

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

**Scientific and
Organisational
Content**



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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 |



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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.

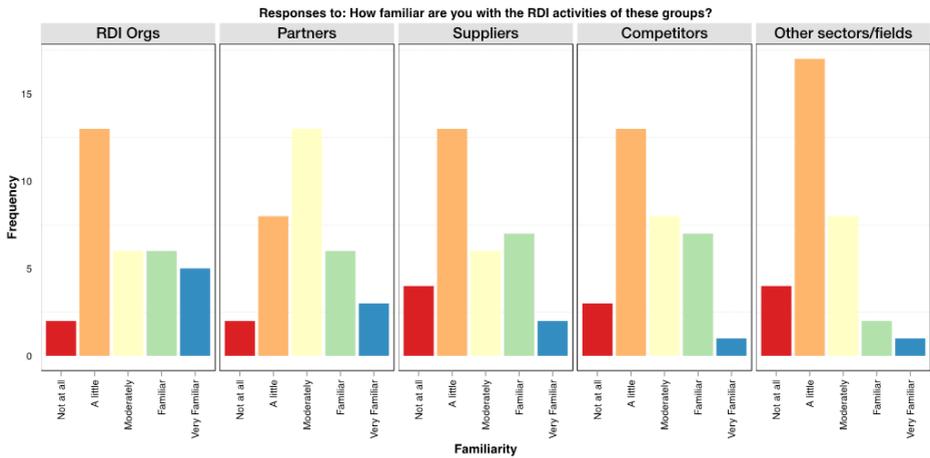
Reveal how the value of collaboration is positioned in the market.

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**

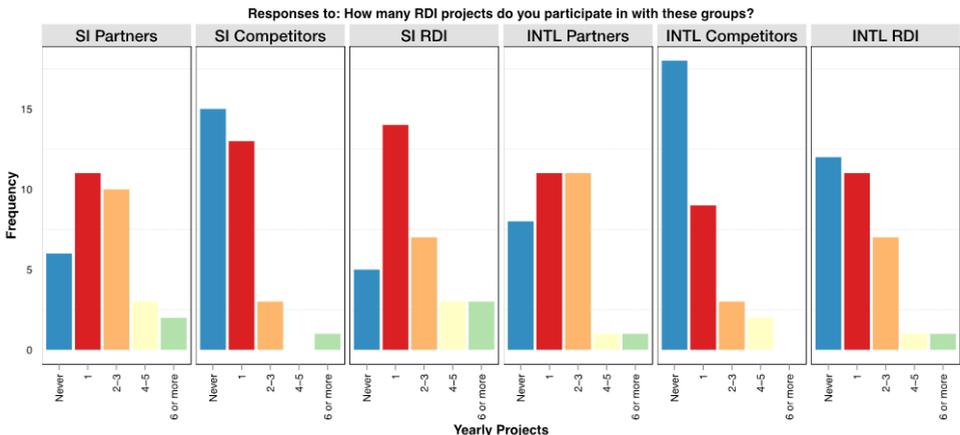
Results of survey and key messages for the InnoRenew CoE

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.



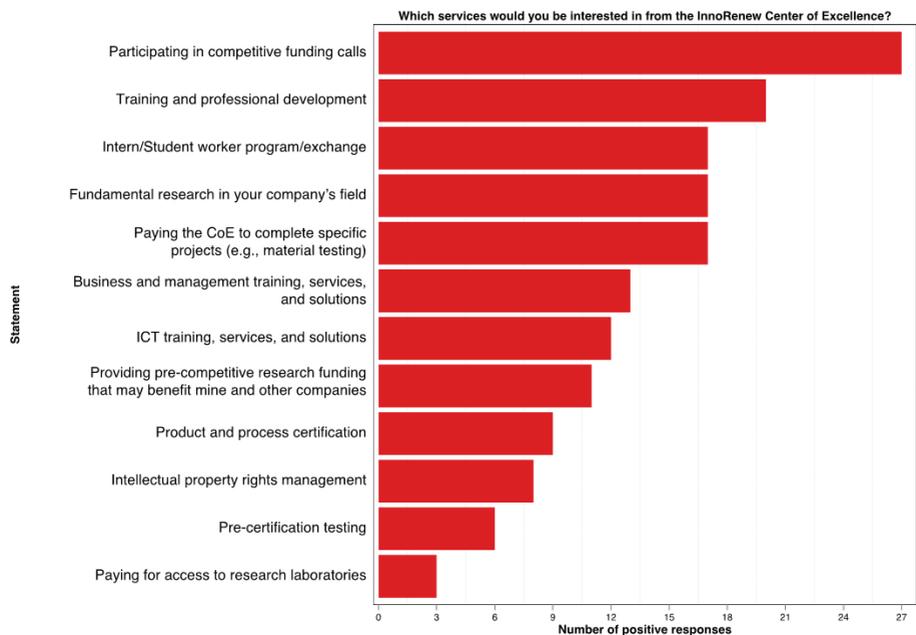
Most responding companies already participate in at least 1 RDI project each year with an industrial or RDI partner. This indicates a willingness to cooperate with other members of the value chain to improve product offerings, processes, or systems. This number is certainly influenced by the sample -- 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 joint 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:

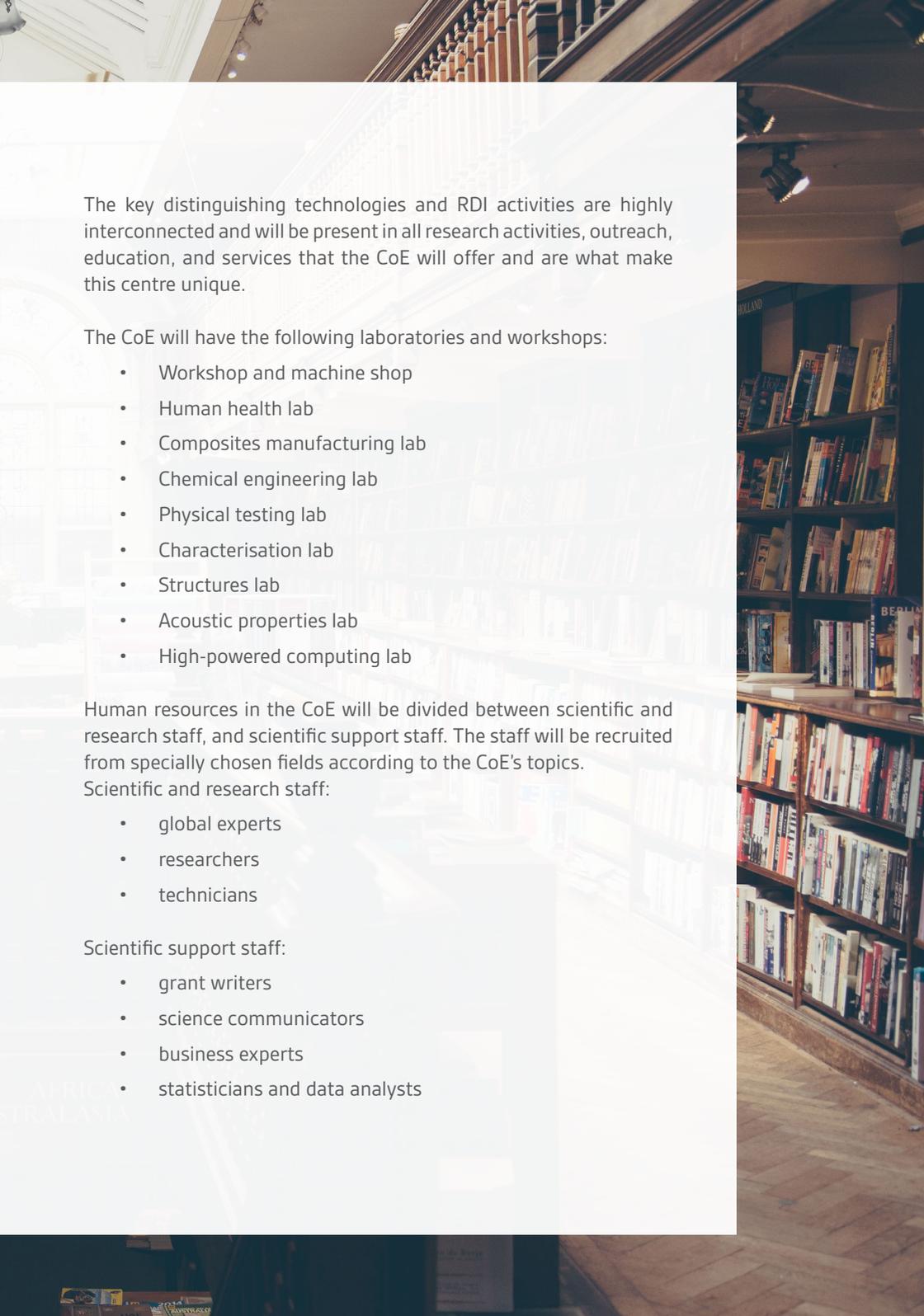
- Restorative Environmental and Ergonomic Design (REED)
- Modified Wood

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

Social media

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