

European Cooperation  
in the field of Scientific  
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- COST -



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Secretariat  
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**Full proposal reference oc-2009-2-5549 for a COST new Action**

Subject: Full proposal for a new COST Action:  
USEWOOD:

Improving Data and Information on the Potential Supply of Wood Resources: A European  
Approach from Multisource National Forest Inventories

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**National Coordinator:** [\*]

**Domain Committee:** Forests, their Products and Services

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*[\*] Will be completed by the COST Office*

**DRAFT**  
**MEMORANDUM OF UNDERSTANDING**  
**For the implementation of a European Concerted Research Action**  
**designated as**

**COST Action**

**USEWOOD:**

**Improving Data and Information on the Potential Supply of Wood Resources: A European Approach from Multisource National Forest Inventories**

The signatories to this "Memorandum of Understanding", declaring their common intention to participate in the concerted Action referred to above and described in the "Technical Annex to the Memorandum", have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of document COST 299/06 "Rules and Procedures for Implementing COST Actions", or in any new document amending or replacing it, the contents of which the Signatories are fully aware of.
2. The main objective of the Action is [\*]
3. The economic dimension of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at [\*] Euro [\*] million in [\*] prices.
4. The Memorandum of Understanding will take effect on being signed by at least five Signatories.
5. The Memorandum of Understanding will remain in force for a period of    years, calculated from the date of the first meeting of the Management Committee, unless the duration of the Action is modified according to the provisions of Chapter V of the document referred to in Point 1 above.

*[\*] Will be completed by the COST Office*

## **A. ABSTRACT & KEYWORDS**

### **A.1 ABSTRACT**

The question of availability of wood in Europe on a sustainable basis is highly relevant to define global change mitigation strategies and targets for biomass energy as adopted at national and European level, and to support the proposal of an increased use of wood as a post-Kyoto decision. Future scenarios at EU-level highlight a deficit of wood supply compared to wood consumption of 47 Mm<sup>3</sup> in 2005, 134 Mm<sup>3</sup> in 2010, possibly reaching 436 Mm<sup>3</sup> in 2020. Major issues to be clarified are the potential supply of tree biomass, trees outside the forest, and the economic, social and ecological conditions, which will determine the wood supply. This COST Action aims at improving information and methodologies on the potential sustainable wood supply based on the National Forest Inventories to reduce the given uncertainties. Such harmonised information is urgent to improve the calculation basis for decision makers in the forest, environment, and in the wood and energy sectors.

### **A.2 Keywords**

Wood resources, wood supply, improvement of information, harmonisation of data, national forest inventory, sustainability, remote sensing, multi-functionality

## **B. BACKGROUND**

### **B.1 General background**

The EU Renewable Energy Directive has entered into force, climate change discussions and the post-Kyoto negotiations are still ongoing - including carbon storage in forests, energy from forests and harvested wood products. The wood supply issue is important in the light of rapidly growing demand for wood. Woody biomass is an important renewable energy source and will play a decisive role in mitigating climate change. Hence in a future “low-carbon” society, wood fuel has a high potential to alternate fossil fuels. The question of availability of wood is highly relevant in the context of increased use of wood as a possible post-Kyoto decision, in Europe and at global level. It is of political importance to produce better information on the quantities of wood available on a sustainable basis to meet the increasing need for woody biomass.

Results from European National Forest Inventories (NFIs) show increased forest area and growing stocks in most surveyed European countries. However, because of environmental, economic and social reasons, only one part of the resources is available. The development of new techniques to use wood as fuel (e.g. wood chips and pellets) enlarged the supply possibilities. Parts of the trees that used to remain in the forest can now be harvested, e.g. remnant, stumps. Short rotation coppices are also planted specifically to rapidly produce fuel. In low-forested areas, trees outside forest and hedges have become a possible source of energy. Finally, a

large part of the fuel-wood resource is composed of industrial residues and wood waste. Since many National Forest Inventories (NFIs) collect information on trees outside forest and dispose of many measurements on the trees, it is possible to harmonise and/or create the methodologies to estimate the available wood resources from NFIs.

However, recent results from European countries on the balance between wood supply and demand show significant differences among countries depending on data availability and data collection. Data on potential wood supply and its availability in Europe are scarce or imprecise. Transparent and comprehensive information is necessary as a basis for decision-making. Several countries have carried out major studies; others have indicated ongoing efforts to fill information gaps.

Recently, a workshop held by the UNECE reviewed the state-of-the-art of national potential wood supply assessment. The workshop points out the needs for improved information at European and national level and for more detailed assessments at national level considering the entire woody biomass, all parts of the trees inside forests, the extensive, non-traditional sources of woody biomass available from outside forests as well as by-products from wood processing.

The European programme, Cooperation in the field of Scientific and Technical Research (COST 2009) provides funding for large consortia such as the combined NFIs of European countries. COST is one of the longest-running European frameworks supporting cooperation among scientists and researchers across Europe. COST is a flexible and efficient tool for coordinating nationally funded research activities, bringing scientists together with only minimal strategic guidance and letting them investigate their ideas. The success of this new COST Action, USEWOOD, is dependent on the possibility to include many EU members with their NFI representatives. Although COST provides funding mostly for meetings, it is one of the few sources of funding for large groups.

COST is the best mechanism for support as it builds upon already existing scientific knowledge in each participating country. This COST Action will involve the excellent network of national forest inventories (ENFIN) which has collaborated very successfully under the COST Action E43. In each country the National Forest Inventory is the main provider of information concerning wood supply availability for the national and sub-national political needs as well as for international reporting. Through this existing networking a clear statement of the problem, the state of the art of the different national situations as well as research methods can be identified and harmonised throughout the European countries and partners. Capacity building will be reinforced using COST mechanisms (meetings, workshops, and STSMs particularly) and new approaches will be proposed for strengthening the sector and proposing sound results to decision makers. The Action USEWOOD will try to include countries with less scientific background in the addressed topic and thus enable capacity building for those countries.

## **B.2 Current state of knowledge**

The best state-of-the art of the process of harmonisation of forest data and information has been published recently as a main outcome of the COST Action E43, which successfully tried to find paths for common reporting on European forests. National forest inventories have been the source of accurate information for forest management and forest industry investment planning since several decades. Processes as the Ministerial Conferences on the Protection of Forests in Europe (MCPFE) in 2003 and the Montréal Process in 2005 were established with the goal of providing data on forest sustainability criteria and indicators. Most countries joined an international treaty – the United Nations Framework Convention on Climate Change (UNFCCC) – to begin considering what could be done to reduce global warming and to cope with the inevitable temperature increases.

The Global Forest Resource Assessment in the year 2000 (FRA 2000) was the first assessment to use a homogeneous set of definitions. Yet, the FRA 2000, FRA 2005 and FRA 2010 reports indicate severe problems in harmonisation for definitions of some variables such as forest area available for wood supply, or forest area by protection categories. In addition, even implementation of harmonised definitions of base line variables, such as forest area and volume of growing stock when collecting data, has been found to be challenging. To respond to the needs for harmonised European information, representatives of the European NFIs established an informal network called the European National Forest Inventory Network (ENFIN) in Vienna 2003. ENFIN applied for common research funding with the aim of investigating techniques leading to comparable European forest resource estimates.

The efforts of COST Action E43: Harmonisation of National Forest Inventories in Europe: Techniques for Common Reporting were not the first attempts to harmonise information from NFIs. In addition to the FAO FRA efforts to harmonise forest resources reports, the EU Council regulation (EEC) No. 1615/89 extended by Council Regulation (EEC) No. 400/94 established the European Forestry Information and Communication System (EFICS). The objective of EFICS was to collect comparable and objective information on the structure and operation of the forestry sector in the European Community (EFICS 1997).

Two previous COST Actions addressed the issue of harmonisation and common strategies. COST Action E27 (Protected Forests in Europe – Analysis and Harmonisation) improved the harmonisation level of protection categories and the definition for natural forests, both of which are important elements of sustainable forestry. COST Action E21 (Contribution of Forests and Forestry to Mitigate Greenhouse Effects) aimed at developing a common carbon accounting strategy. COST Action E21 “requires input data from forest inventories, forest management practices, perspectives of use of forestry products and socio-economics” (COST Action E21 2009). COST Action E43 supported the goals of COST Action E21 by improving the quality of input data from forest inventories. The EU CARBO-INVENT (FP5) project aimed at developing methodologies for carbon inventories of forests that would satisfy requirements at both national and EU levels.

At national level, many recent studies were conducted to address the question of wood available for energy in European countries and in other parts of the world. Fewer studies characterise the total available wood split into the different usage categories: sawn timber, industrial wood and fuel-wood. One difficulty for the comparability of the results at the international level is the variety of the definition of the wood categories,

which frequently depend on the species, the industry and the market. A recent report by the UNECE/FAO Timber Section showed that there is a potential to supply more wood from the European forests. However, the authors highlight that the results used in the report suffer from diversity of sources and definitions, which limits the comparability of the results between countries. Moreover, the availability for supply implies that the wood is technically harvestable, but also that it is environmentally, economically and socially acceptable. NFIs can provide information on the technical availability, sometimes taking into account environmental factors, but these parameters differ from one country to another, which makes it difficult to compare or sum the results. Forests produce wood, but also other services like the preservation of biodiversity, places for recreation. Since wood harvest and some services may be incompatible, the resources available are lower than predicted, when referring only to technical constraints and economical benefit. The multifunctionality of forestry impacts the possible harvest and revenues, and so the resources. A common definition of the indicators of production and methodology of estimation is required to estimate wood resources in a multifunctional management context. In many European countries, NFIs have reacted to the increasing wood demands with potential supply studies like Austria, Switzerland, Germany, Finland, Sweden, and Denmark. These national studies were carried out with different aims and including different data sources and methodologies.

During the last years many scenario models and wood supply studies on the European and global scale were carried out. Examples of important studies are:

- Global Forest Sector Model EFI GT, Scenario Analysis of Sustainable Wood Production under Different Forest Management Regimes SCEFORMA and The European Forest Information Scenario Model EFISCEN by the European Forest Institute (EFI)
- The report from 2004 of the International Institute for Applied Systems Analysis (IIASA) on “The supply of forest-based resources for the energy sector: the case of Sweden”
- A report of the Finnish Forest Research Institute (METLA) from 2004 on "Estimation of Energy Wood Potential in Europe"
- The reports of the European Environmental Agency (EEA) recent reports “How much biomass can Europe produce without harming the environment?” in 2006 and “Environmentally compatible bio-energy potential from European Forests” in 2007
- Future projections of forest resources among produced by the Confederation of European Forest Industries (CEPI) on Future Wood supply from European Forests to pulp and paper industry under competing demands
- The results of the EU FP6 project EFORWOOD on Tools for Sustainability Impact Assessment of Forestry-Wood Chain.

All these international studies use aggregated NFI results without taking into account differences in NFI methodology and definitions. These studies lack on comprehensiveness and comparability of the basic data and therefore major outcomes differ remarkably from each other.

### **B.3 Reasons for the Action**

The main reason to launch the COST Action USEWOOD is to overcome the non satisfying quality of existing forest wood supply information. The benefit will lie in an improved overview of the available data and information on wood resources and possible wood uses. Future wood supply is expected to come from all types of wood from forests, other wooded land, trees outside forest and residues. This high quality information will be used for future scenario modelling and help political decision making for the renewable energy sector.

The action is mainly aimed at the economic/ecological needs in Europe, but it will be based on the development of sound scientific work in the fields of forest statistics, remote sensing and scenario modelling.

### **B.4 Complementarity with other research programmes**

The Action has very strong links to the ENFIN network (European National Forest Inventory Network) which has worked on the harmonisation of forest data and information for many years. Ongoing activities like the Joint Research Centre (JRC) Framework Contract (N° 2007/ S 194-235358) where the practical work on a common European forest Database including harmonisation, aggregation, mapping and reporting to different thematic areas is conducted will be supported with the work under the COST Action USEWOOD

The content and the intended activities of this proposal are considered to fit excellently with the goals set in the Forest-based Sector Technology Platform and with the EU Forest Action Plan Key action 17 and 18, and also the Key action 4, which aims to promote the use of forest biomass for energy generation. The work is also in line with the long-term strategy for renewable energy in the EU, outlined in the Renewable Energy Roadmap, aiming at increasing security of energy supply and reducing greenhouse gas emissions. There are also close links to the relevant measures provided in the EU Biomass Action Plan and to the proposal of the new EU Renewable Energies Directive.

The COST Action USEWOOD will also contact and seek to complement information needs of other ongoing COST Actions and projects. Especially the COST Action FP0902 on sustainable forest biomass supply and FP0603 on forest modelling will be contacted as well as the EUWOOD project. This project aim at improving the knowledge on the woody biomass demand and supply situation, analyse the future development of biomass, document and develop methods for woody biomass studies and provide recommendations for policy processes. This project has specifically highlighted the lack of harmonised and detailed information on available wood supply, which was recognised to be necessary for comprehensive outlook studies including meaningful results at the national as well as the European levels.

## **C. OBJECTIVES AND BENEFITS**

### **C.1 Main/primary objectives**

The main objective of the Action is to improve and harmonise data and information on the potential supply of wood resources at European level considering the actual extent and building scenarios of forest indicators (forest area, growing stock, biomass, increment and harvest) in light of perspectives of long term trends for supply and demand of forest products.

### **C.2 Secondary objectives**

The main objective of the COST Action USEWOOD is supported by the following secondary objectives:

1. The COST Action will work on the harmonisation process on core variables of forest characteristics by developing European wide accepted reference definitions on increment and harvest as well as for related variables.
2. The COST Action will discuss, compare and disseminate the methodologies, including remote sensing techniques, definitions and results of wood resource studies in European countries and develop best practices and harmonised guidelines in this field.
3. The COST Action will exchange information on difficulties and challenges and find harmonised solutions in modelling taper curves and assortments of trees.
4. The COST Action will exchange information on difficulties and challenges and find solutions in assessing trees outside forests.
5. The COST Action will help countries, which need to improve their expertise in special modelling or remote sensing techniques in capacity building of these technical areas.
6. The COST Action will contribute to building a comprehensive and reliable picture of potential wood supply as an input to energy, environment, forest policy making, and wood industry decision making.

Sound basic data and information for the supply of wood resources will be built on a comprehensive approach distinguishing clearly between the maximum potential and likely availability of wood and taking influencing factors into account and thus improving assessments of the potential use of wood.

### **C.3 How will the objectives be achieved?**

The objectives of the Action will be achieved following three basic mechanisms. Firstly the scientific programme including its work plan, time table and deliverables will be elaborated with specific consideration to the production of results. Secondly the large body of ongoing work on assessing and using wood supply both at national and international level will ensure that the Action is based on substantial scientific activities.

Thirdly the collected expertise involved in the Action will guarantee both linkages to the data providers and the research communities working within the topic and the use, and dissemination channels of the Action.

The objectives will be achieved by

- Capitalising on the work of the COST Action E43 by developing new reference definitions. The concept of reference definitions has been adopted and tested by the participating NFIs in COST Action E43 on many core variables. However, several variables of relevance to the assessment of wood resources have not been defined. This Action will include reference definitions on the major variables necessary for wood supply like increment and fellings, and then propose bridging functions to obtain comparable data at European level.
- Including available high level expertise on forest remote sensing techniques. Wood supply is highly dependent on the local forest situation regarding e.g. actual growing stock, possibilities and costs of harvest, nature protection or forest protective-function constraints. Information on these parameters can be gained using a combined methodology with terrestrial and remote sensing data.
- using the NFI modelling expertise in the field of forest growth, harvesting and assorting to prepare predictions of future wood recourses including competitive market conditions. Harvested Wood can be used for several different products like saw-logs, paper, pulp and firewood. According to the market situation different uses will gain priority affecting the feedstock of the different sectors.

The COST Action USEWOOD will gather the knowledge and expertise available with NFI experts in the fields of

1. Harmonisation of Forest data to reach the comparability.
2. Detailed national wood supply studies to reach comprehensiveness.
3. Multisource Forest Inventory to incorporate remote sensing data for mapping and small area estimation
4. Economic modelling to incorporate different competitive market conditions

One of the prerequisites to achieve the European wide objectives is a good cover of participating countries over Europe. The COST Action will build on the European Forest Inventory Network ENFIN which can provide good contacts to most of European NFIs. On one hand the Network can help in motivating many countries to sign the Memorandum of Understanding and on the other hand to reach the specialists in different technical areas like forest remote sensing or forest growth and harvest modelling. ENFIN also provides good contacts to European and international organisations which are relevant users of the Actions outcomes (UNECE Timber Section, MCPFE Liaison Unit, JRC). They can easily be motivated in joining the actions activities through ENFIN's contacts.

## **C.4 Benefits of the Action**

The Action will improve the quality of European level data and information on usable wood resources. High quality information in this area is still lacking. Decision making on the national as well as on the European scale in the area of renewable energy is depending on the quality of the addressed type of information. The Action will improve the ability of the NFIs both to meet national requirements for information on wood resources and to provide up-to-date harmonized information at European and international level.

The Action will improve forests statistics on wood supply. Data and methodologies to assess wood supply will be improved allowing for comparability of results.

The achieved experience could benefit at the global scale as it did under the COST E43, where US participated very actively in the process of harmonisation of the NFIs.

## **C.5 Target groups/end users**

The immediate end users of the achieved results are primarily the forest research community. Moreover the Action targets the forest sector industry, the energy industry (biofuel users), forests owners.

Decision makers and stakeholders at local, national and EU levels are also a very important target group of the Action.

Secondary users are researchers from other fields such as ecology, economics, marketing who use reliable and easily accessible information for modelling purposes or simply to investigate the performance of technologies and interpretation of research results. Furthermore the results will also benefit the general public.

## **D. SCIENTIFIC PROGRAMME**

### **D.1 Scientific focus**

To achieve the objectives of the Action presented in Part C: Objectives and benefits, the Action will collect information on the existing activities in each participating member countries with regards to potential wood supply. The activities of the Action are divided into three major tasks.

The main tasks are:

1. Find an agreement on a methodology to assess and estimate state and changes in wood resources based on NFIs
2. Improve the estimates of wood resources combining the NFIs and remote sensing techniques
- 3.

Predict the use of wood resources under competitive conditions

The necessary cooperation between the work on the main tasks will be organised by joint meetings and through Steering Group meetings.

## **D.2 Scientific work plan methods and means**

The scientific work will be arranged in three different working groups each with its specific work plan. The working groups are as follows:

### **WG1: Assessment and estimation techniques of state and changes in wood resources**

Working Group 1 focuses on available field data and information from the NFIs including sampling design and estimation techniques for wood resources. The work will take full advantage and further develop the methodology for the harmonisation of NFIs performed under the COST Action E43. Variables not included in the COST E43 are increment, fellings, and mortality. Another aspect poorly investigated by COST E43 concerns other wooded land (OWL) and trees outside forest (TOF) for which harmonised definitions are necessary. Major questions to be investigated are, how much wood is available now (taking age classes and diameter thresholds for cuttings into account), and how much will be available in the next decades. Recommendations for statistical sound data collection and estimation techniques will be derived and the effects of different approaches on the results will be presented.

#### **Workplan subtasks**

Four main subtasks are identified for WG1:

1. assessment of current state of data availability, methodologies for change estimation (temporary vs. permanent plots, annual vs. periodic inventory, taking cores)
2. creating reference definitions for tree variables and population parameters: increment, fellings, mortality, ingrowth, increment, drain
3. creating reference definitions for “non-forest” categories with trees such as OWL and TOF
4. estimating usable wood from trees (assortments): stem, branches, residues

### **WG2: Improving estimates of wood resources combining RS and NFI field data.**

Working Group 2 will investigate ways of improving estimates of wood resources combining RS and NFI field data. WG2 will give an overview of the extent of use of different tools and methodologies within remote sensing in the NFIs (e.g. satellite and air-borne images (different sensors like true colors and infrared, Radar

and Lidar). The efficiency of the sampling design and the improved precision of the estimates will be considered. Models for spatial distribution of variables such as biomass and volume used for small area estimation and mapping will be discussed and evaluated. The aim is the development of recommendations for the assessment of living biomass, inside and outside forests, for regular and fast updates of wood resources at NUTS3 and regional level. A special attention will be devoted to detection of clear-cuts and other changes in the forest resources for the estimation of the corresponding biomass.

### **Workplan subtasks**

1. Assessment of the current state of the use of remote sensing technologies for NFIs in the European countries.
2. Evaluation of different methodologies and applications for the combined use of terrestrial and remote sensing data to derive forest wood and biomass resources.
3. Develop methods for the estimation of wood and biomass resources outside the forest from remote sensing data
4. provide “best practices” for the estimation of wood resources for small areas at the regional level
5. create examples and applications for high resolution mapping crossing national borders

### **WG3: Predicting the use of wood resources under competitive conditions**

Working Group 3 will work on predictions of the use of wood resources under competitive conditions. WG3 will develop guidelines for a harmonised forest data set from NFIs to be used for wood supply modelling by assortment of wood such as saw log, paper and energy wood. The input variables needed for the most commonly applied models for growth, harvest and economic conditions will be analysed with relevance to their availability in NFIs. Harmonisation techniques of these input variables will be developed. An important task of this group will be to use NFI variables to quantify wood quality at tree and plot level including also accessibility and exploitability. Another task will be to identify data sources that can be utilized together with NFI data to model the financial returns from forest management and to determine the economic situation of the wood market.

### **Workplan subtasks**

1. Assessment and evaluation of the available wood supply studies and applications at country and European level
2. Identify availability of NFI data for growth, harvesting and assortment models
3. Harmonisation of input data for the models
4. Evaluation of the models with input data from several countries
5. Testing the applicability of available economic models at the European level, including harvest costs, competitive products.

## **E. ORGANISATION**

### **E.1 Coordination and organisation**

The Action is led by a management Committee (MC). A Steering Group (SG) will support the MC. The SG is consisting of the chair and vice-chair of the Action, working group leaders and vice-leaders (WGL).

The SG prepares the MC meetings and monitors the activities of the Working Groups (WGs) between the MC meetings. The SG will also act as assessment panel for Short-term-Scientific Missions (STSMs).

The Action is divided into 3 different working groups (WGs) and each of them will be led by a different WG leader assisted by a vice-leader (WGL). The WG leader's task is to ensure the implementation of the task and delivery of milestones. Each working group has two main deliverables called milestones. Moreover each WG will organise an international workshop dealing with the general topic of the WG to promote the exchange of research, facilitate communication among Action participants, and disseminate information.

The coordination of the national research is under the responsibility of the national MC members. The national MC members' role is to establish consensus among national researchers and to coordinate their activities. This will be achieved through regular workshops either in conjunction with ongoing COST activities or separate workshops. Furthermore, the creation of common research teams will be supported. In addition the ongoing cooperation in regards to joint courses for Ph.D. students will further contribute to the successful coordination of both national and international research. National team leaders are encouraged to organise training schools for Ph.D. students that supports both the Ph.D. works of the students and the Action.

The Action will serve as a platform from which basic information coming from NFIs can be communicated to other sectors and from which larger research projects can be launched through the EU-FP programmes. The Action will include meetings organised within the European research community, but also inviting key note speakers from industries specifically from wood manufacturing sectors. The findings of the COST Action will be published as reports and scientific articles. The Action will continue the successful organisation of the COST Action E43. The Action will be based on plenary sessions and on a close co-operation among the three working groups. The results of the parallel sessions of the working groups will be presented under the plenary for agreement. Participants are thus informed and contribute to all parts of the work. Short-term Scientific Missions will be held also crossing the work of the working groups to analyse and further develop the country contributions.

### **Milestones**

The major milestones to be achieved during the action are:

- give a clear picture of the situation among countries concerning potential wood supply

- establish reference definitions for the main useful concepts
- propose bridge building techniques for converting data into the reference definition
- application testing for the derivation of cross-country outputs using harmonised input data like modelling of growth, harvest, assortments, harvesting costs, and mapping
- test for derivation of possible future wood supply for several European countries
- publish the methodology and results as scientific articles.

## **E.2 Working Groups**

Scientific activities of the Action will take place in Working Groups (WG) covering the tasks to be carried out by the Action. Each working group has a clear work plan, objectives and outputs. Each WG will nominate a WG leader and vice-leader, which also have a seat in the Steering Group of the Action. It is the task of the WG leaders to ensure the implementation of the work plan and to achieve the objectives and outputs of the Action.

The following Working Groups are planned for the COST Action:

WG1: Assessment and estimation techniques of state and changes in wood resources

WG2: Improving estimates of wood resources combining Remote Sensing techniques and NFI field data

WG3: Predicting the use of wood resources under competitive conditions

In order to ensure efficiency of the work carried out by the WGs and best possible results, the following steps will be taken by each of the WGs:

1. Regular meetings (2 per year) of the WG participants in order to prepare the reports
2. Use of STSMs to exchange information and promote communication among participants
3. Monitoring of the WG activities by the SG
4. Establishing a website to support internal communication
5. Organisation of an international workshop by each WG to promote the ongoing work, initiate cooperation and disseminate results

### **E.3 Liaison and interaction with other research programmes**

Liaison will be developed with key people involved in other research programmes in a number of ways depending on the liaison. The link with existing research activities going on in the different member countries will simply be achieved by inviting researchers involved in such projects to join the Action.

Important links must also be established with the JRC in charge of the European Data Centre (EFDAC), the UNECE/FAO-Timber section and the UNECE/FAO-FRA unit as well as with the EU Forest Technology Platform, which has an important role in drafting the priorities of the EU research on these topics. These international organisations will be encouraged to sign the MoU like it was done for the Cost Action E43. Furthermore links will be established through official participation of a COST Action representative to the official meetings of the platforms.

Liaisons with ongoing or forthcoming FP7 or other European projects will be sought actively by the Action leadership.

### **E.4 Gender balance and involvement of early-stage researchers**

The COST Action will respect an appropriate gender balance in all its activities and the Management Committee will place this as a standard item on all its MC agendas. As a first concrete action, the COST Action will be chaired by a person of the female gender. The Action will also be committed to considerably involve early-stage researchers in the Action this item will also be placed as a standard item on all MC agendas. Early stage researchers will also be encouraged to join the STSMs of the COST Action since they will be the ones benefiting from this Action in the future.

The question of availability of wood on a sustainable basis is highly relevant to define global change mitigation strategies, targets for biomass energy and to support increased use of wood in the future. There is growing demand for scientific results to fill the knowledge gaps. Therefore, a substantial amount of research is currently conducted in this field. Also, the number of Ph.D. projects is increasing and there is more competition for available positions. The Action will constitute an ideal ground for coordinating the activities of Ph.D. projects and establish new possibilities for future Ph.D. projects.

## **F. TIMETABLE**

The duration of the COST Action USEWOOD will be 4 years. The MC will hold its kick-off meeting within the first four months of the Action with nomination of the WGLs. The Working Groups will be constituted and their coordinators (WGLs) nominated. A first joint WG-meeting joining all Action participants will be organised quickly in one voluntary country. A total of 5 Management Committee meetings and 8 joint WGs

meetings will be held during the duration of the Action. The work of all WGs will continue throughout the duration of the Action. WG participants will meet regularly to discuss progress of the work plan. The WG participants will meet twice per year preferably in connection with other Action activities.

	Year 1		Year 2		Year 3		Year 4	
Kick-off meeting	X							
MC meeting	X	X		X		X		X
WG joint meeting	X	X	X	X	X	X	X	X
STSM		X		X		X	X	
International conference				X				
Final international conference								X

## G. ECONOMIC DIMENSION

The following COST countries have actively participated in the preparation of the Action or otherwise indicated their interest:

AT,BE,HR,CY,CZ,DK,EE,FI,FR,DE,GR,HU,IS,IE,IT,LV,LT,NL,NO,PL,PT,RO,RS,SK,SI,ES,SE,CH,UK.

On the basis of national estimates, the economic dimension of the activities to be carried out under the Action has been estimated at 58 Million € for the total duration of the Action. This estimate is valid under the assumption that all the countries mentioned above but no other countries will participate in the Action. Any departure from this will change the total cost accordingly.

As one of the main prerequisite to achieve the European wide objectives is a good cover of participating countries over Europe, the leaders of this COST Action will seek contact with the few COST countries, which have not yet indicated their interest in the Action.

Also as the topic and objectives of this COST Action also have a high global relevance, contact will be taken to "non-COST" countries. The COST Action will continue its collaboration with the USDA Forest Services in USA and will take contact with other interested countries (Russia- Russian State Enterprise for Forest Inventory (Roslesinforg))

## **H. DISSEMINATION PLAN**

### **H.1 Who?**

The target audiences for the dissemination of the results are:

- European and global processes (MCPFE, IPF, IPCC, UNFCC, UMFF) and organisations (European Commission particularly Eurostat and the JRC, FAO, UNECE, and EFI) using and compiling forest and wood statistics and information decisions makers at national levels such as policy makers, forest industry, energy sector,
- Forest owners
- Research organisations both in the public and private sector involved in wood supply and use of wood
- Teams of the national forest inventories participating in the Action and other countries as well and all participants of the ENFIN

### **H.2 What?**

The COST Action USEWOOD will use available means for dissemination first of all by opening a general project website to introduce the Action and follow updates and progress in the work of the Action. Furthermore a password protected website will be accessible for the participants of the Action for exchange of documents and information and for discussions.

The activities of the Action will be disseminated as events: WG meetings and workshops, MC meetings, SG meetings, STSMs, international conferences. The outcome of these will be presented in state-of-the-art reports, newsletters, proceedings and minutes. The output of the COST Action will be published in peer-reviewed scientific publications as well as a handbook on country methodologies.

### **H.3 How?**

International conferences

The conferences are intended for the broader scientific international audience. They will offer researchers within the COST Action USEWOOD and from outside to meet and discuss the progress and results of the Action. Organisation in cooperation with the EU-JRC and/or UNECE will be considered. The conferences will act a major dissemination tool for the Action and will reach a very large audience since it is anticipated to invite also other stakeholders in the forest energy sector.

## WG meetings/workshops

The two annual WG meetings/workshops will be limited to Action participants, but also including experts to contributing to the progress of the work. The Action will seek to synchronise the WGs with the annual conferences and with each other. The general progress of the Action is seen to depend on both the work of the individual WG and the joint plenary sessions to ensure optimal communication and collaboration. The workshops will facilitate a hands-on approach to the research tasks of the Action.

## MC meetings

The meetings will be an important part of the Action since they will guide the Action participants and ensure that the Action is implemented properly. The meetings will be held in conjunction with the other Action activities in order to save costs. They will also facilitate discussions and distribution of Action results among Action participants.

## Short Term Scientific Missions

The STSMs will be decided during WG meeting to facilitate a good preparation of the concrete work and a good cooperation and harmonisation of work between WGs. The results and reports produced by the STSM work will be presented for discussion and approval to the next joint WG meeting. This concrete work is indispensable to capitalize on scientific material for peer reviewed publications.

## Scientific publications

Scientific peer reviewed articles will be produced by Action participants.

## Publications, reports, flyers and non technical publications

As mentioned in the objectives of the Actions, it is important to reach a wide range of researchers in and outside the special field. Furthermore, the produced results also have to reach other end users such as policy makers, the industry and small to medium enterprises. The non-scientific publication will act as a major tool to disseminate information to them that is in a format which they are more accustomed to. Therefore the action will summarise major results also into shorter formats and publish them in print or on the website. This tool is one option to publish the best practice guidelines to be produced.

## Handbook

The best practice guidelines will be another important result of the project and its use is intended for a very broad audience both within the research sector, the industry and the private sector. They can either be published as a handbook or leaflet

## Public website

A publicly accessible website is created as one of the major dissemination channel for all the Action results.

#### Project website

A password protected project website will be created for Action participants to facilitate the online communication and coordination within the Action.

DRAFT MOU

## **Part II - Additional Information (This part will not be element of the MoU)**

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## **Part II-B. ADDITIONAL INFORMATION**

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