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LIST OF ABBREVIATIONS

CN = Collaboration Network

DTP = Danube Transnational Programme

FBI = Forest-based Industries

FORESDA = Project "Forest-based cross-sectoral value chains fostering innovation and competitiveness in the Danube region"

IP = Innovation Project

LAP = Local Action Plan (Project Deliverable 6.2.4 Local Action Plan)

LIAP = Local Innovation Action Plan (Project Output 3.2 Local Innovation Action Plans)

MH = Methodology Handbook

PA = Priority area

PIE = Pilot Innovation Environment

PP = Project Partner

RIS = Regional Innovation System

SME = Small and Medium Sized Enterprise

TS = Transnational Strategy (Project Output 3.1 Transnational Strategy on Cross-sectoral Level)

USP = Unique Selling Point

TTO/KTO = Technology transfer office/Knowledge transfer office

WP = Work Package

1. EXECUTIVE SUMMARY

FORESDA's main objective is to support the transformation of traditional forest-based industries into sustainable manufacturing areas by an innovative cross-sectoral and transnational approach by developing and supporting cross-sectoral Collaborative Networks (CNs) and Innovation Projects (IPs) as idea generation engines, by implementing cross-sectoral Pilot Innovation Environments (PIEs) as physical and virtual collaboration spaces, and by building up necessary supportive capacities in clusters, intermediaries, research organisations and policy makers.

The specific objective of Work Package 5 (WP5) New Value Chains is to generate and validate cross-sectoral, transnational innovation activities in the strategic innovation areas smart and sustainable construction and furniture, innovative bio-based products and materials and energy efficiency. One important aim in the framework of WP5 was to support at least 90 SMEs (Small and Medium Sized Enterprises) to establish cooperation with R&Ds. The FORESDA consortium supported SMEs through CNs and IPs. CNs are defined as international, cross-sectoral networks of SMEs, large companies and research organisations and IPs are defined as projects bringing together cross-sectorial consortia of SMEs, large companies and research organisations to develop new products, processes or services. Output 5.3 *Cross-sectoral transnational innovation by SMEs* presents how FORESDA approached the provision of the non-financial support to SMEs in the project regions to develop new products, processes or services. The innovations achieved through the CNs and IPs are described by focusing on the involvement of SMEs. Via the CNs, the following number and types of organisations have been supported:

- CN Building with wood (39 members): 12 Business Support Organisations, 22 SMEs, 5 Knowledge Partners
- CN Creative Hubs (32 members): 10 Business Support Organisations, 16 SMEs, 6 Knowledge Partners
- CN Socially Responsible Use of Forests (35 members): 3 Clusters, 4 Higher Education, 6 NGO, 2 Public Institutions, 1 R&D, 2 Regional Authorities, 4 Regional Development Agencies, 13 SME.

Through the Innovation Projects, in sum 305 SMEs (i.e. more than three times more than the planned KPI) have been involved and accordingly supported in the form of innovation management, expertise in various forms, partner search, internationalization, access to finance, testing facilities or other kinds of supports.

2. BACKGROUND OF CROSS-SECTORAL TRANSNATIONAL INNOVATION BY SMEs

2.1 OBJECTIVES

FORESDA's main objective is to support the transformation of traditional forest-based industries into sustainable manufacturing areas by an innovative cross-sectoral and transnational approach by developing and supporting cross-sectoral Collaborative Networks (CNs) and Innovation Projects (IPs) as idea generation engines, by implementing cross-sectoral Pilot Innovation Environments (PIEs) as physical and virtual collaboration spaces, and by building up necessary supportive capacities in clusters, intermediaries, research organisations and policy makers.

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Output 5.3 *Cross-sectoral transnational innovation by SMEs* describes how FORESDA approached the provision of the non-financial support to SMEs in the project regions to develop new products, processes or services. The innovations achieved through the CNs and IPs will be presented focusing on the involvement of SMEs.

2.2 APPROACH

FORESDA tackles the challenge of low competitiveness of the forest-based sector in the Danube region resulting from significant disparities in quadruple helix cooperation, low levels of knowledge based and technology intensive activities as well as a weak innovation culture, low levels of internationalisation of SMEs and insufficient transnational coordination. Focusing on the strengths of SMEs and encouraging them to cooperate and develop new products, processes or services shall support the transformation of the traditional forest-based areas into innovative, modern and sustainable manufacturing areas and the development of innovation-friendly ecosystems. Within FORESDA it is assumed that innovation activities and the innovation culture of SMEs is enhanced by improving existing value chains and strengthening collaboration in the quadruple helix

cooperation. Supporting cross-sectoral, transnational innovation of SMEs through CNs and IPs also enhances existing products, processes and services and fosters the development of new products, processes and services showcasing the possibilities of wood and fibre in tomorrow's society. Connecting different stakeholders of the regional innovation systems, connecting the more traditional forest-based sector with other sectors and supporting SMEs specifically is considered as an innovative approach with a strong potential.

In line with the cross-sectoral and transnational approach of FORESDA, SMEs from various Danube countries and beyond are involved in the CNs and IPs coming from a variety of different sectors such as forestry, sawmill industry, furniture industry, wood in construction, biomass and renewable energy sources, energy efficiency and energy storage, design and creative industries, transport, certification, forestry tourism, cultural and social aspects of forests.

As follows, the particular achievements of FORESDA with regard to cross-sectoral and transnational innovation by SMEs within Collaborative Networks and Innovation Projects will be presented, followed by the contributions to the involvement of SMEs in R&D&I activities on cross-sectoral and transnational level as well as general conclusions.

3. CROSS-SECTORAL TRANSNATIONAL INNOVATION BY SMEs WITHIN COLLABORATIVE NETWORKS

3.1 CN "BUILDING WITH WOOD"

The following subsections provide information about different aspects of the involvement of SMEs in the CN "Building with Wood", with the focus on their role and expected impact of the involvement related to the development of cross-sectoral transnational innovations.

3.1.1 PROFILE DESCRIPTION OF THE INVOLVED SMEs

The Collaborative Network "Building With Wood" is led by the Department of Forest Products Technology and Timber Constructions at Salzburg University of Applied Sciences. Members of the CNs by beginning of July 2019 are:

- 12 Business Support Organisations
- 5 Knowledge (R&D) Partners
- 22 SMEs

The members are coming from the following countries: Germany, Slovenia, Austria, Hungary, Romania, Serbia and Bosnia and Herzegovina.

The *Building with Wood* network builds on a strong kernel of well-established SMEs, dynamic clusters, intermediaries, research and education specialists, policy makers and their networks representing a significant part of the strong traditional SME-dominated wood and timber constructions sectors in the Danube region to promote the image of timber constructions.

The members of the CN contributed to the development of a Joint Innovation Agenda encompassing potential new products, processes and services related to the topic Building with Wood and the CN has been continuously expanded during the course of the project. The long-term aim of the CN is to contribute to the development and roll-out of new products, processes and services.

3.1.2 JOINT INNOVATION AGENDA AND ROLE OF SMEs

Through the transnational bilateral cooperation of FORESDA partners, good framework conditions for innovation is set. Innovations and best practice examples increase the positive image of timber constructions and promote the use of bio-based materials for buildings.

The CN was built to support the development of Building with Wood in the Danube region. The main objectives are to develop a broad spectrum of product ideas and to select one of them for R&D and market implementation. Therefore, a joint innovation agenda was jointly written within the CN. Bilateral discussions and literature research as well as the information/questions/challenges from previous training sessions and knowledge transfers to SMEs were used for the development of the joint innovation agenda. Five trends have been identified as crucial to stimulate R&D activities within the network in order to develop marketable results:

- Climate protection
- Urbanisation and interior development
- Urban Mining
- Low Tech
- Wood materials

3.1.3 EXPECTED IMPACT OF INVOLVEMENT OF SMEs TO THE CN

These five identified trends have a high potential for innovations and market opportunities. Based on the market opportunities and potential for innovation, the focus of the CN laid on bio-based materials. The various product ideas and related market opportunities will be further elaborated through the work in the network so that one idea can finally be implemented in the market. Bio-based resources are not used currently and are residues. Materials out of bark for instance have good insulation properties and have a high potential on the market and are regional available for the further usability.

This idea can support the innovation capacities of the involved SMEs and the whole industry sector. In addition, the new changed conditions in the environment have also naturally an influence on the current collaborations between different actors (e.g. forestry, policy makers, research and SMEs, clusters). Therefore, this topic will be also analysed within this network.

3.1.4 CONCLUSIONS AND RECOMMENDATIONS

The research agenda of the SMEs will be dealt with in the CN and bilateral meetings within the CN partners will be supported. According to the CN Agreement, the development of an “exploitation plan as the basis for new value chains” is a core activity within the network and this idea was implemented in a research study. Based on the research proposal “Building with wood”, which was successfully submitted for the first step of the third call for proposals of the Danube Transnational

Programme, the work within the Collaborative Network has been supported in the frame of the FORESDA project. The CN will be further supported if the new research project is funded. The involved CN members will also use the developed joint innovation agenda for the analysis of their own innovation potential.

The fostering of transnational collaboration is a central aspect of the approach of FORESDA. In fact, during the project lifetime, it turned out to be challenging to involve regional SMEs in international collaboration activities and the barrier to participate in transnational workshops, trainings and webinars seemed rather high. Accordingly, the work performed within the CN contributed to making the advantages of transnational collaboration more obvious.

The development of new products, processes and services is obviously a very time consuming process and will go on beyond the project duration of FORESDA. A central prerequisite of collaborative activities aiming at new products or processes is trust between the partners – and innovative approaches such as the establishment of CNs can contribute to building up trust between partners and accordingly stimulate innovative activities.

3.2 CN "CREATIVE HUBS"

The following subsections provide information about different aspects of the involvement of SMEs in the collaborative network "Creative Hubs", with the focus on their role and expected impact of the involvement related to the development of cross-sectoral transnational innovations.

3.2.1 PROFILE DESCRIPTION OF THE INVOLVED SMEs

During the period of implementation of FORESDA, membership of Collaboration Network "Creative HUBS" has been enlarged involving total of 28 members (registered by 22nd May 2019) and the structure as follows:

- Business supporting organizations (9 members),
- Knowledge (R&D) partners (6 members),
- SMEs (13 members).

Structure of involved SMEs is dominated by furniture industry – SMEs interested in the concept of cross sectoral cooperation. Companies originate from Bosnia and Herzegovina and Slovenia, and they are typical representatives of SMEs of furniture industries.

During the inception phase of CN, few companies considered as representatives of IT/Creative sector have joined the initiative officially. Companies are engaged on development of specific IT solutions applicable to the forest-based industries. Range of their activities include:

- Development of on-line sales solutions,
- Digital marketing services,
- Professional photography

3.2.2 JOINT INNOVATION AGENDA AND ROLE OF SMES

New business models are emerging as a consequence of technological and transitional changes in global economy. The region is experiencing spill-over effects of global and regional trends of development and implementation of new business models, which are changing existing markets, processes and behaviours of actors, heavily using rapid development of new technologies. Significant impact of changes is expected to be directed towards forest-based and other traditional industries. New business models recognize potentials of culture, creativity, intellectual property, knowledge, personal property, connecting technologies, social networking, financial innovations, artificial intelligence, crypto currencies, etc. for further development processes and competitiveness of business environment of the programme area. The members of the Collaboration Network *Creative Hubs* agreed the fact that the aspect of cooperation between forest based industries (FBI) and Creative industries is emerging and has a potential to largely influence development of new products, processes and services. CN Creative Hubs is formed within FORESDA Project, where the project partners are the backbone of the network. FORESDA partners are supported by the group of institutions – involving SMEs, Knowledge Partners, R&D and Business supporting organization.

CN Network is designed and agreed to secure market-oriented interactions between the two main target groups of SMEs: traditional industries (primarily forest-based industries) and creative industries (implying IT sector and cultural industries). Interactions are planned to be initiated and/or facilitated by the group of Business support organizations, Clusters, R&D Partners, etc. General intention is to support collaboration between these groups, aiming on following trends:

- Application of IT tools in marketing.

- Increasing significance of Creative industries in terms of competitiveness on the market.
- Digitalization processes in progress and under way.
- Combination of resources and cross sectoral cooperation.
- Co-creation, co-working and free-lance networking.

3.2.3 EXPECTED IMPACT OF INVOLVEMENT OF SMEs TO THE CN

The scope of CN “Creative Hubs” is wide. Consequently, throughout the process of drafting of Joint Innovation Agenda (JIA), specific areas (trends, as mentioned in previous section) are pinpointed as the ones with emerging features, cross-sectoral cooperation potential and network capacities to be approached. Overall objective is to use cross sectoral cooperation links to create specific advantages for forest-based industries.

Application of IT tools becomes an imperative in terms of maintenance and enhancement of the position on the market. CN is interested to support interactions of SMEs of forest-based industries and IT/Creative sector, with impact which will ensure proper response to the changes in seller – consumer relations. This implies development and utilization of “on-line” design and order options by using Virtual Reality and Augmented Reality tools. Additionally, interactions will focus 3D modelling - Rapid prototyping technology (3D printing/scanning) and CNC processing.

Another type of impact expected is more significant involvement of Creative industries in development of forest-based value chains, in line with the market trends. Contribution of creative industries is particularly expected in utilization of digital marketing tools, for more efficient access to target markets.

Furthermore, following the trend of introduction of digitalization processes, which have presented significant “game-changer” potential, CN is interested to initiate and facilitate interactions between SMEs of forest-based industries and SMEs engaged on development and application of IT and software solutions. Targeted subject of interactions are digital solutions developed to optimize production processes and raise efficiency and productivity as important elements of competitiveness.

Aspect of cross-sectoral cooperation involving traditional sectors is not neglected. Market trends and potentials are present in cooperation relations between different types of traditional processing

industries (e.g. furniture and metal processing industries) - resulting in new features and characteristics of products – innovations.

Finally, business development processes are getting increasingly initiated as a result of economic and social interactions, which are taking place in dedicated co-working spaces (“hubs”). Usually, processes in subject, are the result of combination of relevant individual expertise and know-how in product design and innovation. Introduction of Co-creation, as methodology for multidisciplinary approach to the process of development of new products, processes and ideas, is one of the crucial aspects, which will be promoted on the level of CN.

3.2.4 CONCLUSIONS AND RECOMMENDATIONS

Mainly as a result of promotion and animation efforts of FORESDA partners, the network is expanded, involving new members with relevant expertise. Transnational approach is applied, which is a good prerequisite for initiation of cooperation on this level. The structure of the network is in line with the plan and expectations. Major achievement in the respective period is a joint approach to the process of preparing of new projects, proven with 2 proposals already submitted for the 3rd Call for proposals within Interreg Danube Programme.

However, expansion of the network has created new challenges. In order to manage and coordinate network activities, it is necessary to establish certain communication structure, which will secure desired level of understanding and involvement of members. Additionally, expertise of each network members has to be revealed, in order to understand full potentials of each individual member and the network in general.

In order to secure desired level of activities of the Collaboration Network for Creative HUBs, primarily task is to create appropriate communication channels for exchange of information and acquaintance with the scope of work and expertise of all individual members. Social networks will be the initial tool for this purpose. Dedicated groups will be created (e.g. FB group “FORESDA Creative HUBs”). On long run, individual meetings and visits will be organized on the bases of expressed individual or group interests for initiation of specific collaboration or cooperation projects, or pure identification of potential topics of mutual interest.

3.3 CN "SOCIALLY RESPONSIBLE USE OF FORESTS"

The following subsections provide information about different aspects of the involvement of SMEs in the collaborative network "Socially Responsible Use of Forests", with the focus on their role and expected impact of the involvement related to the development of cross-sectoral transnational innovations.

3.3.1 PROFILE DESCRIPTION OF THE INVOLVED SMEs

The coordinator/leader of CN FORDIS is Croatian Wood Cluster, the oldest industrial cluster in Croatia, established in 2003, by following bottom-up approach. Since Croatia is very small, CWC acts on the national level. At the moment, the cluster has about 100 members/companies from all the sectors related to the forest-based industries value chain: forestry, sawmill industry, furniture industry, wood in construction, biomass and renewable energy sources, energy efficiency and energy storage, design and creative industries, transport, certification, forestry tourism, cultural and social aspects of forests.

Current state of the CN members (June 30th 2019) from 15 countries*:

Type of organization profile:

- 3 Clusters
- 4 Higher Education
- 6 NGO
- 2 Public Institution
- 1 R&D
- 2 Regional Authority
- 4 Regional Development Agency
- 13 SME

Sectoral profile of SMEs:

Forestry, Furniture production, Flooring, IT, Construction, Metal industry, Biomass

Important remark: Members like regional development agencies are expected to support linkages and contacts with all sectors they collaborate with.

Geographical profile of the CN members:

Danube region: Germany, Austria, Slovenia, Croatia, Serbia, BiH, Hungary, Czech Republic, Romania, Bulgaria, Ukraine

Non Danube region: Italy, Spain, Portugal, Turkey

**FORESDA ends on 30th of June but the Collaborative Networks are expected to provide the basis for the emergence of truly transnational and cross-sectoral new industrial value chains, thus leading to new developments and economic activities on the long-term. Accordingly, the cross-sectoral links and the R&D collaborations initiated will only be fully developed and implemented after the limited duration of the project. Many R&D activities initiated will be maintained after the formal end of FORESDA.*

3.3.2 JOINT INNOVATION AGENDA AND ROLE OF SMES

The aim of the development of the CN's joint innovation agenda was encompassing of potential new products, processes and services which can be generated through collaborative activities of all or some partners of the CNs' members. A joint approach was implemented in order to enable knowledge transfer and exchange between the CNs since they represent 3 master groups of related sectors:

Socially responsible use of forests = Resource

Building with wood = Production

Creative Hubs = R&D

Therefore it can be expected that additional value chains among members of different CNs will be established in mid- and long-term period, following the interaction established among CNs' members on professional events on European but also international level.

The role of SMEs in the CN FORDIS is defined by the main objective of the CN, which is to develop products and services, e.g. solutions for sustainable use of forest resources according to the ecological, economical and social aspect. Accordingly, their task was to:

- 1) Provide information on the existing support environments related to R&D and development of biobased products;
- 2) Give inputs on their needs for development of biobased products in terms of R&D and possible project activities;
- 3) Evaluate their internal capacities and possible roles in the process of project development and implementation.

3.3.3 EXPECTED IMPACT OF INVOLVEMENT OF SMEs TO THE CN

The involvement of SMEs in the CN FORDIS has several expected impacts:

1) To support them in the articulation of their needs in terms of R&D activities, with an accent on the development of biobased products;

SMEs, and especially SMEs in the forest-based industries, have a rather conservative approach to R&D activities. By participating in the CN, it is therefore expected that the SMEs will gain experience in the communication of their needs and ideas regarding R&D activities towards the development of biobased products. Additionally, they will gain a habit of constant analysis of their business, taking into account consumer needs and interests, which is crucial for further development of their products and services established on biobased approach.

2) To raise awareness on the need for collaboration with other sectors towards ensuring their sustainability;

Forest-based SMEs are not used to enter collaborative innovation partnerships and/or networks, especially with cross-sectoral and transnational character. By entering the CN, whose activities will be based on the cross-sectoral and transnational activities, it is expected that the SMEs will become aware of the opportunities to establish collaboration with other sectors and SMEs and other relevant stakeholders on international level towards development of the products and services which will ensure their sustainability on the highly competitive business environment.

3) To raise awareness on the need to use forest resources sustainably, and to respect the ecological and social aspects when using them economically;

Most of the SMEs, especially in the Southeast European region, when using forest resources economically, often neglect ecological and social aspects. Given the fact that the responsible use of forests is based on the sustainable use of natural resources which includes also the anticipation of changes in the environment, there is a need to improve the level of the awareness among enterprises and to support SMEs in finding the way how to contribute to those two aspects on the local and regional level.

4) To raise awareness on the need to "open" forests also for physically disabled and elderly people to use forests for recreative/tourism purposes by producing biobased equipment designed according to their specific needs;

The companies worldwide and in the Danube region are faced with the growing pressure to become more socially and environmentally responsible, e.g. to direct their business in a more ethical way and to have a positive social impact by promoting inclusive and sustainable growth. This concept is for forest-based industries even easier to practice since because socially responsible forest management directly affects the economy as it seeks the development of new and innovative products and services. Also, forest-based industries have the opportunity to contribute to society and support the opening of the forests to physically disabled and elderly people by producing innovative wood- and biobased products for these socially vulnerable groups. or forest-based industries.

3.3.4 CONCLUSIONS AND RECOMMENDATIONS

Developing a clear innovation strategy is a challenging process for SMEs in the forest-based industries since they have a rather conservative approach when it comes to future business development. However, this process is of critical importance towards developing sustained and successful innovative products and services. Setting concrete objectives can be helpful in that process. Besides, it is important to set an innovation climate within the company and to develop the innovation mindset among employees. By joining to the collaborative network such as FORDIS, forest-based SMEs have the opportunity to get different types of support needed to create their innovation agendas and strategies which will, with time, result by innovative products and services. CN FORDIS offered a different kind of support in this first period (during FORESDA lifetime), however, attracting SMEs to join the CN was a demanding task. Accordingly, FORDIS adapted the activities to the current market situation and supported SMEs in the articulation of their needs related to R&D&I activities, with an accent on the establishing of cross-sectoral collaboration on the transnational level. Also, another important task was raising awareness among SMEs on the opportunities to run the business sustainable by respecting ecological and social aspect, but also to support some of the socially vulnerable groups in using forests for recreative purposes and to support them by developing wood- and biobased products specially designed for their needs.

4. CROSS-SECTORAL TRANSNATIONAL INNOVATION BY SMEs WITHIN INNOVATION PROJECTS

To achieve the objective to build up a transsectoral innovation environment which transforms the traditional forest-based industries into innovative, modern and sustainable manufacturing sectors, FORESDA followed a practice-oriented approach and supported cross-sectoral, transnational innovation through CNs and IPs.

With regard to the IPs, as a result of an idea validation and selection process that took into account innovativeness, market potential, potential for new industrial value chains, cross-sectoral added value, expected potential for growth and job creation and transfer potential to other European projects, 33 Innovation Projects have been selected to be supported by the FORESDA consortium by different means.

The main topics of the Innovation Projects were:

- Energy efficiency / power consumption reduction
- Enhancing RDI capacity (of clusters, SMEs)
- Development of strategies (e.g. branding strategy for wood / wooden products; for digitalising the FBI-sector; sustainable mountain forest management)
- Development of new supporting measures (e.g. competence centers, trainings like the training for energy efficiency)
- Development of new products (e.g. multi-story modular wooden buildings, Office chair, high fire resistance interior wooden doors)
- Optimize usage of wood regarding climate / exposition / usage
- Optimize processes (e.g. increasing security and duration of wooden products, improve wood quality in primary wood processing and wood durability, new wood drying regime for wood quality improvement, more efficient manufacturing processes)
- Knowledge exchange (e.g. share the teaching experience in project based classes and to continue developing timber construction modules)
- New Business Models (e.g. change from pure companies to service providers, software-based management of individual service requests)
- Fostering cooperation (e.g. access to CNC technologies applied in wood processing and furniture industries, development of Cross-Border Cooperation

Network of Creative Industries, overcoming borders for cooperation, Cross linkage of the furniture industry)

As follows, the innovativeness of the IPs supported by FORESDA per project country including the type of support and the innovation category are presented.

4.1 PROJECT COUNTRY: GERMANY (LP)

The following sections describe activities related to the cross-sectoral transnational innovations by SMEs realized within the project country Germany.

4.1.1 OVERVIEW

IP Acronym	Innovation Category*	What is Innovative?	How was It Supported?*	No of SMEs Involved
SoftwareCantina	Service	Software-based management of individual service requests as a new service	Expertise / Others SoftwareCantina is given access to the pool of experts of CyberForum, e.g. regarding business model development, as well as access to the Pilot Innovation Environments (PIE) of the FORESDA project to foster the cross-sectoral dissemination of the software-based solution by SoftwareCantina. Support has also been given support on the development of a sound dissemination strategy to increase the visibility.	1
IWOFurn	Service	A new service is established focusing on digital logistics business models for	Partner search/ Others The SME has been given access to the PIE and network of CyberForum to	1

		<p>the furniture industries. Difficulties in establishing digital logistics business models among the individual participants (industry, trade, logistics service providers) are identified and incorporated into joint solution concepts. Approaches such as feedback management, which contribute to the creation of continuous communication are examined.</p>	<p>find suitable partners Support was also given via dissemination activities to strengthen the network of the involved SME.</p>	
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**Product/Service/Process*

***Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others*

4.1.2 RESULTS AND CONCLUSIONS

The two supported IPs SoftwareCantina and IWOFurn are both focusing on cross sectoral activities and the linkage between the IT sector and the furniture industry. Both IPs aim at developing new services (digital logistics business models for the furniture industries and Software-based management of individual service requests) which both have an innovation potential. Both projects contribute to the aim of transforming traditional companies from the wood sector into a sustainable, innovative and competitive sector making use of the whole wood value chain and of regional competences from other complementary sectors. The cooperation between FBI and the IT sector is an important innovation driver and addresses the challenge of the rather

low innovation capacity of the SMEs in FBI. If both IPs turn out to be successful, they can be a role model for further cooperation activities and can result in structural benefits on regional level.

4.2 PROJECT COUNTRY: SLOVENIA (ERDF PP3, PP4)

The following sections describe new value chain cases tackled within the project country Slovenia. Support for the GUARDIAN project idea was conducted for the Slovenian company MELU, a door manufacturer, but the project idea will be implemented at an international cross-sectorial consortium of companies from Slovenia, Italy and Spain with the support of EU subsidies. The IQ HOME project idea was implemented within the wide cross-sectorial consortium of Slovenian companies with the support of Slovenian public subsidies. Support within project idea Play with Wood was offered to the company Silvaprodukt, Slovenian partner in the cross-sectorial and transnational consortium. The OUTWOOD project idea was integrated Slovenian-Italian cross-sectorial consortium with scientific excellence and successful SMEs. Project idea WOOLF brings together RDIs and SMEs in the field of building with wood, who are also involved in SRiP Smart buildings and home, including wood chain. The project idea Mountain Wood joins mountain farmers, local SMEs, RDIs and supporting organisations into cross-sectorial consortium aiming to establish short local value-chains and add value to local mountain wood.

4.2.1 OVERVIEW

IP Acronym	Innovation Category *	What is Innovative?	How was It Supported? **	No of SMEs Involved
GUARDIAN	Product	The idea is innovative in its green approach – innovative design, integration of new innovative eco materials.	Expertise / Others	2
IQ HOME	Product	The idea is very innovative. Completely new approach to furniture design, new way of thinking about use of furniture.	Innovation Management / Others	4
Play with Wood	Product	Development of innovative wooden	Expertise / Testing Facilities /	6

		playgrounds and recreational equipment. Development of customised inspection and maintenance regime for selected wood materials/construction systems/playground equipment	Internationalization	
OUTWOOD	Product	New protection solutions for exposed wood will be proposed	Expertise / Others	2
WOOLF	Product	New sensing system for wood moisture content and new business model will be provided.	Expertise	4
Mountain Wood	Product	Idea is innovative in terms of recognizing and proving high quality of mountain wood. Scheme of mountain wood certification will be established and new innovative products with local character with high added value will be developed. New protection solutions will be proposed.	Expertise / Access to Finance	13

* Product/Service/Process

**Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others

4.2.2 RESULTS AND CONCLUSIONS

We estimate that GUARDIAN doors made with eco-friendly materials would contribute to better people's safety and health. An innovative product may also have a higher added value for the company. The project idea of IQ HOME could have a great impact on the furniture market, because they deal with completely new concept of furniture development. The approach is cross-sectoral and going in disciplines as medicine, physics which were rarely seen before. This open also quite different Unique selling point (USP) which can give also advantage on the market if marketing strategy will be correctly developed and conducted. Development of innovative wooden

playgrounds and protocol of their maintenance within the project idea Play with wood is in accordance with the current demand for usage of sustainable natural materials for equipment of playgrounds and other outdoors recreational areas. Project idea OUTWOOD searches for innovative solutions to protect wood, exposed in extreme environments. Results will be beneficial for the highly sensitive marine environments and will contribute to conservation of wood based cultural heritage. Development of new innovative sensing systems and consequently predicting of service life of wood represents a basis for the development of new business idea for products with high added value. It connects all stakeholders in the construction sector. So far little attention was put on the provenance of the wood and its quality properties. The approach of project idea Mountain wood is highly innovative in terms of adding recognition and added value to innovative local wooden product.

4.3 PROJECT COUNTRY: AUSTRIA (ERDF PP5)

The following sections describe activities related to the cross-sectoral transnational innovations by SMEs realized within the project country Austria. WP 5 offered the basic framework for the selection and further development of innovative projects with different SMEs, universities and research institutes. Most of the Austrian projects deal with the research funding of various innovative project ideas.

4.3.1 OVERVIEW

IP Acronym	Innovation Category*	What is Innovative?	How was it Supported?*	No of SMEs Involved
Flavour of different wood species	Product	To produce a high added-value product from wood for BBQ	Access to Finance – Through the knowledge and technology exchanges of the FORESDA partner the project idea could be transferred into a research project. Funding for different innovation ideas and	1

			projects are very important for SMEs. Here, we screened and looked for this project idea for possible national funding programmes.	
woodVR	Process	To analyse and develop new VR methods for the renderings of wood surfaces for different applications	Access to Finance - The innovation potential for the usability of VR and also AR (augmented reality) technology to present wood products is very high. The SMEs can be used this method to products presentations or included in BIM (building information modelling). The requirements of the SMEs were very high and therefore, an appropriate research funding programme was needed.	2
iwood	Process	To analyse and develop new processes for stabilisation of wood surfaces against natural weathering	Access to Finance - New technologies can save energy and are normally less time-consuming as old technologies. With this methods material improvements are possible, which can implement in new products with new properties. The challenge for the implementation of this project idea was to find an appropriate funding programme and the	1

			suitable research partners, which fulfils the requirements of the SME.	
Dämmwolle	Product	To use wood extractives as functional compounds for insulation materials	Access to Finance - Furthermore, the unused wood extractives can be used to produced high added-value products, which have a positive image and may reflect this to the forest based industry back. However, the challenge for the implementation of this project idea was to find an appropriate funding programme and the suitable research partners, which fulfils the requirements of the SME.	2
CirculAlps	Process	To analyse and development new timber value chains in the Alpine region	Access to Finance - This was a transnational approach for a general research topic with a high influence in different countries (e.g., Alpine region) and no research project funding was available, although in this project no SME was involved in this stage of the project idea. However, the potential of finding new value chain within the forest based industry to support their development and bio-based materials is very high, so that the	-

			expected potential for growth and job creation as well as the cross-sectoral approach were fulfilled.	
Beck	Service	To analyse an innovative wooden product	Testing Facilities - The innovation potential and applications of wood nails become increasing. However, some results are need to further optimization and development.	1
aHolz	Product	To analyse the potential of thermal activated wood products	Access to Finance - Funding for different innovation ideas and projects are very important for SMEs. Here, we screened and looked for this project idea for possible national funding programmes. Nevertheless, this idea was from the involved SMEs. However, there is needed basic research before the possible business can start and the companies did not carry the risk. Therefore, a special funding programme was needed to fulfil the requirements of all actors.	-

**Product/Service/Process*

***Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others*

4.3.2 RESULTS AND CONCLUSIONS

Based on the results of WP 3 *Transnational Strategy* of the FORESDA project and the actual situation of the Austrian economy and the innovation strategy of Salzburg 2025, SUAS decided to setup a Pilot Innovation Environment (e.g. demonstration centre) (WP 4) for upcoming approaches of innovative materials and/or products at the Salzburg University of Applied Sciences in Kuchl, Austria.

This was the basic framework for the selection and further development of innovative projects with different SMEs, universities and research institutes. Within the knowledge transfer and innovative project development activities in WP 4 and WP 5 more than 20 SMEs and 20 research institutes, business support and cluster organisations were involved in the different activities in the frame of the FORESDA project. Six various project ideas were submitted to different research funding agencies to support these projects beyond FORESDA. In each of the six IPs at least one company or enterprise was involved. The potential of finding new value chains within the forest-based industry to support their development and bio-based materials is very high for the forest-based industry, so that the expected potential for growth and job creation as well as the cross-sectoral approach were followed. The involved SMEs can use the results of the different studies to take further steps towards implementing this innovative product/process idea in order to achieve a development and innovation advantage. Through the research project development, the collaboration between the SMEs and research institutes is ongoing also beyond the FORESDA project.

4.4 PROJECT COUNTRY: HUNGARY (ERDF PP6)

The following sections describe activities related to the cross-sectoral transnational innovations by SMEs realized within the project country Hungary. Six IPs have been supported:

- The Innwood project is a transnational project, in which furniture prototypes were created. Basically the Hungarian cluster organised two innovation camps, an invited several students from universities from Austria and Hungary.
- PetSmart wants to develop smart wood furniture for pets. During the project the furniture- and IT sector work together, and participants gain experiences of cross border and cross sectoral innovation processes.

- The B Light project focuses on fostering value added business cooperation between SMEs operating on different sides of the Hungary-Croatia border. This project helps to enhance competitiveness of small and medium size enterprises, supports the cross border business relations and the innovative cooperation between HU-HR SMEs.
- The Regionet Competitive Initiative has set up a model of regional and cross-border cooperation between wood-based industries SMEs in the border region Austria-Hungary. As a result of this networking based structuring of the regions, the cross-sector and cross-border business relations of the border region have been able to budge from their stagnant state. Simultaneously, despite the cross-border efforts, the created networks in the field of wood sector are in the majority of cases only active within their own core regions.
- FEEDSCHOOLS focuses on improving the sustainable energy consumption in school buildings. The projects generate and validate cross sectoral activities in smart and sustainable school construction and materials (wood) and school building use, innovative solutions, like gray (waste) water system, solar panel system, building engineer systems and its education for the maintenance staff and managers also. The FEEDSCHOOLS project is dedicated to creating new value chains. FEEDSCHOOLS strategic objective is to facilitate the implementation of the Energy Efficiency Directive creating conditions so that more municipalities, financing institutions and consultants develop projects of deep renovations of schools in the upcoming years.
- The EN-EFF project wants to build up a cross-sectoral innovation environment (in smart and sustainable construction and building use, innovative bio based solutions, like gray (waste) water system and its education also.) by SMEs which helps to improve the sustainable energy consumption and also the educated workforce in all sectors. The overall objective is to contribute to the implementation of nZEB principles through activities and knowledge exchange. Workforce education and training in new energy efficient and renewable technology is vital for the further implementation of nearly zero-energy buildings.

4.4.1 OVERVIEW

IP Acronym	Innovation Category*	What is Innovative?	How was It Supported? **	No of SMEs Involved
Innowood	Product	Within the Innowood project 6+5 wood	Others FORESDA	30+

		<p>furniture prototypes and 3 wood structure ideas were created. Furnitures were developed for different target groups and for different use cases. Main attributes of these prototypes are modularity, recyclability and multifunctionality. Customer's needs are grouped around these three specifics, because they have smaller living space, and more of them feel responsibility themselves for their environment. They have to solve more functionality in the same room, that's why they need multifunctional solutions in their homeplace.</p>	<p>meetings for collaborating SMEs of Innowood. FINCOM members will disseminate project results and experiences of Innowood.</p>	
PetSmart	Product	<p>PetSmart results will be a smart product range for small pets. Innovation of the project are new prototypes and product family for pets, and pets' smart owners.</p>	<p>Partner Search To reach wide range of potential stakeholders have to use best practices of FORESDA and FINCOM. Presentations and workshops are not enough but necessary tools to reach our goals. Impacts are new connections, and possibilities of new collaborations within</p>	8+

			FBI.	
BLight	Service	Overall objective and innovation of the project is to enhance the competitiveness of SMEs, creating and extension of advanced capacities for product and service development through generating value-added business cooperation between SMEs of Hungary and Croatia. B Light is tempted for new ideas, for example it has metal industry, IT application development, wood industry projects within B Light.	Partner Search Recommendation of experts and potential construction companies in the field of renovation with wood. Introduction of results to join FINCOM. Deliver information on cross border wood-based solutions. Sharing good practices in cross border cooperation. Give more data and updated know-how about the development of wood sector.	20+
Regionet Competitive	Service	The cooperation between entrepreneurial networks (e.g. wood sector, wood industry clusters) is only limited to solving individual economic issues, they are not strategically dispositioned, and as an effect, the opportunities lying in strategic cross-border cooperation are not being utilized. The strategic cooperation of bilateral economic groups for development, the	Partner Search The cross-sectoral character is that SMEs dealing with wood and forest industry cooperated with SMEs in the field of tourism and local supply and the wood and forest industry companies gain knowledge in the field of marketing, sale and negotiation techniques. Creation integrated bilateral network Arrangement	27+

		<p>establishment of cooperation yielding sectoral (e.g. wood), innovation stimulating opportunities and the activities aimed at improving entrepreneurial competencies and establishing international business relations strengthen the international competitiveness of the border region's SMEs.</p>	<p>trainings for SME's in the field of marketing, market entry, negotiation techniques, etc. Organisation of study trips in order to get to know each other at the border region and gain experiences by best practices in the field of marketing, financial issues, cooperation, etc.</p>	
FEEDSCHOOLS	Service	<p>The project addresses identified challenges with holistic approach considering financial, environmental and energy aspects of NZEB renovation of public buildings, training needs of local staff, behavioral change and policies influencing Sustainable Energy Action Plans. It allows public sector to become a leading example for mobilizing private capitals for energy efficiency market. It's innovative approach, holistic and transnational, supports Local Authorities(LA)/Schools in all steps of designing a strategy for nZEB renovation using harmonized transnational tools and methods.</p>	<p>Internationalization The wood-based renovation possibilities and energy – efficiency building solutions were presented during the trainings dealing with energy – efficiency. The wood-based building solutions are emphasized during the preparation of schools building renovation</p>	3+ SMEs

EN-EFF	Service	The energy efficiency is the most important field in all cross sectoral approaches like in the education and the building construction side. At the moment there is no coherent education and training for energy efficiency of buildings from both, Croatian or Hungarian, side. On the other hand, low-energy solutions becoming mainstream construction practice and nearly all workers have to be engaged in continuing vocational training activities dedicated to the so called “green skills”.	Internationalization Mentoring activities in the field of building renovation with wood • recommendation of experts and potential construction companies in the field of renovation with wood • introduction of results to join FINCOM.	92+
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**Product/Service/Process*

***Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others*

4.4.2 RESULTS AND CONCLUSIONS

The main objective of FORESDA project is to support the cross sectoral, and transnational cooperation. The wood sector is basically following industry, new solutions or innovation is applied later than in other industrial fields. This has also been experienced related to the IPs supported in Hungary. In addition, other branches do not have too much information about FBI.

Within the mentoring period of FORESDA project, ZMVA has supported and organized activities for PANFA cluster and non-cluster members by involvement of intermediaries, research organisations, local public authorities, and national and regional policy makers.

ZMVA has supported the collaboration among research institutes, schools and SMEs with the aim of establishing new sectoral and cross-sectoral cooperation, similar as Innowood project.

The Pilot Innovation Environments have been also established as a collaboration space for SMEs in FBI and it ensures possibilities to open different segments. The invited SMEs were involved in several knowledge exchanges, where they were able to share best practices between each other ZMVA focused on the dissemination of available market possibilities as well, and actively participated in new project idea generations. The developed networks are sustainable, and it is expected to be maintained after the FORESDA project ends.

The supported SMEs benefited from increase of their visibility on regional, national and international markets, while advanced technological knowledge was shared with them.

4.5 PROJECT COUNTRY: CROATIA (ERDF PP7)

The following sections describe activities related to the cross-sectoral transnational innovations by SMEs realized within the project country Croatia.

4.5.1 OVERVIEW

IP Acronym	Innovation Category*	What is Innovative?	How was It Supported?***	No of SMEs Involved
SLAHRA	The branding of Slavonian Oak could be categorized as a basic product which will support development of other innovative products and services based on the brand.	It is not a common practice to brand a natural resource, and the project is of strategical relevance for the future development of forest-based industries on national and international level. The characteristics of the Slavonian Oak offer a great platform for greater but smarter use of forests and timber which are crucial for sustainable forest management and related impacts on the climate change.	Expertise, Internationalization: CWC supported project by drafting of the possible agendas, addressing milestones, funding opportunities, and sustainability approaches of the project. It provided access to the knowledge and experience transfer related to the project topics and created a study on all potentially relevant aspects of the branding of the Slavonian Oak, as well as project proposal for	2 IP partners (The project has 2 partners in this initial phase: CWC and Spin Valis PLC. Counting also SME members of CWC which are potential future users of the facility, project encompasses almost 100 SMEs).

			the branding process.	
CEKOM SPIN	The development of the CEKOM Spin could be categorized as a basic service which will provide the needed environment towards development of innovative products and services.	This project has a strategical importance for the future development of the forest-based industries in the region, since it will strengthen currently weak collaboration between SMEs and higher education and R&D community on regional and transnational level. Also it will contribute to the development of R&D facilities based in the rural areas.	Expertise, Internationalization: CWC supported development of dissemination plan, addressing milestones, funding opportunities, main objectives, etc., and provided access to the knowledge and experience transfer related to the project topics. In addition, it supported the project by identifying of possible collaboration partners and collaboration networks and disseminated information on the project on the national and international level.	2 IP partners (The project has 2 partners in this initial phase: CWC and Spin Valis PLC. Counting also SME members of CWC which are potential future users of the facility, project encompasses almost 100 SMEs).

**Product/Service/Process*

***Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others*

4.5.2 RESULTS AND CONCLUSIONS

Both IP projects supported by CWC are of strategical relevance for the future development of forest-based industries in Croatia but also on transregional and European level. The provided support was focused on the CWC's strengths related to the access to the specific knowledge/information pool and a broad network of connections on the national and international level. The goals were twofold:

- 1) To support projects in regards that everyone has the same understanding in terms of the project targets, customer value, possible solution approaches, risks, and mitigation solutions, and next steps
- 2) To provide specific knowledge/information needed to start with the project implementation.

The main challenges were related to the fact that both companies had very few experiences with that kind of innovation projects, including processes and activities needed to be implemented as a means to communicate the idea and/or concept to important decision-makers within and outside of the company as well as to the stakeholders. Accordingly, risks, weaknesses and “blind spots” were recognized that gave orientation for further project work and clear indications of which subtasks have to be worked on in the initial project phases.

The main results are not linked only with the expertise and internationalization provided for the successful project implementation, but also with the raised level of awareness in terms of the project topics, methodology and need on the continuous implementation of the innovation activities and collaboration on a cross-sectoral and transnational level.

4.6 PROJECT COUNTRY: ROMANIA (ERDF PP8)

In order to increase the cross-sectoral and transnational innovations, PRO WOOD initiated a new project, called INNO WOOD. The project idea is mainly cross-sectoral because it involves SMEs from FBI industry, including knowledge transfer from different sectors, such as design, furniture production, manufacturing, electronics, IT, marketing, etc. In addition, within the project R&D institutions are also involved to support the innovation at SMEs level. The main objective of the project is to develop the RDI agenda of PRO WOOD, contributing thus to the increase of competitiveness and level of innovation among the member SMEs; strengthening the cooperation, creation of new, innovative products with high added-value and increasing the level of internationalization for SMEs. The internationalization of regional SMEs will be a support tool for transnational business collaboration.

The second activity for cross-sectoral innovation is tangible through elaboration of a new prototype of UPS (uninterruptible power sources) for wooden houses and small power consumer SMEs. The overall objective of this innovative project is to capitalize a patented technology for the development of UPSs, used in addition to computers, servers and other electrical installations requiring a constant energy source) by TE- K 26 SYSTEM Ltd., at a much lower price due to the decrease of the investment into batteries.

4.6.1 OVERVIEW

IP Acronym	Innovation Category*	What is Innovative?	How was It Supported?*	No of SMEs Involved
INNO WOOD	Service	<p>The project is about development of the RDI capacity of the PRO WOOD cluster, which is initiated by the KO-FA Association, and PRO WOOD Cluster members. The overall objective of the proposed project is to develop the capacity of RDI within PRO WOOD Cluster and to support the innovation among the member SMEs.</p> <p>Activities: Initiate and support cross-sectoral business collaborations and innovation projects Provide advices for member SMEs of PRO WOOD Cluster in terms of project funding, project submissions, internationalization, marketing, etc.</p> <p>Develop the management capacities at PRO WOOD Regional Wood Cluster, Elaborate sustainable management strategy for SMEs within the PRO WOOD Cluster</p>	Innovation Management	40
UPS4Industry	Product	<p>The innovative project entitled “Ups4Industry” is about Innovative Equipment for Reduction of Power Consumption and Permanent Energy Supply at Small and Medium</p>	Others	1

		<p>Power Consumers, initiated by TE-K 26 System Ltd. The core objective of the proposed IP is to capitalize a patented technology for the development of UPS (uninterruptible power sources, used in addition to computers, servers and other electrical installations requiring a constant energy source) by TE- K 26 SYSTEM Ltd. at a much lower price due to the decrease of the investment into batteries. The innovation in this IP is a new technical approach, namely inclusion of a new power plant (even in case of a power failure) based on the use of electromagnetic energy present in the vacuum in electrical installations and its transformation into useful electrical energy, a solution that underpins the development of new, high value-added products, competitive on national and international markets. The Ups4Industry innovative project will significantly contribute to achieve passive house level at wooden houses or at small power consumer SMEs, which ensures the sustainable energy management at different power consumers, while the buildings will consume significantly less energy.</p>		
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**Product/Service/Process*

***Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others*

4.6.2 RESULTS AND CONCLUSIONS

Based on the INNO WOOD project, the results of the project will be a better cross-sectorial business collaboration, knowledge transfer from different sectors towards FBI. The main output of the project will be to develop the RDI agenda of the PRO WOOD Cluster. The conclusion regarding to this project is that the necessity for development of the RDI capacity in FBI is proved. The Romanian FBI is characterized by low level of innovation, lack of cross-sectorial collaboration, only a few cross-sectorial innovative products. In this perspective the support for cross-sectorial business collaboration, advices in terms of funding, marketing and internationalization are necessary. In order to provide this support service the development of management capacity at PRO WOOD cluster is essential.

In terms of “UPS4Industry”, the project idea has been elaborated, a working group has been established for elaboration and implementation of the project. The cross-sectorial added value is on collaboration of architects, wooden house producers, electronic engineers and R&D entities. The conclusion regarding to UPS4Industry is that only by cross-sectorial collaboration can be elaborated a innovative product or service. This is a best-practice case which can be disseminated among the SMEs from FBI sector by PRO WOOD cluster.

4.7 PROJECT COUNTRY: BULGARIA (ERDF PP9)

The following sections describe activities related to the cross-sectorial transnational innovations by SMEs realized within the project country Bulgaria. The plan for the business idea of Createch Hub is ensuring a sound plan to support the further development of Createch Hub project until the end of the project and beyond if necessary in form of mentoring, coaching and access to experts within the networking of the BFC. The idea of the hub is to bring together the advanced, smart and talented people from the creative industry in an interactive and friendly environment, so they can be challenged, motivated, supported, mentored, educated and inspired.

One of the main objectives of the IP is fostering the interface between the traditional sectors and the creative industries for increasing the competitiveness of the SMEs and start-ups through innovation and transnational cooperation.

4.7.1 OVERVIEW

IP Acronym	Innovation Category*	What is Innovative?	How was It Supported? **	No of SMEs Involved
Createch Hub	Service	<p>First of all, the idea is to create a space where knowledge will flow to all directions and creative people with ideas and will, can thrive. Eventually it will transform from just a space to a powerful ecosystem where the members will be interconnected.</p> <p>The hub will provide, besides the obvious working spaces, a second degree connection. Serendipitous collisions and knowledge gained from some thematic events will be a major value add for the members of the createch hub.</p> <p>Key partners of the Bulgarian Furniture Cluster are successful local and worldwide brands, which are going to host mentoring events and workshops.</p>	<p>Innovation Management / Access to Finance / Partner Search</p> <p>To ensure the implementation of the mentoring and coaching activities and knowledge exchange workshop, the hub will work closely with experts and highly successful professionals, which will host different ideation workshops and implement accelerator programmes.</p> <p>In order to provide the members of the hub grant support or market access programmes, Bulgarian Furniture Cluster will work in collaboration with several governmental institutions and international organisations.</p>	4

*Product/Service/Process

**Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others

4.7.2 RESULTS AND CONCLUSIONS

The stakeholders for IP Createch Hub were strongly involved in the development of the idea. They contributed to the process of formulating the objectives of the project and the best ways for implementing the activities planned. The IP partners from LaunchLabs enable teams to develop and implement creative solutions for complex problems. Providing a sound foundation for innovative teams, the highly practical modules build on the feedback from end-users, as well as promoting a highly empathetic understanding of their needs and learning through feedback loops. Thus, they contributed soundly to the development of the creative aspects of BFC's IP. The action plan for implementing the IP was elaborated so far with the contribution of all the partners and stakeholders. Workshops, regarding the need of establishment of cross-sectoral collaboration between the creative and the traditional industries, were held.

4.8 PROJECT COUNTRY: SERBIA (IPA PP1)

The following sections describe activities related to the cross-sectoral transnational innovations by SMEs realized within the project country Serbia.

4.8.1 OVERVIEW

IP Acronym	Innovation Category*	What is Innovative?	How was It Supported? **	No of SMEs Involved
BORWood	Service	The new IT database and new methods for wood modification will contribute to better use of wood in the marine conditions.	Access to Finance	-
Chabros	Service	New regimes for wood drying	Expertise	1
MS&Wood	Service	Application new ideas to improve quality of wood products in primary wood processing	Expertise	1

LignoLink	Service	Development of European research and innovation projects in the field of wood-based bioeconomy	Internationalization	-
WoodNet	Service	Development of European research and innovation projects in the field of Wood Science and Technology	Internationalization	-

**Product/Service/Process*

***Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others*

4.8.2 RESULTS AND CONCLUSIONS

BORWood: The main goal of this project is to obtain new knowledge about the influence of wood modification agents on wood-borers and the interaction between wood modification agents, wood and the marine environment. The result of this cooperation can be the basis for further development of innovative techniques in improving the quality of wood for use under specific conditions.

Chabros: The main objective of this project is to analyze and improve the quality of wood drying in primary wood processing. Research will be performed by UBFF and the obtained results will have application in all enterprises dealing with primary wood processing and drying of wood. As a platform to develop innovative ideas, definitely offers a great potential for the building of new industrial value chains.

LignoLink: The focus of LignoLink is on the initiation and development of European research and innovation projects in the field of wood-based bioeconomy. Fraunhofer IMW, together with UBFF and other partners within the LignoLink network, will develop innovative ideas for participation in European projects. The network consists of clusters and R&D institutions from several countries in Europe.

MS&Wood: The main objective of this project is to analyze and improve the quality of wood and wood products in primary wood processing. The project is a platform for the development of new technological processes for improving wood quality, and for better cooperation between R&D institution and SMEs.

Wood Net – is a new innovation projects in the field of wood science and technology. The main objectives of this cooperation are: the development of common wood research strategies, a facility catalogue and an interactive webpage of all wood research devices and methods of each partner

to optimize and strengthen the common wood research potential and a combination and exchange of the investigation potential to overcome gaps in the research equipment of single partners.

4.9 PROJECT COUNTRY: BOSNIA AND HERZEGOVINA (IPA PP2, PP3)

In Prijedor Region, Agency “PREDA-PD” was engaged on the establishment of local Co-working HUB in Prijedor, as point of concentration of respective know-how in IT/Creative sector and transfer to traditional industrial sectors (primarily forest-based industries).

There is a general lack of interactions between the traditional industrial sectors, and the IT sector as widely recognized service provider of digitalization and creative industry products and services. Co-working HUB is a local economic development tool – an instrument for facilitation of closer interactions between traditional industrial sectors (primarily forest-based industries) and IT/Creative sector. In local and transnational context, Co-working HUBs are considered as an innovative instrument, which are enabling concentration of primarily IT/Creative sector. However, the model applied in Prijedor, within FORESDA Project, is adjusted to the local specifics. It is not considered as a business case in usual sense of the word, but as the case of innovative public policy infrastructure for support to entrepreneurship and innovation development, with the focus on development of new value chains, connecting primarily forest-based and other industries with IT/Creative sector.

4.9.1 OVERVIEW

IP Acronym	Innovation Category*	What is Innovative?	How was It Supported?*	No of SMEs Involved
Co-working HUB Prijedor	Testing Facilities	Co-working HUB Prijedor is the first co-working space in Prijedor region. Additionally, it is one of the first co-working space owned and developed by the public sector, which will be a part of local set of	<u>Testing facilities</u> <ul style="list-style-type: none"> • Set-up of Co-working space (small scale constructions works), with 160 m2 of useful space, leaned on Business Incubation facilities. • Equipping of the space for provision of 	36

		instruments and supporting infrastructure for business pre-incubation and acceleration, providing facilitation services and access to new technologies, within the concept of support to development of new value chains.	<p>services (LCD screens, 10 PCs, 3D software, 3D Printer, Audio/Video equipment).</p> <p><u>Expertise</u></p> <ul style="list-style-type: none"> • Organization of trainings on the subject of: new value chains, business acceleration, digital marketing, free-lancing and 3D technologies. <p><u>Pilot services</u></p> <ul style="list-style-type: none"> • Support to digital marketing content of local forest-based industries. 	
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**Product/Service/Process*

***Innovation Management/Expertise/Partner Search/Internationalization/Access to Finance/Testing Facilities/Others*

4.9.2 RESULTS AND CONCLUSIONS

Project FORESDA contributed significantly to the development of specific local and regional innovation environment. Transnational collaboration established within FORESDA have created specific and tangible impact on the local level. Prijedor region was represented by Agency PREDA, with the role to facilitate contacts and transfer of know-how and relevant expertise from the level of Danube region to local environment.

Development of the first local co-working space (HUB) was the central point in the concept of the pilot in Prijedor. Local activities included small-scale infrastructure development, but the general concept of co-working space is shaped through the transnational cooperation and methodology defined by FORESDA Project. In this process, experiences of co-working HUBs from Karlsruhe (CyberForum) and Sofia (Bulgarian Furniture Cluster) are taken into account. Co-working rulebook is designed in cooperation with CyberForum. Set of services in Prijedor Co-working HUB are defined on the bases of services provided in mentioned co-working HUBs. With the support of Innorenew Centre of Excellence from Slovenia, LivingLab methodology, implying application of

quadruple-helix approach, is selected as one of the key concept of functioning of Prijedor HUB. Particular importance in terms of transnational cooperation has the collaboration between project FORESDA and ACCELERATOR (both funded within DTP). First beneficiaries of the co-working HUB in Prijedor are selected participants of the business acceleration program implemented by the Agency for development of SMEs of Republika Srpska, supported by Agency PREDa.

Co-working HUB Prijedor is the first co-working space in Prijedor region. Additionally, it is one of the first co-working space owned and developed by the public sector, which will be a part of local set of instruments and supporting infrastructure for business pre-incubation and acceleration, providing facilitation services and access to new technologies, within the concept of support to development of new value chains.

Several weaknesses and challenges of the concept applied, have been recognized in the initial phase of development of Co-working HUB in Prijedor.

- Target beneficiaries of the facilitation services are in lack of formal communication skills, creating obstacles to complete administration and business correspondence in a desired way.
- Additionally, target beneficiaries are often in lack of technical expertise and experience required by the SMEs. Most commonly, beneficiaries are not acquainted with technical and technological processes in forest-based and other industries, causing misunderstandings and mistakes in relations with SMEs.
- Technical capacities of the Co-working HUB in Prijedor, although providing access to some new technology devices, are still beneath the desired level, which could ensure competitiveness of beneficiaries on the market.
- Local support policies to cross-sectoral cooperation fostered within Co-working HUB in Prijedor are still in the process of preparation by the local actors (Agency PREDa and City of Prijedor).

4.10 SUMMARY

By supporting these before mentioned Innovation Projects, it is expected to significantly contribute to programme-specific and to the objectives of FORESDA as well as to intensify collaborations of SMEs, R&D organisations and intermediary organisations. As follows, the results of the support given to the IPs and SMEs in the framework of FORESDA are displayed. In sum, throughout all IPs, 305 SMEs have been supported via different means. The types of support given are:

- Innovation Management



- Expertise
- Partner Search
- Internationalisation
- Access to Finance
- Testing Facilities
- Others

48 SMEs have been supported through Innovation Management, 68 through different kinds of expertise from the FORESDA PPs, 60 SMEs were supported with partner search, 103 with regard to internationalisation, 23 with Access to Finance, 43 SMEs received Access to Testing Facilities, and 41 were otherwise supported. Figure 1 shows the number of SMEs supported by which type of support (multiple entries were possible).

Figure 1: No of SMEs supported/type of support

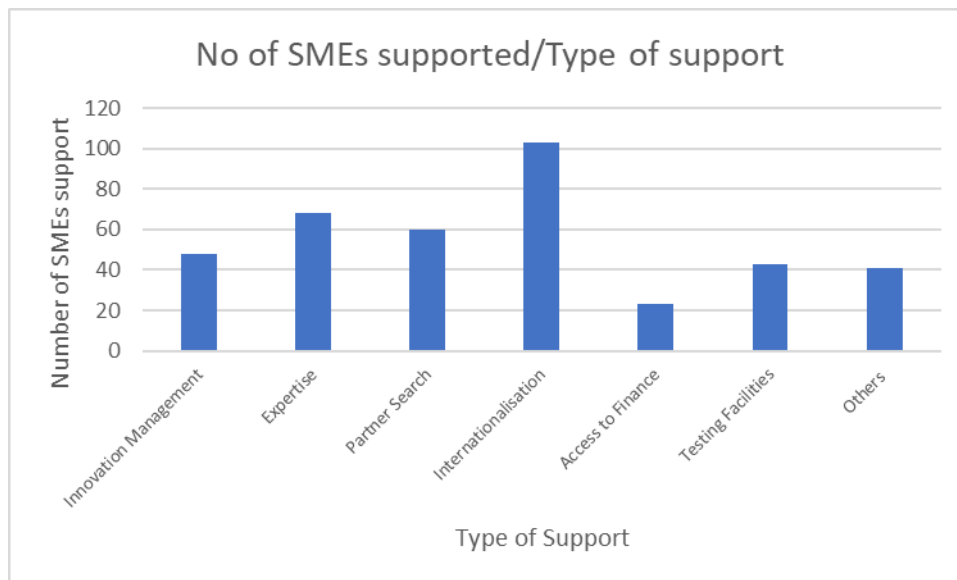
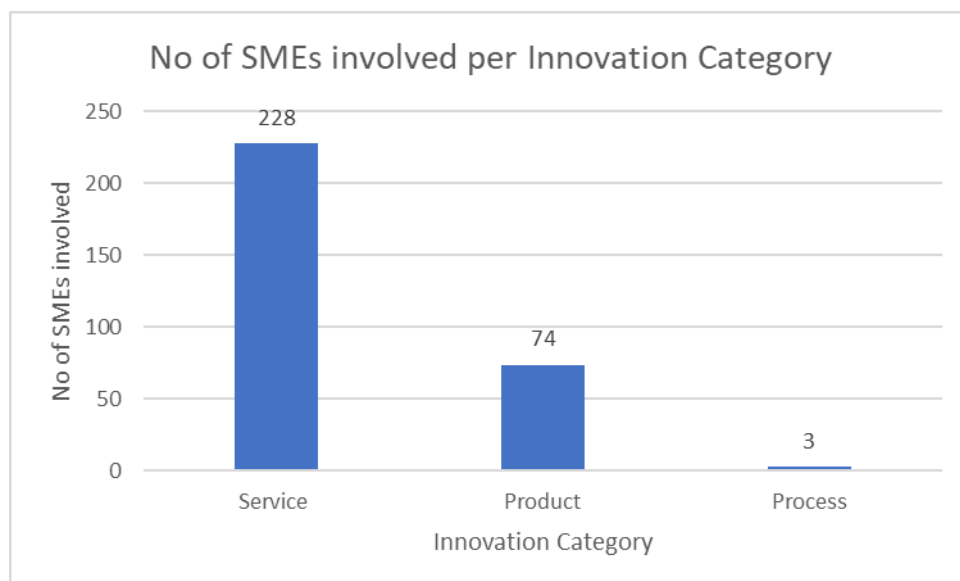


Figure 2 shows the three Innovation Categories Service, Product and Process and how many SMEs were involved in the respective category. As it can be seen, out of the 305 SMEs involved in the IPs, 228 contributed to an innovative development of a Service, 74 to a new product and 3 to an innovative process.

Figure 2: Number of SMEs involved per Innovation Category



5. CONTRIBUTION TO THE INVOLVEMENT OF SMEs IN R&D&I ACTIVITIES ON CROSS-SECTORAL AND TRANSNATIONAL LEVEL

5.1 CONTRIBUTION ON THE LEVEL OF CNS

CN	Contribution
"Building with Wood"	<p>There were different activities (e.g., knowledge exchange, technology transfer, Pilot Innovation Environment) in different WPs of the FORESDA project before the development/establishment of the CN Building with wood. Therefore, the inputs and the challenges of the SMEs and other organisations were known and this was the first step of the development of the CN. Through bilateral meetings and discussion with the SMEs and other actors the requirements from the companies could be connected with the needs of the regions or countries (e.g., protection of the natural resources, cultural heritages, ...). This is a cross-sectoral and transnational approach of the CN. All these regional inputs and the national requirements were used to develop an innovative research project, which can be used for the sustainability development of the new CN Building with wood.</p>
"Creative Hubs"	<p>Main option to gain sustainability of the network and generally increase involvement of SMEs in the initial period is reserved for the process of preparing of relevant project proposal for the purpose of submission to various development programs and funds supported by the EU. Opportunity to pursue the goals and objectives of CN Creative HUBs is used in the framework of FORESDA. Within the 3rd Call for proposals of the Danube Transnational Program, work on two project concepts on the level of CN is registered. Two project concepts are submitted as official proposals:</p> <ol style="list-style-type: none"> 1. Fostering the interface between the traditional wood craft culture and the creative industries for increasing the use of regional natural resources and competitiveness of wood-processing culture through innovation and transnational cooperation - DanubeWood4Creative. 2. Industry 4.0, targeting transnational capacity building development of economic environment in order to spread the Industry4.0 solutions and Development of competences, learning methods and innovative culture in local businesses using Industry 4.0 solutions.

	<p>Other options for sustainability have been analysed. Currently, there are no prospects to secure funding exclusively for the activities of CN Creative HUBs. However, considering the history of cooperation links established between the organizations involved in FORESDA, it is likely to expect that the communication channels will be preserved on the level (on the official and non-official level), ensuring continuation of cooperation. Members of the CN agreed that additional source of viability of the network might be joining other relevant initiatives and networks on other transnational cooperation levels and EU in general.</p>
<p>"Socially Responsible Use of Forests"</p>	<p>Although the terms "social responsibility" and "business" have no common touchpoints on first sight, to link those terms in practice is highly appreciated in today's society. More and more companies are incorporating social responsibility into their overall business strategies since the results can strongly affect a company's image and build its brand in a positive direction. Socially responsible business in the forest-based industries has an additional impact of affecting climate change which is one of the biggest issues of the humankind on the global level. Therefore it is expected that this topic will be even more appreciated also in the future. At the same time, this fact offers a great platform to attract SMEs and strengthen their involvement and active participation in the CN FORDIS which main goal is to support the development of wood- and biobased products to use the forests and timber more smartly and sustainably. The recommended tools and activities to strengthen the involvement of SMEs in the CN and its cross-sectoral and transnational projects are the following:</p> <ol style="list-style-type: none"> 1) To provide further support in R&D activities towards the development of wood- and biobased products; 2) To share information on possible funding sources; 3) To develop project ideas based on the inputs received from the companies; 4) To encourage companies to strengthen the involvement of the customers in the process of future products; 5) To support companies in establishing of transnational and cross-sectoral linkages in order to ensure sustainable future. <p>In addition, it is recommended to base all activities on the raising of awareness about the need to use forest resources in a socially responsible way, and to take in consideration the need of socially vulnerable groups to have the access to forests.</p>

5.2 CONTRIBUTION ON THE LEVEL OF IPs

Project Country/Region	Contribution
Germany	<p>Both IPs supported in Germany aim at developing new services as an innovative tool to foster cross-sectoral cooperation between the IT sector and the furniture industry. As the IT sector has been identified as a promising partner for cooperation to make FBI more efficient, both IPs might function as a role model for further collaboration activities, presupposed support with adequate dissemination activities will be given. For the region Baden-Württemberg and the TechnologyRegion Karlsruhe this is a sustainable approach as both the HighTech Industry and FBI are strong sectors.</p> <p>To achieve this and strengthen the involvement of SMEs, clusters are ideal intermediary organisations to stimulate networking, facilitate exchange and enable companies to enter new branches and markets. For instance, the wood sector can be used by IT clusters as a soft-landing platform to enter other related sectors and vice versa. In addition, both IPs aim at stepping up to the transnational level in the long run, for which the involvement into a transnational project such as FORESDA is positively contributing.</p>
Slovenia	<p>Within innovative project ideas multidisciplinary and internationally strong consortiums have been established, offering all partners knowledge and best practice transfer and to break into international market. Involved SMEs will have access to research infrastructure and knowledge transfer of partner SMEs and RDIs. Competitive level of SMEs will be raised through strong emphasis on research, technological development and innovation in cooperation with RDIs and supporting organisations. Experienced SMEs will help with knowledge transfer to those with less experiences and lower level of innovativeness. Through workshops, B2B events and visits of best practice examples involvement of SMEs in cross-sectoral and transnational collaboration will be strengthened.</p>
Austria	<p>The aims of the innovative projects are quite different. However, the potential of finding new value chains within the forest-based industry to support their development and bio-based materials or innovative processes is very high for the forest-based industry, so that the expected potential for growth and job creation as well as the cross-sectoral approach were fulfilled. The involved SMEs can use the results of the different studies to take further steps towards implementing this innovative product/process idea in order to achieve a development and innovation advantage.</p> <p>Through the development of research projects, the collaboration between</p>

	<p>the SMEs and research institutes is ongoing and beyond the FORESDA project. These projects can be used for the knowledge transfer of best practices examples for fruitful collaborations between SMEs and research institutes.</p>
Hungary	<p>ZMVA focused on SMEs during the whole FORESDA project. Their first idea was showing them new potentials in new segments, especially of bio-composites. They looked for tools and activities changing their mind and reaching their involvement of common thinking and acting. They found only a few SMEs in Hungarian FBI which are working in cross-sectoral and transnational projects, but generally they are not on this level of development and skills.</p> <p>ZMVA placed big efforts on reaching a sustainable business environment between SMEs in the wood segment. Successful was starting communication and cooperation within the wood sector, and getting higher interest from other sectors, in West-Hungary. Key tools were visits, study tours to different countries and different SMEs, which have experience in these fields (cross-sectoral and transnational projects).</p>
Croatia	<p>Both IP projects supported by CWC offer a basic platform which will generate more R&D activities and innovation projects in the future. Being part of their development and implementation process, CWC is gaining a good insight in all opportunities offered by those projects, and can accordingly involve other SMEs, and/or create new project proposals which will involve further relevant stakeholders. The recommended tools and activities to strengthen the involvement of SMEs in cross-sectoral and transnational projects are the following:</p> <ol style="list-style-type: none"> 1) To provide further support in R&D activities towards the development of wood- and biobased products; 2) To share information on possible funding sources; 3) To develop project ideas based on the respective IP projects and their outputs; 4) To encourage companies to use results of the respective IP projects and to use them in the development of new project ideas; 5) To support companies in a constant establishing and nourishing of transnational and cross-sectoral linkages which could be activated when developing an innovation project in the future. <p>In addition, it is recommended to base all activities on the raising of awareness about the need to develop and maintain the innovation climate within the companies, and not only on the management level but also among employees.</p>
Romania	<p>Both innovative projects of PRO WOOD are important, and they are</p>

	<p>contributing to a more sustainable forest-based sector. INNO WOOD is aims to support the innovation among the SMEs together with R&D institutes. UPS4Industry provides a new solution for a sustainable energy management and energy efficiency in wooden houses, and low-power consumer SMEs. In both cases, the internationalization is crucial in order to increase the number of collaboration and end-users. The regular brainstorming events, site visits and matchmakings are the most efficient tools and activities to strengthen involvement of SMEs in cross-sectoral and transnational projects. Moreover, the most powerful tool is the dissemination of local best-practices among the regional SMEs in order to raise awareness of the stakeholders and thus they can realize their potentials for implementation of the same projects and innovations.</p>
Bulgaria	<p>One of the main objectives of the Bulgarian Furniture Cluster`s Innovation Project is fostering the interface between the traditional sectors and the creative industries for increasing the competitiveness of the SMEs and start-ups through innovation and transnational cooperation. In this regard, BFC has implemented several activities to ensure the sustainability of the involvement of SMEs in activities on cross-sectoral and transnational level.</p> <p>First of all, BFC has conducted a training with a thematic focus on creative hubs - how they can foster the competitiveness and cooperation between SMEs in different sectors and help them grow.</p> <p>The topics of the training were connected to the objective of the IP, regarding fostering cross-sectoral innovations and collaborations by setting up activities enabling a strong interface between traditional FBI sector with creative industries. Another topic that the training addressed was the integration of wood and creative industries into competitive innovative new value chain and developing business solutions and regional createch culture.</p> <p>The need of bringing together multiple stakeholders, including public policy and administration, businesses, research and education, intermediary organisations and end users, contributing jointly to the development of new products, processes and services, regarding creative industries was discussed among the participants in the training.</p> <p>Nowadays, in the world of innovative ideas, the key skill is how to turn them into successful businesses. Therefore, another objective of the IP is fostering the activities, related to the establishment of strong collaborative network between the people from the creative industries and the traditional FBI sector.</p>

Serbia	<p>SMEs (MS&Wood and Chabros) will be provided with scientific knowledge in order to foster innovation, cross-sectoral and transnational thinking. In this way SMEs will get a concrete support in developing of innovations in the direction to improve the production quality and the quality of wood products in primary wood processing. SMEs will help other companies in wood industry (on regional and transnational level) to become involved in the realization of innovations. The chosen tool to realize this goal is to establish collaborative networks as international, cross-sectoral networks of SMEs, and research organizations, which will develop joint innovation agendas. Those networks will act as idea generation engines for new products, processes, mid-term services and contribute to foster cross-sectoral, transnational innovation in project countries and beyond.</p>
Bosnia and Herzegovina	<p>General conclusions are made with regards to the future scope of support to the concept of co-working HUB created within FORESDA. Following actions have been identified as priorities:</p> <ul style="list-style-type: none"> • Continuous capacity building support needs to be provided for the benefit of co-working space beneficiaries. Written and oral presentation skills are a weak point, negatively affecting communication and transfer of accurate information from the beneficiary to public and targeted subjects. In consideration is the idea to introduce administrative support service for application procedures faced by the beneficiaries of Co-working HUB. • Continuous capacity building support is required also in the field of technical contents - application of new technologies, tools and methods for raising competitiveness of free-lance businesses, as well as the IT/Creative sector in general. • Technical capacities of the Co-working HUB in Prijedor, should be improved with additional new technology devices (3D equipment, VR/AR devices, CNC technologies, etc.). • Local support policies in the near future will include specific lines of support to co-working community.

6. CONCLUSION

FORESDA expected to provide non-financial support to at least 90 SMEs in three Collaborative Networks, involving at least 10 SMEs each and 30 Innovation Projects involving SMEs and/or R&Ds and/or Support Organisations. By the end of the project, in sum the three established CNs supported the following number and types of organisations:

- CN Building with wood (39 members): 12 Business Support Organisations, 22 SMEs, 5 Knowledge Partners
- CN Creative Hubs (32 members): 10 Business Support Organisations, 16 SMEs, 6 Knowledge Partners
- CN Socially Responsible Use of Forests (35 members): 3 Clusters, 4 Higher Education, 6 NGO, 2 Public Institutions, 1 R&D, 2 Regional Authorities, 4 Regional Development Agencies, 13 SME.

Through the Innovation Projects, in sum 305 SMEs have been involved and accordingly supported. The support given to the SMEs has taken the form of Innovation Management, expertise in various forms, partner search, internationalization, access to finance, testing facilities or other kind of supports.

This document Output 5.3 *Cross-sectoral Transnational Innovation by SMEs* presents the results achieved by FORESDA with regard to the support given to SMEs and the contribution to the development of new products, processes and services. Obviously, the development of new products, processes and services takes time and processes that have been initiated during the project lifetime of FORESDA will take further time to evolve and become marketable. But what has been seen is that the approach followed by FORESDA (focusing on the strengths of SMEs and encouraging them to cooperate and develop new products, processes or services shall support the transformation of the traditional forest-based areas into innovative, modern and sustainable manufacturing areas and the development of innovation-friendly ecosystems) proved to be successful as many collaborative, cross-sectoral and/or transnational activities were initiated that might have not been followed without FORESDA. Awareness raising for existing cross-sectoral and transnational opportunities is an important aspect for SMEs within the rather traditionally oriented forest based industries within the Danube region. SMEs in the forest based industries do struggle with the development of clear innovation strategies, by being involved in a CN or an IP SMEs could be supported with regard to how to implement innovation management strategies and



enhance the innovation potential. The cross-sectoral and transnational cooperation fostered within FORESDA can be the basis for further development of innovative processes and gaps in the approaches followed by single partners can be overcome by joining forces.