

# PROJECT FINAL REPORT

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Project acronym: **WOODWISDOM-NET 2**

Project title: **Networking and Integration of National Programmes in the Area of Wood Material Science and Engineering in the Forest-Based Value Chains**

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## 1 Executive summary

The overall objective of the ERA-NET WoodWisdom-Net 2 was to promote the transformation of the European F-BI from a resource-intensive to a value-added knowledge-intensive, innovative and globally competitive industry based on the sustainable use of renewable raw materials. The goal was to further develop the WoodWisdom-Net Research Programme by launching two joint calls for projects in 2009 (Joint Call 2) and 2010 (Joint Call 3). Both calls were successfully implemented as planned.

The 2<sup>nd</sup> joint call for proposals “Sustainable, competitive processing and end-use concepts for forest-based industries” was launched in autumn 2009. The call was focused on applied research and development projects, and the themes and topics for the call were defined by the national funding organisations together with industry, based on strategies described in the SRA and NRAs of the forest-based sector. The focused call topics were aimed at activating industry partners to participate more in the WW-Net Research Programme and to create closer interaction between the research community and applied product development.

This resulted in 38 proposals, involving partners from 17 different countries and additional associated countries such as Belgium and Brazil. After evaluation by an international Expert Panel, nine projects were funded and these started with a kick-off session at the WW-Net Programme seminar in Paris in February 2011. The total volume of the projects is over 13 M€: public WW-Net funding 68 % (9 M€), industrial funding of the company projects 8 % (1 M€), industrial funding of research projects 12 % (1,5 M€), and research centres’ own funding 12 % (1,5 M€).

The 3<sup>rd</sup> call of WW-Net was arranged together with the ERA-NET Bioenergy. This Joint Call 2010 for “Sustainable forest management and optimised use of ligno-cellulosic resources – Bridging gaps between research disciplines, producers, consumers and society” was launched on September 15, 2010. In this call the ERA-NETs WoodWisdom-Net 2 and ERA-NET Bioenergy aim to step up the cooperation and coordination of research activities carried out at national and regional level by joining forces to promote innovative research and cooperation to help optimise the use of trees and forests. The public funding is jointly provided by 19 national funding organisations from Finland, France, Germany, Ireland, Italy, Latvia, Norway, Poland, Slovenia, Spain, Sweden, Turkey and the United Kingdom between 2011 and 2014.

During this 2-step call there were 81 pre-proposals submitted and out of these 40 proposals were invited to the second step. The full proposals were peer-reviewed by an international Expert Panel and based on the ranking list collected by the Expert Panel the Call Committee then recommended 13 projects to be funded within the framework of the available national budgets. The total value of these 13 projects is close to 21 M€, the share of public WW-Net funding being 13.7 M€ and the rest (ca. 7 M€) coming from other co-funding sources (industrial co-funding etc.). As well as the main participants, some of the projects have partners from Austria, Brazil and Chile.

Thanks to all the active efforts during WW-Net 2 in December 2011 the partners came to an agreement on a draft plan of an ERA-NET+ for the forest-based sector and as a result the enlarged ERA-NET Plus consortium was able to submit a proposal in February 2012. The proposed ERA-NET+ action would continue improving implementation of joint activities and has an ambitious goal for funding trans-national research and offering access to resources of other countries.

## 2 Summary description of project context and objectives

*The overall objective of the ERA-NET WoodWisdom-Net 2 was to promote the transformation of the European forest-based industry from resource-intensive to value-added knowledge-intensive, innovative and globally competitive industry based on sustainable use of renewable raw materials.*

This transformation of F-BI not only increases the competitiveness of the sector but also contributes to EU Policy Objectives, see e.g. Communication on the competitiveness, innovation and sustainability of the forest-based industries [COM (2008)113] and EU policies on climate change and sustainable use of resources (20 to 30 % greenhouse gas emissions reduction by 2020) and energy (20 % share of renewable energy by 2020) as set up by the March 2007 Council Conclusions.

The steps to reach the above stated overall objective were:

- 1) Creating and establishing a common research and funding platform for long-lasting cooperation by deepening and broadening the cooperation of the national funding organizations and by inviting partners from additional new countries to join the platform;
- 2) Assisting raw material optimisation (and efficient utilisation of raw material properties) in the development of innovative, eco-efficient processes, products and services along different forest-based value chains and thus promoting competitiveness of the sector; and
- 3) Promoting the utilization of cutting-edge knowledge for new applications at the cross roads between different technologies and disciplines - transformation of F-BI from traditional separate value chain industry to optimized multiple value chains industry which addresses to customer needs, reduced resource consumption and increased value creation.

Specific objectives:

- 1) Broadening, strengthening, streamlining and deepening the cooperation at the European and national levels within the forest-based sector and with other relevant sectors. The final goal is long-lasting cooperation.
- 2) Broadening, deepening, streamlining and strengthening the joint activities, including strengthening the existing ongoing trans-national research programme to cover the whole innovation chain from science to business by launching new calls, reinforcing industry involvement and developing management of a transnational programme.
- 3) Launching new calls:
  - The first applied research and industrial development call focused on wood and fibre based products.
  - The second call focused on consortia combining basic and applied research with a broad scope covering new and innovative production in forest-based value chains, the call including promotion of participation of researchers outside EU.

The first ERA-NET on wood material science and engineering, WoodWisdom-Net started in 2004 with 12 partners from 5 countries. In 2006, the network expanded with a further 6 partners from 3 new countries. The follow-up ERA-NET WoodWisdom-Net 2 - “Networking and integration of National Programmes in the Area of Wood Material Science and Engineering in the Forest-Based Value Chains” was launched in 2009 (contract ending in February 2012) with 19 partners from 12 countries participating in the ERA-NET and some additional funding organisations connected to the network.

The European collaboration in the WW-Net project arises from the Finnish Forest Cluster Research Programme Wood Wisdom (1998-2001) and from the Finnish-Swedish co-funded Wood Material Science and Engineering Research Programme (2003-2006). WW-Net’s objective was to promote the competitiveness and sustainability of forestry and the F-BI by networking and integrating national research activities in the area of wood material science and engineering. This will foster the creation of the European Research Area (ERA) in the area by building structures and practices for improved coherence and coordination in planning and implementation of the research activities.

The overall objective of WW-Net 2 was to promote the transformation of the European F-BI from a resource-intensive to a value-added knowledge-intensive, innovative and globally competitive industry based on the sustainable use of renewable raw materials. The goal was to further develop the WoodWisdom-Net Research Programme by launching two joint calls for projects in 2009 (Joint Call 2) and 2010 (Joint Call 3). Both calls were successfully implemented as planned.

The 2<sup>nd</sup> Joint Call for Proposals “Sustainable, competitive processing and end-use concepts for forest-based industries” was launched in autumn 2009. Call 2 was focused on applied research and development projects and the themes and topics for the call were defined by the national funding organisations together with industry, based on strategies described in the SRA and NRAs of the forest based sector. The focused call topics were aimed at activating industry partners to participate more in the WoodWisdom-Net Research Programme and to create closer interaction between the research community and applied product development.

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The 3<sup>rd</sup> call projects started with a kick-off session at the 4<sup>th</sup> WoodWisdom-Net Programme Seminar on the 7<sup>th</sup> and 8<sup>th</sup> February, 2012 in Helsinki. This was also the mid-term seminar for the WW-Net 2<sup>nd</sup> Joint Call and the final seminar of the ERA-NET Bioenergy Joint Call on short rotation coppice.

### 3 Description of the main S&T results/foregrounds

Looking to the future, the ERA-NET WoodWisdom-Net 2 was to continue improving implementation of joint activities and had ambitious goals for funding trans-national research and offering access to resources of other countries. Therefore the project was seeking to extend and reinforce the integration, and was aimed to broaden the partnership and deepen the coordination between the relevant national programmes in the field of wood material science and engineering.

The proposal consisted of five (5) work packages:

WP1 - Strategic network development, WP Leader P10 FCBA (France)

WP2 - Implementation of joint activities, WP Leader P5 Jülich (Germany)

WP3 - Funding of joint trans-national research, WP Leader P7 Formas (Sweden)

WP4 - Dissemination, WP Leader P12 COFORD (Ireland)

WP5 - Management, WP Leader P1 Tekes (Finland).

#### Work Package 1 - Strategic Network Development

WP1 was dealing with the strategic guidance of the project and offering a platform for the national funding bodies to share strategies and strengthen and broaden the links within the forest-based sector at the national, European, and global scale, and broaden the co-operation with related Technology Platforms and ERA-NETs. It was the core for improving cooperation, identifying new strategic partners, and setting the basis for self-sustaining cooperation in the future.

During the project cooperation with the whole sector (industry and forest owners) was strengthened especially through the European Forest-Based Sector Technology Platform (FPT) as planned. Cooperation with the FTP was strengthened in order to coordinate the implementation of the Strategic Research Agenda (SRA; priorities defined by the FTP), and to define the relevant research priorities to be supported by WoodWisdom-Net (WW-Net). WW-Net had several discussions and meetings with the FTP representatives to analyse the interactions with the WW-Net Research Programme. Many of the WW-Net participants are also members of the National Support Groups (NSG) of the FTP and partners have extensively utilised these networks for WW-Net when mapping the potential research areas for the trans-national WW-Net Research Programme.

Furthermore, WW-Net was actively mapping new opportunities via COST. Prior to the WW-Net Research Programme Seminar in connection with the FTP Conference in Stockholm (11 November 2009) WW-Net organised a separate workshop for the project leaders of the ongoing research projects within the WW-Net Research Programme (Call 1) and the project coordinators explained that there was no budget in the projects for short term missions which would facilitate scientific exchanges. It was also discussed that some projects are linked to each other in terms of goals and scientific approaches but there is unfortunately no scientific exchange between these projects.

Due to these reasons WW-Net started discussing a possible WW-Net related COST project idea together with some COST representatives. As a result FCBA prepared a draft for a COST pre-proposal and with the support from WW-Net partners the COST pre-proposal (titled COSTWISE) was submitted on 24.3.2010. However, the COSTWISE pre-proposal was not selected and in the evaluation results it turned out that only one of the individual evaluations (eight individual

evaluations in total) did not rank COSTWISE proposal high enough. Still, the feedback from other evaluators was encouraging and the WW-Net consortium made a decision to work further with the issue.

The consortium also collected examples and experience from other former ERA-NETs which had progressed beyond period of Commission funding, e.g. ERA Chemistry, SKEP, CRUE. This was considered useful as an information basis to develop and discuss concrete long-lasting cooperation models for WW-Net during the course of the project. As a first step, the funding organisations participating in the 3<sup>rd</sup> Joint Call committed to fund jointly evaluation and programme activities in relation to the call.

During the project the consortium also focused on strengthening the collaboration with other related ERA-NETs in order to share good practices (gap analysis, methodology for the call, evaluation practices, etc). The activities included e.g. as follows:

- participation in the collaboration among both the IB related ERA-NETs and the KBBE related ERA-NETs (this collaboration including proposal preparation "PLATFORM KBBE ERANETS");
- collaboration with the ERA-NET Plant Genomics when organising the 2nd WoodWisdom-Net Research Programme Seminar on 11th of November 2009 in Stockholm (three related ERA-PG projects were presented during the sessions);
- collaboration with ERA-NET Bioenergy in defining and implementing the 3rd joint call.

P5 PtJ as the WP2 Leader addressed previous contacts at potential partner organisations during preparation of the 2<sup>nd</sup> and 3<sup>rd</sup> Joint Call regarding a potential participation as a call funding organisation and definition of call topics. Two call partners, FNR on behalf of BMELV (Federal Ministry of Agriculture) from Germany and the Ministry of Environment and Construction from France committed to join the 3<sup>rd</sup> Joint Call as additional funding organisation besides the participating ERA-NET partners. Other organisations such as FFG from Austria, Forestry Commission from UK and MSFU from Russia were interested being active third countries for implementation of the 3<sup>rd</sup> Joint Call and to potentially arrange funding for project participants from their countries. Austrian applicants are successfully involved in projects recommended for funding from the 3<sup>rd</sup> Joint Call.

The cooperation with ERA-NET Bioenergy introduced several new funding organisations and new partner countries to join in for the implementation of the 3<sup>rd</sup> Joint Call (altogether 19 funding organisations from 13 countries). Besides the officially participating countries, the 3<sup>rd</sup> Joint Call again invited participation of third countries, particularly also non-EU countries for individual projects.

During the project the consortium also focused on the topic "deepening the cooperation towards self-sustaining cooperation of the national funding organizations and research programmes in the future". The topic was discussed among the WW-Net 2 partners in a number of meetings and there were identified several potential elements. Via a questionnaire all partners contributed to a more detailed research on the possibilities of further cooperation including a self-sustaining cooperation. There was a strong interest from the major part of the consortium to aim at a further cooperation.



During several meetings the topic was discussed among the WW-Net 2 partners. The following potential elements for further cooperation were identified:

- ERA-NET+ as a plan for further cooperation
- Potential elements of self-sustaining/ long lasting cooperation:
- Kick-off Seminar for Call 3 projects (MoUs): February 2012?
- Mid-term Seminar for Call 3/ Final Seminar for Call 2 (MoUs): 2013?
- Final Seminar for Call 3 (MoUs): 2014?
- Brochure/ book of all projects of the “WoodWisdom-Net Research Programme”?
- Updated Research Landscape Tool (RLT)
- WW-Net website?
- WW-Net contact list?
- The network itself?

Via a questionnaire all WW-Net 2 partners contributed to a more detailed research on the possibilities of further cooperation including a self-sustaining cooperation. There was a strong interest from the major part of the consortium to aim at a further cooperation. As main elements of a further cooperation in case of a self-sustaining network the following elements were highlighted (in decreasing importance): 1. Programme seminars for the running projects, 2. The WW-Net website, 3. Secretariat, 4. Project Observers, 5. Newsletters. Without EU-COM funding only 3 of the partners would aim for another Joint Call. But considering the financial crisis and the financial situation in many European countries and the limited relevance of the forest-based sector in many countries it does not seem to be realistic to aim at a self-sustaining network in the forest-based sector at this stage. However, a Nordic self-sustaining network might be a possible option.

As a result there was taken the decision to apply with an enlarged consortium for an ERA-NET Plus project under KBBE and ENV. As a final result the proposal for an ERA-NET Plus Action WoodWisdom-Net+ (WoodWisdom-Net+ Pacing Innovation in the Forest-Based Sector) was submitted on Feb 28, 2012.

## **Work Package 2 - Implementation of Joint Activities**

WP2 focused on the preparation and implementation of joint activities thus supporting the creation and evolution of a strong trans-national research and development and innovation (RDI) community in the field. It also analysed and prepared the processes for implementation of the transnational research programme in WP3, and identified the research topics of the calls.

Most of the work was dedicated on defining the process and call topics for the 2<sup>nd</sup> and 3rd Joint Call, the work including also the re-launch of the „Research Landscape Tool" (RLT), arrangements linked to two large WW-Net Research Programme seminars, and collection of a handbook for transnational programme management. Furthermore, there was conducted an external evaluation of the first phase of the WW-Net Programme with a focus on the added value from transnational cooperation in WW-Net community and on the impact on European innovation environment and effect on the sector. The evaluation brought up new ideas for future improvement of the WW-Net Programme and the feedback of the evaluator team from Slovenia and Austria was used for the ERA-Net Plus proposal.

Collection of information on the partners' funding programmes was carried out with a questionnaire survey prepared by P5 PtJ. This information was then used within the process of call topics definition for the 2<sup>nd</sup> and 3<sup>rd</sup> Joint Call. In parallel information on related research projects and programmes in the European framework were collected.

The consortium organized the following WoodWisdom-Net Research Programme seminars (agendas and presentations are available for download under WW-Net website):

- 1) "From Research to Business" was the theme for the FTP Conference 2009 which was held in Stockholm from 9-11 November 2009 ([www.ftpc2009.se](http://www.ftpc2009.se)). WoodWisdom-Net joined the thematic sessions of the conference and organised the 2<sup>nd</sup> WoodWisdom-Net Research Programme Seminar on 11 November 2009 at the same venue back-to-back with the FTP conference.
- 2) 1-2 February 2011 in Paris (Final Seminar of the projects of the 1<sup>st</sup> Joint Call, and Kick-Off Seminar of the projects of the 2<sup>nd</sup> Joint Call),
- 3) 7-8 February 2012 in Helsinki (Mid-Term Seminar of the 2<sup>nd</sup> Joint Call + Opening Seminar of the Joint Call (2010) of the European Research Area Networks (ERA-Nets) WoodWisdom-Net 2 and ERA-NET Bioenergy + Final seminar of the Joint Call on Short Rotation Coppice (2008) within the framework of ERA-NET Bioenergy).

The Research Landscape Tool RLT was identified as one of the potential elements of long-lasting cooperation after the end of the preceding ERA-NET WW-Net. For the planned update of the Research Landscape Tool (RLT) discussions with FTP and InnovaWood were made to join forces and use synergies with existing other research databases. However, it turned out that it would not be possible to launch a joint database. For that reason there was done a technical re-launch of the RLT (RLT link for public search: [https://www.ptj.de/woodwisdom/project\\_db](https://www.ptj.de/woodwisdom/project_db) or under [www.woodwisdom.net](http://www.woodwisdom.net)) based on a further development of the ERA-Net MARTEC database. All WW-Net 2 project partners and Joint Call partners received login information to submit their national projects into the RLT. P5 FZJ-PtJ as the Task Leader added the projects of the old RLT into the new database.

During the project previous experience and the mapped programme characteristics of the partners were analysed and used as a basis for developing the procedures for the joint calls. Based on the experience made in the different implementation procedures of the three Joint Calls, the handbook for transnational programme management was developed and it is also expected to provide additional input to the NETWATCH/ERALEARN project as an overview on best practice processes and experience from the implementation of the three Joint Calls.

Furthermore, there was conducted an external evaluation of the 1<sup>st</sup> Call of the WoodWisdom-Net Programme with a focus on the added value from transnational cooperation in WW-Net community and on the impact on European innovation environment and effect on the sector. Ideas for future improvement of the WW-Net Programme were collected, and the feedback of the evaluator team from Portugal, Slovenia and Austria was used for the ERA-Net Plus proposal. Due to limited resources the report could not be published in its final format by the end of the project, however the official version will be brought onto the website later during the spring 2012.

To support further collaboration and to provide the partners with an opportunity to learn more about each other the consortium continued with the "visiting programme for programme managers" in a

format of one-day visiting programmes in connection with the Steering Committee meetings. Of each visiting programme there was published a separate written report:

- Bordeaux on Oct 13-14, 2009
- Ljubljana on May 27, 2010
- Antalya on Oct 19, 2010
- Riga and Jelgava on May 31, 2011
- Oslo on June 6, 2011
- Madrid on Dec 1, 2011.

The consortium was also active in discussing potential topics for an ERA-NET+ together with the ERA-NET partners and representatives from FTP and COM. The first draft topic description for an ERA-NET+ "Tackling climate change in forest-based value chains" was developed already in 2010 and proposed for the NMP Work Programme 2011 but was finally not included.

However, the discussions were continued and as a result the European Commission published the following ERA-NET Plus topic in its Work Programme in June 2011: "*NMP.2012.4.0-3 Innovation in the forest-based sector for increasing resource efficiency and tackling climate change with competitive customer solutions – ERA-NET Plus topic jointly implemented by Theme 2, FAFB, and Theme 4, NMP*". This was a starting point for the process to collect an ERA-NET Plus proposal. After first creating a general roadmap, based on the analysis of potential new partners and the work on a self-sustaining network there were identified and contacted a large number of partner candidates. The agreement on a draft plan of an ERA-NET+ for the forest-based sector and a draft plan of contents and processes for an ERA-NET+ with preliminary commitments obtained from partners was reached as soon as in December 2011. As a result, the enlarged ERA-Net Plus consortium was able to submit a proposal in February 2012.

### **Work Package 3 - Funding of Joint Trans-national Research**

WP3 was to implement the strongest form of programme networking i.e. to fund and implement a joint trans-national research and development programme. The founding supporting WP3 was the implementation of the best practises identified from the first WoodWisdom-Net transnational call 2006 and broadening the WoodWisdom-Net Research Programme with new calls of different objectives and with different funding organisations.

As planned, the project successfully launched two calls with different focus and objectives as well as involving different funding organisations to build an evolutionary programme scheme consisting of transnational consortia of different types of R&D projects.

The 2<sup>nd</sup> Joint Call for Research and Development Proposals within the WoodWisdom-Net Research Programme "*Sustainable, competitive processing and end-use concepts for forest-based industries*" (call launch 11 Nov 2009, deadline for applications 23 Feb 2010) was focused on applied research and development projects conducted by consortia of researchers and industry (small- and medium-sized enterprises (SME) or large companies). The call is expected to increase synergies between industries and research teams around Europe and to promote the sustainability and competitiveness of the forest-based sector in Europe.

The theme and topics of this Call were developed by the national funding organisations together

with representatives from industry in a process involving surveys, discussions and workshops. They are based on priority research areas described in the Strategic Research Agenda (SRA) of the Forest-based Sector Technology Platform (FTP), the respective National Research Agendas of the national support groups of FTP, input from the CEI-Bois R&D Working Group, and priority topics of the national programmes of the funding organisations participating in the Joint Call. Furthermore, representatives of the European Commission were consulted to avoid duplication of this Call with FP7 topics.

At its meeting on the 27<sup>th</sup> of May 2010 the 2<sup>nd</sup> Joint Call Committee of the WoodWisdom-Net Research Programme decided to recommend nine (9) proposals for funding. The proposals total approximately 13.4 MEUR with ~8.4 MEUR requested from public funding sources and ~2.4 MEUR from industrial co-funding.

The 2<sup>nd</sup> Joint Call generated 38 proposals of which the 9 recommended for funding. The results have been communicated to the coordinators of the submitted proposals. The projects accepted for funding will be published in detail on the WoodWisdom-Net website after the respective funding organisations have taken their final funding decisions. This is expected to happen by the end of November 2010.

On 15 September 2010 the consortium successfully launched the 3<sup>rd</sup> joint call of the trans-national WW-Net Research Programme under the title *"Sustainable forest management and optimised use of lignocellulosic resources - Bridging gaps between research disciplines, producers, consumers and society"*. In this call the European Research Area Networks (ERA-Nets) WoodWisdom-Net 2 and ERA-NET Bioenergy aim to step up the cooperation and coordination of research activities carried out at national and regional level by joining forces to promote innovative research and cooperation to help optimise the use of trees and forests.

The call covers the research topics listed below. Each proposal was expected address at least one or more of these topics. Innovative forms of cooperation were encouraged, e.g. interdisciplinarity (natural/technology sciences and social sciences, researchers/users), research and implementation, involvement of stakeholders. The research topics were:

1. Forest for multiple needs of society, including enhanced productivity and optimised use of forest feedstock;
2. Advanced products and technologies for primary wood processing and manufacturing of wood and fibre-based products; and
3. Advanced biofuels and biorefineries.

The call model was a two-stage application procedure, starting with a call for pre-proposals (deadline 1 December 2010). 81 pre-proposals from 660 organisations were first evaluated by national organisations on the criteria for: eligibility and suitability for national funding, relevance to the call scope and objectives, qualities of the consortium, innovativeness, societal, economic and environmental relevance. 40 proposals were then selected by the Call Committee (representatives of the participating funding agencies) in January 2011 and the selected consortia were invited to submit full proposals by 31 March. For the evaluation of the full proposals the ERA-Nets WW-Net 2 and ERA-NET Bioenergy had invited international experts to form an Expert Panel.

The Expert Panel met in Berlin for two days in the middle of May 2011 and agreed on a ranking list and recommendations of applications. Using the Expert Panel evaluation and ranking, the Representatives Committee met in Riga on 31 May 2011 and checked the availability of national funding for the higher ranked projects, and as a result of the discussions presented a funding recommendation of 13 project proposals for the Call Committee. The Call Committee took the final decision on 14 June 2011 and thereafter the national funding organizations took their national decisions for funding.

The 3<sup>rd</sup> call projects started with a kick-off session at the 4th WW-Net Programme Seminar on 7-8 February, 2012 in Helsinki, and many of them also combined this with internal consortia meetings. The total value of the selected 13 projects is close to 21 M€, the share of public WW-Net funding being 13.7 M€ and the rest (ca. 7 M€) coming from other co-funding sources (industrial co-funding etc.). As well as the main participants, some of the projects have partners from Austria, Brazil and Chile.

As a part of the Research Programme activities the consortia are expected to deliver short progress reports to the WW-Net Research Programme Secretariat and/or the ERA-Net Bioenergy Secretariat, in English, on an annual basis, including a description of their transnational cooperation and a publishable summary of the project status. Furthermore - as in connection with the earlier WW-Net calls, too - a project observer from one of the participating funding organisations (two observers for each project) was assigned to each of the funded projects to monitor the progress in transnational cooperation on behalf of the participating funding organisations and to provide a communication link between the project and the ERA-Nets' Programmes. Each project is supposed to keep the respective project observers up-to-date on the project (i.e. the coming Board meetings etc.) and its progress.

The activities also include joint programme seminars where there is expected active participation of the funded projects (in a format of short presentations and/or posters on the project). During the reporting period there were organised two such seminars: the first one on 1-2 February 2011 in Paris (Final Seminar of the projects of the 1<sup>st</sup> Joint Call, and Kick-Off Seminar of the projects of the 2<sup>nd</sup> Joint Call), and the second one on 7-8 February 2012 in Helsinki ( Mid-Term Seminar of the 2<sup>nd</sup> Joint Call + Opening Seminar of the Joint Call (2010) of the European Research Area Networks (ERA-Nets) WoodWisdom-Net 2 and ERA-NET Bioenergy + Final seminar of the Joint Call on Short Rotation Coppice (2008) within the framework of ERA-NET Bioenergy. )

All projects are also expected to prepare publishable summaries of the project and its progress at the request of the funding organisations for programme activities and publications of the two participating ERA-Nets (e.g. brochures, newsletters, website), and to deliver, on request, key project information to be published in the "Research Landscape Tool" on the WW-Net website. Updated information on programme activities is published on the WW-Net website.

#### **Work Package 4 – Dissemination**

WP4 was to ensure knowledge and understanding of the project and its impacts across the sector or all relevant sectors, and to provide basis for maximum exploitation of the results of the ongoing WoodWisdom-Net Research Programme and the results of the projects to be started.

A communications plan for the project was developed outlining the goals for communication, project audiences, instruments and channels, communications schedules and an events timetable. This was supposed to be a guiding document which would be updated periodically as the project would progress and develop.

To strengthen and extend the engagement of different stakeholders with the ERA-NET WW-Net 2 there were run a number of initiatives. This was achieved through a number of initiatives - at international level, through the work of the joint call working groups in gathering information on research topics and priorities from key forest industry organisations such as FTP and CEI-Bois, through the Joint Call launched in collaboration with the ERA-NET Bioenergy, through the submission of an innovative networking proposal to COST DC FPS, and through participation in the KBBE ERA-Nets Platform. In addition, at national level, the participating funding organisations in the ERA-NET raised the awareness of WoodWisdom among the forest industry, academia and research communities within their respective countries. This was achieved through attendance at workshops and seminars and through presentations, posters, articles in newsletters magazines, distribution of flyers and reference to the WoodWisdom website.

Attempts – lead by P15 MHEST (Slovenia) as the Task Leader - were made to engage new member and candidate states. Several meetings and workshops with representatives of funding organizations, the research community, the industry and Wood Industry Clusters were organized. Besides various other communications, WW-Net 2 was e.g. invited to have a presentation at the general assembly of the INCO-NET on 30 October 2009 in Zagreb. Ms Marta Sabec from MHEST represented WW-Net at the meeting and gave a short presentation of the WoodWisdom-Net activities.

Additional dissemination activities were performed by the Slovenian Wood Industry Cluster. These included the implementation of dissemination activities of WW-Net 2 among researchers and the interested industry both in Slovenia and the wider SEE region (Serbia, Croatia, Montenegro, Macedonia, Bosnia & Hercegovina and other SEE countries Bulgaria, Romania, Greece, Turkey, Albania) and encompassed publications on WW-Net 2 in different professional media (magazines, websites), in meetings and workshops and through the SouthEast and Central European Network of Forest-Based Clusters (see <http://www.fbclusters.net/>).

As a result of these activities both the Ministry of Education and Science of the Republic of Serbia and the Ministry of Agriculture and Rural Development of the Slovak Republic joined the ERA-NET-Plus proposal WoodWisdom-Net+. However, despite a huge interest of the research community and the wood based industry in Croatia unfortunately did not manage to become actively involved.

Efficient and modern means of communications were put in place to manage the ERA-NET and to disseminate information. The WoodWisdom-Net website was updated and the functionality enhanced through the addition of a newsletter module. Electronic management tools were also acquired such as an Electronic Submission System for receiving and managing proposals, and systems for project progress and financial reporting. The Management Team also tried out meetings via videoconference connections with some success, but incompatibility problems and in-house security issues require that further work is needed to perfect this means of communication.

Broadening and deepening the knowledge and technology transfer management was progressed

during the reporting period through providing current and relevant information on the WW-Net website. During the first half of the project there were published two high quality newsletters profiling the projects from the 1<sup>st</sup> Call for Proposals and reporting interim results from the projects as presented in the mid-term seminar. During the latter half of the project there were again collected two printed newsletters (the latter one could not be published by the end of the reporting period, however will come out in the spring 2012) profiling projects from all the three joint calls and reporting interim/final results from the projects.

During the project there was also produced a large number of dissemination materials in the form of e-newsletters. On the WW-Net website there is a possibility for an automatic online subscription for the e-news. In average there were around 430 recipients all around the world for each e-news issue. A copy of each issue is also available on the WW-Net website.

Through the project level dissemination activities of all the three joint calls significant output has been achieved in terms of peer reviewed scientific papers and communications among the research community and industry. For the Periodic Report 1 all projects from the 1<sup>st</sup> and 2<sup>nd</sup> Calls were surveyed for the dissemination activities undertaken since the start of the projects to mid-September 2010. While all data were not captured at the time of writing, the following gives some idea of the activity that has taken place in 12 projects during the period, namely:

Peer reviewed papers	>55
Conferences where project was presented/represented	>74
Workshops where project was presented/represented	>91
Posters	>23
Newsletters produced	>6
Other publications	>58
Training courses	1

There were also collected the final reports of the projects funded through the 1<sup>st</sup> Call of the WW-Net Research Programme. However, although there already exists a draft of the complete final report, the report could not be published by the end of the reporting period but will come out later in the spring 2012.

The project was in active collaboration with the Forest-based Sector Technology Platform (FTP). All WW-Net partners were and are closely following and actively participating in the FTP activities via their National Support Groups. Besides a number of various national workshops, seminars, and other meetings e.g. with the NSGs, several WW-Net partners also participated in the 7<sup>th</sup> FTP Conference “*Pacing Innovation for the Bioeconomy*” in Warsaw on 26-27 September 2011.

## **Work Package 5 – Management**

WP5 was dealing with the project management issues. By building on previous experience project management was streamlined to manage a growing consortium and surrounding network.

The Project Coordinator together with the Secretariat was involved in organising the following Management Team and Steering Committee meetings:

- Management Team Meeting 1/2009, 2 April 2009, Brussels, Belgium

- Steering Committee Meeting 1/2009 (kick-off), 23-24 April 2009, Rome, Italy
- Management Team Meeting 2/2009, 2 June 2009, video conference
- Management Team Meeting 3/2009, 19 August 2009, Dublin, Ireland
- Steering Committee Meeting 2/2009, 13-14 October 2009, Bordeaux, France
- Management Team Meeting 4/2009, 12 November 2009, Stockholm, Sweden
- Management Team Meeting 5/2010, 27 January 2010, Vantaa, Finland
- Management Team Meeting 6/2010, 30 March 2010, telephone conference
- Steering Committee Meeting 3/2010, 26-27 May 2010, Ljubljana, Slovenia
- Management Team Meeting 7/2010, 20 September 2010, video conference
- Steering Committee Meeting 4/2010, 18 October 2010, Antalya, Turkey
- Management Team Meeting 10/2011, 18 November 2011, telephone conference
- Management Team Meeting 8/2011, 8 March 2011, telephone conference
- Management Team Meeting 9/2011, 30 May 2011, Riga, Latvia
- Steering Committee Meeting 5/ 2011, 15 June 2011, Oslo, Norway
- Steering Committee Meeting 6/2011, 30 November 2011, Madrid, Spain

Besides the above-mentioned coordination meetings there were organised several workshops related to individual WPs and the Project Secretariat was also actively involved in most of the arrangements. There were a lot of joint activities especially related to the preparations of the Joint Calls.

The Secretariat was also giving both financial and administrative assistance to all partners when necessary. Every six months there was collected an Interim Management Report and in connection with the interim management reporting the internal financial follow-up has been regularly updated.

During the reporting period the WoodWisdom-Net partners actively collaborated with researchers, cluster companies and different stakeholders by arranging seminars, giving presentations and publishing articles. WW-Net partners also actively changed information and experience with other ERA-NETs. All contractors promoted and stimulated the joint research activities at the European level by participating actively especially in the processes of the joint trans-national WoodWisdom-Net Research Programme.



## **4 Potential impact (including the socio-economic impact and the wider societal implications of the project so far) and main dissemination activities and exploitation of results**

The ERA-NET WoodWisdom-Net 2 aimed at further deepening, broadening and strengthening the established transnational cooperation based on the experience gained and the existing cooperation structures, but also adding new organisations from new partner countries for broadening the network activities and the EU impact.

### **Reduced fragmentation by improved cooperation and basis for long-lasting cooperation**

The future development of S&T requires not only a higher critical mass of researchers, but it must also in its strategy apply a multidisciplinary approach in order to build new innovations and include e.g. the use of nano- and bio-technologies on a larger scale. In this context Europe is facing a serious drawback compared to US and Japan, as the present research is fragmented and mainly organised on a national level, which hinders the development of a unified European research area. It is in this context that the WW-Net 2 was expected to extend the co-ordination and integration of a common European research platform within wood material science and engineering and to set the basis for a sustained cooperation in the field. A dedicated task (T1.5) was in charge to pave the way for a long-lasting cooperation.

*> By collaborating on cutting-edge technologies the ERA-NET was expected to provide the critical mass needed to develop new technologies and approaches.*

By strengthening and streamlining the information exchange system (developed during the preceding ERA-NET) between the current national programmes and stakeholders the F-BI research areas were co-ordinated to expand the efficiency of the research. Given the size of the national research bodies and stakeholders involved in the WW-Net 2 with new core partners and associated partners, a co-ordination of these on a European scale created a European research area of unprecedented size, supporting European S&T within the area to become a global leader.

The research community along the forest-based value chain benefitted from the transnational cooperation because it helped to join forces in relevant European countries with high forest coverage bringing together leading research groups in the fields of forestry, wood properties, wood materials and engineering, pulp and paper, and wood products together with strong forest-based industry including a large number of SMEs in the wood working industries. Transformation of the sector requires that research and development needs to work with a trans-national perspective and actively develop RDI culture and processes. WW-Net 2 was promoting the industry - academia collaboration throughout the whole innovation chain from science to business.

The fact that national bodies are co-ordinating their research strategies within wood material science and engineering ensured that sufficient funding was available to obtain a high effect of the co-ordinating and integrating activities, thereby building a truly integrated and operational European research area.

*> The value and synergy obtained from the network activities were expected to be the driving force for a durable network beyond the period of funding by the European Commission.*

Furthermore, the large size of the forest-based industry in Europe ensured that the impact of the WW-Net 2 on the European research arena and industrial competitiveness was of a wide range. A strong liaison between European research and industry within wood materials science and engineering is vital for a stable economy and to ensure possibilities for sustainable growth and development in a number of other industries and areas.

### **Capitalising the experience of joint calls and coordinated activities**

The Finnish-Swedish Wood Material Science and Engineering (WMS) Research Programme (2003-2007) was the first step towards creating a common research platform in the area of wood material science and engineering. The evaluation of the programme was run early 2008. Main lessons learnt were the better understanding and benefits of the bilateral collaboration stated by the research community and funding organisations. On the other hand, industry involvement was not as high as desired.

The first WW-Net ERA-NET was successful in mobilising significant industrial co-funding within the transnational programme (ca. 15% of a total call volume of 20 M€ was industrial funding) because it met strategic interest of European forest-based industries, e.g. through the Building with Wood Programme of CEI-Bois. But the active industrial participation in the research and development projects actual was still to be improved.

Based to this experience, the WW-Net 2 paid special attention for the industrial involvement by targeted workshops with invited experts (such as innovation leaders of leading companies, and FTP). It is planned that in the future there will be set up an industry advisory panel comprising nominees from each participating organisation which will be asked to comment on draft calls and would meet once a year to review the industry relevance of the project portfolio. WW-Net 2 supported the industrial involvement by a dedicated call for applied/development projects with SME/industry participation and by fostering "hybrid projects" involving the whole innovation chain. Furthermore, strategic industry needs were met by close collaboration with FTP and consideration of their SRA and NRAs for future call topics which are expected to support active industry involvement in the upcoming projects.

In the FP6 WW-Net ERA-NET the project partners piloted joint activities on numerous forest-based sector related subjects. These pilots identified barriers on the one hand, and established valuable network contacts on the other hand. An internal evaluation of the preceding ERA-NET which was conducted through a survey among the ERA-NET partners and participants of the Pilot Joint Call were the basis to collect lessons learnt and to identify further improvement potential to make future joint activities more efficient.

While WW-Net resulted in a strong network and suitable basis for durable cooperation between the partners involved, there was still a need to deepen the established integration, to reinforce the collaboration both among the partners and among the different stakeholders, and to streamline the processes. At the same time, there was also a need to broaden the network to value added partners not only at the European, but also at the global scale.

*> WoodWisdom-Net supported the participation by providing the partners with a possibility to join the project also by having other roles than being a core participating partner. It also allowed the original WW-Net partners to deepen their cooperation, and the new partners to benefit from the experience.*

This was aiming to have a larger representation of European interests in wood material science and engineering and closely related sectors, and also to encourage the involvement of new Member States in particular. Furthermore, the dialogue with different European and global associations was strengthened.

WW-Net 2 was building on the achievements of the preceding WW-Net, adding new potential research areas to the launched trans-national WoodWisdom-Net Research Programme. It allowed WW-Net partners to deepen their cooperation, and the new partners to contribute to and benefit from research partnership and collaboration. Capitalising the experience made in the Pilot Joint Call, the programme was continued through annual joint calls for different target groups and theme areas within the European Research Area. Streamlined processes allowed faster call schedules and efficient decision making for project funding.

The structure of WW-Net 2 focused effort on different topics and broadened the national funding profile (for a specific call at the national level the involvement of another funding organisation such as a ministry). This flexible structure was the basis for an efficient call and programme management.

*> The transnational programme was designed to be flexible and allowed joint activities at several levels, ranging from information exchange to joint calls, all within common goals and interests agreed upon in the joint agreement between participating countries.*

### **Addressing issues of common interest with socio-economic relevance recognised at global level**

As indicated in the overall project objective, a key element of the WW-Net 2 project was to promote the industrial transformation of the European forest-based industry across the whole value chain through effective integration of nanotechnologies, materials and production technologies in the research.

*> This lead to a new generation of high value added, eco-efficient, competitive and innovative products, processes and services of significant volume and impact in different forest-based value chains based on the renewable raw material source.*

A continuously competitive European forest-based sector is essential for transformation of the European industry from a resource-intensive to a knowledge-intensive industry. An efficient use of wood as a renewable resource substituting limited non-renewable resources will reduce resource-intensity of the European industry. But it requires intensive knowledge to develop new wood-based applications with high added value. This knowledge needs to be created in a common European Research Area in that field which was strengthened by WW-Net.

In order to achieve all this, there is a need for taking advantage in process and product developments of alliances with other sectors and of exploiting emerging technologies, as also indicated in the Strategic Research Agenda (SRA) of the Forest-Based Sector Technology Platform

and in the FTP Vision 2030. There is a clear need to engage scientists from essentially all fields, stretching from the natural and technical sciences to the social, economic and medical sciences. As an example one could mention the developments within bioscience (genomics, post-genomics, system biology offering applications to trees and forests and providing strong input to the manufacturing and functionality of forest-based products), and nanoscience (e.g. investigating fibre cell wall nanostructures, utilisation of cellulose (nano) fibrils, surface treatments with nanoparticles, smart packaging, intelligent housing).

The S&T objectives of the WoodWisdom-Net were in good accordance with the objectives of the sustainable development put forward by the European Commission.

*> The results of research conducted within the trans-national WoodWisdom-Net Research Programme and supported by the extensive network of WoodWisdom-Net 2 with the key players of the European national funding bodies and other stakeholders has a valuable impact on the sustainable development.*

For example, material optimization and new processing concepts will create energy savings of over 40% and also have major impact on product quality through improved material properties of wood and fibres.

In a sustainable economy wood will have a key role as a vast biomass feedstock for a number of applications, e.g. fibre composites, wood construction systems, fine chemicals, biofuels, and intelligent packaging solutions. In the FTP SRA it is stated as follows: "Europe reduces its dependence on oil with the production of advanced transportation bio-fuels that form an integral part of the forest-based sector and create significant new business opportunities. The 'bio-refinery' concept integrates pulp manufacture and the optimised production of bio-fuels, and gives base for chemicals production. Developments in this area will correspond to demands for the increased production of bio-fuels and overall use of renewable raw materials.

Besides the relevance of wood being a renewable resource it is also essential for mitigation of climate change. Increasing use of wood will increase carbon storage in wood and paper products. At the same time standing forests are a sink for CO<sub>2</sub> and produce the resource wood which can be utilised with much less energy effort than most non-renewable resources.

*> Increasing the competitiveness and profitability of forest-based industry through innovative technologies and products helps to tackle climate change.*

It is obvious that society as a whole can benefit from the substitution of non-renewable materials and energy with sustainable, forest-based products. But to realize the full potential of the forest-based sector it requires a balanced and stable supply of wood from sustainable production.

### **Impact of activities on national and regional research programmes**

The dissemination of the work done within the WW-Net mainly took place in the information exchange set-up. Also seminars, workshops and training missions were part of the dissemination. The type of information distributed included best practice, benchmarking results, research programmes and industrial or technical implementation. Part of the information was made open to parties outside the network, as the network was and is supposed remain open and transparent in

order to attract additional resources and grow the European research area. The information from the network was mainly aimed at industry, researchers, European, national and regional decision-makers and advisory bodies, but the network was also addressing the general public.

*> A common, transnational programme was based on a joint analysis of research needs and priorities that would facilitate allocation of resources to areas of highest strategic importance.*

Coordinated efforts will create a basis for the build-up of structures and critical masses required for substantial scientific impacts, and for which national funding alone is insufficient. Implementation of best practice protocols within the participating research funding and managing organisations may lead to a higher efficiency in the administration of programmes. The network was also promoting further development of quality criteria that can be used as tools for ultimately raising the competitiveness and standard of the European wood material research. Potentials for harmonisation and mutual opening of the national programmes were identified and realised.

Special actions were set up for technology transfer to the European industry and stakeholders. In this context IPR and proprietary knowledge must be included as part of the dissemination by the network.

*> It is believed to be of main importance that a result of the network is a more free flow of information and knowledge.*

This was partly achieved by a set of guidelines and protocols specified in the Consortium Agreement.

### **Contribution to standards**

Within the area of wood material science and engineering there are already a high number of common standards, many of them CEN based and addressing commonly traded goods, and a substantial number of forest related industries have been ISO certified. On the other hand, the lack of common standards and the diversity of national standards in the building sector is one serious barrier for the widespread use of wood for different building purposes.

*> Extending the state-of-the-art through new research initiatives and development of new technologies will enable incremental development of existing standards in areas such as wood products and will contribute to development of new standards as new commodities and services begin to be traded across the EU and outside the community.*

As a result of the activities in the WoodWisdom-Net calls for research of pre-normative nature may occur.

## 5 Address of the project public website and relevant contact details

The WW-Net website ([www.woodwisdom.net](http://www.woodwisdom.net)) contains two main sections: one for the ERA-NET WoodWisdom-Net 2, and another one for the joint trans-national WoodWisdom-Net Research Programme.

For the ERA-NET project the website offers some details of the project in general (such as mission/objectives, organisation and contact, description of work packages, description of the ERA-NET scheme) as well as information on the main news, events and publications. There are also links to relevant websites and databases, and for the WW-Net 2 ERA-NET partners there is a "Partner area" with links to the main online tools such as the WW-Net Intranet and the online reporting tools. Finally, any user has a chance to provide feedback to the project via a separate feedback page.

The part for the WoodWisdom-Net Joint Research Programme includes general description of the research programme itself with detailed information on the individual calls and funded projects. Furthermore, all news, events and publications related to the research programme are available on the website.

For further information on the project, please contact:

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