry; Corporate Services, Human Resources and Finance; Natural Resources Management and Environment; and Technical Cooperation. Besides its headquarters in Rome, FAO is present in over 130 countries. The decentralized network includes five regional offices, 11 subregional offices, two multidisciplinary teams, and 74 fully fledged country offices. FAO's activities comprise four main areas: Putting information within reach, sharing policy expertise, providing a meeting place for nations, and bringing knowledge to the field. The FAO Forestry Department helps nations manage their forests in a sustainable way. The Organization's approach balances social, economic and environmental objectives so that present generations can reap the benefits of the earth's forest resources while conserving them to meet the needs of future generations.

Key persons involved

Ewald Rametsteiner, Senior Forestry Officer, specialized in forest governance analysis and support to forest policy development
Paul Vantomme, Forestry Officer, specialized in non-wood forest products and markets analysis
Sophie Grouwels, Forestry Officer, specialized in community-based forest enterprise development
Arvydas Lebedys, Forestry Officer, specialized in forestry statistics and forest products related data collection and dissemination

FAO Non-Wood Forest Products series (No. 1-19, approx. 1 publication / year).
FAO Non-Wood News (biannual newsletter, latest is Non-Wood News 22, 2011).
FAO (2010) Developing Effective Forest Policy: A Guide; FAO Forestry Paper 161, Rome.
FAO (2011) Framework for Assessing and Monitoring Forest Governance; FAO, Rome.
FAO (2011) Reforming forest tenure: Issues, principles and process, FAO Forestry Paper 165, FAO Rome.
FAO (2011) Market Analysis and Development Manual; FAO, Rome.
FAO (2010) Global Forest Resources Assessment 2010, Main Report, FAO, Rome.
FAO (1995) Report of the International Expert Consultation on Non-Wood Forest Products; FAO, Rome.

P.16.	Wild Resources Ltd. (WRL)

The company was established in 2002 as a spin-out consultancy from the School of Agricultural and Forest Sciences of Bangor University in the UK. The company was founded to provide services related to tropical forest inventory especially for non-timber forest products (NWFPs). As the company gained experience this expanded to include strategic and policy analysis for sustainable harvesting of NWFPs and SME development in Africa and Europe. The company trades on experience gained from more than 25 years of work on the design and implementation of forest biodiversity surveys of biodiversity, human-biodiversity interactions; participatory management planning, NWFP enterprise development and post-graduate teaching.

Key persons involved

Jenny Wong has twenty five years experience in development forestry in tropical Africa. Specialisation in inventory, management planning and the use of forest resources by local people. Development planning for equitable forest resource enterprise development with an emphasis on sustainable management of wild resources. Skills developed during the course of this work includes: GIS, NWFP resource assessment, participatory techniques, control of non-native invasive species and policy analysis. Work undertaken in: sub-Saharan Africa, Fiji, Siberia, Greece, Europe, UK and Wales. Experience working with international agencies (e.g. FAO), government agencies (e.g. DFID, UK, Leader+ Action Groups in Wales), private sector (e.g. Emerald Foliage, Ireland and SRK, Canada) and NGOs (e.g. Tiaga Rescue Network). Teaching at post-graduate level in forestry and international development for Bangor University, UK and Georg-August University, Göttingen, Germany.

*Hearn S.M., Healey J.R., McDonald M.A., Turner A.J., **Wong J.L.** and Stewart G.B. (2011) The repeatability of vegetation classification and mapping. Journal of Environmental Management 2011 Apr;92(4):1174-84. Epub 2011 Jan 12.*

***Wong J.** and Dickinson B. (2010) Developing and Promoting Local Provenance Trees in Flintshire. Cadwyn Clwyd (Leader+).*

***Wong J.** (2009) Supporting the sustainable development of non-timber forest product enterprises in Russia. Report for the Taiga Rescue Network, FERN & Ford Foundation.*

***Wong J.**, Dickinson B., Over E., Perrin N., Haycock M., Watkins H., Rao J., Smith J. and Lewis A. (2008) Business planning workbook for local provenance tree nurseries. Glasu (Leader+).*

***Wong J.** (2007) Development of guidelines for the sustainable use of wild plants in England. Consultancy report for Natural England.*

***Wong J.** (2006) Developing biometric sampling systems and optimal harvesting methods for medicinal tree bark in southern Africa. Final Technical Report. Project R8305, Forest Research Programme, Department for International Development. UK*

***Wong J.** (2005) SWOT analysis of the forestry sector in Wales. Consultancy report to the Robinwood project, Forestry Commission Wales.*

Slee B, Ingram J, Cooper R, Martin S and Wong J (2005) United Kingdom. Acta Silvatica and Lignaria Hungarica. Special Edition COST E30 Economic integration of urban consumers' demand and rural forestry production. Forest sector entrepreneurship in Europe: Country studies. Pp. 725-776.

***Wong J.** (2005) SWOT analysis of the forestry sector in Wales. Consultancy report to the Robinwood project, Forestry Commission Wales.*

Wong J. and Dickinson B. (2003) Current status and development potential of woodland and hedgerow products in Wales. Report to Countryside Council for Wales, Forestry Commission Wales and Welsh Development Agency.

***Wong J.** (2002) Analysis of miombo edible fungi monitoring data for Malawi. In: Boa E (Ed) Final Technical Report. R7250. Miombo edible fungi. CABI Bioscience.*

Wong JLG (1998) Non-timber forest products from the Forest Reserves of Ghana. Consultancy report no. 11. Technical assistance to the Forest Sector Development Project Ghana. ODA contract No. CNTR 955528A.

P.17.	Llais y Goedwig (LlyG)

The company was founded as a not-for-profit company by the association of community woodland groups in Wales in 2010. The purpose of the company is to promote and represent community woodland groups in Wales and to provide assistance and support to local grass roots woodland groups and initiatives. Since its formation Llais y Goedwig has received funding from the Forestry Commission Wales and is considering the development of social enterprise as a means of funding both the company and to support members with marketing local woodland produce. In the short time since its inception Llais y Goedwig has organised a series of national workshops covering issues such as insurance, forest management planning and sustainable funding. Member groups have also been commissioned and mentored to prepare case studies of their development into established legal entities. As a young organisation membership is still growing and by Oct 2011 stands at 33 community groups and 60 associates.

Key persons involved

Adam Thorogood is the director of Llais y Goedwig and Coetiroedd Dyfi Woodlands a social enterprise providing woodland management, education and firewood. He has post-graduate degrees in Social anthropology and Environmental forestry and previous experience fund raising for Centre for Alternative Technology in Wales. In his capacity as a director of Llais y Goedwig Adam is responsible for work on climate change and sustainable funding. This includes development of two online databases; one being a bibliography of climate change literature for Wales and the other for funding opportunities encompassing grants for conservation and social development and funding for social enterprise development**.**

Roger Davies is the Chair of Llais y Goedwig - Roger was born and educated to secondary level in South Wales. He studied Architecture at Huddersfield and then worked as a Civil Servant for 15 years in the Education Sector. Moving back to Wales in 2003, he had a complete change in occupation to Community Development, for which he is currently studying for an MA at Bangor University. Roger has been Company Secretary and Strategic Developer of Golygfa Gwydyr (an arts based community woodland group) since it's foundation in 2004 and is currently setting up Golygfa Gwydyr's Social Forestry Enterprise.

Case studies prepared by member groups for Llais y Goedwig*:*

Williams D. (2010) Responding to opportunities: Blan Brân Community Woodland.
Wigfall L. (2011) By the people – for the people: Coed y Bobl Community Woodland.
Spencer D. and Charlton J. (2011) Sustainable local firewood: Llangattock Community Woodlands.
Price S. (2011) A steep learning curve: Ruperra Conservation Trust.
Petty D., Pattinson M. and Philips C. (2011) Turning a vision into reality: Coed Marros Co-operative

P.18.	PlanSinn GmbH (PLANSINN)

PLANSINN is a planning and communication consultancy founded in 1997. We are engaged in projects focussing on participation and empowerment, science communication, process control, publicity and planning in the thematic fields: Environment & Water, City & Neighbourhood, Open Spaces & Landscaping, Gender & Work, Children & Young People as well as Sustainability & Mobility.

”When lots of people are sitting around a table, it's best if it's a round one.” When it comes to complex plans, projects and programmes, there often are different interests to be accommodated. We help to achieve workable outcomes by establishing certainty and clarity with regard to procedures, responsibilities and decision-making. An indispensable factor in this context is joint planning and ongoing process evaluation together with our clients. We design the processes specifically for the individual case, drawing on our expertise in mediation methods and project management. In addition, we also employ large group methods like Open Space or World Cafe and creative decision-making techniques such as Future Workshop and various Simulation Games.

Key persons involved

Bettina Wanschura is the managing partner since 1998; Master Degree in Landscape Planning at the University of Natural Resources and Applied Life Sciences, Vienna, 1995. Employed at Technical Office for Water Management Weidel 1995-1998; Further Training in mediation & conflict management, systemic consultancy, rhetoric. Core fields: moderation and communication, neighbourhood work, citizens' participation, event organisation, environmental and nature education, science communication, specialised editorial work and PR, projects related to sustainability, environmental affairs.

Efa Doringer works for the company since 2003; Master Degree in Landscape Planning at the University of Natural Resources and Applied Life Sciences, Vienna, 2002. Core fields: planning of open spaces, settlement development, participation and empowerment, ageing and the city, environmental education, PR for environmental topics, communication and moderation.

Project tonAU*: The new National Park Visitor Centre in Vienna’s Lobau wetlands introduces visitors to the world of the Donau-Auen National Park. PLANSINN won the competition to create and install the permanent exhibition on the topics of forest and wetlands with its innovative concept of displays with an acoustic focus. The exhibition was designed to provide visitors with intensive hearing and listening experiences, in sharp contrast to the sensory overload of the huge city just down the road. Details: http://www.plansinn.at/plansinn/index.php?id=projekte&L=2&res=361&cHash=c9fb126b2a*

Project Climate and Environments in Transformation*. Participatory process for an Austrian strategy of adaptation to climate change: Climate change is an indisputable fact for most researchers. Efforts aiming at mitigating climate change as by reducing carbon dioxide emissions have been made in many places and in the context of numerous programmes. But how may we react to climate change? What do public institutions and private individuals have to expect in the meantime? How can we prevent humanity from becoming even more susceptible to natural disasters? These are some of the issues the participants in the process explored in order to define an Austria-wide strategy. PLANSINN ensured the communication between all partners. Details: http://www.plansinn.at/plansinn/index.php?id=projekte&L=2&res=420&cHash=9560d09ff4*

Project River Dialogues – Festival of Rivers 2009*: One of the targets of the EU-Water Framework Directive is to ensure better quality of water bodies and to organise public participation. The River Dialogues focused on five catchment areas in Upper Austria in order to involve inhabitants in a process of eco-friendly water management. The client for this project is the Ministry for Environment. These meetings dealt with the questions of how to reconcile eco-friendly management of surface water bodies, groundwater and flood control with smart uses. PlanSinn organised, designed and mediated the dialogues with stakeholders. Since 2009 many more processes were undertaken in other federal states of Austria. Details: http://www.plansinn.at/plansinn/index.php?id=projekte&L=2&res=353&cHash=740e71cb23*

P.19.	Joensuun Tuote ja Vihannes Ky (JTVK)

Joensuun Tuote ja Vihannes Ky is an independent privately owned company specialized in buying and selling Finnish, locally picked wild forest berries and mushrooms sold in domestic market and exported to Europe. The company has a history of almost 50 years. Guiding and teaching the pickers how to handle mushrooms and berries for the commercial purposes has been an important part of company´s business ever since from the beginning. Due to the wide range of products bought by the company, the work starts early in the spring time and continues until October. During the winter the company packs and delivers mushrooms and berries that have been bought earlier.

The company has been the first to buy fresh Boletus in Finland and the classification has been accepted also by other companies. Many new laws concerning the branch have been advised by the company.

Key persons involved

Marja Päivänurmi (Managing Director, co-owner) has an experience of over 30 years working and co-owning in the company. She works mainly on selling (domestic and export) and administration, but during the season working in buying section is atmost important. Her knowledge and experience of commercial trade of mushrooms and berries is often required especially during the season by the newspaper reporters. She is a member of the Food Cluster and Regional Development Programme in Regional Council of North Karelia.
Anne Silvast (Head of office, co-owner) has been working in the company for almost 20 years. She takes care of book keeping, administrative section. Supervising buying and packing of mushrooms and berries are also her field.

P.20.	Instituto de Restauración y Medio Ambiente S. L. (IRMA)

IRMA is a Spanish enterprise devoted to natural heritage protection, to the exploitation of natural resources, to chestnut tree activities, to fungi forestry activities and to the development of Community projects.

Key persons involved

Juan Antonio Sánchez Rodríguez is graduated in History & Geography with 24 years of experience in mycology.
Marta Lombraña Tascón is a PhD in Sea Sciences with 6 years of experience in development and innovative projects in forest areas.
Javier Flórez Serrano is graduated in biology, with 10 years of experience in forest management.
María de Celis Martínez is graduated in biology with 4 years of experience in chestnut management.
Luis Álvaro Villoldo Pelayo is graduated in History & Geography with 10 years of experience in development and innovative projects in rural areas..

Sánchez, J. A. *(2011): "Study on the mycology resources in Sanabria". Elaborated for the City Council of Puebla de Sanabria, within the territorial cooperation project POCTEP, SUSTENTA. 164 pages.*
Rubio, E., Miranda, A,, Linde, J. and ***Sánchez, J. A.*** *(2010): "Fungi biodiversity in the natural Park of Somiedo". City Council of Somiedo and Biodiversity Foundation. Edited by IRMA SL. 384 pages.*
Sánchez, J. A., Flórez, J.*, Rojo, D. and* ***de Celis, M.*** *(2008): "Chestnut trees in Las Médulas". ADESPER and Biodiversity Foundation, Edited by IRMA SL. 256 pages.*
Sánchez, J. A.*, Rubio, E. and Rojo, D. (2007): "Good Practice Handbook for the development of a sustainable mycological activity. Red List of species that need to be protected in the Iberian Peninsula". Financed by the Spanish Science and Technology Foundation for (FECYT) – Ministry of Science and Education. 253 pages.*
Sánchez, J. A. *and García, A. (2005): "Atlas of Fungi in Castilla y León" financed by the County Council of Castilla y León. 450 pages. Edited by IRMA S. L.*
Sánchez, J. A., Flórez, F.*, Sierra, J. L, Guerra, B. and Chamorro, M. (2004): "Fungi: Handbook and Didactic Guide", within the project "Mykos: fungi as a resource of employment, sustainable development and economic diversification within the rural realm". Leonardo da Vinci Programme (LdV-II) 2000/C 23/08, Nº E/01/B/P/PP - 115.427. (751 pages).*

Most relevant projects in which IRMA has participated:
Biotechnological and agro-ecological implementations in the joint production process of chestnuts (Castanea sativa Mill) and ectomycorrhizal fungi. *(2010) I+D+i project approved by the Development Agency (Ade) of Castilla y León.*
Reproduction technologies for different interesting wild fungi varieties. *(2009) I+D+I project Approved by the Industrial Technological Development Centre (C.D.T.I.) and developed in collaboration with the enterprise FUNGISEM MICELIOS S. A., devoted to the production of mycelia.*
Centre for the production, processing, packing and merchandising of wild fruits*. (2006) Submitted to C.D.T.I. within the programme "Financing of Enterprise I+D+I projects". Approved for the enterprise Del Monte de Tabuyo S.L., devoted to fungi packing and cultivation activities.*
Research Study for the project:019-AGRO: Cooperation and Valorisation of Rural Heritage. *(2000-2006) Elaborated for ADESPER within the Community Initiative INTERREG IIIB-ATLANTIC AREA..*
Research project for the restoration of a **Pinus sylvestris** ***forest and for a better exploitation of the mycological resources (*****Boletus pinicola*****)****. (1995)Elaborated for the Neighborhood Community Committee of Castrocontrigo.*

P.21.	Forestry Association Lüneburg GmbH (FVL)

The "FVL Forestry Association Lüneburg GmbH" is an association of several regional cooperations of forest land owners. It extends over 55,000 hectares in Lower Saxony and Western Pomerania. 2500 mainly small-scale forest owners are member in the FVL. The core competence of FLV is the supervision of participating forest owners in all aspects of forest management and the marketing of forest products. Through the affiliated company WMG(Forest Marketing ´Company), FVL (Forest land owner association) has professional logistics know-how.

Key persons involved

Markus Hecker is experienced in managing and participating in EU-projects. He performed his PhD in Wood Technology (1993-1995) at University of Göttingen and worked as Senior Researcher on Forest Logistics (1997-2000) at University of Freiburg, before he became executive director of the FVL. Actually, his responsibility is staff-, and round wood sales- and logistics management.

Participation in the project "Novalis" (environmental sustainability of short rotation plantations) under the leadership of the University of Göttingen. Funded by Deutsche Bundesstiftung Umwelt (DBU).

P.22.	Asamer-Handler & Co OG (AH&Co)

Asamer-Handler & Co OG is a company working in the field of local and regional development, founded in 1997 and located in Graz, Austria. The owners, Maria Asamer-Handler and Franz Handler, are also associates of ÖAR Regionalberatung GmbH (ÖAR Regional Consultants Ltd.), one of Austria´s leading companies in the field of regional development. Both have more than 25 years of experience in consulting and accompanying projects in the field of sustainable regional development with a particular emphasis on protected areas in Austria and South East Europe.

Key persons involved

Maria Asamer-Handler is an agrarian economist. Her expertise includes local/regional development with a particular emphasis on sustainable development (often in protected areas, but also in LEADER- and other regions). She also has extensive experience in advising SMEs in food-industry and rural tourism in project development and marketing issues.

Franz Handler is director of the association of nature parks in Austria (the umbrella organisation of the 47 Nature Parks). His focus as a consultant lies on sustainable development and management of protected areas and calculations of efficiency for EU funded tourism infrastructure projects.

Most relevant projects in which IRMA has participated:

***"Österreichische Naturpark Spezialitäten"** – Coordination of an inter-regional LEADER+ project to market products of the nature parks, Verband der Naturparke, 2004 – 2006 and 2009 – 2011*

Management of the Association of Austrian Nature Parks, since 1996.

***Evaluation and Development Concept for Nature Parks in Luxemburg**, 2006 – 2011*

Development Concepts for Nature Parks in Upper Austria, Lower Austria, Styria and Burgenland, 2000 – 2010.

***Sustainable Tourism Development in the Bjelasica & Komovi Region II**, 2006 – 2009 - Strategy and project development for the National Parks Biogradska Gora and Lovcen.*

Concept of a training programme for Nature Guides in protected areas in Slovenia (2006-2009), Montenegro (2005) and Austria (1999-2002).

***Feasibility Study "Cable Car to Lovcen Mountain"** (Montenegro), 2007 – 2009.*

***Strategy Concept for Nature Parks in Carinthia**, 2008*

***Feasibility Study "Accessible Holidays in Styria"**, 2008*

***Consulting for LEADER+ Lower Austria**, module project development, LEADER coordination office Ökoregion Retzer Land, 2000 – 2006*

***Evaluation Objective-2 programme** Styria (with Hummelbrunner), 2002 – 2005*

***Development of an agricultural product range for the Austrian nature parks** , Verband der Naturparke, 2000 – 2004*

***Regional Development Programme for the district of Vöcklabruck**, 2002 – 2003*

P.23.	Information systems for resources (INFRO)

INFRO is a consultancy in the area of market research and marketing in the field of wood markets and construction. INFRO has carried out some of the major marketing studies in the field of wood marketing in Germany in the last decade: State, perspective and strategy of forest products marketing (2002 and 2009); Certification of wood and consumer behavior (2002); Several regional studies on regional biomass potential for wood industry and biomass power plants; The role of building project organizer in the decision process; Market potential and marketing of wood used in gardens (2006). INFRO is experienced in elaboration of training courses: Seminar on certification and marketing for stakeholder (2004) sponsored by Deutscher Forstwirtschaftsrat (DFWR); Analysis on specialist counseling and education for forest products (2003); INFRO covers the main proportion of the leading yearly market research and forecasting seminar in the construction industry in Germany (2000-2011); Training course for the newly appointed marketing manager in the construction industry (2011/2012) together with the company Heinze (marketing service in construction industry).

Staff profiles

Udo Mantau is a professional consultant in market research and marketing in the construction industry since 1980. He started his career in industry as a market research assistant in the Bertelsmann AG subsidiary company Heinze. He developed his company service section to a market research profit center, which is today the leading market research company in the German construction industry. Since 1992 Mantau is a university professor in Hamburg, but still the research advisor of the Heinze market research center.

Additional explanation: *If the STAR TREE proposal will be successful the expected start of the project would be September 2012. This would mean that Prof. Mantau who conducts the research activities at the University of Hamburg will have retired already 9 months before the project end (end of 2016). This would primarily meet the critical completion phase of the reports. Prof. Mantau will fully continue all his work until the end of the project but as an adviser with his consultancy INFRO (SME).*

INFRO has developed about 100 professional studies in the construction industry, 25 marketing studies in the area of wood industry and forestry, 10 studies in the area of regional wood energy potential for biomass power plants.

Springer BauMedien GmbH – Heinze Marktforschung, Holzabsatzfonds, EU-Commission, UNECE/FAO Timber Committee, German and European Paper Association (VDP/CEPI), German and European Wood Industry Association (VDS, Cebois), German and European Panel Industry (VHI/EPF), biomass power plant companies(Shell AG, Mutsubishi, NovusEnergy et al.), Wood industry (Pfleiderer, Glunz, Zellstoff Stendal, Pöyry).

P.24.	Reforesting Scotland (RS)

Reforesting Scotland is a network of people involved or interested in restoring Scotland's forest cover and culture. We believe that bringing back the forest would make Scotland richer economically, ecologically and culturally. We bring together foresters and foragers, architects and artists, landowners and land reformers, writers, ecologists, chefs, diggers, dreamers and ordinary people with a love of trees. Reforesting Scotland's projects have ranged from community woodlands and the sustainable harvesting of forest produce to promoting wood as a fuel. We have seeded a number of organisations which are now at the heart of Scotland's forest culture, such as the Community Woodlands Association and the Scottish Wild Harvests Association, and have pioneered research and R&D into Scotland's NWFP sector.

Staff profiles

Emma Chapman is a long-term member of Reforesting Scotland who has also worked as a contractor on several of Reforesting Scotland's projects. She has edited and developed the Forest Harvest website (www.forestharvest.org.uk), helped conduct a survey of NWFP businesses in Scotland, and organised meetings and seminars focusing on various aspects of wild harvests and NWFPs in Scotland. She developed and ran the Wild Harvests Sector Support project (www.reforestingscotland.org/projects/wild_harvests_sector_support.php), which culminated in a national Wild Harvests of Scotland conference (www.forestharvest.org.uk/WHapr09.htm) and the launch of the Scottish Wild Harvests Association (www.scottishwildharvests.org.uk). She is now the Secretary of the Scottish Wild Harvests Association.

Edwards I (ed) (2010) Woodlanders: New Life in Britain's Forests
The Reforesting Scotland Journal www.reforestingscotland.org/pubs/journal.php
Rural Alternatives reports (2008) www.reforestingscotland.org/pubs/RAP_reports.php
Chapman E (2009) Ways forward for Scotland's Wild Harvests businesses
ForestHarvest website www.forestharvest.org.uk
Dyke A (2003) Non-timber forest product inventory method

Most relevant projects in which RS has participated:
Wild Harvests Sector Support Project: formation of the Scottish Wild Harvests Association (www.reforestingscotland.org/projects/wild_harvests_sector_support.php)
Sustainable Forest Harvest project: monitoring NWFP harvests (www.reforestingscotland.org/projects/sustainable_forest_harvest.php)
Creation of the Scottish Working Woods Label (www.scottishworkingwoods.org.uk/)
Rural Alternatives Shared Futures: a community NWFP project (www.reforestingscotland.org/projects/rural_alternatives.php)
Formation of Scotland's Community Woodlands Association (www.communitywoods.org/)

2.3 Consortium as a whole

Complex issue requests a multidisciplinary team

The **STAR TREE consortium structure** perfectly reflects the complexity of the addressed topic. On one hand it ensures the key scientific knowledge involving all relevant disciplines (silviculture, forest management, decision support, economics, policy analysis, etc, while on the other side it also secures the incorporation of practical knowledge and experience of small and medium enterprises (SME) being active in the NWFP sector and the rural development. Such a balanced consortium composition is crucial to enable the achievement of the STAR TREE objectives presented in section 1.1.

The **researchers** in the consortium have significant project experience and publication records relevant to their domain and are competent in addressing each of the STAR TREE aspects (forest, resources, enterprise, market and customer) that were introduced in the introductory sections. The scientific part of the consortium consists mainly of universities and public research institutions and agencies, many of them are leading institutes in their respective countries. The coordinator's institution has an impressive track record in the management of EU FP projects. The other core participants in the project are leading European institutions in the areas of social sciences, forest and natural resource management. STAR TREE builds on institutions that were already previously involved in projects related to the management of MPT and NWFP, entrepreneurship in the forest sector and marketing of forest products, rural development and institutional aspect of natural resource management. In this way the consortium integrates different research communities. The consortium offers strong expertise and incorporates some of the leading European institutions in the fields of forest management (ISA, CTFC, IWW, METLA, INIA, SILAVA, KTU), economics and marketing (UNIPD, UHAM, EFI, CTFC), natural resource policies and rural development (CTFC, UNIPD, USV, FAO), and innovation processes and systems (BOKU). Although the STAR TREE is a new consortium many of the research partners have already collaborated in previous projects, including EU projects like EFORWOOD (Sustainability Impact Assessment of the Forest-based Sector), FORVALUE (Study on the development and marketing of non-marketed forest products and services), NEWFOREX (New Ways to Value Forest Externalities), MOTIVE (Models for Adaptive Forest Management), as well as relevant cost actions such as E42 (Growing Valuable Broadleaved Tree Species), EUROFOREX (European forest externalities), FORREC (Forests for Recreation and Nature Tourism), E30 (Economic integration of urban consumers' demand and rural forestry production) and FP0603 (Forest models for research and decision support in sustainable forest management). The STAR TREE consortium has also excellent linkages to the international forest research community through the network of EFI associated members.

The STAR TREE **SME partners** have the capacities, knowledge and experience that are needed to significantly contribute to a successful implementation of the project. The scarcity of systematic data about the current and potential development of the NWFP sector is one of the major obstacles that have to be overcome by the project. Thus, the incorporation of SMEs working in the NWFP and rural development sectors should secure the availability of the most relevant information and supporting the development of new solutions for SME and other stakeholders in the above mentioned sectors. At the same time, it is important to acknowledge that the diversity of stakeholders in these sectors also requires that the involved SME are having different backgrounds and can present different aspects. Therefore, the STAR TREE consortium includes SME that represent forest owners (FVL), NWFP traders (JTVK, IRMA), SME working in the field of rural development (LlyG, RS, FORECO), business development assistance (WRL, FORECO, INFRO, AH&Co) and resource management planning and optimisation (FORECO).

The **diversity of the STAR TREE consortium participants** can be considered both, an advantage but also a risk. As already mentioned, the advantage of such a consortium structure is the complementary of the participating organisations, which enriches the dialog within the project and positively contributes to the results of the project. On the contrary, this diversity also means differences in interest and participation objectives within the consortium and can weaken or even hinder the collaboration between partners. Therefore, an SME (PLANSINN) specialised in planning and organisation of communication in multi-stakeholder environments is included in the consortium. The involvement of this SME should safeguard, at all stages of the project, that the communication process will be lead in a way that enables and fosters the participation of all partners, regardless their background. Among others, specific SME oriented sessions will be organised at GA meetings, where the dissemination of new knowledge generated within and outside the project will be disseminated, but also encounters with local SME will be organised for exchange of experience, problems and potential solutions (e.g., experience in establishing a system of licences

for mushroom picking, establishment of chestnut producer networks). These approaches will not only guarantee the improved internal communication and participation, but will also help to attract to active participation external participants, in particular key stakeholders.

A key element of the STAR TREE project are **regional case studies**, which will be used to gain data that can help to identify the current situation in the NWFP sector and potential future development at the regional and international level. Therefore, further important criteria for building the STAR TREE consortium were the regional distribution of the partners and whether they have established networks with key stakeholders in the region. The result of this process is the STAR TREE consortium with partners equally distributed throughout Europe, coming from 10 EU member states (Austria, Finland, Germany, Italy, Latvia, Portugal, Romania, Slovenia, Spain and UK) and Turkey. Furthermore, the consortium is completed by two international organisations (FAO and EFI).

Already in the proposal preparation phase the STAR TREE consortium members were showing enthusiasm and were performing like a well functioning team, which is the result of a growing process of several months. In the first phase informal contacts took place between scientists that already earlier collaborated in the field of forest management, economics, marketing innovation and policy. As a result a core group of 7 partner institutions was formed, which had several brainstorming sessions on the basic research idea. This core group had a project development workshop that took place in Barcelona on the 26 August 2011. In this meeting the project structure and the main content of the WPs was agreed, responsibilities shared and tasks distributed. In the last phase project writing and compilation took place mainly by using teleconferencing and email communication. Based on this experience we are confident that the excellent teamwork will be extended over the whole project lifecycle and beyond.

2.3.1 Subcontracting

Legally required financial audits
Rationale:
Because there is a legal requirement to complement financial audits in case the grant requested from the EC exceeds the amount of € 375,000, audit expenses will be allocated to each participant fulfilling this criterion. These partners are EFI, UNIPD, BOKU, CTFC and METLA.

Sub-contractor:
Depending on the institutional regulations, either external or internal auditing consultants will be engaged.

Resource management (forest inventory)
Rationale:
For the implementation of the foreseen tasks in WP 2, additional forest inventory data will have to be collected. However, ISA does not have own capacities to conduct field measurements, and would sub-contract a SME to conduct the field work. The foreseen budget is 5.000€.

Sub-contractor:
SME in the Alentejo region (Portugal) conducting forest surveys.

Action research (development of new product lines)
Rationale:
Part of the tasks in the development of new product line will be subcontracted.

Sub-contractor:
Österreichische Naturparke is the provider of the NWFP and will be at the same time the main beneficiary of the product line development.

2.3.2 Additional partners

Rationale:
It is foreseen to involve additional companies in the project work. The rationale is that the project aims to analyse and to work with some of the most innovative companies. Part of the work in WP 5 is dedicated to develop a database of the best innovative products and enterprises in the field of NWFP and MPT. It is therefore of utmost

interest for the project to get these companies as partners in the project, but is so that they cannot be known beforehand. These companies will in particular be invited to contribute to the development of business solutions, new marketing methods, innovation support tools, etc. which is carried out the action research under WP1.

Potential additional partners:
It is foreseen to involve four or five relevant and interested companies or interest organisations. The total budget foreseen for these new partners is 100.00€ and it is allocated under the coordinators

2.4 Resources to be committed

2.4.1 Allocation of resources per work package and partner

Table 2.4.a shows the total requested budget and the allocation of resources among different partners and work packages (see also Table 1.3e). About 80% of the requested budget is allocated to **Research and Technological Development** (RTD) activities (WP 1-5), 15% is assigned for other activities (dissemination and training), and 6% of the budget will be used for management.

The STAR TREE project will provide tools and knowledge that will improve the provision and management of MPT and NWFP, and the competiveness and innovation in the rural sector and provide new solutions (e.g., marketing, innovation) to SME. Therefore, the biggest share of the resources (39%) will be used for **case study activities, stakeholder engagement and action research** (WP1). The central role of this WP is more than justified if we consider the general lack and fragmentation of data, poor knowledge about the needs and problems of different stakeholders across Europe, as well as the need to test and demonstrate the relevance of the project and its results to the praxis. Most of the tasks in WP1 are budgeted as RTD activities. However, a small share of the resources is assign for other activities and will be exclusively allocated for the participation in internal training courses (e.g., data collection training, organisation and moderation of multi-stakeholder events).

Approximately 12% of the budget is designated for **dissemination activities** (WP 6). It is of the utmost importance for the project to disseminate the developed solutions to a wide range of relevant stakeholders. The relatively high amount of resources is related to the objective to reach the widest possible number of stakeholder at the international, national and regional level. Therefore, all consortium partners are involved into the dissemination activities. An important part of dissemination resources will be dedicated to the development of the STAR TREE NWFP web portal, which will offer relevant information, knowledge and tools for different stakeholder groups. This web portal should become a reference address for the NWFP sector at European level.

The rest of **RTD work packages** (2, 3, 4 and 5) account in total for almost 43% of project's resources. WP 3, 4 and 5 differ only slightly in costs, while WP2 has allocated almost 18% of the budget. The differences in the budget are mainly due to the differences in data collection approaches and the number of partners participating in the implementation of WP 2.

Management activities (WP 7) will be the task of the project coordinator aided by the project manager. Any management costs for other partners will be restricted to potential auditing costs. These costs are budgeted as subcontracting under Management in form A 3.1 for the partners relevant. The overall management costs of STAR TREE are corresponding to approximately 7% of the EU-contribution and 6% of the overall budget, which indicates efficient use of resources while maximizing good governance of the consortium and of the project.

The **distribution of the budget to the different partners** is according to their activities and responsibilities in the project. EFI as the project coordinator and the coordinator of dissemination activities holds the biggest share of the budget (15%). However, it should be noticed that part (10%) of EFI's resources (100.000 €) is reserved for additional partners that will join the project consortium in the course of the project as we explained in the previous section. Among other partners the WP leaders (BOKU, CTFC, ISA, UNIPD and WRL) hold roughly equal shares of the budget (5-8%), in line with the key activities carried out by them, where the difference is mainly due to the different personal costs among these partners. Participants responsible for the coordination of more complex tasks within the work packages (FORECO, INIA, IWW, METLA and UHAM) receive also similar shares of the budget (4 - 6%). Partners with clearly defined tasks in a few work packages have a lower budget (1-3%). The budget differences between partners with similar responsibilities are mainly because salary level variation across Europe.

An important aspect in the budgeting was the equal involvement of SME partners in the project activities. In total the involved **SME[18] partners** receive approximately 28.7% of the requested budget or 36% of the total man-months allocated in the project. The share of SME partners will be increased to 30.5% in the course of the project by involving new SME (see 2.3.2).

Further, the STAR TREE project will also promote the **involvement of young researches**, which is as well reflected in the budget where 50% of the budget is allocated to junior researchers.

2.4.2 Cost types

More than half (57%) of the total budget is related to personnel costs, 4% for travel and 3% for consumables and other costs. Sub-contracts only take up 1% of the budget (see 2.3.2). 35% of the budget is related to indirect costs.

Apart from the evident need for labour in the project, travel and consumables budgets represent a relatively large part of the total budget. This is explained by the crucial importance of partner and stakeholder participation in the project, where workshops, meetings and trainings form an essential part. Other costs are also used to involve new partners into the project consortium as it was explained in section 2.3.

Table 2.4.a: Requested EU contribution allocated over participants and work packages

Partner no - Short name	Work Package no.							Total	Requested EU contribution
	WP1	WP2	WP3	WP4	WP5	WP6	WP7		
P1 EFI	254,348	28,762	0	30,929	32,929	242,991	390,874	980,833	897,957
P2 UNIPD	127,240	0	373,040	60,520	12,440	27,640	2,000	602,880	462,280
P3 BOKU	111,800	82,535	26,133	32,800	347,466	26,133	2,000	628,867	481,566
P4 UHAM	92,960	0	150,400	0	92,320	29,600	1,000	366,280	285,680
P5 CTFC	89,600	147,200	43,200	254,400	7,200	21,600	2,000	565,200	432,200
P6 ISA	141,461	279,388	0	0	8,100	29,032	1,000	458,981	354,778
P7 METLA	165,897	292,812	0	0	0	33,016	3,000	494,725	383,705
P8 INIA	70,922	164,151	0	0	0	14,673	1,000	250,746	193,811
P9 IWW	106,720	233,280	0	0	0	22,080	1,000	363,080	280,840
P10 SFI	59,554	0	0	0	5,966	7,202	1,000	73,722	58,533
P11 USV	38,400	0	0	41,720	16,360	6,400	1,000	103,880	80,400
P12 SILAVA	46,880	51,205	0	0	5,132	5,919	1,000	110,136	85,365
P13 KTU	58,426	80,136	0	0	5,966	7,202	1,000	152,730	117,789
P14 FORECO	226,800	54,400	0	76,800	25,200	33,600	1,000	417,800	324,100
P15 FAO	55,790	0	0	85,736	0	52,303	0	193,829	158,448
P16 WRL	323,516	0	0	0	12,058	29,354	1,000	365,928	284,648
P17 LlyG	136,243	0	0	0	9,766	22,573	1,000	169,582	135,121
P18 PLANSINN	146,870	0	0	0	0	94,119	1,000	241,989	207,866
P19 JTVK	114,910	0	0	0	12,502	30,136	1,000	158,548	129,521
P20 IRMA	144,442	0	0	0	7,450	17,647	1,000	170,539	134,128
P21 FVL	138,000	0	0	0	5,600	22,400	1,000	167,000	133,200
P22 AH&Co	98,440	0	0	0	11,520	34,240	1,000	145,200	120,590
P23 INFRO	30,800	0	39,200	0	0	48,000	1,000	119,000	103,000
P24 RS	136,243	0	0	0	12,886	22,573	11,000	182,702	147,461
Total	2,916,261	1,413,869	631,973	582,905	630,861	880,434	427,874	7,484,177	5,992,987
Total requested	2,239,974	1,060,400	473,980	437,180	473,145	880,434	427,874	5,992,987	

Legend: SME partners are marked with light grey shading

[18] As SME were considered: FORECO, WR, LlyG, PlanSinn, JTVK, IRMA, FVL, AH&Co, INFRO and RS

3 IMPACT

STAR TREE will, in the long-term, diversify the traditional wood-producing forestry value chain and foster the competitiveness and innovative socio-economic activities in rural communities based on enhanced business opportunities and SMEs around MPT and NWFP. SMEs will gain solutions for improving the management and profitability as well as the commoditization and marketing of non-wood products based on:
i) new knowledge and tools to optimise the provision of goods and services from MPT and develop strategies for their conservation and sustainable management.
ii) better understanding on the potentials of markets for NWFP, including the role of public and private actors in supporting the innovation processes for new products and services based on consumers' behaviour and patterns.

This will benefit the rural population as much as land owners and companies through a more competitive and robust rural economy and a better quality of life. Through diversification of their production and businesses, more land owners, processors and traders and their employees may have viable income possibilities from their properties. The companies in this sector are predominantly small or micro firms. Through better income possibilities as well as more lively communities, healthier environment and better services and amenities from the rural landscape, depopulation trends may be reduced, the life of rural communities enriched, and the infrastructure in rural areas maintained.

Diversification into non-wood products has the potential to make forestry and related business activities of forest owners and the further elements in the value chains more profitable and better prepared for economic crises. Relevant studies see significant neglected potentials in new business activities of forest owners. Numerous successful examples show great potentials of this underdeveloped sector, both on enterprise level and regional levels (e.g. Mavsar et al. 2008). It is not predicted that the non-wood sector would override the timber production overall, but it is proven that non-wood activities can have a significant income share from land resources. These potentials may be used by single land owners with the relevant interest and know-how, particularly in certain regions, such as touristic regions or regions in easy reach from metropolitan areas. For certain regions with a specific production potential, e.g. cork trees, chestnut groves, mushrooms, or berries, etc., the market value of these may easily outgrow wood production. Examples are known from the Mediterranean region but also from Scandinavian countries.

A further positive effect of a better development of non-wood products may be expected in the field of forest-related use conflicts. Forest conflicts often arise from the gap between new societal demands towards natural resources and the lacking provision from rural economies. Society puts a growing value on undisturbed nature, natural biodiversity, landscape amenities, natural and wild fruits, etc. Rural communities, however, in their traditional values systems may have these resources and capacities but lack an understanding for the urban demands and therefore neglect those interests. The better provision of urban demands through the market has the potential to reduce the conflict level around the use of forest land.

These overall impacts shall be reached in a number of ways through the work in the project and through the results of the project. In order to guarantee the practical usefulness of the project work, companies are included as research partners in the project and the project will furthermore work in close cooperation with stakeholders. This work is furthermore facilitated by a professional communication company with relevant experience in international and inter- and trans-disciplinary research projects in the field of sustainable development and natural resources. This company is a project partner and will accompany and support the communication between the research and company partners within the project as well as the participation of external stakeholders.

3.1 Expected impacts listed in the work programme

3.1.1 Contribution to the FP7 programme

Increasing productivity and competiveness, while safeguarding the quality of life, protecting the environment and different parts of the society is at the core of the FP7 Theme “Knowledge-Based Bio-Economy”. STAR TREE will improve the knowledge to help to diversify forest production and improve the competiveness and innovative socio-economic activities in the rural communities through a stronger utilisation of the NWFP and MPT, which is one of the key elements of the Area 2.1.2 *Increased sustainability of all production systems (agriculture, forestry, fisheries and aquaculture); plant health and crop protection.* The STAR TREE proposal fully addresses the scope of the call KBBE.2012.1.2-06: MPT and NWFP for an innovative forestry in rural areas. Table 3.1 shows that all challenges identified in the call text are well covered by the tasks listed in the STAR TREE work plan.

Table 3.1.a: STAR TREE activities that address topics identified in the KBBE.2012.1.2-06: MPT and NWFP for an innovative forestry in rural areas call

Topic identified in the call	STAR TREE activities addressing these topics
"generate new knowledge and tools (e.g. new silvicultural approaches, forest management practices, decision support systems, guidelines, etc.) to optimise the provision of multiple goods and services from MPT in rural areas"	**WP 2**: T2.1, T2.2., T2.3; **WP 5**: T5.6
"integrated approach will be taken to address priority issues concerning the selected multipurpose tree(s), such as the sustainable management of forests/orchards, adaptation to climate change, protection from pests and pathogens, etc."	**WP 2**: T2.1
"explore and enhance the socio-economic contribution of these trees to rural areas"	**WP 2**: T 2.3; **WP 3**: T 3.1
"new management practices needed to maximise the profitability of non-wood forest products"	**WP 2**: T2.2, T2.3;**WP 3**: T 3.2, T 3.3, T3.4; **WP 5**: T5.3
"approaches required to ensure their commoditization and marketability from the perspective of consumers' behaviour and patterns"	**WP 3**: T3.3; WP4: 4.3; **WP 5**: T5.2
"taking into account European as well as other markets"	**WP 3**: T3.1, T 3.2
"innovation approaches for creating new products and services"	**WP 3**: T3.2, T3.4; **WP 5**: T 5.1, T 5.5, T 5.6
"crucial roles that various actors play in supporting the development and implementation of new market offers"	**WP 3**: T3.2, T3.3; **WP4**: T4.4, T4.5; **WP 5**: T5.3, T5.4, T5.5, T5.6

3.1.2 Expected impacts, as listed in the call

The STAR TREE project addresses all the impacts, as listed in the call text:

Table 3.1.b: Overview of the STAR TREE approaches to reach the expected impacts listed in the call

Expected impacts of the project	How STAR TREE will achieve these impacts
"*in the long-term diversify the traditional wood-producing forestry and foster competitiveness and innovative socio-economic activities in rural communities*"	It will be the joint effort of all STAR TREE WPs to develop knowledge, guidance and tools to easier recognise and utilise the potential of NWFP and MPTs as means for income generation and maintenance of life quality in rural areas. **WP 1** collects relevant field data and information related to relevant stakeholders. This data is used to develop management systems for simultaneous provision of timber and non-timber products and services (**WP2**), development of improved marketing strategies better responding to current and future consumer needs (**WP3**), propose adjustments of policies and institutions to foster the development of the NWFP sector (**WP4**) and show innovative products and approaches (**WP5**). All developed solutions will be disseminated in custom-tailored form to relevant stakeholders in **WP6**.
"*generate new knowledge and tools to optimise the provision of goods and services from multipurpose trees*"	**WP 2** objective is to develop guidelines and tools (e.g., growth and yield models, DSS) to implement management approaches that will optimise the joint provision of goods and services from MPT. The project will create knowledge about the production possibilities of NWFPs in case study regions, and trade-offs (e.g. timber production). Adopting forest management to multiple objectives will increase forest bio-diversity and resilience to climate change and other harmful impacts.
"*and develop strategies for their conservation and sustainable management*"	Modern management approaches developed in **WP2** will promote a well balanced management that simultaneously allows conservation and a sustainable provision of goods and services. The market-oriented approach of the project will lead to a better bio-diversity as well as diversification of market opportunities of land owners.
"*provide wider understanding on the potentials of markets for non-wood forest products*"	The current and future potentials of markets for new forest products will be studied and shown in qualitative and quantitative terms for single enterprises, regions and at the international level (**WP3**). WPs **3-5** will provide, from different perspectives, guidance on new product development. NWFP market information is the basis for triggering new entrepreneurship. Profitability of NWFP-based enterprises, supply chain performance, rural impact of the sectors, as well as the roles of institutional frameworks, policies and actors in the networks will be addressed (**WP3-5**). An important part of the study is the collection of successful examples (**WP5**). The

Expected impacts of the project	How STAR TREE will achieve these impacts
	product and enterprise cases are valuable material to illustrate how non-wood activities may contribute to income of forest holdings and enterprises, and whole regions.
"*including the role of public and private actors in supporting the innovation processes for new products and services based on consumers' behaviour and patterns*"	The project will build a stronger awareness among all relevant actors about their role in supporting the innovation processes for new products in the NWFP sector by: • raising awareness about the development potentials of NWFP, reached by providing basic information on the market potentials, possible marketing solutions, and successful examples. Activities are aimed at industry representatives, policy-makers but also training institutions (**WP 3, 5**). • collecting and disseminating knowledge on consumers' preferences (**WP3**), as well as the notion of innovation systems, systemic innovation support measures, and the important roles of public and private actors in the innovation processes (**WP5**). • involving central actors in the research process through stakeholder participation and action research. Through these activities they will develop the knowledge and get a deep understanding of their own roles and opportunities (**WP1**).
"*SMEs will gain solutions for improving the management and profitability as well as the commoditization and marketing of non-wood products*"	Market success is strictly linked to the provision, structure and marketability of a product. A set of NWFP will be addressed to understand the market structure and the patterns of knowledge transfer between actors at different scale. **NWFP provision**: Enhancing the marketing skills of forest owners is a crucial point. STAR TREE aims to impact the education of a new market figure: the **NWFP entrepreneur**. In this sense, providing innovation support tools, a professional training course, and the cooperation with professional forest journals will increase the impact of the project in the field (forest owners, universities, professional schools) (**WP 3 and 5**). **NWFP structure**: Showing new possibilities of use and ways of processing NWFP in different industrial sectors will contribute to diversify NWFP and show the importance of stronger linkage between the forest owner and to industry (**WP 3 and 5**). **NWFP marketing**: Understanding the relationships between the product characteristics and the customer acceptance is the key bridge to remunerate the whole supply chain (**WP3**).
"*Public and private actors in the innovation systems will receive an understanding of their important role in the innovation processes as well as guidelines and tools for systemic innovation support.*"	The institutional analysis done in the project provides recommendations on how to adjust the institutional structure to allow for diversification of the traditional wood-producing forestry and foster competitiveness of NWFP sector, stressing the role of public and private actor in the process of institutional change (**WP4**). Moreover, the roles of all actors in the innovation systems are analysed and examples for systemic innovation support will be collected. Based on that, systemic innovation support instruments (or prototypes) will be developed for specific target groups together with practice partners and stakeholders (**WP5**). The combination of the scientific analysis and the involvement of central actors in the action research (**WP1**) is strategically chosen for a maximum practice impact.

3.1.3 Policy impacts

International processes

The main objective of the **United Nations Forum on Forests** (UNFF) is to promote "… the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end…" One of the landmarks of the UNFF is the adoption of the **Non-legally binding instrument** (NLBI) on all types of forests (Resolution adopted by the General Assembly 62/98). NLBI defines four global objectives for forests. STAR TREE will in particular contribute to two of them: (i) Reverse the loss of forest cover worldwide through sustainable forest management, including protection, restoration, afforestation and reforestation, and increase efforts to prevent forest degradation; (ii) Enhance forest-based economic, social and environmental benefits, including by improving the livelihoods of forest-dependent people;

FOREST EUROPE is the pan-European policy process for the sustainable forest management. It develops common strategies for its 46 member countries and the European Union on how to protect and sustainably manage forests. The high-priority topics of FOREST EUROPE are to strengthen the role of forests in mitigating climate change, secure the supply of good-quality fresh water, enhance and preserve forest biodiversity and provide forest

products. FOREST EUROPE has developed and adopted six criteria for sustainable forest management and a set of associated indicators to provide guidance for developing policies and to assess progress towards sustainable forest management. One set of indicators is related to the production and value of NWFP. The latest report on State of Europe's Forests (ForestEurope 2011) states that NWFP can be an important source of income, but that it is difficult to obtain a comprehensive view because of missing data in many countries. STAR TREE will generate **new data collection methodologies**, **data** and **information** related to NWFP that can support the FOREST EUROPE process.

EU policies

To better affront the current economic and social crisis, and to boost growth and job creation EU adopted the **Europe 2020 strategy** (EC 2010) that defines a new economy model for Europe. This Strategy foresees that the future EU's economy should be based on a smart, sustainable and inclusive growth. To reach this target, 7 flagship initiatives (FI) were defined. The STAR TREE project will support at least five of these initiatives.

Table 3.1.c: Europe 2020 strategy flagship initiatives addressed by STAR TREE

EU 2020 Strategy		**How will STAR TREE contribute**
Key priorities	**Flagship Initiative**	
Smart growth	Innovation Union	• Create knowledge and promote innovative ideas that can help to create **new products** and **jobs** in the NWFP sector and rural areas
Sustainable growth	Resource Efficient Europe	• identify new **economic opportunities**, • propose innovative structures and processes that can boost the **competiveness** and reduce **productions costs**
	An industrial policy for the globalisation era	• showing **innovative** possibilities for application of NWFP; • promoting and supporting **sustainable** management of natural resources; • provide knowledge, recommendations and tools that contribute to the improvement of the **business environment** and foster the establishment and functioning of **SME**
Inclusive growth	An agenda for new skills and jobs	• providing knowledge and skills to stakeholders that can help to find new **job** or **business opportunities** • generating guidance related to business establishment, policies and regulation that can **improve** the **conditions** for c**reation** of new **jobs** in the sector/area
	European platform against poverty	• creating knowledge (*powerful tool against poverty*), offering new business opportunities will contribute to a **higher quality of life in rural areas**, • emphasizing the importance of networking as an opportunity to create new opportunities in the rural areas and for supporting **social inclusion** • promoting **building partnerships** between private and public actors supporting the innovation structures and processes in the NWFP and rural areas

The essential rules governing the **Rural Development Policy (RDP)** for the period **2007 to 2013** are set out in the Council Regulation (EC) No 1698/2005. This Regulation, defines three focus themes (known as "thematic axes"):

- improving the competitiveness of the agricultural and forestry sector;
- improving the environment and the countryside;
- improving the quality of life in rural areas and encouraging diversification of the rural economy.

The work and outputs generated by STAR TREE will support all of them by providing knowledge and tools for a sustainable rural development through a stronger utilisation of business opportunities based on NWFP and MPT. This will benefit the rural population as much as land owners and companies through a more competitive and robust rural economy and a better quality of life. It is expected that the **RDP** for the next period (**after 2013**) will abandon the thematic axes division and will even stronger support and emphasize the implementation of integrated, high-quality and original strategies for sustainable development, with a strong focus on partnership and networks of exchange of experience. Also in this case STAR TREE will provide strong support, by generating understanding of the effects of establishment of partnerships and networks in order to create new products and markets.

First and foremost, however, the STAR TREE will considerably contribute to the objectives of the **EU Forest Strategy** (Council Resolution 1999/ C 56/01) and the **EU Forest Action Plan** (2006). The Forest Action Plan sets for main objectives: (i) improving long-term competitiveness; (ii) improving and protecting the environment; (iii) contributing to the quality of life; and (iv) fostering coordination and communication, and sets 18 key action to reach these objectives. STAR TREE will address all of the main objectives of the EU Forest Action plan and in particular the following key action:

Table 3.1.d: Forest Action Plan Key Actions addressed by STAR TREE

EU Forest Action Plan Key Action	How will star tree address it
KA 1: Examine the effects of globalisation on the economic viability and competitiveness of EU forestry	• understanding past and current trade flows and characteristics of the international NWFP market will provide a picture of the current competiveness of the EU NWFP sector and serve as the background for an outlook analysis
KA 3: Exchange and assess experiences on the valuation and marketing of non-wood forest goods and services	• analysing the current market situation at the regional and international level will provide good background information for development of adequate marketing strategies in the NWFP sector • providing guidance and tools for development and implementation of new marketing approaches • providing examples and experience innovative practices in the NWFP sector and presentation of new products
KA5: Foster the cooperation between forest owners and enhance education and training in forestry	• promoting new marketing approaches that are based on establishment of partnerships and networking (e.g. territorial marketing) • develop training courses for SME to improve their knowledge on marketing of NWFP • organise knowledge exchange, consultation and dissemination meetings with relevant stakeholders to raise awareness about the potentials of the NWFP sector a • provide guidance on the roles of different stakeholders in supporting innovation systems in the NWFP sector
KA 9: Enhance the protection of EU forests	• developing tools and guidelines that will simultaneously enhance the sustainability of resources provision and their conservation
KA 10: Encourage environmental education and information	• include different stakeholders in the disseminate knowledge and awareness about the potentials of the NWFP sector
KA 11: Maintain and enhance the protective functions of forests	• developing guidelines and tools for a balanced and sustainable production of wood and NWFP and services
KA 17: Encourage the use of wood and other forest products from sustainably managed forests	• new marketing approaches for creating new demand, • providing examples of new products and uses of NWFP that can satisfy the demand of emerging customers

National level

STAR TREE's activities mentioned in the previous paragraphs will also support the national forest policies of EU member states, which provide the framework for implementing international forest related commitments. The context analysis in WP1 and the continuous involvement and exchange with stakeholders throughout the project (WP6) will ensure that the relevant regional policy contexts will be considered in the case studies and that the provided results will also serve the regional and national policies needs.

STAR TREE will provide information for a further development of forest policies, but also other relevant policy fields. The policy analysis done in the project provides recommendations on how to adjust the institutional and organizational structure to allow for diversification of the traditional wood-producing forestry and foster competitiveness of NWFP sector. They will include suggestions for the improved incorporation of NWFP into national policies and forest management plans, as well as suggestions concerning the roles of public and private organizations related to NWFP sector.

3.1.4 Impacts on stakeholders

Key stakeholders listed in this call are land owners, forest managers, entrepreneur (SME), potential users, local and sectoral public authorities, regional development agencies, innovation support structures and rural communities. STAR TREE will address these stakeholder groups in regions where the case studies are implemented and the regional stakeholder groups will be established and involved into the consultation process; at the SME level through the in-depth case studies and action research; at the national and European level the STAR TREE web portal should be used as a reference knowledge and data source.

The project underlines the importance of the stakeholder engagement and active dialogue by dedicating an important part of WP1, while several tasks in other Work Packages are specifically designed to develop knowledge, tools and guidelines for relevant stakeholders, as follows. While stakeholder engagement throughout the project has

a special focus on the regionally important stakeholders in the case studies, the project will address relevant European stakeholder in the second half of the project and in its midterm and final dissemination oriented stakeholder activities.

3.1.5 Advancing science

The consortium members have excellent networks within the European and global research community. Table 3.1.e documents relevant past and current projects at the regional and EU level with STAR TREE partner involvement while all partners are also involved in relevant national projects. The personal links to these projects will secure that the proposed work will build on past achievements, utilize possible synergies and create added value.

Table 3.1.e: A selection of EU projects relevant for the STAR TREE proposal

Project (funder)	Relevance for STAR TREE	STAR TREE partners
AGORA (FP7)	Increment of NWFP information in Mediterranean basin through the enhancement of research capacities	EFI, UNIPD, ISA
E 30 (COST)	Better understanding of the problems and possible solutions of the forest based small-scale forestry	BOKU, UHAM, UNIPD, USV
E51 (COST)	Innovation theory, policies and processes, innovation in territorial goods and services, success factors and barriers for innovation, marketing of NWFPS	BOKU, UNIPD, EFI, USV, SILAVA
FP0603 (COST)	Review of the existing NWFP models	ISA, METLA, EFI
FP0804 (COST)	Forest DSS collection and analyses of their properties	BOKU, METLA, SILAVA,
EFORWOOD (FP6)	Forest sector policy database; assessment of social values.	BOKU, EFI, CTFC, ISA
FONASO (Erasmus Mundus)	Research on NWFP management and supply chain based on social capital and networks	UNIPD
NEWFOREX (FP7)	Promotion of forest externalities and NWFP through the implementation of market based mechanisms.	EFI, UHAM, UNIPD, CTFC, METLA
RES (FAIR1)	Niche Markets for Recreational and Environmental Services from Multiple Forest Production Systems (RES)	UHAM, UNIPD, BOKU
SUTROFOR (Erasmus Mundus)	NWFP management and promotion in European mountains	UNIPD
VOLANTE (FP7)	Trade off analysis between goods and services	EFI, BOKU

3.1.6 Assumptions and external factors that may determine whether impacts will be achieved

From a purely scientific point of view, there is no reason to suspect any external factors to jeopardise the project's potential to accomplish its scientific goals. The required competence to secure this is represented within the Consortium. However, the success of the project in terms of actually influencing forest resource management, forest user groups and policy practice, design and making will depend on the motivation, and the willingness and ability of the key stakeholders to get engaged in the STAR TREE project. And on the willingness of all stakeholders to participate in and pursue their interest in the dissemination and communication efforts outlined below.

These are external factors, as seen from the STAR TREE project. Thus, the project's success depends partly on the assumption that stronger utilisation of business opportunities based on NWFP and MPT remain an important topic of the relevant stakeholders. The Consortium is very optimistic that this will be the case and the spontaneous readiness of key regional stakeholders to join participate in projects activities. In addition, STAR TREE can implement countermeasures to limit any negative effects of the external factors. A prominent such countermeasure is an extensive and practice oriented dissemination and communication effort.

3.2 Dissemination and/or exploitation of project results, and management of intellectual property

The main challenge of STAR TREE is inherent in its multi- and trans-disciplinary nature. Multi discplinarity will integrate aspects of resource management and modelling (WP2), economics and marketing (WP 3), policy and rural development (WP 4), and innovation research (WP 5) in a consistent and logical way. Trans-disciplinarily responds to the practical demands in fostering rural development and as a signal therefore the strong involvement of SMEs, which requires multi-modal and multi-lingual knowledge transfer, different interfaces to and from science, and the development of tools to enhance self-organisation of partners and interest group beyond the life-time of the project.

Table 3.2.a: Main outcomes and products that will form the STAR TREE dissemination package

WP	Name	Short description	Form	Target audience
1	New NWFP implemented	NWFP initiated within the regional case studies by STAR TREE action research	List of implemented NWFP	Forest owners
	SME's management improvements	Five SMEs with enhanced economic an ecological sustainability	Description of improvements with SME	SME
2	Wood and more	Silvicultural guidelines for selected MPT	Handbook on "How to do"	Forest owners
	NWFP tree tables	Tables of production possibilities by species	Tables	Forest owners
3	Marketing training course	Professional marketing training course for forest owners	Training course and material (printed and electronic)	Forest owners
	Territorial Marketing Guidelines	Guideline manual for local NWFP	Electronic	Forest owners, SME
	NWFP Outlook study	A market report on the future chances and challenges of NWFP	Industry and policy decision paper	Industry; decision makers, forest owners
	Statistical improvements	Recommendations for EUROSTAT from actual systematic to future	Paper on new systematic	EUROSTAT, Forest Europe, UNECE, FAO
4	Checklist for legal and institutional advantage, hinder and change	Checklist laws, incentives and other institutional arrangements to support or hinder NWFP development and recommendations for improvement	Policy recommendation checklist	policy makers
	Institutional quality assurance (QA) system	Institutional structures needed to support NWFP	Checklist for institutional qualification	stakeholder
5	Forest owners best practise communication	Articles in professional journals in attractive cases	Articles maybe special issues	forest owners
	Resource substitution potential	List of resources and their utilization potential	Checklist	industry Forest owners
	Innovation generator (innovation database and tool kit)	Website offers innovation examples as ideas for product development as well as innovation support tools	Website	forest owners, interest groups, consulters and advisors, SME
	Innovation guidelines	Target group oriented innovation strategies and guidelines	Website tool	Public and private institutional actors
6	Webportal	Portal for internal and external communication, hub of outcomes and products, community of practice	Webportal	all

STAR TREE builds on a consortium that is rich in experience on knowledge transfer, education, and with a huge portfolio of dissemination means. Yet, dissemination usually does not work in a top-down fashion. In planning the dissemination activities, the wide range of users and target groups have been taken into account since they all have their specific requirements. Therefore, one type of communication does not serve all of the users. Initially, a dialogue between the target groups and the project will be established and facilitated by contacts of the regional stakeholder groups (case study areas).

Nonetheless, some cornerstones of the STAR TREE dissemination can be outlined ex-ante. A detailed dissemination plan will be developed in the first six months of the project. The specific elements need to be adapted to the needs of the target groups both in time and space. Central element will be the **STAR TREE dissemination package** that collects and synthesis findings from the WPs: the WPs will generate a wealth of outcomes and

products (Table 3.2.a), the strategic integration of which shall secure maximum impact of dissemination and exploitation to be outlined in the following.

Empowerment: towards new forms of rural development

STAR TREE considers its operational, applied research approach and the large bandwidth of SME involvement beyond tokenism. The project consortium is willing to harmonize the fragmented landscape on knowledge and collaboration in this field, as well as to enhance the status of MPT and NWFP from a cross-cutting issue without clear representation to a new modus of communication and business interaction. STAR TREE aims at going beyond top-down dissemination of scientific findings, but wants to build ground for new awareness-rising towards the potentials of local and regional products (incl. new products and product lines), new and innovative roles of natural goods in the nutrition industries, and the opportunities and constraints to overcome for values generation, employment and income in rural areas all over Europe (incl. demonstrations & best practices, management guidelines, marketing trainings, innovation tool kit).

Taking full respect of the heterogeneity of demands and supply of NWFP in Europe a regionalised dissemination approach is pursued, fully supported by the project partners active in these regions. Also, a regionalized approach implies that there could be certain language barriers for the proper dissemination of project results, especially to forest practitioners and regional policy makers in the case study regions. Therefore, targeted activities will also be undertaken in various national languages aimed directly at the end-users in the countries hosting case studies and in national forest journals at the direct responsibility of the involved partners in the regions.

Yet, a common umbrella shall be a permanent platform of communication, interaction, innovation exchange and trading opportunities that shall grant empowerment of all groups of stakeholders (i.e., land users, land owners, managers, processors, traders, policy-makers) in terms of the STAR TREE webportal.

Agenda setting: reaching policy- and decision makers

STAR TREE takes respect of the strong need of stakeholder interaction and the need for personal contacts and exchange with this group. Hence, it will organise short stakeholder briefing events in the case study regions including meetings with policy makers at national level as a key contribution to an improved science-policy interface.

The following means will be set up:

Informal briefings for European Commission officials and other key stakeholders in Brussels will be held at mid-term and towards the end of the project. These briefings will provide an update on the project, draw attention to policy relevant findings and emerging topics and provide an opportunity to receive feedback from stakeholders outside the stakeholder panels of STAR TREE throughout the project. The newly established EFI ThinkForest - a European high-level forum on the future of forests - shall serve as forum for these activities to connect with EC, Forest Europe, FAO, UNECE incl. contributions to their resource reports (EUROSTAT, Pan-European SFM Criteria & Indicators, Forest Resource Assessment –FRA)

Formal interaction with Technology Platforms and other relevant bodies: Special attention will be given to presentations at existing European and international platforms such as the Forest-Based Sector Technology Platform to secure compliance with SRAs and other relevant strategic guidance.

Policy Briefs: Policy Briefs on the MPT and NWFP will be designed to translate scientific information into non-technical and practical language (science-policy and science-practice transfer) and visual elements to support the main messages of STAR TREE. Proven EFI publication series such as EFI policy briefs and the series "What science can tell us" shall give particular support to this objective.

Media and communication

STAR TREE webportal: The STAR TREE portal is instrumental for a highly effective dissemination output and exploitation after project life. The impact of this strategy shall be guaranteed by an instrument mix of knowledge transfer, communications tools and new media, community-building and business means, and customized guidelines and training material.

The central elements that go beyond conventional project dissemination activities are:

- STAR TREE Pathways: provide technical briefs for managing NWFP, and electronic management and marketing guidelines that synthesize the findings of all WPS to operational recommendations, and best management practice to secure a sustainable long-term impact of the project

- STAR TREE Marketplace: will be developed and tailored to foster B2B, B2C, and C2B interactions by sharing information on regional and international value chains, chains of custody, customers (supply&demand), and information on best practices and feasibility studies gained from the project
- STAR TREE Community of Practice (CoP): shall foster and manifest business partnerships, maintain and update databases (e.g. innovation database, experts & customers) and secure feedback between science and practice on professional, continuous level.

Also, the portal will be used as a window for the scientific teams, in order to present the STAR TREE results, project related publications and other outputs. Blogs and other new media will be utilized to discuss project outputs and issues related to multifunctional mountain forest management with interested stakeholders, incl. Web 2.0 solutions.

Project information: A two to four page leaflet and a newsletter will be produced at least twice during the project in all languages represented in the consortium. It will contain general information about the work plan, participants, and published results. It will be used for broad distribution to potential audiences in the EU institutions and Member States, at scientific meetings, for industry and other stakeholders (e.g. via the EFI communication network). Summaries of overall STAR TREE results will be produced for specific target audiences (for forest practitioners, school education, sectoral stakeholders, and non-governmental organisations).

Contacts to media and professional journals: Suitable printed media will be identified to publish articles about the STAR TREE project and its results. This will include also articles in local and professional media. These targeted contributions will be accompanied by regular press and news releases to disseminate newsworthy events or results to be distributed through existing contact networks and distribution lists of the partner institutions. Inter alia, EFI will use its network to more than 700 journalists to disseminate press releases on key messages and project breakthroughs in regular terms.

Of particular importance to reach forest practitioners will be **publications in professional journals**. The partners will publish thematic and instructive papers in professional journals in English and other languages. The partners will enable and commit each other to translate relevant papers into the languages covered, thereby multiplying the impact and reaching a huge number of forest and other land owners and further stakeholders and decision-makers and stakeholders on national and regional levels. Further, STAR TREE will take full advantage of its trans-disciplinary consortium and employ a variety of expert networks form science to business that are back-ups for the involved partners.

Scientific Community

STAR TREE shall build a nucleus for a new form of scientific community on multipurpose tress and NWFP that is democratic and open

Scientific publications will be written in all relevant work packages and published in international peer-reviewed journals, including several synthesis publications, to disseminate the project results among the scientific community and to bring the studied topics into scientific discussion. According to the new Open Access regulation of the EC copies of peer-reviewed publications will be made electronically available free of charge via the publisher. Arising expenses will be covered by the general management costs allocated to the coordinator**.**

International science conference: The final general project meeting will be combined with an open *international trans-disciplinary conference* "Non-wood forest products – The forest goods of the future?" The conference shall be a combined panel and meeting place for scientists, practitioners, business partners, and stakeholders to discuss the new state of the art and give an outlook on future development and challenges (foresight workshop). Special room will be given to a STAR TREE young researcher's forum to carry along the findings, motivations, and open issues with a new generation of actors in the field of MPT and NWFP.

Representation: Scholars involved in STAR TREE are strongly integrated in the international research science in the fields of climate change impact assessments and adaptive management, forest modelling, management, decision-support, forest policy and economics, and innovation research. This will be used to ensure visibility for STAR TREE results at international events of all included scientific communities.

Training and education

Training of Professionals including SMEs: STAR TREE Pathways, a set of customized electronic Guidelines for adaptive and innovative management of multi-purpose trees and NWFP, will be a central output for training activities in STAR TREE. It can be used in education and life-long learning activities (e.g., train the trainer). Thematic workshops in the case study regions will present project output by means of cases and issues of a more local relevance, and will focus on (i) management and (ii) marketing of NWFP tailored for involved and other interested SMEs. The effect of this activity will be to reach out and bridge effectively the gap between science and actual policymaking and practice. It is envisioned that with such activities, members of STAR TREE will for a reasonable cost be able to meet and inspire, face-to-face, 20-30 potential users of project output.

Educational use of the results: Many of the STAR TREE consortium partners are actively involved in educational and training programmes at European universities. Findings of STAR TREE shall be integrated in courses and curricula, and at least one cross-cutting international course will be organised by members of the consortium (e.g., European Forestry MSc, EFI Winter-Summer School). Education based on STAR TREE will further facilitate an early exchange of students and practice and business partner as flagship of applied science and science-business interaction at educational stage. As for future multiplication effects, also the collaboration with schools is sought (e.g., a regional STAR TREE school afternoon in the case study region).

3.2.1 Exploitation and Intellectual property rights policy

Acknowledging the SME and stakeholder supporting character of the KBBE Theme, the common aim of the consortium is to make the results of STAR TREE open to third parties as widely as possible, without infringing any partner's previous commitments e.g. regarding pre-existing know-how. The responsibilities and roles of the different Participants will be described in the **Consortium Agreement** (CA). The Desca Simplified FP7 Model Consortium Agreement (http://www.descafp7.eu/DESCA/descahome.htm) will be used as basis for the Consortium agreement. Other aspects that will be addressed formally in the CA are Intellectual Property Rights, Access Rights, Confidentiality and Liability and Indemnification and these will be managed in accordance with the regulations in the EU contract.

The provisions from the EC Guidelines on IP management in collaborative projects and principle agreements will be considered during the proposal phase in the following terms:

Pre-existing, **"background" know-how** and tools (including software) will be made available to the consortium members free of all charges, licenses or fees whenever this is necessary to perform the work.

However, partners remain the owners of their specific "background" IPRs that they will make available/ accessible to the consortium, i.e. ownership of background is not affected by participation in the project.
Background will be clearly documented within the CA. Improvements in existing tools/techniques/prototypes (i.e. in background) arising from project work are treated as background knowledge.

"Foreground" know-how is owned by the partner (i.e., researchers, associations, companies), if not otherwise agreed upon by the consortium. This refers to new elements of knowledge or new tools developed by the project. All foreground knowledge produced during the project will be assessed by the Project Management Team in terms of need for IPR protection before it is further disseminated and decisions sought through consultation with the owner party.

A post-project management group of use rights (STAR-MG) under the premises of a joint ownership arrangement within the consortium will control further use and development of Foreground tools and know-how under the premises of open access to the results of STAR TREE, and secure existing IPRs and claims arising from background know-how. This relates particularly to outputs such as STAR TREE market place, CoP, and databases. Intellectual Property arising from the STAR TREE undertakings, which is thought to be commercially/non-commercially exploitable (with specific focus on SMEs and policy makers) will be identified.

The main principle will be to long-term maintenance of the STAR TREE portal and CoP, safeguarded by minimum 3-years maintenance of the portal by the PC and seeking a business solution beyond. Further, an **exploitation plan** will be developed in T6.1 that will foster the implementation and further use of project outcomes and will incorporate expressed stakeholder needs and clarifies IPR issues, particularly in relation with SME partners.

4 ETHICAL ISSUES

The consortium can confirm that no Ethical Issues as described in Annex 4 of the Guides for Applicants for collaborative projects under PF7 KBBE.2012.1.2-06 apply to the STAR TREE and that no ethical committee regulatory organisations will need to be approached during the life of the project.

Data protection issues: Part of the STAR TREE activities will be built upon the involvement of regional stakeholder groups. This research will be carried out in accordance with the ethical standards and commonly applied ethical guidelines for social research. Before an individual becomes a Subject of Research, he/she shall be notified of: 1) the aims, methods, anticipated benefits, and the importance of their participation in the study; 2) his/her right to abstain from participation in the research and his/her right to terminate at any time his/her participation; and 3) the confidential nature of his/her replies. Personal details will not be released to the client or to third parties. The identity of individuals from whom information is obtained in the course of this project shall be kept strictly confidential, except if the individual concerned has consented otherwise. The project team will avoid unnecessary collection and use of personal data. Only contact information (names, addresses, telephone numbers and email addresses) will be collected and used to enable the stakeholder engagement process. In this respect, all the appropriate measures will be taken to prevent the publishing or disclosure of personal data collected.

ETHICAL ISSUES TABLE

(Note: Research involving activities marked with an asterisk * in the left column in the table below will be referred automatically to Ethical Review)

	Research on Human Embryo/ Foetus	YES	Page
*	Does the proposed research involve human Embryos?		
*	Does the proposed research involve human Foetal Tissues/ Cells?		
*	Does the proposed research involve human Embryonic Stem Cells (hESCs)?		
*	Does the proposed research on human Embryonic Stem Cells involve cells in culture?		
*	Does the proposed research on Human Embryonic Stem Cells involve the derivation of cells from Embryos?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	X	

	Research on Humans	YES	Page
*	Does the proposed research involve children?		
*	Does the proposed research involve patients?		
*	Does the proposed research involve persons not able to give consent?		
*	Does the proposed research involve adult healthy volunteers?		
	Does the proposed research involve Human genetic material?		
	Does the proposed research involve Human biological samples?		
	Does the proposed research involve Human data collection?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	X	

	Privacy	YES	Page
	Does the proposed research involve processing of genetic information or personal data (e.g. health, sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction)?		
	Does the proposed research involve tracking the location or observation of people?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	X	

	Research on Animals	YES	Page
	Does the proposed research involve research on animals?		
	Are those animals transgenic small laboratory animals?		
	Are those animals transgenic farm animals?		
*	Are those animals non-human primates?		
	Are those animals cloned farm animals?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	X	

	Research Involving Developing Countries	YES	Page
	Does the proposed research involve the use of local resources (genetic, animal, plant, etc)?		
	Is the proposed research of benefit to local communities (e.g. capacity building, access to healthcare, education, etc)?		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	X	

	Dual Use	YES	Page
	Research having direct military use		
	Research having the potential for terrorist abuse		
	I CONFIRM THAT NONE OF THE ABOVE ISSUES APPLY TO MY PROPOSAL	X	

5 CONSIDERATION OF GENDER ASPECTS

Consideration of gender and equal opportunity aspects

In accordance with the European Commission Science and Society Action Plan, the STAR TREE project will contribute to gender equality in science by supporting equal opportunities for men and women. Gender equality support will apply to both researchers and support personnel, e.g. technical and administrative staff employed. Women and men are entitled to be equally represented in all fields of study and in all types of posts. When selecting the participating institutions and persons to be involved in the STAR TREE consortium, the main criteria have been the presence of a high specific expertise and scientific excellence in one or more of the fields covered by STAR TREE. Past experience in European level cooperation and research projects has been another important criterion used, e.g. to select and distribute the roles as WP-leaders across the institutions. Gender has not been a selection criterion.

Nevertheless, the STAR TREE has from the outset a reasonable balance in terms of gender representation. Three of the seven WP-leaders are experienced female researchers (WP1: Jenny Wong; WP2: Margarida Tomé; WP5: Irina Prokofieva). Also, looking at the name of researchers involved from the partners in Section 2.2, it is evident that STAR TREE will involve a – gender wise - fairly balanced group of researchers at both junior and senior level.

Concept to promote gender equality in STAR TREE

The application of equal opportunity policies in the STAR TREE project recruitment will make efforts to consider equal gender representations in the project's committees and staff and will in particular encourage qualified women to apply for any job openings in the project's working groups on that account. The recruitment policy of the partners within STAR TREE is also committed to take special considerations to gender issues by:

- providing flexible, individual arrangements for researchers to help reconcile work and private life
- securing deputy arrangements for parental and sick-leave
- providing information about these provisions in advertisements for job openings in the project
- securing that hiring criteria focus entirely on qualifications relevant for the post in question and remain blind to gender, race, religion and any other issue of no relevance to the scientific or technical qualifications needed in the position considered.
- giving preference to female applicants, in case of equal qualification.

During the project life, the awareness of the task of gender equity will be raised at the project management team and general meetings. This will be in relation to recruitment issues and stakeholder involvement. Management measures will be evaluated in terms of their effect on gender representation, carrier enhancement of young men and women, and realisation of equity goals. All the communication and dissemination work will aim at the adequate visibility of women, by content, with results, and names.

Gender issues in Research

Beside the project work level, gender aspects also play a role in the field of the STAR TREE research. NWFP and MPT offer great promise for women, in particular in poorer rural areas (also in Europe), as an important source of main or additional income and contribute to poverty reduction (IDAF 2008). Therefore, STAR TREE will also contribute to improve the situation of women in rural areas, by creating knowledge and new business opportunities related to NWFO and MPT. Moreover, the role of gender will be one important criterion to take into account in the analysis of actors and actor networks.

6 REFERENCES

Aizpurua, J, Galilea, P. 2000: Property rights on the forest resources. Paper presented to the Annual meeting 2000. "The economics of institutions in the new millennium" of ISNIE (International Society for New Institutional economics), Tübingen, September 22–24, 2000, 33 p

Alexander, S. J., S. N. Oswalt, and M. R. Emery. 2011. Nontimber forest products in the United States: Montreal Process indicators as measures of current conditions and sustainability. U.S.D.A. - Forest Service, Pacific Northwest Research Station., Portland, Oregon, USA.

Andersson FO, Feger KH, Huttl RF, Krauchi N, Mattsson L, Sallnas O, Sjoberg K (2000) Forest ecosystem research - priorities for Europe. Forest Ecology and Management 132 (1):111-119

Asheim, B. and M. S. Gertler (2005). The geography of innovation: regional innovation systems. The Oxford Handbook of Innovation. J. Fagerberg, D. C. Mowery and R. Nelson. Oxford and New York, Oxford University Press.

Attitudes Towards Non-wood Forest Products and Services in Switzerland and an Assessment of Their Market Potential, Small-scale Forestry, ISSN 1873-7854, 12/2007, Volume 6, Issue 4, pp. 443 – 452

Baker, W. E. 1984. The Social Structure of a National Securities Market. The American Journal of Sociology 89:775-811.

Barigozzi, M., G. Fagiolo, and D. Garlaschelli. 2010. Multinetwork of international trade: A commodity-specific analysis. Physical Review E 81:046104.

Bauer, J., Kniivilä, M., Schmithüsen, F. 2004. Forest legislation in Europe: How 23 countries approach the obligation to reforest, public access and use of non-wood forest products. Geneva Timber and Forest Discussion Papers no. 37, ECE/TIM/DP/37, United Nations, New York and Geneva, 39 p.

Bhattacharya, K., G. Mukherjee, and S. S. Manna. 2007. The International Trade Network. Physical Review E arXiv:0707.4347v1.

Bhattacharya, K., G. Mukherjee, J. Saramaki, K. Kaski, and S. S. Manna. 2008. The International Trade Network: weighted network analysis and modelling. Physical Review E arXiv:0707.4343v2.

Bledsoe, K. L., and J. A. Graham. 2005. The use of multiple evaluation approaches in program evaluation. American Journal of Evaluation 26(3):302–319.

Böcher, M. (2008). "Regional Governance and Rural Development in Germany: the Implementation of LEADER+." Sociologia Ruralis 48(4): 372-388.

Bokhorst, S., J.W. Bjerke, F.W. Bowles, J. Melillo, T.V. Callaghan and G.K. Phoenix, Impacts of extreme winter warming in the sub-Arctic: growing season responses of dwarf shrub heathland. Global Change Biology, 14 (2008), pp. 2603–2612.

Boland DJ (1989) Trees for the tropics: growing Australian multipurpose trees and shrubs in developing countries. Australian Centre for International Agricultural Research,

Bollobas, Bela. 2002. Modern Graph Theory, Graduate Texts in Mathematics: Springer.

Borgatti, S. P., A. Mehra, D. J. Brass, and G. Labianca. 2009. Network Analysis in the Social Sciences. Science 323:892-895.

Borges PJ, Marques S, Borges JG, Tome M (2009) Scenario Analysis Applied to Cork and Holm Oak Forest Ecosystems in Southern Portugal. In: Palahí M, Birot Y, Bravo F, Gorriz E (eds) Modelling, Valuing and Managing Mediterranean Forest Ecosystems for Non-Timber Goods and Services. vol 57. EFI Proceedings, pp 49-56

Borges, J.G., Falcão, A., Miragaia, C., Marques, P. and Marques, M. (2003). A decision support system for forest resources management in Portugal. In: Arthaud, G.J. and Barrett, T.M. (eds) System Analysis in Forest Resources, Managing Forest Ecosystems Vol. 7. Dordrecht, Netherlands: Kluwer Academic Publishers, pp. 155-164.Boschma, R. and K. Frenken. 2011. The emerging empirics of evolutionary economic geography. Journal of Economic Geography 11:295-307.

Boschma, R., and K. Frenken. 2011. The emerging empirics of evolutionary economic geography. *Journal of Economic Geography* 11 (2):295-307.

Bouriaud, L., 2002. Economic and policy analysis of property rights allocation in Central and Eastern European countries. Doctoral thesis, ENGREF Nancy, 350 p. In French.

Bouriaud, L., 2007. Property Rights Characteristics Relevant for Innovation and Enterprise Development in Small-scale Forestry. Research paper in Small-Scale Forestry, Springer Netherlands, ISSN 1873-7617 (Print) 1873-7854 (Online) , Volume 6, Number 4 / décembre 2007, pp. 359-372

Braczyk, H.-J., P. Cooke and M. Heidenreich, Eds. (1998). Regional innovation systems: the role of governance in a globalized world. London and Pennsylvania, UCL.

Breschi, S. and F. Malerba (1997). Sectoral Innovation Systems: Technological Regimes, Schumpeterian Dynamics and Spatial Boundaries. Systems of Innovation. Technologies, Institutions and Organizations. C. Edquist and B. Johnson. London and Washington, Pinter: 130-156.

Bugalho MN, Plieninger T, Aronson J, Ellatifi M, Crespo DG (2009) Open Woodlands: A Diversity of Uses (and Overuses). In: Aronson J, Pereira JS, Pausas JG (eds) Cork Oak Woodlands on the Edge: Ecology, Adaptive Management and Restoration. Island Press, pp 33-45

Buttoud Gerard, Irina Kouplevatskaya-Buttoud, Bill Slee, Gerhard Weiss (2011): Barriers to institutional learning and innovations in the forest sector in Europe: Markets, policies and stakeholders. Forest Policy and Economics 13 (2011) 124–131.

Cai, M., D. Pettenella, and E. Vidale. 2011. Income generation from wild mushrooms in marginal rural areas. Forest Policy and Economics 13:221-226.

Calama R, Tome M, Sanchez-Gonzalez M, Miina J, Spanos K, Palahi M (2010) Modelling non-wood forest products in Europe: a review. Forest Systems 19:69-85

Cashore, B. 2009. Key Components of Good Forest Governance in ASEAN Part I: Overarching Principles and Criteria. Exlibris.

Cesaro, L., Merlo, M.; Milocco, E. 1998. Privatising public goods and services provided by forestry: Modification of property rights or marketing techniques? In Jöbstl, H. et al. (eds.): Institutional aspects of managerial economics and accounting in forestry, Proceedings of International Symposium, Roma-Ostia, Italy, April 1998, 59–86.

Croitoru, L. 2007. Valuing the non-timber forest products in the Mediterranean region. Ecological Economics 63:768-775.

Cunningham, A. B. 2011. Non-timber Products and Markets: Lessons for Export-Oriented Enterprise Development from Africa. Non-Timber Forest Products in the Global Context. Pages 83-106 in S. Shackleton, C. Shackleton, and P. Shanley, editors. Springer Berlin Heidelberg.

De Romàn, M. and E. Boa. 2006. The marketing of <i>Lactarius deliciosus</i> in Northern Spain. Economic Botany 60:284-290.

Dolsak N.and E. Ostrom, 2003. The challanges of the commons. In: N Dolsak and E Ostrom (Editors), The commons in the new millenium: challanges and adaptations. The MIT Press, Cambridge.

Dupraz C, Burgess P, Gavaland A, Graves A, Herzog F, Incoll LD, Jackson N, Keesman K, Lawson G, Lecomte I, Liagre F, Mantzanas K, Mayus M, Moreno G, Palma J, Papanastasis V, Paris P, Pilbeam DJ, Reisner Y, Van Noordwijk M, Vincent G, Werf Van der W (2005) Silvoarable Agroforestry for Europe. SAFE final report. Synthesis of the SAFE project.

EC. 2010. Europe 2020: A strategy for smart, sustainable and inclusive growth. http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF

EC. 2011. Communication from the Commission to the European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions: A Resource-Efficient Europe – Flagship Initiative Under The Europe 2020 Strategy. European Commission.

Edquist, C. (1997). Systems of Innovation Approaches - Their Emergence and Characteristics. Systems of Innovation. Technologies, Institutions and Organizations. C. Edquist. London, Pinter.

Egger, P. and M. Larch. 2008. Interdependent preferential trade agreement memberships: An empirical analysis. Journal of International Economics 76:384-399.

EU. 2005. Council Regulation (EC) No 1698/2005 of 20 September 2005 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD). In Offical Journal L 277, edited by C. o. t. E. Union. Brussels.

Eurostat. 2006. Quality Report on International Trade Statistics. European Communities, Luxembourg.

Eurostat. 2008. Quality Report on International Trade Statistics. In Eurostat, Methodologies and Working paper, edited by Eurostat. Luxembourg: European Communities.

FAO, 1995. Report of the International Expert Consultation on Non-Wood Forest Products. FAO, Rome.

FAO, 2004. Forest legislation in Europe: How 23 countries approach the obligation to reforest, public access and use of non-wood forest products, by Josephine Bauer, MatleenaKniivilä, Franz Schmithüsen, Geneva Timber and Forest Discussion Paper 37.

FAO. 1999. Towards a harmonized definition of non-wood forest products. Unasylva 50 (1999/3).

FAO. 2007. Trade Measures - Tools to Promote the Sustainable Use of NWFP. An Assessment of Trade Related Instruments Influencing the International Trade in Non-Wood Forest Products and Associated Management and Livelihood Strategies. FAO, Forest Products Division, Non-Wood Forest Products Programme, Rome, Italy.

Forest Europe, UNECE, and FAO. 2011. State of Europ's Forest 2011. Status and Trends in Sustainable Forest Management in Europe.

Gibson C. C., M. McKean, and E. Ostrom, 2000. People and forests: communities, institutions, and governance, MIT Press, Cambridge, Massachusetts.

Giddens, A., 1984. The constitution of society. Outline of the Theory of Structuration. Polity Press, Cambridge.

Glück, P. 2002. Property rights and multipurpose mountain forest management, Forest Policy and Economics 4: 125–134.

Hanneman, Robert A., and Mark Riddle. 2005. Introduction to social network methods. Riverside, CA: University of California, Riverside.

Harrison, Steve. 2001. Research Approaches to Environmental-economic Issues in Small-scale Forestry. Predstavljeno International IUFRO Symposium. 201-214.

Hines DA, Eckman K (1993) Indigenous multipurpose trees of Tanzania: Uses and economic benefits for people. Cultural Survival Canada, Ottawa

Hirsch-Kreinsen, H. and D. Jacobson, Eds. (2008). Innovation in Low-Tech Firms and Industries. Cheltenham, Edward Elgar.

Hoff, P. D. 2004. Modeling Dependencies in International Relations Networks. Political Analysis 12 (2):160-175.

IDAF, 2008. Gender and non-timber forest products: Promoting food security and economic empowerment. International Fund for Agricultural Development.

Indufor/Eco 2001. Implication of land restitution programs on achieving WB/WWF alliance targets in Eastern Europe and the Central Asian Region. Main Report. The World Bank/WWF Alliance. 133 p.

Ineichen, R., 2010. Livelihood and Conservation Aspects of Non-wood Forest Product Collection in the Shaxi Valley, Southwest China.sup.1, Economic Botany, Volume 64, Number 3, 189-204

International Forestry review, Volume: 5 Issue: 2 Pages: 156-160

IUFRO R.G. 6.13, several years. Experiences with new forest and environmental laws in European countries with economies in transition. Proceedings Iufro Research Group 6.13: 1999 (Ossiach/Austria); 2000 (Ossiach/ Austria); 2001 (Jundola/Bulgaria); 2003 (Jaunmokas/Latvia). Legal aspects of European forest sustainable development. Proceedings Iufro Research Group 6.13: 2004 (Zidlochovice/Czech Republic); 2005 (Brasov/Romania)

Janse, G., Ottitsch, A., 2005. Factors influencing the role of Non-Wood Forest Products and Services. Forest Policy and Economics 7 (2005) 309–319

Jantsch, Erich. "Towards Interdisciplinarity and Transdisciplinarity in Education and Innovation." In Interdisciplinarity: Problems of Teaching and Research in Universities, pp. 97-121. Paris: Organization for Economic Cooperation and Development, l972

Jobber, D. 2009. Principles and Practice of Marketing 6th ed. McGraw-Hill Higher Education.

Jonsson, R. 2011. Trends and Possible Future Developments in Global Forest-Product Markets—Implications for the Swedish Forest Sector. Forests 2:147-167.

Kangas, A., Kangas, J. & Kurttila, M. 2008. Decision support for forest management. Managing Forest Ecosystems 16. Springer. 222 p.

Kangas, K. and P. Markkanen. 2001. Picking of wild berries and edible mushrooms in the rural and urban Dweller of Finnish Lapland. Silva Fennica 35:487-495.

Kangas, Kari, and Pasi Markkanen. 2001. Picking of wild berries and edible mushrooms in the rural and urban Dweller of Finnish Lapland. Silva Fennica 35 (4):487-495.

Kilchling P, Hansmann R, Seeland K (2009) Demand for non-timber forest products: Surveys of urban consumers and sellers in Switzerland. Forest Policy and Economics 11 (4):294-300.

Kissling-Näf I., Bisang K., 2001. Rethinking recent changes of forest regimes in Europe through property-rights theory and policy analysis. For Policy Econ 3:99–111

Kissling-Näf, I., Volken, T., Bisang, K., 2002. Common property and natural resources in the Alps: The decay of management structures? Forest Policy and Economics 4, 2: 135–147.

Klein, Julie Thompson. Interdisciplinarity: History, Theory, and Practice. Detroit: Wayne State University Press, l990

Kotler, P. and G. Armstrong. 2011. Principles of Marketing 14th ed. Pearson Education, Upper Saddle River, New Jersey, U.S.

Kubeczko, Klaus, Ewald Rametsteiner and Gerhard Weiss (2006): The Role of Sectoral and Regional Innovation Systems in Supporting Innovations in Forestry. In: Forest Policy and Economics 8/7, 704-715.

Kuo, N., T. Hsiao, and Y. Yu. 2005. A Delphi–matrix approach to SEA and its application within the tourism sector in Taiwan. Environmental Impact Assessment Review 25:259-280.

Kusters, Koen, and Brian Belcher. 2004. Forest Products, Livelihoods and Conservation. Case Studies of Non-Timber Forest Product Systems. 3 vols. Vol. 1-Asia, Forest Products, Livelihoods and Conservation. Jakarta, Indonesia: CIFOR.

Lindner, M.; Maroschek, M.; Netherer, S.; Kremer, A.; Barbati, A.; Garcia-Gonzalo, J.; Seidl, R.; Delzon, S.; Corona, P.; Kolstrom, M.; Lexer, M.J.; Marchetti, M. 2010: Climate change impacts, adaptive capacity, and vulnerability of European forest ecosystems Forest Ecology and Management, Volume 259, Issue 4, February 2010, Pages 698-709.

Magee, Christopher S. P. 2008. New measures of trade creation and trade diversion. Journal of International Economics 75 (2):349-362.

Mantau U., Wong J., Curl S. (2007) Towards a taxonomy of forest goods and services, Small-scale Forestry 6:391-409

Mantau, U., M. Merlo, W. Sekot, and B. Welcher. 2001. Recreational and Environmental Markets for Forest Enterprises. CABI Publisher, Wallingford, Oxfordshire, UK.

Marshall, E., K. Schreckenberg, and A. C. Newton. 2006. Commercialization of Non-timber Forest Products: Factors Influencing Success. Lessons Learned from Mexico and Bolivia and Policy Implications for Decision-makers. UNEP World Conservation Monitoring Centre, Cambridge, UK.

Maso, D., A. Matilainen, and D. M. Pettenella. 2011. The role of networks in non-wood forest products and services market development. In G. Weiss, D. M. Pettenella, P. Ollonqvist, and B. Slee, editors. Innovation in Forestry: Territorial and Value Chain Relationships. CABI, Nosworthy way, Wallingford, Oxfordshire OX10 8DE, UK.

Mavsar, R., S. Ramcilovic, M. Palahi, G. Weiss, E. Rametsteiner, S. Tykkä, R. v. Apeldoorn, J. Vreke, M. v. Wijk and G. Janse (2008): Study on the Development and Marketing of Non-Market Forest Products and Services (FORVALUE). Study Report for DG AGRI, Study Contract No. 30-CE-0162979/00-21.

Niskanen A., B. Slee, P. Ollonqvist et al., 2007. Entrepreneurship in the forest sector in Europe, University of Joensuu, Joensuu, Finland.

Niskanen, A. (ed.). 2006. Issues affecting enterprise development in the forest sector in Europe. University of Joensuu, Faculty of Forestry, Research Notes 169. 406 p

North D., 1990. Institutions, institutional change and economic performance, Cambridge University Press, Cambridge.

Ostrom E., 1990. Governing the commons: the evolution of institutions for collective action, Cambridge University Press, Cambridge.

Ostrom E., 2005. Understanding institutional diversity, Princeton University Press, Princeton, NJ.

Ostrom E., 2007. A diagnostic approach for going beyond panaceas. Proceedings of National Academy of Sciences (PNAS), 104:15181-15187.

Ostrom E., R. Gardner, and J. M. Walker, 1994. Rules, games & common-pool resources, The University Michigan Press, Ann Arbor.

Ostrom, E., 1999. Institutional Rational Choice. An assessment of the Institutional Analysis and Development Framework. In Sabatier, P.A., ed., Theories of the Policy Process, Westview Press, 289 p., pp.35-71

Patari, Satu. 2010. Industry- and company-level factors influencing the development of the forest energy business ‚Äî insights from a Delphi Study. Technological Forecasting and Social Change 77 (1):94-109.

Peattie, K. 1995. Environmental Marketing Management: Meeting the Green Challenge 1st ed. Financial Times, Prentice Hall.

Peattie, Ken. 1995. Environmental Marketing Management: Meeting the Green Challenge 1st ed.: Financial Times, Prentice Hall.

Petennella D, Klőn S, Brun F, Carbone L, Venzi L, Cesaro L, Ciccarese L., 2005. Italy. Country report. In: Jáger L (ed) Forest sector entrepreneurship in Europe: country studies. ActaSilvatica and LignariaHungarica, pp 383–435 (special edition)

Pettenella, D., L. Secco, and D. Maso. 2007. NWFP&S Marketing: Lessons Learned and New Development Paths from Case Studies in Some European Countries. Small-Scale Forestry 6:373-390.

Polski M. M.and E. Ostrom, 1999. An institutional framework for policy analysis and design.

Powell, R. B., M. J. Stern, and N. M. Ardoin. 2006. A sustainable evaluation program framework and its application. Applied Environmental

Powell, R.B., and W. M. Vaigas. 2010. The benefi ts of stakeholder involvement in the development of social science research. Park Science, Vol. 27 (1), 46-49.

Pukkala, T. (2002). Measuring non-wood forest outputs in numerical forest planning: A review of Finnish research. In: Pukkala, T. (ed.), *Multi-objective Forest Planning. Managing Forest Ecosystems, Vol. 6.* Kluwer Academic Publishers, Dordrecht, The Netherlands. pp. 173-207.

Pukkala, T. 2009. Population-based methods in the optimization of stand management. Silva Fennica 43(2): 261–274.

Rametsteiner, E., Weiss, G., Kubeczko, K. 2005. *Innovation and entrepreneurship in forestry in central Europe*. EFI Research Report 19, European Forest Institute, Joensuu, Finland.

Rekola, M. 2004. Perceived property rights – the case of regeneration cuttings in Finland. In Anderson, F.; Birot, Y.; Päivinen, R. (eds.): Towards the sustainable use of Europe's forests – Forest ecosystem and landscape research: Scientific challenges and opportunities. EFI Proceedings, no. 49: 135–144.

Reynolds, K.M. (2005). Integrated decision support for sustainable forest management in the United States: fact or fiction? Computers and Electronics in Agriculture 49: 6-23.

Rista, L., Shanley, P., Sunderland, T., Sheil, D., Ndoye, o., Liswantic, N., Tieguhong, J., In Press, Corrected Proof. The impacts of selective logging on non-timber forest products of livelihood importance. Forest Ecology and Management.

Rossi, P. H., and H. E. Freeman. 1993. Evaluation: A Systematic Approach. Fifth edition. Sage Publications, Newbury Park, California, USA.

Saastamoinen O., 1999. Forest policies, access rights and non-wood forest products in northern Europe. Unasylva, 50.

Schlager, C. E., Ostrom, E., 1992. Property-rights regimes and natural resources: a conceptual analysis. Land Economics, 68(3), 249-262.

Schmithüsen, F. 2000. The expanding framework of law and public policies governing sustainable uses and management in European forests. Iufro World Series, Vol. 10: 1–27; Iufro Secretariat, Vienna.

Schmithüsen, F. 2004. Role of land owners in new forest legislation. In: Legal Aspects of European Sustainable Development. Proceedings of the 5th International Symposium Zidlochovice, Czech Republic, pp. 46–56. Forestry and Game Management Research Institute Jiloviste-Strnady.

Schmithüsen, F., 2005. Multifunctional forestry practices as a land use strategy to meet increasing private and public demands in modern societies. Journal of Forest Science, 53, 2007 (6): 290–298

Schvidenko, Anatoly , Charles Victor Barber, Reidar Persson, Patrick Gonzalez, Rashid Hassan, Petro Lakyda, Ian McCallum, Sten Nilsson, Juan Pulhin, Bernardt van Rosenburg, and Bob Scholes. 2005. Forest and Woodland Systems. V Ecosystems and Human Well-being: Current State and Trends, urednik R. M. Hassan, R. J. Scholes in N. Ash. Washington: Island Press.

Scott, J. 2000. Social Network Analysis: A Handbook. SAGE Publications.

Scott, W. R. (2001). Institutions and Organizations (2nd ed.). London - Thousand Oaks - New Delhi: Sage Publications.

Secco, L., D. Pettenella, and D. Maso. 2009. 'Net-System' Models Versus Traditional Models in NWFP Marketing: The Case of Mushrooms. Small-Scale Forestry 8:349-365.

Seeland, K. and P. Staniszewski. 2007. Indicators for a European Cross-country State-of-the-Art Assessment of Non-timber Forest Products and Services. Small-Scale Forestry 6:411-422.

Seeland, K., Kilchling, P., Hansmann, R., 2007. Urban Consumers' Attitudes Towards Non-wood Forest Products and Services in Switzerland and an Assessment of Their Market Potential, Small-scale Forestry, ISSN 1873-7854, 12/2007, Volume 6, Issue 4, pp. 443 - 452

Sills, E., P. Shanley, F. Paumgarten, J. Beer, and A. Pierce. 2011. Evolving Perspectives on Non-timber Forest Products. 7:23-51.

Simula, M. 1999. Trade and Environmental Issues in Forest Production. Inter-American Development Bank.

Sitta, N. and M. Floriani. 2008. Nationalization and Globalization Trends in the Wild Mushroom Commerce of Italy with Emphasis on Porcini (Boletus edulis and Allied Species). Economic Botany 62:307-322.

Spiecker H (2010) Wertholzproduktion in Agroforstsystemen. In: Bemmann A, Knust C (eds) Agrowood - Kurzumtriebsplantagen in Deutschland und europäische Perspektiven. Weißensee Verlag, pp 305-309

Squartini, T., G. Fagiolo, and D. Garlaschelli. 2011a. Rewiring World Trade. Part I: A Binary Network Analysis.

Squartini, T., G. Fagiolo, and D. Garlaschelli. 2011b. Rewiring World Trade. Part II: A Weighted Network Analysis.

Subramanian, A. and S.-J. Wei. 2007. The WTO promotes trade, strongly but unevenly. Journal of International Economics 72:151-175.

Sunderland, T. and O. Ndoye. 2004. Forest Products, Livelihoods and Conservation. Case Studies of Non-Timber Forest Product Systems. Africa. CIFOR, Bogor Barat, Indonesia.

Surhone, L. M., M. T. Timpledon, and S. F. Marseken. 2010. Sustainable Packaging: Sustainable Packaging, Sustainability, Ecological Footprint, Life Cycle Assessment, Human, Eco- Friendly, Environmental Marketing. Betascript Publisher.

Ter Wal, A. and R. Boschma. 2009. Applying social network analysis in economic geography: framing some key analytic issues. The Annals of Regional Science 43:739-756.

Turtiainen, M. and T. Nuutinen. 2011. Evaluation of Information on Wild Berry and Mushroom Markets in European Countries. Small-Scale Forestry.

Vantomme, P. 2003. Compiling statistics on Non-Wood Forest Products as policy and decision-making tools at the national level. International Forestry Review 5.

Vantomme, P. 2003. Trade Opportunities for Non-Wood Forest Products in Niche Markets.in XII World Forestry Congress, Québec, Canada.

Voces, R., L. Diaz-Balteiro, and Ó. Alfranca. 2011. Demand for wild edible mushrooms. The case of Lactarius deliciosus in Barcelona (Spain). Journal of Forest Economics.

Wallenius, 1999 T.H. Wallenius, Yield variations of some common wild berries in Finland in 1956–1996. Annales Botanici Fennici, 36 (1999), pp. 299–314.

Wasserman, S. and K. Faust. 1994. Social Network Analysis: Methods and Applications. Cambridge Univ. Press, Cambridge.

Weiss, C. H. 1998. Evaluation: Methods for Studying Programs and Policies. Second edition. Prentice Hall, Upper Saddle River, New York, New York, USA.

Weiss, G., D. Pettenella, P. Ollonqvist, and B. Slee. 2011. Innovation in forestry: territorial and value chain relationships. CABI, Wallingford, Oxfordshire, UK.

Weiss, G., Regina Steiner and Otto Eckmüllner (2011): Assessing Institutional Frameworks of Inter- and Transdisciplinary Research and Education. Higher Education Policy 24, 499-516 (December 2011)

Weiss, Gerhard, Davide Pettenella, Pekka Ollonqvist and Bill Slee (eds., 2011): Innovation in Forestry: Territorial and Value Chain Relationships. CABI. 320 pp.

Young M., H. Schroeder, and L. A. King, 2008. Institutions and environmental change: principal findings, applications, and research frontiers, The MIT Press, London, England.

Young O. R., 2002. The institutional dimensions of environmental change: fit, interplay, and scale, Massachusetts University of Technology.

Young O. R., A. Agrawal, L. A. King et al., 2005. Science plan: institutional dimensions of global environmental change. International Human Dimensions Programme on Global Environmental Change (IHDP), Bonn.

Ziman, J. 1991. Public understanding of science. Science, Technology, and Human Values 16:99–105.

ANNEX 1: Regional case study description

Regional Case Study number	Responsible Partner (Country)	Region	Total & Forest Area (ha)	Important NWFP	Important MPT species
1	METLA (Finland)	North Karelia	1,776,000 1,590,000	Mushrooms and Berries	Birch and Pine but of minor importance
2	SILAVA (Latvia)	Latvia	6,459,000 3,354,000	Mushrooms, berries, wild honey, birch juice, foliage, hunting products, sauna scent	Scots pine (*Pinus sylvestris*), Norway spruce (*Picea abies*), Silver birch (*Betula pendula*), Rowan - tree (*Sorbus sp),* Lime tree (*Tilia sp.*), Juniper (*Juniperus sp.*), Willows (*Salix sp.*), Chokeberry (*Aronia melanocarpa*) and Black elder (*Sambucus nigra*), Hazel (*Corylus sp.*), Buckthorn (*Frangula alnus*) and bird-cherry (*Prunus padus* or *Padus avium*), Alnus (*Alnus incana*)
3	UHAM (Germany)	Waldmärker region	600,000 200,000	Beer kraut, Christmas trees, berries, game, foliage.	Walnuts, wild fruit trees as cherry, apple, pear, sorbus species, chestnut, oak Pine stands to be explored
4	BOKU (Austria)	Styria Region	1,639,193 1,002,000	Berries, mushrooms, Christmas trees, Schnaps	Cherry, Walnut
5	SFI (Slovenia)	Osrednjeslovenska region	255,496 153,298	Chestnut, mushrooms, blueberries, honey	Chestnut
6	UNIPD (Italy)	Trentino-Alto Adige (one region that includes two autonomous provinces)	1,360,000 744,000	Mushrooms (including truffles), chestnuts, aromatic products and essences, herbs and wild berries	Chestnut, other broadleaves and conifers (e.g., scotch pine, dwarf pine, larch, spruce, fir) for essences, aromas, medicinal and aromatic plants.
7	USV (Romania)	Counties of Bacău, Botoșani, Iași, Neamț, Suceava și Vaslui	3,685,000 1,188,000	berries, mushrooms, hunting	Norway spruce. Beech, oak, ash
8	KTU (Turkey)	Bursa province	272,000 160,000	Mushroom, chestnut, lime tree flowers	Chestnut, Stone pine, Lime tree, bay tree and cherry laurel
9	LlyG (United Kingdom)	Wales	2,077,900 304,000	Foliage, moss, timber by-products e.g. bark, game birds	Not relevant

Regional Case Study number	Responsible Partner (Country)	Region	Total & Forest Area (ha)	Important NWFP	Important MPT species
10	CTFC (Spain)	Autonomous Community of Catalonia	3,209,200 1,250,000	Mushrooms, black truffles, aromatic plants, honey, cork, pine nuts.	Several pine species, Holm and cork oaks and chestnut trees.
11	IRMA (Spain)	Province of Valladolid	811,000 126,000	Pine nuts, resin tapping	Stone pine, Maritime pine
12	ISA (Portugal)	Alentejo Region	3,160,325 1,413,983	Cork, pine kernels, mushrooms	Cork oak, Holm oak and stone pine
13	EFI (Serbia)	Belgrade	320.400 39.141	Mushrooms, berries and herbs	Wild apple, Common Hazel, Silver Lime

ANNEX 2: Detailed STAR TREE structure and links between Tasks