



**RENEWABLE MATERIALS AND HEALTHY
ENVIRONMENTS RESEARCH AND
INNOVATION CENTRE OF EXCELLENCE**
(InnoRenew CoE)



Funded by the Horizon 2020 Framework Programme of the European Union;
H2020 Widespread-1-2014 - Teaming

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About the project Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (InnoRenew CoE)



In 2014, the project Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (InnoRenew CoE) was proposed within the Horizon 2020-WIDESPREAD-2014 call under the topic WIDESPREAD-1-2014: Teaming.

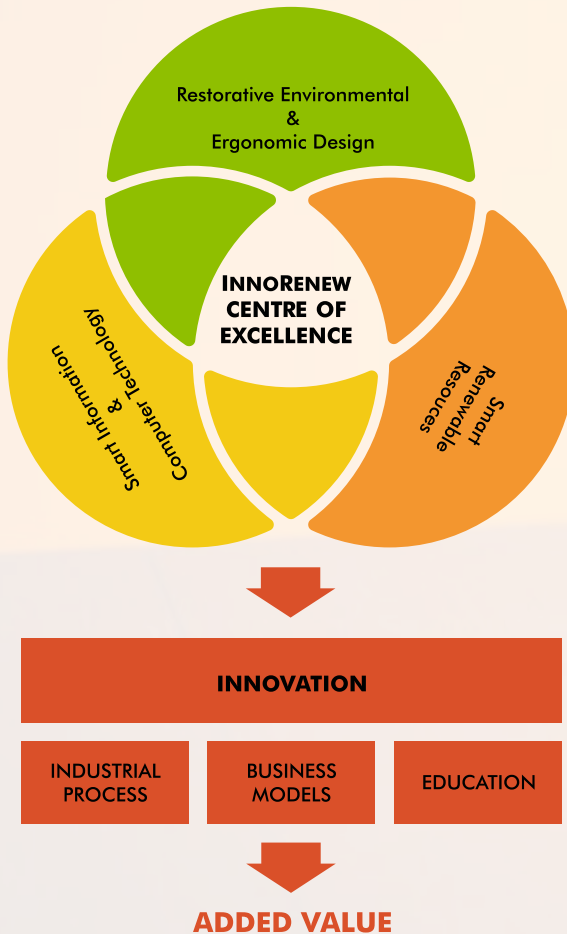
The specific challenge of this call was to create or upgrade centres of excellence in European countries and regions that are lagging behind in terms of research and innovation performance and could, due to existence of such centres, reclaim their competitive position in the global value chains. Teaming also addressed this challenge to be built on partnerships between leading scientific institutions and low performing partners that display the willingness to engage together on this purpose and emphasised that the project's scheme should fit within the relevant Smart Specialisation Strategy of the participating low performing member state or region. The proposed vision of the InnoRenew CoE project is to establish a centre of excellence in Slovenia, which currently encounters many difficulties within its forest sector and wood-product value chain even though it is the third most forested European country with most extensive forest coverage. In January 2015, the InnoRenew CoE project was chosen among 169 submitted project proposals to the Horizon 2020 WIDESPREAD-1-2014: Teaming call.

Objectives of the InnoRenew CoE project:

- to establish improved, innovative and efficient use of renewable materials for building products and materials, as well as development of new techniques for cascade use, reuse, and recycling of wood products, residues and waste
- to create, improve, and communicate innovative products, processes, services, business models and systems for smart, sustainable and modern built environments for all generations, thus facilitating Slovenia's transformation into a society focused on sustainability, cyclical economy, human well-being, and use of its renewable resources and assets
- to advance scientific excellence in Slovenia in wide range of fields related to renewable materials such as wood materials, construction, biology, polymers, social sciences, cultural heritage, computing, mathematics, psychology, kinesiology, modelling, simulation, design, logistics, deployment, risk assessment, decision making, and management



Concept diagram of the InnoRenew Centre of Excellence



Type:

Horizon 2020
WIDESPREAD-1-
2014:Teaming call

Duration:

1 year (1st June 2015
- 31st May 2016) -
first implementation
stage

Coordinator:

Assoc. Prof. Dr.
Andreja Kutnar,
acting dean of
the Faculty of the
Built Environment
and the head of
the Department of
Technology at Andrej
Marušič Institute,
University of
Primorska

Focus:

**preparation of the
business plan of
the future centre of
excellence**

Leading partner of the project:

University of Primorska (UP), Slovenia

Advanced partner and mentor institution of the project:

Fraunhofer Institute for Wood Research – Wilhelm-Klauditz-Institute
(Fraunhofer WKI), Germany

Seven complementary Slovenian partners:

EuroCloud Slovenia/Zavod e-Oblak

Institute for the Protection of Cultural Heritage of Slovenia (ZVKDS/IPCHS)

National Institute of Public Health (NIJZ)

Regional Development Agency of the Ljubljana Urban Region (RRA LUR)

Pulp and Paper Institute (ICP)

Slovenian National Building and Civil Engineering Institute (ZAG)

University of Maribor (UM)

Project's Work Packages and LL InnoRenew:

The first stage of the project – the preparation of the business plan – consisted of six work packages (WP) carefully designed to achieve specific objectives in order to carry out the overall project's aim of developing a firm and competent business plan serving for development of an enduring and effective centre of excellence:

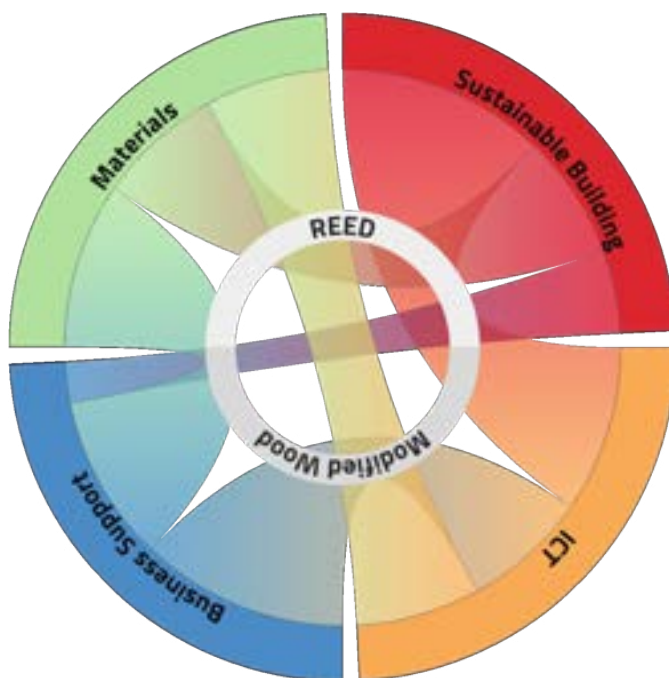
- **WP1 Management and coordination**
- **WP2 Market analysis**
- **WP3 Scientific development and innovation excellence**
- **WP4 Business model / Operational Plan**
- **WP5 Financial Performance**
- **WP6 Dissemination**

The consortium also set up the **Innovative Renewable Material Uses living laboratory (LL InnoRenew)**, which is established as an aid for the preparation of the business plan of the CoE, and furthermore to contribute to the promotion of Slovenia's scientific excellence within many diverse scientific and professional fields.

Envisaged centre of excellence InnoRenew CoE

The concept of the future centre of excellence grew progressively through the first implementation stage of the project. The InnoRenew CoE's RDI activities were determined by consortium after extensive review of other research centre offerings, through consideration by the experts within the project and its living laboratory, and market research which included an industry survey and focus groups. Ultimately, four consortium partners (UP, Fraunhofer WKI, ZVKDS/IPCHS, and ZAG) decided to found the non-profit institute InnoRenew CoE.

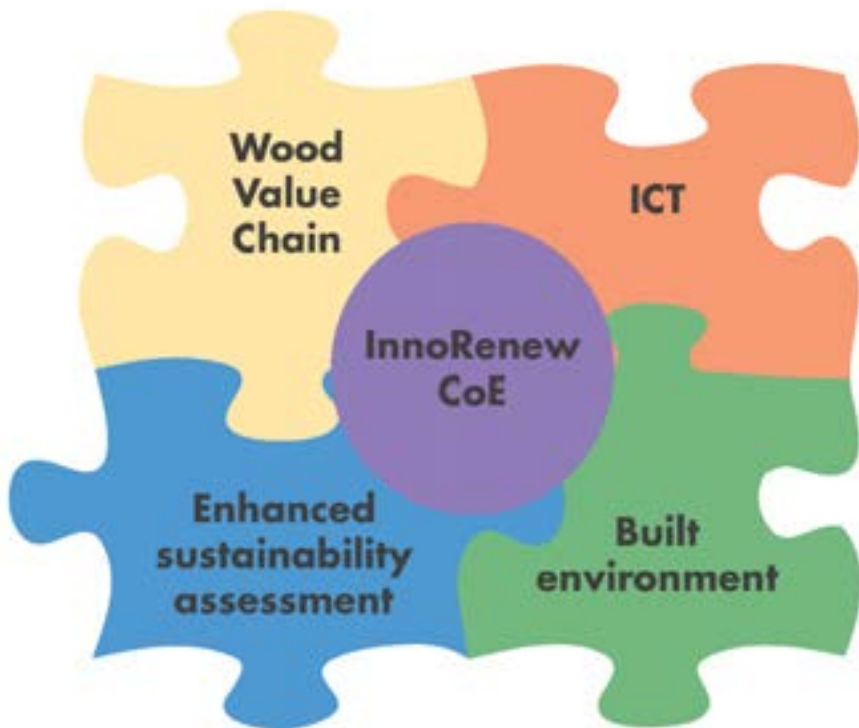
Two main CoE's thematic areas of research were chosen which will set the InnoRenew CoE apart from other centres: **Restorative Environmental and Ergonomic Design (REED)** and **Wood Modification**. Additionally, four key RDI activities most related to the two key distinguishing technologies were selected: **materials**, **business support**, **ICT**, and **sustainable buildings**.



Chord diagram of relationships between research areas. All links are bilateral, and the width of each chord represents the relative impact of the relationship between the connected research areas.

Both groups of key themes and activities are linked through three core research themes (CRTs) which will support and continually shape the former two and will take place in conjunction and alongside all other RDI activities – **health, design and cultural heritage, and policy and government liaising.**

The foreseen basic RDI infrastructural needs were divided between many laboratories and workshops, such as Workshop and machine shop, Human health lab, Composites manufacturing lab, Chemical engineering lab, Physical testing lab, Characterisation lab, Structures lab, Acoustic properties lab, and High-powered computing lab, which will employ global experts, researchers and technicians, as well as grant writers, science communicators, business experts, and statisticians and data analysts. Combining this excellence in the staff's knowledge and competences with the state of the art research equipment into well-designed structure of work will make the CoE scientifically excellent, innovative, and internationalised, sustainably creating value for science, industry, and society.







Fraunhofer
WKI



University of Maribor



RRA LUR
regionalna razvojna agencija
ljubljanske urbane regije



Zavod za varstvo
kulturne dediščine Slovenije
*Institute for the Protection of
Cultural Heritage of Slovenia*



Inštitut za celulozo in papir
Pulp and paper Institute

Bogišičeva ul. 8, 1000 Ljubljana
tel.: +386 1 200 28 00
fax.: +386 1 426 56 39
email: info@icp-lj.si



Nacionalni inštitut
za javno zdravje



**ZAVOD ZA
GRADBENIŠTVO
SLOVENIJE**

**SLOVENIAN
NATIONAL BUILDING
AND CIVIL ENGINEERING
INSTITUTE**

The University of Primorska (UP)

As the project coordinator and a partner of InnoRenew, UP will lead, coordinate, collaborate, and contribute their knowledge of wood science and sustainability. UP will also provide expertise in the fields of ergonomics focused on improving human well-being in the built environment, ICT, mathematics, and business management.

<http://innorenew.eu/en/partners/coordinator-university-of-primorska>

Fraunhofer-Institut für Holzforschung - Wilhelm-Klauditz-Institut (WKI)

Fraunhofer-Institut für Holzforschung - Wilhelm-Klauditz-Institut is an institution of global research and innovation excellence in the field of renewable materials. As the advanced partner of the project and an institution of research and innovation excellence in the field of renewable materials, WKI will provide support and guidance to the InnoRenew CoE throughout the design and implementation of the new centre of excellence.

<http://innorenew.eu/en/partners/fraunhofer>

EuroCloud Slovenia

EuroCloud Slovenia's mission is to contribute to digitising European Industry through European Cloud Initiative as being member of EuroCloud Europe association (<https://www.eurocloud.org/about.html>) and help building a competitive data and knowledge economy in Europe. EuroCloud Slovenia will contribute mainly through the expertise on bringing European Open Science Cloud into operation within traditional industries of CoE core competences and bringing Digital Infrastructures also to other EU and global researchers from within fields related fields of renewable materials, including wood and material science, health, cultural heritage and in the end digital business enablement.

<http://innorenew.eu/en/partners/EuroCloud>

Institute for the protection of Cultural Heritage of Slovenia (ZVKDS/IPCHS)

The IPCHS' mission is to perform public service consisting of administrative and expert tasks in the field of protection of immovable, movable and intangible cultural heritage, including promotion, presentation, and raising awareness of its values. IPCHS' contribution to the CoE is their knowledge about cultural heritage material characterisation and technology, and overall conservation-restoration activities striving for the development of built environment beyond classical sustainability.

<http://innorenew.eu/en/partners/institute-protection>

The National Institute of Public Health (NIJZ)

NIJZ mission is to contribute to better health of population. NIJZ's contribution to the CoE is, providing research in the field of health, increasing the level of health by raising the awareness of population and carrying out other preventive measures.

<http://innorenew.eu/en/partners/health>

Pulp and Paper Institute of Slovenia (ICP)

ICP's contribution to the CoE is their knowledge in fibers, materials and processes in papermaking, development of new high added value paper and board products, and optimization of industrial processes to be more environmentally friendly. Pulp and Paper Institute is creating knowledge, services and strategies to increase competitiveness in paper and partner industries. It is a research and development centre which supports industry partners with a complete portfolio of services and strategic international and domestic network.

<http://innorenew.eu/en/partners/icp>

Regional Development Agency of the Ljubljana Urban Region (RRA LUR)

RRA LUR's mission is to detect potentials in the Central Slovene region, as well as to plan and co-create its sustainable development. RRA LUR supports sustainable-based economic, social and cultural activities, initiates interdisciplinary networks and collaborates in cross-sectorial value chains in terms of added value and establishing new work places. RRA LUR's contribution to the CoE is their knowledge of maximising market potential, functionality and user experience of new products and services, particularly with the wood processing industry.

<http://innorenew.eu/en/partners/rralur>

The Slovenian National Building and Civil Engineering Institute (ZAG)

ZAG as public and non-profit research organization in the field of building and civil engineering performs activities regarding fundamental and applied research, development of new methods of testing and measurement, certification of construction products, training of research and technical staff in particular technical fields, and participation in the preparation of technical codes and standards. ZAG's contribution to the CoE is their knowledge of building and civil engineering, and infrastructure for basic and applied research on raw and secondary materials, energy efficiency and life cycle analyses, structures and earthquake engineering as well energy efficiency, building physics, and fire related characteristics. <http://innorenew.eu/en/partners/zag>

The University of Maribor (UM)

University of Maribor (Institute for Engineering Materials and Design) develops and possesses expertise in the field of engineered polymer materials, mostly in fibrous and film form, for wide-ranging applications, encompassing biomedical sector and technical applications. UM will contribute knowledge in surface structuring and functionalization of polymer matrices, with emphasis on polysaccharide-derived materials.

<http://innorenew.eu/en/partners/university-of-Maribor>

Social media

Join the conversation about InnoRenew CoE on:



Facebook
facebook.com/InnoRenew



Twitter
twitter.com/InnoRenewCoE



LinkedIn
linkedin.com/groups/8347719



Website
www.innorenew.eu



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Foundation of Innovative Renewable Material Uses living laboratory (LL InnoRenew)

In August 2015, the consortium of InnoRenew CoE established *Innovative Renewable Material Uses living laboratory (LL InnoRenew)*. The laboratory is a public-private-people partnership combining InnoRenew CoE partners, LL InnoRenew stakeholders, and the broader interested public.

LL InnoRenew's intention for the first stage project preparation was to contribute to the highest possible optimisation and efficiency of the business plan of the future centre of excellence, and to prompt the ascension of Slovenia's scientific excellence within various scientific and professional fields and processes linked to sustainable development and renewable materials.

The overall ambition of LL InnoRenew during the first stage of the project was:

- to create an environment that would serve as grounds for discussions about the project, development, testing, and implementation of creative and innovative ideas
- to survey different initiatives and critical feedback
- to reciprocate information regarding members' areas of interest

During the second stage of the project, LL InnoRenew will intensify the already employed activities to serve for exploration, investigation, design, monitoring, verification and review of innovative ideas and solutions concerning renewable materials exploitation (including but not limited to publicly funded and/or direct industrial project preparation).



Structure of LL InnoRenew

LL InnoRenew main activities in the first stage of the project were:

- operating the web forum
- organising workshops, meetings, round tables, seminars, conferences etc.

Members of LL InnoRenew

Members of living laboratory LL InnoRenew are all partners of the projects' consortium and are diverse entities including:

- national and international research and development (R&D) institutions
- associations
- small and medium-sized enterprises (SMEs)
- large companies, clusters, agencies, governmental authorities, municipalities and citizens.

From August 2015 until the end of the first phase of the project the consortium recruited 59 national and international stakeholders into the LL InnoRenew, who signed the *Declaration of Intent to Participate*. Stakeholders are diverse both in geographical location (Slovene, European, international) and in terms of the type of entity (SMEs, R&Ds, development agencies, associations, clusters etc.).

Participating Stakeholders - 59 stakeholders from 16 countries

Austria - R&D

[FH Salzburg, Study Programme „Forest Products Technology and Timber Construction“](#)
[Kompetenzzentrum Holz GmbH](#)

Belgium – Associations

[Forest-based Sector Technology Platform, FTP Sprl](#)
[InnovaWood](#)
[Slovenian Business and Research Association \(SBRA\)](#)

Bosnia and Herzegovina - R&D

[University of East Sarajevo](#)

Bosnia and Herzegovina - SME

[ŠGD HERCEGBOSANSKE ŠUME d.o.o. Kupres](#)

Croatia - R&D

[Faculty of Forestry](#)

Hungary - SME

[Pannon Pro Innovations Ltd.](#)

Italy - R&D

[National Research Council - Trees and Timber Institute \(CNR-IVALSA\)](#)

Macedonia - R&D

[Ss. Cyril and Methodius University in Skopje Faculty of Forestry](#)

Montenegro - R&D

[University of Monte Negro Biotechnology Faculty](#)
[Institute of Forestry of Montenegro](#)

Netherlands - SME

[FirmoLin](#)
[Foreco Dalfsen BV](#)

New Zealand - R&D

[New Zealand Forest Research Institute Limited trading as Scion](#)

Russia - R&D

[Volga State University of Technology](#)

Serbia - R&D

[Faculty of Forestry of the University of Belgrade](#)

Serbia - SME

[State Enterprise for Forest Management „Srbijašume“ Belgrade](#)

Slovenia - SMEs

[Abelium Research & Development](#)
[aFRONT - zavod za prostorsko inovativnost](#)
[Alples d.d.](#)
[Brest pohištvo d.o.o. Cerknica, podjetje za proizvodnjo in promet pohištva in opreme](#)
[CBD gradbeno in poslovno projektiranje](#)
[Dekleva Gregorič arhitekti, projektiranje](#)

[Donar d.o.o.](#)
[INTECH-LES, razvojni center, d.o.o.](#)
[JELOVICA Hiše d.o.o](#)
[KonektOn](#)
[Marles Hiše Maribor d.o.o.](#)
[M SORA, trgovina in proizvodnja, d.d.](#)
[Maechtig Vrhunc Arhitekti, d.o.o](#)
[PIA studio d.o.o.](#)
[Proform d.o.o.](#)
[Primus Designs d.o.o.](#)
[Psilos d.o.o.](#)
[Rex Kralj d.o.o.](#)
[Razvojni center koroškega gospodarstva – RACE KOGO d.o.o.](#)
[Riko Hiše d.o.o](#)
[S2P, znanost v pakso, d.o.o.](#)
[Silvaprodukt d.o.o](#)
[Snežnik d.d](#)
[Snopje d.o.o](#)
[Yaskawa Ristro d.o.o](#)
[Zeleno d.o.o.](#)

Slovenia - R&D

[Construction Cluster of Slovenia](#)
[Faculty of Design, University of Primorska](#)
[Geodetic Institute of Slovenia](#)
[Ministry of Education, Science and Sport](#)
[UIP University development center and university incubator of Primorska Ltd.](#)
[University of Ljubljana, Biotechnical Faculty, Department of Wood Science and Technology](#)
[University of Ljubljana, Institute of Structural Engineering, Earthquake Engineering and Construction IT \(IKPIR\); Faculty of Civil and Geodetic Engineering](#)

Slovenia - Regional development agencies

[RRA Zeleni kras d.o.o.](#)
[Regional Development Centre Koper](#)

Sweden - R&D

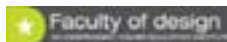
[Luleå University of Technology Wood Science and Engineering](#)

UK - SME

[JCH Industrial Ecology Limited](#)

USA - R&D

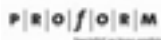
[Society of Wood Science and Technology](#)
[Wood-Based Composites Center, Oregon State University](#)



SCIENCE TO PRACTICE



Regionalni razvojni center Koper
Centro regionale di sviluppo Capodistria



LL InnoRenew activities

Three LL InnoRenew Workshops

Three workshops were completed between October and December 2015. All three workshops were designed as a direct exchange of ideas and collaboration between InnoRenew CoE partners and stakeholders joined in the LL InnoRenew. The workshops were organized by InnoRenew CoE partners with intention to expand the findings of focus groups and the survey which were performed in work package (WP) 2, and to aid the preparation of the business plan of envisaged CoE.

1st LL InnoRenew Workshop: InnoRenew CoE Services

(23rd October 2015, FAMNIT UP, Koper)

Objectives:

The first workshop, *InnoRenew CoE Services*, was outlined for evaluation of “value proposition” of InnoRenew CoE, focusing on most important topics from the WP2 survey.

Workshop topics:

- Presentation of InnoRenew CoE project
- InnoRenew CoE and the use of social media
- Restorative Environmental and Ergonomic Design (REED) paradigm
- Overview of the market analysis and key findings of WP2
- The model of Wood-Based Composites Center (USA) as an example of good practice

Topics presenters and discussions leaders:

Assoc. Prof. Dr. Andreja Kutnar (UP), Amy Simmons (UP), Michael Burnard (UP), Assist. Prof. Dr. Matthew Schwarzkopf (UP), Dr. Črtomir Tavzes (ZVKDS/IPCHS and UP)

Workshop outcome:

- Thought exchange about the opportunities for research development, and innovation funding available to R&Ds and SMEs
- H2020 SME calls were identified as an excellent opportunity for SMEs in Slovenia
- Best practices to transfer information from experts to the sector were identified
- Education and training should be an important service offered by the CoE



Participants of the 1st LL InnoRenew workshop

2nd LL InnoRenew Workshop: Impact and communication

(20th November 2015, CCIS, Ljubljana)

Objectives:

The aim of the second workshop, *Impact and communication*, was to explore the content of communications to the public and industry, above all what kind of data stakeholders want to receive and in what format the stakeholders want to receive the information on RDI.

Workshop topics:

- *Summary of Analysis of the content of Slovenian forest-based industry companies internet sites*
- *Knowledge gaps within in the sector based on survey responses*
- *Social media use in business communications and InnoRenew CoE's social media presence*
- *Goals of Public Communication* including challenges and best practices in communication
- *Goals of communication to the industry* including industry training, public outreach, and scientific and industrial development

Topics presenters and discussions leaders:

Assoc. Prof. Dr. Andreja Kutnar (UP), Michael Burnard (UP), Amy Simmons (UP), Dr. Aidan Cerar (RRA LUR)

Workshop outcome:

Topics presented on the websites of Slovenian forest-based industry companies	
Most commonly	Least Commonly
Added value of wood (emotions, health, labels)	Forest and global warming (carbon absorption, storage)
Building with wood (performance, image, substitution)	Efficient use of wood
Forest and the economy	Wood based innovations
Forest conservation	

Most commons survey responses to <i>Knowledge gaps</i>
Wood based innovations
Efficient use of wood
Building with wood

Important communication channels for survey respondents	
All countries	Slovenia
Newspapers	Television
Colleagues	Company websites
Friends	Social media and salesmen

- InnoRenew is employing the following social media practices:
 - o Presentation of quality information over quantity of posts
 - o Personal stories that will contribute to the more positive response the importance within the necessity of
 - o Maintaining a consistent online personality
 - o A balance between serious and light-hearted posts
- Participants agreed that it is important to have a clear strategy and plan for communication to provide a greater effect and ROI in media campaigns.
- The LL stakeholders identified fairs as their main communication channel, while joint presentations remain a challenge for them
- A coordinated approach with an underlying message, such as healthy living environment, could be the key to success.



Participants listening to a presentation at the 2nd LL InnoRenew workshop

3rd LL InnoRenew Workshop: Understanding Innovation

(15th December 2015, CCIS, Ljubljana)

Objectives:

The third LL InnoRenew workshop was a communication methods workshop and dedicated to innovation in industry. Its goal was to explore what manufacturers are producing, what users need, what are the innovation needs, and how to assess the value of innovations.

Workshop topics:

- Group activities to design and build structures using creativity, innovation, communication, and teamwork
- Presentation of *Innovation in the Forest Industry*
- Group cohesion exercise between researchers and industry members who discussed "What are the research needs of their industry?"
- Lecture about *Creating and Implementing an Innovative Culture* in an industrial organization
- Group exercise dedicated to *Identifying opportunities for collaboration* in the Slovenian innovation system

Workshop coordinator and lecturer:

Prof. Dr. Eric Hansen, a global expert in forest sector business and innovation, and a specialist and Professor of Forest Products Marketing (Department of Wood Science and Engineering, College of Forestry, Oregon State University, Corvallis, Oregon, USA)

Workshop outcome:

- Identified aspects of teamwork that affected success and innovation during group activities
- Industry and research members identified common themes and concerns regarding collaboration
- Inferred design rules decreased innovation and creativity during group exercises resulting in unnecessary, time consuming, and unsuccessful designs
- Cooperation and open communication between industry and researchers was important to successful designs
- Opportunities for collaboration between industry and research sectors were identified



Group creativity and building activities at the 2nd LL InnoRenew workshop

Examples of successful LL InnoRenew additional actions

- Joint proposals submitted to
 - o Social Challenges
 - o Excellent Science
 - o Industrial Leadership pillars of the Horizon 2020 EU financing of research, development, and innovation support
- Networking among stakeholders
- Implementing small, seed projects
- Communication of the sector success stories to policy makers, and interested audience throughout Europe

Social media

Join the conversation about InnoRenew CoE on:



Facebook

facebook.com/InnoRenew



Twitter

twitter.com/InnoRenewCoE



LinkedIn

linkedin.com/groups/8347719



Website

www.innorenew.eu



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INTRODUCTION

The InnoRenew CoE has been active in sharing our work and has participated in dissemination activities, including the InnoRenew CoE website, scientific publications, news releases, social media, and participation in workshops, conference, and fairs.

InnoRenew CoE Webpage

[The InnoRenew CoE website](#) was established within the first three months of the project. To reach the broadest audience the website is available in the English and Slovene language.

The webpage has five main sections, which offer information concerning the project its structure, objectives, partners, news items, and the living laboratory:

- About the project
- Partners
- News and Media,
- Work packages
- LL InnoRenew

All areas of the webpage are open to public except for the online Forum of the LL InnoRenew section where only registered members can access. The InnoRenew CoE webpage is provided and managed by coordinator of the project, University of Primorska.



The [InnoRenew website](#) has a large international audience spanning the globe.

We invite you to visit the [webpage](#) and become better acquainted with the project!

InnoRenew CoE and social media

Social networks are used by the LL InnoRenew as a way to engage a broader audience and individuals of separate stakeholder groups.

To reach the widest possible audience and to engage them with the most modern means of electronic dissemination and communication, InnoRenew CoE created its presence on three social media platforms:

- [Facebook](#)
- [Twitter](#)
- [LinkedIn](#)



Professional public and scientific community, more closely related to the project, are engaged through means of LinkedIn, interactions with general population are assured on Facebook, while a wider professional and scientific audience are reached by Twitter. Links to these networks are available at the bottom of every InnoRenew webpage subpage.

Main goals for using social media:

- Communicate and engage with partners, stakeholders, public
- Share project results, like figures and publications
- Promote InnoRenew CoE, including public events, like roundtable discussions
- Introduce stakeholders and partners

In addition our social media networks also serve LL InnoRenew's affairs. In the framework of the project's living lab, they represent a way to engage broader audience, i.e. individuals of separate stakeholders groups, and are used as international platform where specific topics and questions arising from LL InnoRenew activities and the LL in general can be discussed.

InnoRenew and dialogue with policy decision-makers

National level

InnoRenew CoE has engaged with Slovene government officials, ministries, and policy-makers at several events during our first year. A sample of those events attended is presented here.



Representatives of InnoRenew CoE, assoc. Prof. Dr. Andreja Kutnar, Prof. Dr. Dragan Marušič, Rector, dr. Matthew Schwarzkopf, Michael Burnard, dr. Črtomir Tavzes (all University of Primorska), and Marcus Becks (Fraunhofer WKI) met with the representatives of the Ministry of Agriculture, Forestry and Food (MAFF), and the Ministries of Economic Development and Technology (MEDT), and Education, Science and Sport (MESS). They presented the progress of the project, discussed next steps in the revitalisation of the Slovene forest-based sector with the representatives of the ministries, and the role research, development, and innovation should have in it, with special attention given to the fledgling InnoRenew CoE.



Prof. dr. Dragan Marušič, rektor of the Univeristy of Primorska, visited the Minister of Ministry for Education, Science and Technology, Prof. dr. Arsim Bajrami in Kosovo. Discussion included the collaboration of higher education and research institutions from Kosovo with the InnoRenew CoE. High interest was expressed by the Minister as well as Prof. dr. Ramadan Zejnullahu, rector of the University of Prishtina.



InnoRenew CoE and our living laboratory, LL InnoRenew, were prominently featured at the Workshop on the Implementation of the Smart Specialisation Strategies in Ljubljana, Slovenia on 7 April 2016. Several of our Slovene and international members presented in the section Smart Buildings and Homes including Wood Chain. The workshop was organised by the Slovene Ministry of Education, Science and Sport (MESS) and the Government Office for Development and European Cohesion Policy (GODCP), in collaboration with the European Commission, Directorate-General Joint Research Council (EC JRC) and Directorate General for Regional and Urban Policy (EC DG REGIO G1)

Bilateral level

During 2015 several high-level delegation and representatives from Germany and Slovenia met with InnoRenew CoE in Berlin and Braunschweig, which culminated in participation at the workshop "Establishment and expansion of joint research structures in Europe" in Bonn. The workshop was a part of the Federal Government's Internationalisation Strategy, and supports German institutions in benefitting as strategic partners from access to research capacities and centres of excellence that have been or are being established in the Central and South Eastern European Region. The aim of the projects is to improve the prospects for cooperation in the European Research Area and narrow the innovation gap within Europe. A subset of those events is presented here.



Dr. Anna Prinz, Ambassador of Germany in Slovenia, and Prof. Dr. Dragan Marušič, rector of University of Primorska, discussed the importance of InnoRenew CoE project, its impacts and opportunities for Slovenia and Germany during her visit to the University of Primorska



In October 2015, several Slovene-German high-level delegation and representatives from Germany and Slovenia meet in Berlin and Braunschweig with InnoRenew CoE.

(L) The delegation visited InnoRenew CoE's Advanced Partner, Fraunhofer WKI, as a review of the scientific and research collaboration between Slovenia and Germany. The InnoRenew CoE is highlighted as a prominent example of good practice in such cooperation.

(R) Assist. Prof. Dr. Andreja Kutnar (University of Primorska), the Coordinator of the InnoRenew CoE, Prof. Dr. Dragan Marušič, the Rector of the University of Primorska were guests at the dinner hosted by the Ambassador of the Republic of Slovenia Marta Kos Marko in Berlin, Germany.



On the 5th of April 2016 the German Ambassador to Slovenia visits the UP again – Prof. Jörg Steinbach meets with the rector of the University of Primorska. InnoRenew was presented and the presidents agreed that the opportunities for the cooperation between the universities exists.

InnoRenew and Public Events: Fairs, consortium meetings and public events

InnoRenew has a broad presence in the public sector both in Slovenia and abroad. InnoRenew partners regularly attend and present at events, fairs and consortiums. A sample of those events attended is presented here.



The Institute for the Protection of Cultural Heritage of Slovenia (IPCHS), an InnoRenew CoE project partner, presented the CoE and its Innovative Renewable Material Uses living laboratory LL InnoRenew on its exhibition stand at the Monumento fair in Salzburg, Austria between 28th and 30th of January 2016. Dr. Robert Peskar, the Conservator in Charge (IPCHS) has presented the CoE also in his keynote address at the opening podium discussion.



On 4 February 2016 in Ljubljana, Slovenia, Andreja Kutnar moderates the roundtable WOOD ICON – discussion on policies for forest-based sector.



The 4th Development Day of forest-based sector was held in Ljubljana on 10 March 2016 as a part of the Dom trade fair, with the topic Slovenian woodworking companies in the international R&D projects, and future aspects of the development support. In a session devoted to experiences with the EU research and development projects within Horizon 2020 and the 7th Framework Programme, our colleague dr. Črtomir Tavzes presented the Innorenew CoE project and invited the members of the audience to join us as stakeholders in the LL InnoRenew.

InnoRenew CoE at national and international conferences and workshops

Between September and December 2015, many events on national and international level took place, which were exploited for the presentation and promotion of InnoRenew CoE. A sample of those events attended is presented here.



Asst. Prof. Dr. Matthew Schwarzkopf (UP) and Michael Burnard (UP) presented the Innorenew CoE project at the International Panel Products Symposium (IPPS) hosted by The BioComposites Centre in Llandudno, North Wales, UK on the 7th and 8th of October, 2015. Dr. Schwarzkopf is shown receiving an award for best poster presentation at the conference.



Dr. Črtomir Tavzes (IPCHS and UP) introduced the project at the Forest-based sector Technology Platform (FTP) 10th Year Anniversary Celebration, subtitled "Preparing for the future with the FTP family", and at the FTP's Advisory Committee meeting. The two events were held on 18th and 19th November, 2015, in Brussels, Belgium, respectively.



On 23rd November, 2015, Dr. Kutnar lectured on The internationalization of interdisciplinary research, development and innovation in the wood industry - International Projects of University of Primorska. In her presentation, that was a part of the Conference for work professionals at the Festival of Wood, held in Kočevje, Slovenia, she gave special attention to the Innorenew CoE.



Michael Burnard presented InnoRenew CoE in his talk about The use of bio-materials in sustainable construction at the workshop "Towards a model for sustainable construction and energy efficient building" at the workshop "Towards a model for sustainable construction and energy efficient building", co-organised by the 'Smart Specialisation on Energy' of the European Commission and the Region of Andalusia, and held in Seville, Spain, on December 3rd, 2015.



Dr. Andreja Kutnar gave a presentation of InnoRenew CoE at the Professional conference “Increasing added value to the Slovene wood” at the 10th auction of valuable wood in Slovenia.

More details and contributions of these events are available at: innorenew.eu/en/news

PUBLICATIONS

InnoRenew CoE partners and stakeholders have authored manuscripts in international journals, co-authored and edited a book, and published in international conference proceedings. For additional information, please visit <http://innorenew.eu/en/news>.



A scientific book, *Environmental Impacts of Traditional and Innovative Forest-based Bioproducts*, was co-edited by InnoRenew CoE coordinator, Assoc. Prof. Dr. Andreja Kutnar. InnoRenew CoE partners, Michael Burnard and Matthew Schwarzkopf co-authored a chapter of the book. While LL InnoRenew stakeholder, Eric Hansen, authored a chapter on preparing for the bioeconomy.

This book provides a comprehensive description of traditional and innovative forest-based bioproducts, from pulp and paper, wood-based composites and wood fuels to chemicals and fiber-based composites.

Publications at international scientific conferences

InnoRenew CoE project was presented at five international scientific conferences. Presentation topics include:

- InnoRenew CoE - renewable materials and healthy environments research and innovation centre of excellence
- Challenges and opportunities of the wood construction sector - insights from the Innorenew Coe market analysis
- Integrating ICT into research, development, and innovation in the wood sector at the new InnoRenew CoE
- InnoRenew CoE - Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence - Innovative Renewable Material Uses Living Laboratory (LL InnoRenew)

InnoRenew CoE project partners attended conferences around the world:

- Llandudno, Wales
- Madrid, Spain
- Koper, Slovenia
- Ljubljana, Slovenia
- Curitiba, Brasil



Conference participants at the 59th SWST International Convention: Forest resource and products: moving toward a sustainable future in Curitiba, Brasil.

INNORENEW IN THE MEDIA

The InnoRenew CoE has been featured prominently in Slovenian and international media. News outlets include: television, radio, print and online newspapers, and partner and stakeholder websites.

National Media	28 news items (radio, tv, print and online newspaper, and websites)
International Media	3 online newspapers and websites
Partner websites	News items and announcements
University of Primorska (UP)	3
Fraunhofer WKI (Germany)	3
The Institute for the Protection of Cultural Heritage of Slovenia (IPCHS)	1
The Slovenian National Building and Civil Engineering Institute (ZAG)	4
The Regional Development Agency of the Ljubljana Urban Region (RRA LUR)	3
The National Institute of Public Health (NIJZ)	1
Zavod e-Oblak (EuroCloud Slovenia chapter)	8
The University of Maribor (UM)	3
Pulp and Paper Institute (ICP)	1
Professional Journals	9

SOCIAL MEDIA

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RENEWABLE MATERIALS AND HEALTHY
ENVIRONMENTS RESEARCH AND
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RENEWABLE
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**Scientific and
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FOCUS GROUPS

From the beginning of the InnoRenew CoE project proposal, the consortium strongly believes that research and economic activity should not only be scientific and professional outcomes but user driven as well. The InnoRenew CoE wanted to hear from various groups of our potential customers, their various aspects and diverse representations. Hence exploratory focus groups were conducted as part of market analysis to identify **important themes, perceptions, attitudes, and opinions**. The focus groups provided insight into the market in two important areas – the **renewable materials industry and consumers**. This assessment revealed risks, opportunities, and needs of industrial and consumer and several important related trends in Slovenia.

The focus groups were completed in three geographic locations for both industry and consumer groups by project partners in three areas in Slovenia: Koper (Southwestern Slovenia), Ljubljana (Central Slovenia), and Maribor (Northeastern Slovenia). Industrial focus group members were selected by recruiting from a pool of potential InnoRenew CoE end users. Consumer participants were selected by convenience sampling.

The final results of the focus groups were used to help determine specific target impacts for the InnoRenew CoE that will match industrial opportunities and capabilities with consumer and social needs through the innovation and research activities of the new CoE.

Main themes identified from focus group analysis

Consumers – All locations	Industry – All locations
Material selection	Management and business
Importance of communication	Importance of communication

The main development needs for the future are:

- improve communication and increase marketing of wood-based products
- advertising and labelling the origin of material as Slovenian wood
- educating consumers that wood is a sustainable material, which is plentiful in Slovenia
- increase added value in the industrial sector.

Key messages for InnoRenew CoE:

Industry
Gaps in the value chain
No collaboration along the value chain
Lack of communication between R & D and industry, and among suppliers and consumers
New materials for the car industry and medical applications should be developed
Lack of funds to purchase research equipment that is used infrequently

Consumers
Interest in wood buildings
Product quality is more important than its origin
Unaware of innovation in the wood sector
The amount of research that goes into a product is not an important selling point
Quality and performance are of primary concern



SURVEY

The successful development of Centre of Excellence InnoRenew CoE relies on careful planning and valuable input from different stakeholders. Using the results from the focus groups with industrial representatives a questionnaire was developed, which further delivered the state of the art, strengths and weaknesses of value chain management and marketing in relevant fields. A survey was conducted among industry members of the wood-products sector with the aim to:

- Analyse the strength of value chain management and marketing in relevant fields in Slovenia
- Gain insight into how both the industrial and academic sectors currently work with competitors and partner organizations (or reveal areas where they do not) to create and extend value in Slovenia.

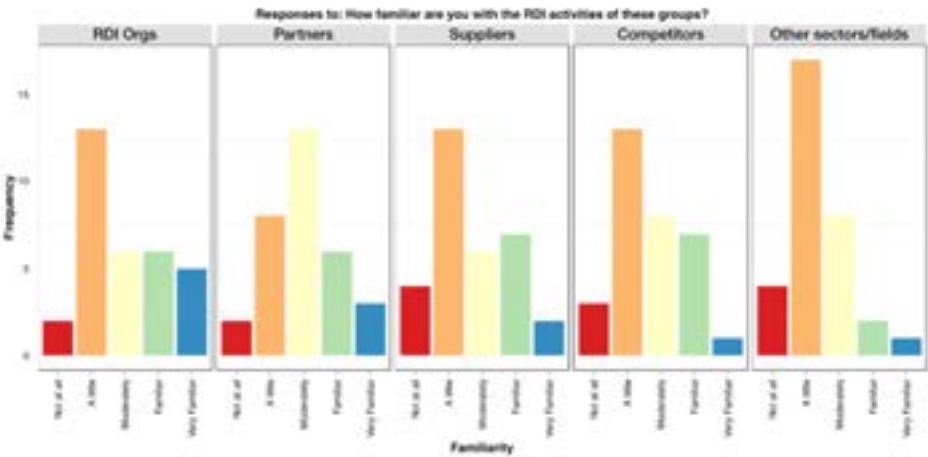
Reveal how the value of collaboration is positioned in the market.

Survey Topics

- **Familiarity with the RDI activities of research organizations, their partners, suppliers, competitors, and other sectors**
- **Amount of participation in RDI projects with national and international business partners, competitors, academic or research institutions**
- **Which services of an RDI partner would be most interesting**
- **Preferred method to learn about the latest RDI news**
- **Willingness to allow and under which condition R&D staff to be partly employed at the CoE in addition to their current position**
- **Demographics of participant**

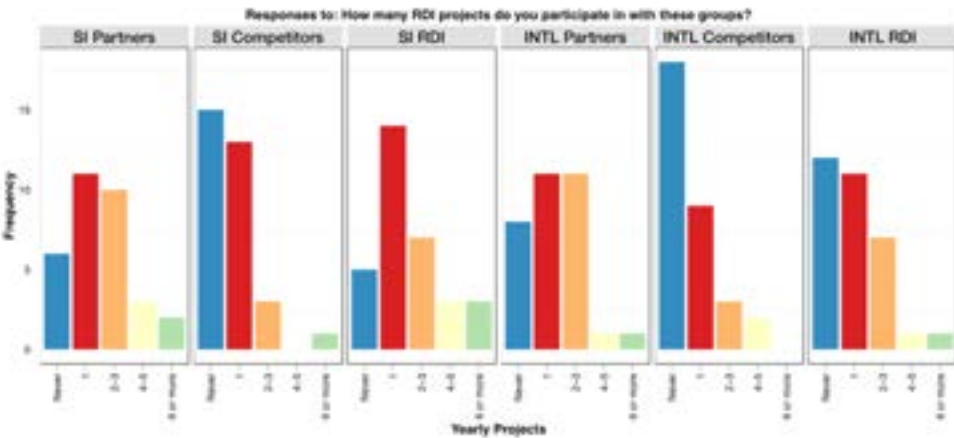
Results of survey and key messages for the InnoRenew CoE

Industry-Industry connections with forest sector value chains



Survey respondent's level of familiarity with the RDI activities of RDI organisations, partners, suppliers, competitors, and other sectors is quite low. Either a greater willingness to share RDI results, or a greater understanding of the importance of learning about RDI results is needed within the industry.

Opportunity: The CoE can serve as a communication amplifier by sharing results, and can train industry members on the importance of participating in joint RDI projects with other members of their value chains.



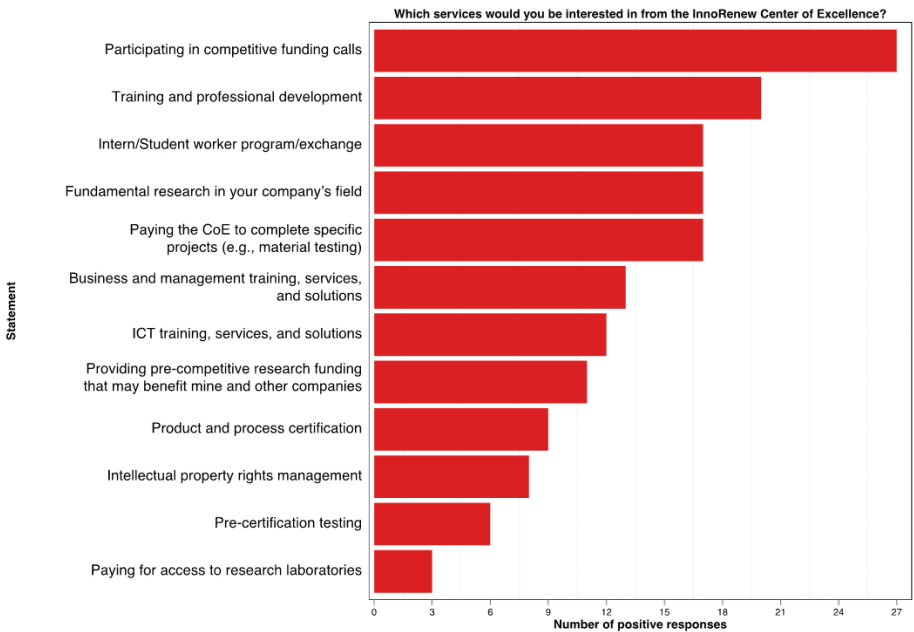
Most responding companies already participate in at least 1 RDI project each year with an industrial or RDI partner. This indicates a willingness to cooperate with other members of the value chain to improve product offerings, processes, or systems. This number is certainly influenced by the sample -- potential clients of the CoE that are therefore likely to be involved in research or understand its value already.

Industry-Consumer connections within the value chain

- Many companies are actively engaging their customers through RDI and project involvement, or by using active and passive communication channels to disseminate information to them.

Opportunity: The CoE can build on this willingness to share and interact, by engaging both industry and the general public in join innovation activities such as living labs.

Company interest in InnoRenew CoE services



The companies surveyed selected services provided by the InnoRenew CoE in which they were interested.

Learning about RDI

- The CoE must tailor its own communication methods to meet the needs of its customers who prefer to learn about RDI news through an e-mail newsletter.

MARKET ANALYSIS

A market analysis of the Slovenian forest-wood value chain was conducted, including RDI activities in the sector. The key findings of the market analysis are:

The forest stock in Slovenia is growing, and its economic value is not fully realised

Hardwood tree species are used for fuelwood and are not yet industrially relevant

The Slovenian primary wood products industry is in a suboptimal condition, undercapitalised, not technologically advanced, and does not fully utilise by-products

The value chain has no accumulation of added value and is unequally distributed along the value chain

The workforce in the wood sector is comprised primarily of older males and has a major gender imbalance

The wood-paper industry in Slovenia has maintained its revenue, production, and increased its added value per employee

In the wood-paper industry there is a need for the development of multi-functional materials and end products for the existing and fast growing markets, and integration of cost efficient and advanced technologies for sustainable production

Much of the waste wood collected annually is exported for energy generation and is a significant loss of value in the Slovene wood value chain

The Slovenian wooden construction industry is underprepared to perform large scale renovations, and still focus on new prefabricated construction

There is no tradition of multi-storey wooden construction in Slovenia

There is a need to create a stronger link between cultural heritage, the tourism sector, and creative industries and develop renewable materials for conservation-restoration to replace synthetic materials currently in use

There is a need for improving the quality of science in the fields of engineering, wood, and paper

Identified opportunities in the forest-wood value chain for the InnoRenew CoE

Invest in technologically advanced primary processing of wood, especially in the production of higher added value products, such as Cross Laminated Timber (CLT) and advanced panels.

Cluster companies along the value chain, providing high-level design and marketing, and share both investments and profits within such clusters

Create new value chains for the production of bio-based, added value products for construction, automotive, electronics, home appliances, and the traditional wood-paper-packaging value chain

Create a constant, reliable, ample, and relatively low-cost supply of lignocellulosic biomass

Introduce Restorative Environmental Ergonomic Design (REED) principles to enhance trends in sustainable construction

Use Green Public Procurement to implement wooden construction

Influence the progress of the market in the field of multi-storey wooden buildings using products like CLT

Develop innovative compositions of building kits, including the usage of new materials

Integrate ICT into the REED design paradigm

Implement a unique approach to bridge the gap between scientific achievements and industrial applications

Promote and facilitate fundamental and applied R&D projects between academic institutions and the industrial sector



RDI PLAN

The InnoRenew CoE's consortium selected research, development, and innovation (RDI) activities through a review of research institutions related to the CoE. The selection process for these activities were aided by market research, stakeholder focus groups, and industry surveys. They were prioritised based on the needs of the industry, the predicted return on investment, and the potential for new knowledge to be generated from them. The RDI plan of the InnoRenew CoE relies on interdependent research in four key RDI areas which is focused through core research themes (CRTs), generating new knowledge for the CoE's key distinguishing technologies.

Two key distinguishing technologies of the InnoRenew CoE are:

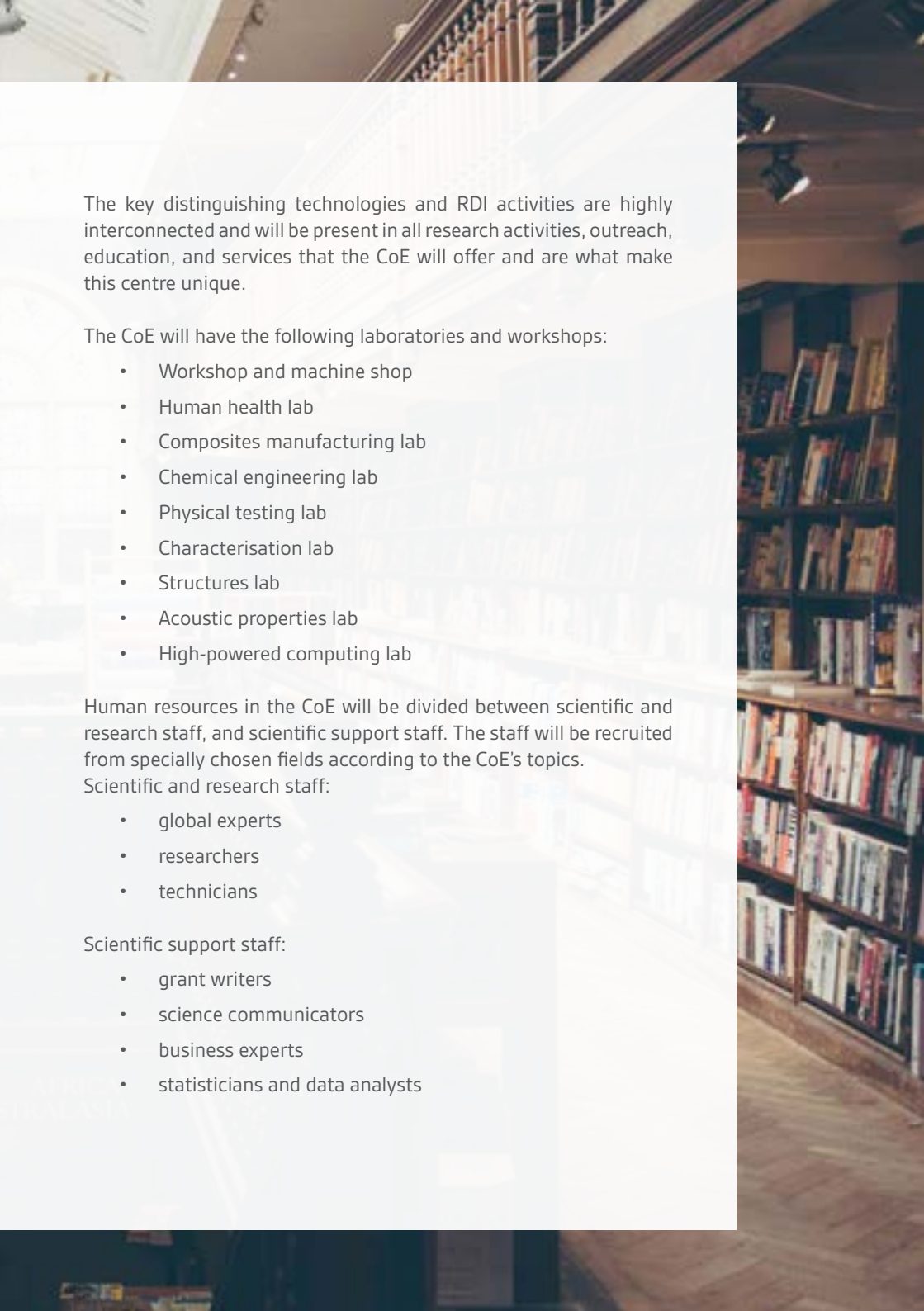
- Restorative Environmental and Ergonomic Design (REED)
- Modified Wood

Three core research themes (CRTs) will support and continually shape the key distinguishing technologies:

- Health
- Design and Cultural Heritage
- Policy and Government liaising

Four key RDI areas are linked to the key distinguishing technologies through CRTs:

- Materials (wood composites, wood modification, insulating products, surface functionalization, pulp, and coatings/surface treatments)
- Business support (material and component testing, product development, innovation management, value-chain development, joint project development)
- ICT (sensors, industrial processes, public data explorer, BIM - building information modelling)
- Sustainable buildings (hybrid systems, engineering, smart buildings, energy efficiency, interior quality)



The key distinguishing technologies and RDI activities are highly interconnected and will be present in all research activities, outreach, education, and services that the CoE will offer and are what make this centre unique.

The CoE will have the following laboratories and workshops:

- Workshop and machine shop
- Human health lab
- Composites manufacturing lab
- Chemical engineering lab
- Physical testing lab
- Characterisation lab
- Structures lab
- Acoustic properties lab
- High-powered computing lab

Human resources in the CoE will be divided between scientific and research staff, and scientific support staff. The staff will be recruited from specially chosen fields according to the CoE's topics.

Scientific and research staff:

- global experts
- researchers
- technicians

Scientific support staff:

- grant writers
- science communicators
- business experts
- statisticians and data analysts

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