REPORT April 2017 - February 2019

POROČILO april 2017 - februar 2019

InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence

InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja

Report from 1 April 2017 to 15 February 2019

Poročilo za obdobje od 1. aprila 2017 do 15. februarja 2019

Mentored by Fraunhofer WKI.

Funded by the Horizon 2020 Framework Programme of the European Union; H2020 WIDESPREAD-2-Teaming: #739574 and the Republic of Slovenia. Investment funding of the Republic of Slovenia and the European Union of the European Regional Development Fund.

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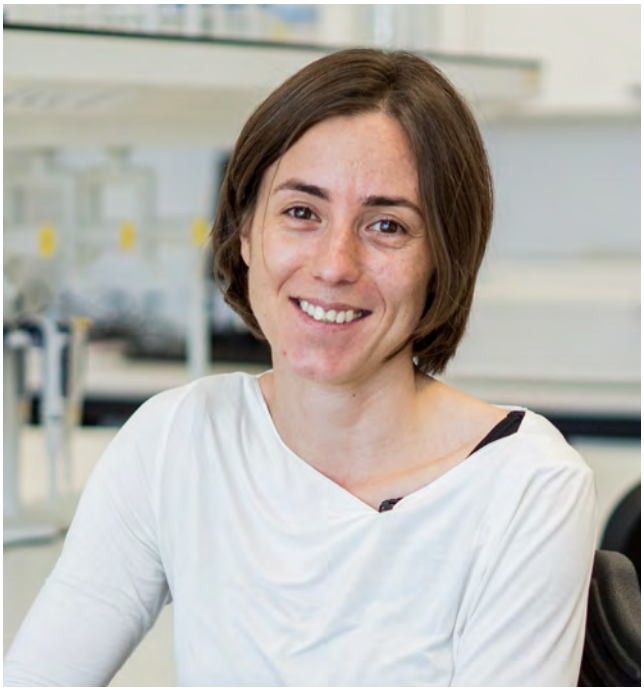
Foreward from the Director of the InnoRenew CoE, Assoc. Prof. Andreja Kutnar, PhD

Predgovor direktorice InnoRenew CoE, izr. prof. dr. Andreja Kutnar

Since the establishment of the research institute InnoRenew CoE in 2017, we choose the path of uncompromising scientific excellence. The InnoRenew CoE wants to move the boundaries of the known and contribute to the development of science, technology, and the economy with innovative, original, and bold ideas and research. It encourages committed scientific and research work of individuals and groups, which is demanding, but, at the same time, entangled with enthusiasm and is of crucial importance for achieving excellent results and success. In the science field and in the initiation of science policy, together with industry, it seeks and promotes new solutions related to today's challenges of great importance: sustainable development, renewable materials, a human- and nature-friendly living environment.

A wide range of professionals are needed in order to achieve excellence in diverse areas related to wood as the main material of our research. Therefore, on our team, besides wood scientists, we also have civil engineers, computer scientists, IT professionals, biologists, chemists, psychologists, and kinesiologists. Interdisciplinary and internationality are two important words for our team. Currently, we have 46 employees, of which almost a half come from abroad. Our researchers and other professionals hail from all around the word, which proves that the international recognition of the InnoRenew CoE is well spread. Moreover,



Raziskovalni inštitut InnoRenew CoE se je že ob ustanovitvi leta 2017 odločil za pot brezkompromisne znanstvene odličnosti. V InnoRenew CoE zato želimo premikati meje znanega in z inovativnimi raziskavami, zasnovanimi na izvirnih, drznih idejah prispevati k razvoju znanosti, tehnologije in gospodarstva. Spodbujamo predano znanstveno in raziskovalno delo tako posameznikov kot skupin, ki je zahtevno, a prežeto z entuziazmom, kar je ključnega pomena za doseganje vrhunskih rezultatov in uspehov. Pri tem tako na znanstvenem področju kot pri snovanju znanstvenih politik in v tvornem sodelovanju z industrijo iščemo in spodbujamo rešitve, ki so povezane s pomembnimi izzivi današnjega časa: trajnostni razvoj, obnovljivi materiali, človeku in naravi prijazno bivanjsko okolje.

we care about the development of our younger colleagues, early stage researchers, and PhD students. Just in the last year, two of our researchers successfully defended their PhD dissertations. With collaboration and lecturing at numerous national and international faculties and universities, we assure our commitment to transfer knowledge to new generations of researchers and nurse the continuity of the excellence.

Because we are perusing sustainable solutions, we must address the economic, environmental, and societal perspectives in our results and challenges. We must use an integrated approach. A great example of this is one of our key research areas: REED (Restorative Environmental and Ergonomic Design). This new paradigm of the built environment's creation and design emphasises the use of natural elements, also known as the biophilic design, and has positive impacts on human health and well-being. By raising awareness of these positive effects, we become even more responsible towards our environment.

We are enhancing the discussion about negative consequences that our actions bring to nature. Renewable materials, or more precisely, wood modification, is the second key research area at our institute and is one of the options for reducing such negative consequences. In the last few years, we reached important new recognitions on environmental impacts, which is a good reason for raising awareness in society. With research and innovation of wood modification, we advance the competitiveness of the forest and wood sector since treated wood can be used for high added value products and enables the use of wood species that are not commonly used in classical timber manufacturing.

Da bi dosegli odličnost na raznolikih področjih, ki smo si jih zadali, stikajo pa se z uporabo lesa kot osrednjega predmeta naših raziskovanj, potrebujemo široko paleto strokovnjakov, ne le lesarjev. Zato so v naši ekipi tudi gradbeniki, računalničarji, informatiki, biologi, kemiki, psihologi, kineziologi. Interdisciplinarnost pa tudi internacionalnost sta tehtni besedi za naš tim. Trenutno zaposlujemo 46 oseb, od tega jih skoraj polovica prihaja iz tujine. Da naši raziskovalci in drugi strokovnjaki prihajajo z različnih koncev sveta, ne nazadnje priča tudi o tem, da se mednarodna prepoznavnost InnoRenew CoE hitro širi. Poleg tega skrbimo za razvoj mlajših sodelavcev, mladih raziskovalcev in doktorskih študentov; dva izmed njih sta lani uspešno zaključila doktorski študij. S predavanji na številnih nacionalnih in mednarodnih fakultetah ter univerzah skrbimo za prenos znanja na nove generacije raziskovalcev in s tem tudi za kontinuiteto odličnosti.

Ker si prizadevamo za trajnostne rešitve, moramo rezultate našega dela obravnavati tako z ekonomskega in okoljskega kot družbenega vidika; na izzive moramo pogledati celostno. Eno od glavnih področij raziskovanja InnoRenew CoE, REED (Restorative Environmental and Ergonomic Design – restorativno okoljsko in ergonomsko oblikovanje), je lep primer takih usmeritev. Ta nova paradigma načrtovanja in oblikovanja bivanjskih okolij temelji na biofiličnem designu, torej uvajanju elementov naravnosti v bivanjska okolja, ki dobro vpliva na naše počutje in zdravje. Ker te pozitivne učinke narave na človeka tudi ozaveščamo, postajamo do naravnega okolja (še) bolj odgovorni.

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Our work is in full swing, and some of our results exceeded initial expectations. Since the establishment of the institute, we have submitted 93 project proposals, from which 37 were successful and 20 are in the evaluation process. After 2 years of intense work, we gained more than a million euros of additional funding. Besides our excellent team of experts, we collaborate with other national and international scientific institutions, as well as industry partners, which is important for our successful proposals.

Internationality is another fundamental pillar of our work. We support internationality by participating and presenting our knowledge and scientific ideas at conferences all around the globe. We attend and lecture at universities and institutes abroad, we host colleagues from other institutions, and we regularly publish our research results on the open access platform Zenodo. Sharing knowledge is essential for social progress. At the InnoRenew CoE we are committed to open science and open innovations.

Nadgrajujemo torej razmišljanje, da naj bi imela naša dejanja čim manj negativnih posledic za okolje. Tudi obnovljivi materiali, natančneje, modifikacija lesa, ki je drugo osrednje področje raziskovanja InnoRenew CoE, je ena od možnosti za zmanjšanje takih negativnih učinkov. V zadnjih nekaj letih smo prišli do pomembnih novih spoznanj glede vplivov na okolje, ki so tudi tehtni razlogi za družbeno ozaveščanje. Z raziskavami in inovacijami modificiranega lesa poleg tega prispevamo k večji konkurenčnosti celotne lesnopredelovalne panoge, saj postane tako obdelan les uporaben za izdelke z visoko dodano vrednostjo, omogoča pa tudi uporabo lesnih vrst, za katere se v klasični predelavi lesa običajno ne odločajo.

Naše delo je v polnem teku, nekateri rezultati pa so že presegli pričakovanja. Od ustanovitve zavoda smo prijavili 93 projektov, od teh je bilo uspešnih 37, dodatnih 20 pa je ravno v postopku ocenjevanja. V dveh letih intenzivnega dela smo pridobili več kot milijon evrov dodatnega financiranja. K takemu uspeh pri prijavah poleg naše odlične ekipe strokovnjakov prispeva tudi naše sodelovanje z drugimi znanstvenimi ustanovami in z industrijo, tako doma kot onstran naših meja.

Internacionalizacija je še eden od temeljnih stebrov našega delovanja. Spodbujamo jo tudi s tem, da pridobljeno znanje in znanstvene ideje predstavljamo na konferencah po vsem svetu, obiskujemo tuje univerze ter inštitute in na njih predavamo, gostimo kolege s tujih ustanov pri nas, rezultate svojih prizadevanj pa redno objavljamo v prostem dostopu na platformi Zenodo. Za družbeni napredek je ključnega pomena, da se pridobljeno znanje deli. Na InnoRenew smo se zato zavezali odprti znanosti in odprtim inovacijam.

General information / Osnovni podatki

Name:	*InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence*
Naziv:	*InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja*
Address:	*Livade 6, 6310 Izola/Isola, Slovenia*
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SI registration number / Matična številka: 7233817000	
Tax number / Davčna številka: SI 65332547	
Primary research activity code:	*• M72.110 – Research and experimental development on biotechnology*
Šifra primarne dejavnosti:	• M72.110 – Raziskovalna in razvojna dejavnost na področju biotehnologije
The bank / Poslovna banka: NLB d.d.	
ARRS number of research organization / Številka raziskovalne organizacije v ARRS: 3770	
InnoRenew CoE's research group number at ARRS / Številka raziskovalne skupine InnoRenew CoE v ARRS: 3770-001	

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OUR VISION

One of the biggest challenges of today's society and the basis for sustainable development is the usage and processing of renewable materials. What are those materials? How and with what technology we can (re)use them? How do they affect human beings and the environment? How effective are they in the industry?

We can answer these questions only with committed scientific work, creativity, pervasive innovation, and cooperation with the industry.

At the InnoRenew CoE, we are following this route. Our vision is to be a world leader in this area and a model for international research excellence, industrial outreach, raising public awareness, and engaging the public in our research activities.

NAŠA VIZIJA

Eden ključnih izzivov današnje družbe in temelj trajnostnega razvoja je uporaba in predelava obnovljivih materialov. Kateri so ti materiali? Kako in s kakšno tehnologijo jih lahko (ponovno) uporabimo? Kako vplivajo na človeka in okolje? In koliko so učinkoviti v gospodarstvu?

Odgovore na vprašanja lahko prinesejo le predano znanstveno delo, ustvarjalnost, prodorna inovativnost in sodelovanje z gospodarstvom.

Tako pot smo si začrtali tudi pri InnoRenew CoE. Naša vizija je, da na tem področju postanemo vodilna ustanova na svetu in zgled odličnosti za mednarodno raziskovanje, podporo gospodarstvu ter za ozaveščanje javnosti in njeno vključevanje v raziskovalno dejavnost.

The InnoRenew CoE Team, February 2018 / Ekipa InnoRenew CoE, februar 2018

OUR MISSION

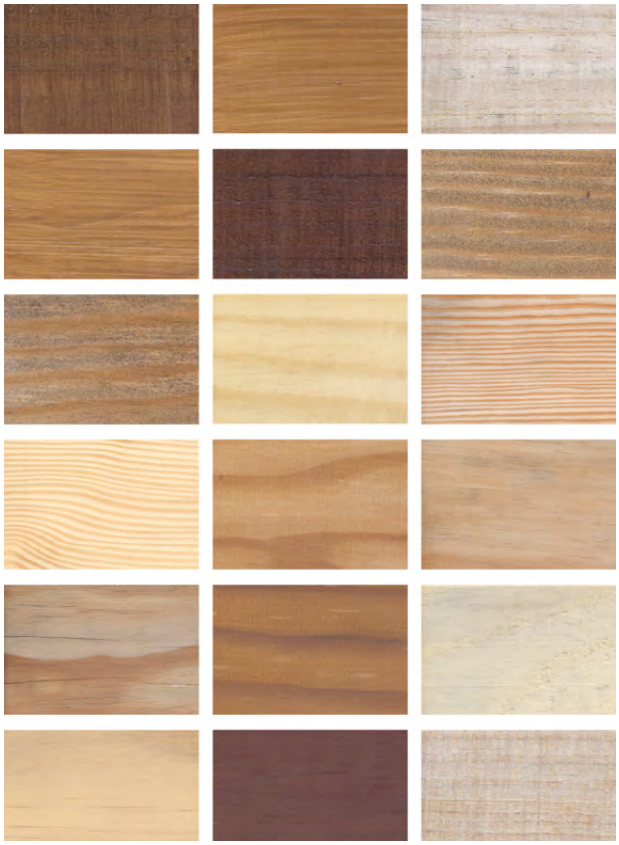
The mission of the InnoRenew CoE is to advance the state-of-the-art and achieve scientific and innovation excellence through interdisciplinary science. We especially promote the state-of-the-art in our two key research areas:

NAŠE POSLANSTVO

Naše poslanstvo je nadgrajevanje najsodobnejših znanstvenih in gospodarskih izsledkov z interdisciplinarnimi raziskavami ter prizadevanje za znanstveno in inovacijsko odličnost. Pri tem napredek še posebej spodbujamo na dveh osrednjih področjih našega raziskovanja:

Wood modification / Modifikacija lesa

Wood modification processes lead to enhancement of desired properties by means of chemical, biological, or physical agents. Wood modification includes several treatments that change materials properties on different levels. They include active modifications, that change the chemical nature of materials (e.g., chemical, thermal, enzymatic), or passive, that do not alter materials chemistry (e.g., impregnation, surface treatments). Consequently, various properties of wood are changed to different extents. Thermal, mechanical, and chemical treatment of wood increases its durability and creates more uses in different products and enables the use of wood beyond traditional applications. The bulk and surface modification processes may affect one or more functionalities of wood as a material. Even if it improves certain assets, the positive effect can be multiplied by merging two or more modification processes. Such an approach turns out to be a "hybrid process" of the biomaterial modification and becomes an optimal solution frequently implemented by producers. Benefits obtained by merging different materials and treatments are highly useful to address



Postopki modifikacije s pomočjo kemičnih, bioloških ali fizikalnih dejavnikov vodijo v izboljšanje želenih lastnosti lesa na različnih ravneh. Vključujejo aktivne spremembe, ki vplivajo na naravne kemijske spremembe materiala (npr.

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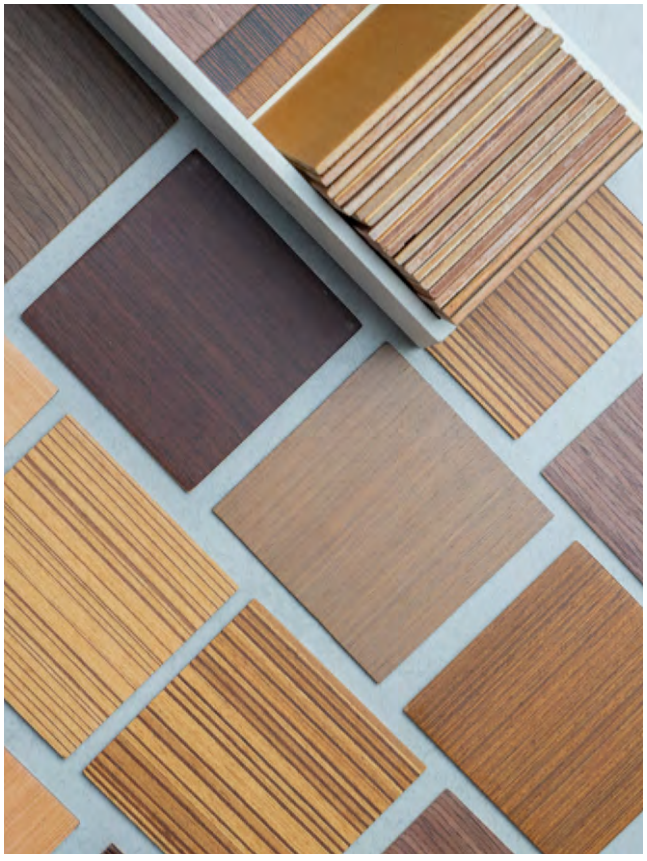
design limitations and wood deficiencies. If properly implemented, hybrid modifications can contribute to reduced environmental burden and economic cost of wood maintenance.

At the InnoRenew CoE, our goal with wood modification is to develop an original treatment solution(s), combine already available technologies into hybrid modifications in order to enhance natural wood properties, and share wood modification techniques that improve targeted wood properties or create functions for wood while reducing the environmental impact of wood use.



kemična, termična, encimatska sestava), ali pasivne spremembe, ki kemijske sestave materiala ne spremenijo (impregnacija, površinska obdelava). Posledično se različne lastnosti lesa spremenijo v različnem obsegu. S termično, mehansko in kemično modifikacijo lesu povečamo trajnost, s tem pa se poveča njegova uporabnost za različne proizvode, in to tudi zunaj tradicionalne rabe. Proces modifikacije obsega in površine materiala lahko vpliva na eno ali več funkcionalnosti lesa kot materiala. Če določen postopek modifikacije izboljša določene lastnosti, se lahko učinek z združevanjem dveh ali več postopkov še stopnjuje. Tovrstni pristop imenujemo »hibridni proces« modifikacije biomaterialov in je postal optimalna rešitev, ki jo pogosto uporabljajo različni proizvajalci. Prednosti, ki jih pridobimo z združevanjem različnih materialov in obdelavo, so zelo uporabne pri oblikovalskih omejitvah in za izboljšavo pomanjkljivosti lesa. S pravilno izvedbo lahko hibridna modifikacija prispeva k zmanjšanju obremenitve okolja in gospodarskih stroškov, ki nastajajo pri vzdrževanju lesa.

Pri InnoRenew CoE smo si postavili cilj, da z modifikacijo lesa razvijemo izvirne rešitve za obdelavo lesa, že razpoložljive tehnologije pa združimo v hibridne modifikacije. S tem bi izboljšali naravne lastnosti lesa in razširili tehnike modifikacije lesa, ki bi okrepile njegove ciljne lastnosti ali ustvarile – ob zmanjšanem vplivu na okolje – dodatne možnosti za njegovo uporabo.

Restorative environmental and ergonomic design (REED) / Restorativno okoljsko in ergonomsko oblikovanje (REED)

Restorative Environmental and Ergonomic Design (REED) is a new design paradigm for using wood in the built environment to create positive environmental, well-being, social, and economic outcomes. The key elements of REED are the psychophysiological impacts of material selection and design, including their interactions, that have an impact on human well-being and the environment. To ensure the most impactful design solutions, REED is based on established scientific evidence from various fields. Accordingly, the InnoRenew CoE is active in this research area with a variety of projects examining the human health and environmental impacts of wood use in the built environment. REED will provide guidelines for using wood to meet

Restorativno okoljsko in ergonomsko oblikovanje (REED) je nova paradigma oblikovanja pri uporabi lesa v grajenem okolju, ki prinaša pozitivne okoljske, zdravstvene, socialne in gospodarske rezultate. Ključni elementi REED so psihofiziološki vplivi glede izbire materialov in njihovega oblikovanja, vključno z interakcijo med njimi, ki delujejo na okolje in človekovo blagostanje. Da bi REED zagotovil najučinkovitejše oblikovalske rešitve, temelji na uveljavljenih znanstvenih spoznanjih z različnih področij. InnoRenew CoE je zato zasnoval številne različne projekte, ki proučujejo vpliv uporabe lesa v grajenem okolju na človekovo zdravje in na okolje. REED bo zagotovil smernice pri uporabi lesa, ki bodo izpolnjevale obstoječe gradbene standarde, kot so WELL ali Living Building Challenge, s čimer bodo arhitekti lahko uporabili strokovno znanje pri doseganju ciljev na področju zdravja in trajnosti, obenem pa ohranjali ustvarjalni nadzor nad zgradbami in okolji, ki jih oblikujejo.

Paradigma REED si prizadeva ustvariti neposredne in pozitivne vplive na okolje in uporabnike stavb, eden od dolgoročnih ciljev REED pa je večja skrbnost za okolje, ki jo prinaša vključevanje narave v grajeno okolje. Ta cilj bo vodil k večji povezanosti med človekovim in naravnim okolja, v katerem so ljudje neposredneje vključeni v svoje lokalno okolje in bolj povezani z njim, prizadevanja, da bi zanj skrbeli, pa so pravilo in ne zgolj izjema.

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existing building standards such as WELL or the Living Building Challenge, allowing architects to apply expert knowledge to achieve health and sustainability goals while maintaining creative control over the buildings and environments they design.

Not only does the REED paradigm seek to create direct and positive impacts for building occupants and the environment, one of the long-term goals of REED is to build a sense of increased concern and care for the environment by integrating nature into the built environment. This goal will lead to a more integrated human and natural environment where people are more directly involved and connected to their local environment and take steps to care for it as a normal activity rather than an exception.

The combined emphasis on human well-being and environmental care will improve occupant health, reduce environmental impacts, and lead to a more sustainable society through the use of renewable materials like wood.

Poudarka na blaginji ljudi in skrbi za okolje bosta skupaj izboljšala zdravje uporabnikov stavb in zmanjšala negativne vplive na okolje, z uporabo obnovljivih materialov, kot je les, pa vodila tudi k trajnostni družbi.

OUR CORE VALUES / NAŠE VODILNE VREDNOTE

1. Inclusion and diversity / Vključenost in raznovrstnost

An environment that builds on inclusion and diversity enables personal development, creativity, and the realization of ideas.

Okolje, ki gradi na vključenosti in raznovrstnosti, omogoča osebnostni razvoj, ustvarjalnost in uresničevanje idej.

2. Sustainability / Trajnost

The preservation of nature and the sustainable development of the economy and society demonstrates great care for the environment, solidarity, and human-friendly economic and social progress.

Ohranjanje narave ter trajnostni razvoj gospodarstva in družbe pomenita skrb za okolje, solidarnost in človeku prijazen gospodarski ter družbeni napredek.

3. Integrity / Integriteta

Ensuring respect and dignity enables employees, partners, and the wider society to personal integrity and integrity of actions.

Zagotavljanje spoštovanja in dostojanstva zaposlenim, partnerjem in širši družbi omogoča osebno integriteto in integriteto delovanja.

4. The pursuit of excellence / Prizadevanje za odličnost

Excellence in all the InnoRenew CoE areas - science, economy, business, users, and environment - will bring the greatest benefit to society.

Odličnost na vseh področjih – znanstvenem, gospodarskem, poslovnem, uporabniškem, okoljskem –, za katero si prizadeva InnoRenew CoE, bogati družbo.

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ORGANISATION

InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (InnoRenew CoE) was formally established on 15 February 2017 in accordance with the provisions of Article 2 of the Institutes Act of Slovenia (Ur. L. RS 12/91, 8/96, 36/00, and 127 /06) and the Contract of Establishment of the InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence dated 29 November 2016.

The InnoRenew CoE is a not-for-profit private institute (in Slovenian legislation, "neprofitni zasebni zavod"). The founders of the InnoRenew CoE and their respective initial capital share are:

- Univerza na Primorskem/Universitá del Litorale (45,1 % of the institute's capital)
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung eingetragener Verein (24,9 % of the institute's capital)
- Javni zavod Republike Slovenije za varstvo kulturne dediščine (15 % of the institute's capital)
- Zavod za gradbeništvo Slovenije (15 % of the institute's capital)

The InnoRenew CoE is represented by the Director, Assoc. Prof. Andreja Kutnar, PhD, who is entitled, on behalf of the institute, to enter into contracts and other legal transactions and to represent the InnoRenew CoE before the courts and other authorities without restrictions.

The organizational structure of the InnoRenew CoE consists of the Assembly of the Founders, an Executive Board, a Director, a Council of Experts, and has an integrated organizational unit, "Living Laboratory InnoRenew".

ORGANIZACIJSKA STRUKTURA

InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (InnoRenew CoE) je bil ustanovljen 15. 2. 2017 na podlagi določil 2. člena Zakona o zavodih (Uradni list RS, št. 12/91, 8/96, 36/00 in 127/06) in pogodbe o ustanovitvi InnoRenew CoE Centra odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja, z dne 29. novembra 2016.

InnoRenew CoE je neprofitni zasebni zavod. Ustanovitelji zavoda InnoRenew CoE in njihovi začetni kapitalski deleži so:

- Univerza na Primorskem/Università del Litorale (45,1 % kapitala zavoda),
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung eingetragener Verein (24,9 % kapitala zavoda),
- Javni zavod Republike Slovenije za varstvo kulturne dediščine (15 % kapitala zavoda),
- Zavod za gradbeništvo Slovenije (15 % kapitala zavoda).

InnoRenew CoE zastopa direktorica izr. prof. dr. Andreja Kutnar, ki je skladno s statutom upravičena, da v imenu InnoRenew CoE sklepa pogodbe in druge pravne posle ter zastopa InnoRenew CoE pred sodišči in drugimi organi brez omejitev.

Organizacijsko strukturo InnoRenew CoE sestavljajo skupščina ustanoviteljev, svet zavoda, direktor in strokovni svet. Zavod ima tudi integrirano organizacijsko enoto "Živi laboratorij InnoRenew".

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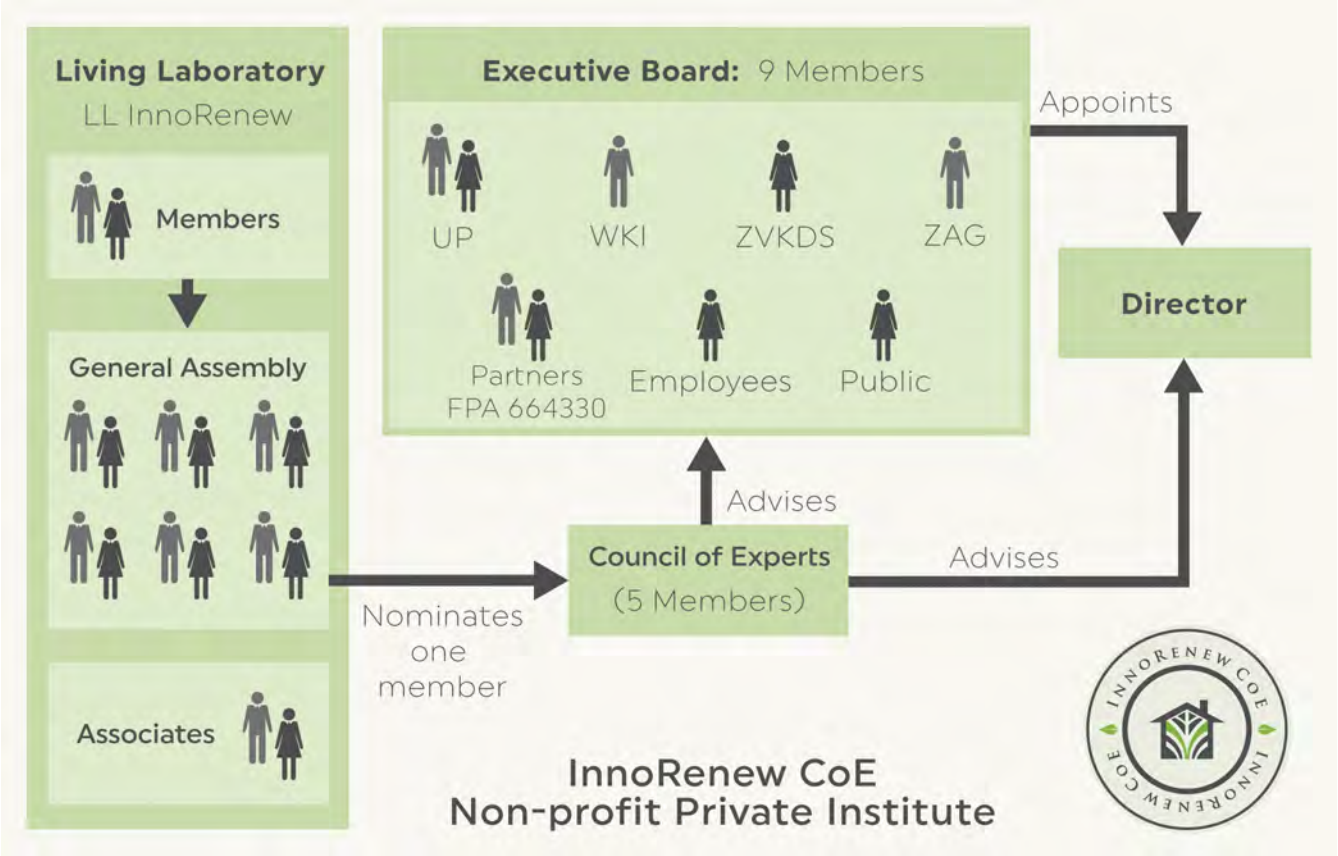

Executive Board / Svet zavoda:

- Prof. Dragan Marušič, PhD (University of Primorska) - chair
  Prof. dr. Dragan Marušič (Univerza na Primorskem) – predsednik

- Prof. Klavdija Kutnar, PhD (University of Primorska)
  Prof. dr. Klavdija Kutnar (Univerza na Primorskem)

- Prof. Bohumil Kasal, PhD (Fraunhofer WKI)
  Prof. dr. Bohumil Kasal (Fraunhofer WKI)

- Anita Klemen, Msc (Institute for the Protection of Cultural Heritage of Slovenia)
  Mag. Anita Klemen (Zavod za varstvo kulturne dediščine Slovenije)

- Assoc. Prof. Andraž Legat, PhD (Slovenian National Building and Civil Engineering Institute)
  Izr. prof. dr. Andraž Legat (Zavod za gradbeništvo Slovenije)

- Mateja Mešl, Msc (Other InnoRenew Partner's representative; Pulp and Paper Institute)
  Mag. Mateja Mešl (predstavnica ostalih InnoRenew partnerjev; Inštitut za celulozo in papir)

• Matej Gojčič (Other InnoRenew Partner's representative; Regional Development Agency of the Ljubljana Urban Region)
• Matej Gojčič (predstavnik ostalih InnoRenew partnerjev; Regionalna razvojna agencija Ljubljanske urbane regije)

• Amy Noel Simmons, Msc (InnoRenew CoE employee representative)
• Mag. Amy Noel Simmons (predstavnica zaposlenih v InnoRenew CoE)

• Karolina Schlegel (representative of the public; Ministry of Education, Science and Sport of the Republic of Slovenia)
• Karolina Schlegel (predstavnica javnosti; Ministrstvo za izobraževanje, znanost in šport Republike Slovenije)

Director / Direktorica:

• Assoc. Prof. Andreja Kutnar, PhD
izr. prof. dr. Andreja Kutnar

Council of Experts / Strokovni svet:

• Petr Hajek, PhD, Czech Republic
Dr. Petr Hajek, Češka

• Duncan Mayes, Finland
Duncan Mayes, Finska

• Mariapaola Riggio, PhD, USA
Dr. Mariapaola Riggio, ZDA

• Peter Niemz, PhD, Switzerland
Dr. Peter Niemz, Švica

• Ritva Toivonen, PhD, Finland
Dr. Ritva Toivonen, Finska

• Milan Vatovec, PhD, USA
Dr. Milan Vatovec, ZDA

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The InnoRenew CoE Living Lab (LL InnoRenew) – where science meets industry, meets policy, meets people

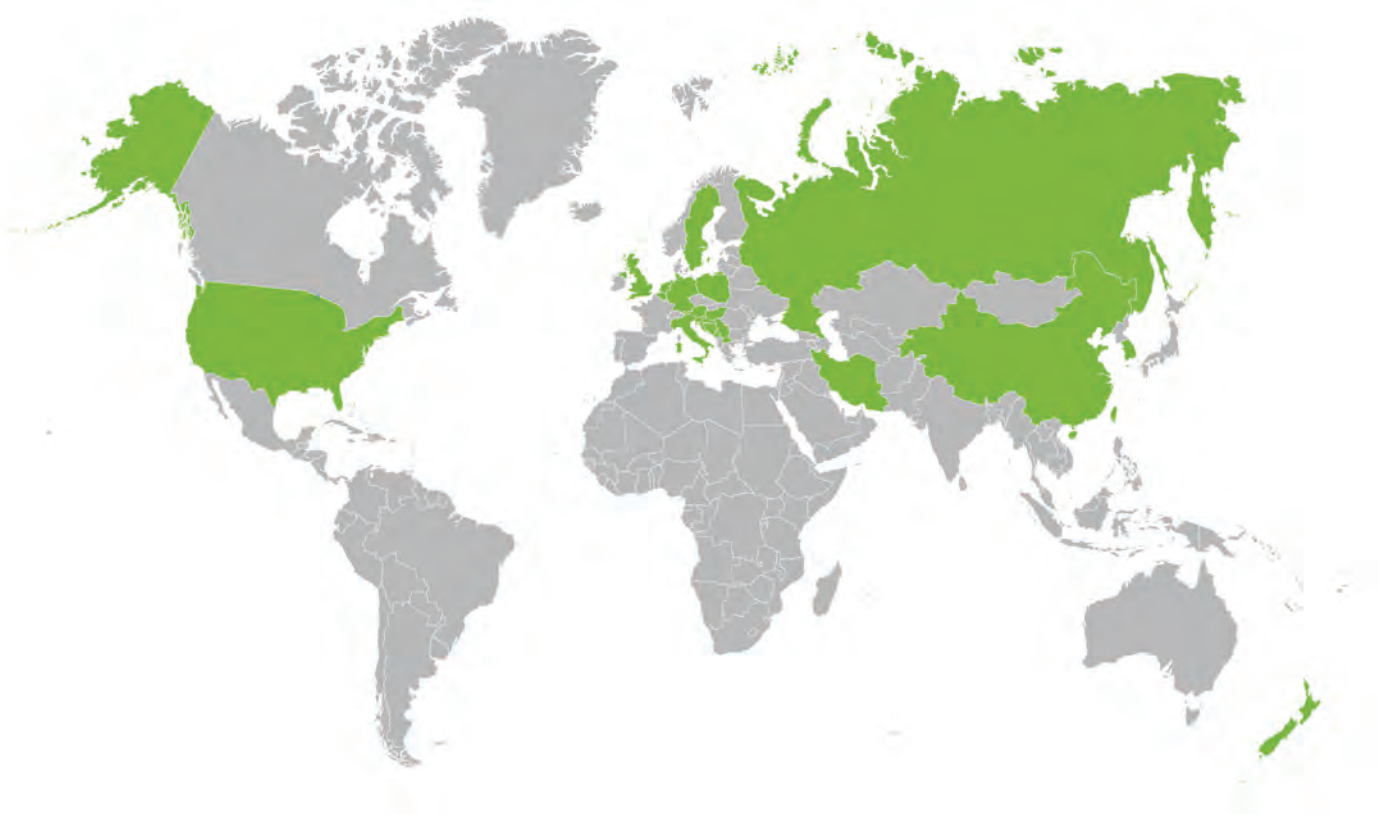
Živi laboratorij InnoRenew CoE (LL InnoRenew) – kjer znanost sreča podjetja, politike, ljudi

The InnoRenew CoE Living Lab (LL InnoRenew) was established in August 2015 during the InnoRenew CoE preparatory phase. It served as a hub bringing together different stakeholders to discuss the development, testing, and implementation of creative and innovative ideas, concepts, and policies that the new center of excellence could address.

With the establishment of InnoRenew CoE, LL InnoRenew continued as a public-private-people partnership, offering different activities and services to its members according to their status: gold, silver, or associate. Currently, LL InnoRenew brings together 107 members from 25 countries, 56 of which are SMEs, 21 are higher or secondary education institutions, and 10 are research organizations. Other members include municipalities, regional development agencies, ministries, business and research associations, technology platforms and clusters, as well as some interested individuals. Ten members have gold status, one has silver, and the rest are associate members.

Živi laboratorij InnoRenew CoE (LL InnoRenew) je bil ustanovljen v pripravljalni fazi InnoRenew CoE, avgusta 2015. Kot stičišče različnih deležnikov je namenjen razpravam o razvoju, testiranju ter udejanjanju kreativnih in inovativnih idej, konceptov in politik, ki so povezani z novim centrom odličnosti.

Z ustanovitvijo InnoRenew CoE je LL InnoRenew nadaljeval s partnerstvom med različnimi deležniki iz javne in zasebne sfere pa tudi zainteresirane javnosti in svojim članom glede na njihov status (zlato, srebrno ali pridruženo članstvo) ponudil različne aktivnosti in storitve. Trenutno LL InnoRenew združuje 107 članov iz 25 različnih držav. Od teh jih je 56 malih in srednje velikih podjetij, 21 visokošolskih/srednješolskih ustanov in 10 raziskovalnih organizacij. Med preostalimi člani so občine, regionalne razvojne agencije, ministrstva, poslovna in raziskovalna združenja, tehnološke platforme in grozdi pa tudi nekaj zainteresiranih posameznikov. 10 članov ima zlato članstvo, 1 srebrnega, drugi pa so pridruženi člani.



Map of the InnoRenew CoE Living Lab members / Zemljevid članov Živega laboratorija InnoRenew CoE

Gold members / Zlato članstvo:

- University of Primorska (UP) from Slovenia
  Univerza na Primorskem iz Slovenije

- Fraunhofer Institute for Wood Research WKI (Fraunhofer WKI) from Germany
  Fraunhofer inštitut za raziskave lesa WKI (Fraunhofer WKI) iz Nemčije

- University of Maribor (UM) from Slovenia
  Univerza v Mariboru (UM) iz Slovenije

- Institute for the Protection of Cultural Heritage of Slovenia (ZVKDS) from Slovenia
  Zavod za varstvo kulturne dediščine Slovenije (ZVKDS) iz Slovenije

- Slovenian National Building and Civil Engineering Institute (ZAG) from Slovenia
  Zavod za gradbeništvo Slovenije (ZAG) iz Slovenije

- Pulp and Paper Institute (ICP) from Slovenia
  Inštitut za celulozo in papir (ICP) iz Slovenije

- Zavod eOblak from Slovenia
  Zavod eOblak iz Slovenije

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Gold members / Zlato članstvo:

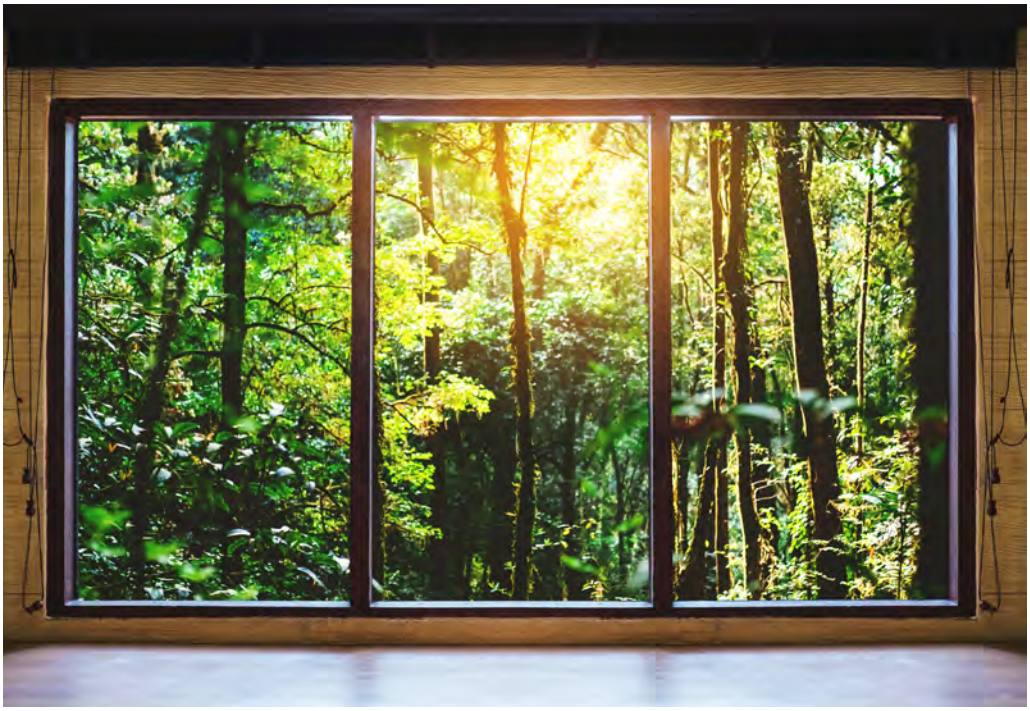
- National Institute of Public Health (NIJZ) from Slovenia
  Nacionalni inštitut za javno zdravje (NIJZ) iz Slovenije

- Regional Development Agency of the Ljubljana Urban Region (RRA LUR) from Slovenia
  Regionalna razvojna agencija Ljubljanske urbane regije (RRA LUR) iz Slovenije

- Municipality of Izola from Slovenia
  Občina Izola iz Slovenije

Silver members / Srebrno članstvo:

- Feniks Zakład Produkcji Mebli Sp.zo.o. from Poland
  Feniks Zakład Produkcji Mebli Sp.zo.o. iz Poljske



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HUMAN RESOURCES

As of 15 February 2019, the InnoRenew CoE has 46 employees, of which 34 are in the science department, 11 are in the support and business development department, and one is a technician.

In the science department, 53 % of employees are foreign with 41 % of that total coming from abroad. The InnoRenew CoE employees hail from Belgium, Brazil, Czech Republic, Finland, France, Hungary, India, Norway, Poland, and the USA.

Dr Michael Mrissa (France): *"I would describe InnoRenew CoE as the drive of a young, dynamic team of people who believe in what they are doing."*

Dr Matthew John Schwarzkopf (USA): *"InnoRenew CoE provides support and guidance to its foreign emwployees, helping them feel comfortable in their new home."*

Dr Jakub Sandak (Italy/Poland): *"My 'price' for the privilege of working for InnoRenew CoE is quitting a permanent job in the public sector and therefore refusing an easy life straightly leading to secure retirement."*

Barbara Rovere (Slovenia): *"I joined InnoRenew CoE primarily because of its ambitious research agenda. I love being a part of this effort and have been privileged to receive superb mentoring on my way to earn a doctoral degree in the field of innovation management."*

Dr Iztok Šušteršič (Slovenia): *"At InnoRenew CoE, I was given the opportunity to work on the topics I love in an interdisciplinary as well as multi-cultural environment. I have the freedom to work on both basic and applied research, collaborate with the global timber industry, and bring my ideas into life."*

Manca Drobne (Slovenia): *"The vision of the center, clearly defined objectives and tasks, the quality of working conditions in an international and ambitious team – this is what is motivating and challenging me at my work at InnoRenew CoE."*

Additionally, three global experts provide significant guidance and mentoring of research and business development.

ČLOVEŠKI VIRI – KADROVSKO POROČILO

Na dan 15. februarja 2019 je v InnoRenew CoE zaposlenih 46 oseb, od tega jih je na oddelku za raziskave 34, na oddelku za podporo in poslovni razvoj 11, tehnik pa je 1.

V InnoRenew CoE je 41 % vseh zaposlenih tujcev, samo na oddelku za raziskave pa je tujcev 53 %. Zaposleni prihajajo iz Belgije, Brazilije, Češke, Finske, Francije, Indije, Madžarske, Norveške, Poljske in ZDA.

Dr. Michael Mrissa (Francija): *"InnoRenew CoE bi opisal kot zagon mladega in dinamičnega tima ljudi, ki verjamejo v to, kar počnejo."*

Dr. Matthew John Schwarzkopf (ZDA): *"InnoRenew CoE zaposlenim, ki prihajajo iz tujih držav, nudi podporo in jim pomaga, da se v novem domu počutijo domače."*

Dr. Jakub Sandak (Italija/Poljska): *"Za privilegij, da delam na InnoRenew CoE, sem "plačal" z odpovedjo redne službe v javnem sektorju, ki bi mi zagotovila lahkotno življenje in varno upokojitev."*

Barbara Rovere (Slovenija): *"InnoRenew CoE sem se pridružila predvsem zaradi ambiciozne raziskovalne agende. Všeč mi je, da sem del te skupine in imam ta privilegij, da sem na poti do pridobitve doktorata s področja inovacijskega managementa dobila tako odlično mentorstvo."*

Dr. Iztok Šušteršič (Slovenija): *"V InnoRenew CoE sem dobil priložnost, da obravnavam teme, ki so mi všeč, v interdisciplinarnem in večkulturnem okolju. Imam vso svobodo, da delam tako na temeljnih kot uporabnih raziskavah, sodelujem z globalno lesno industrijo in uresničujem svoje ideje."*

Manca Drobne (Slovenija): *"Vizija centra, jasno zastavljeni cilji in opredeljene naloge, kakovostni delovni pogoji v mednarodnem, ambicioznem timu. To je tisto, kar mi predstavlja motivacijo in izziv za nadaljnje delo v InnoRenew CoE."*

Poleg tega imamo tudi tri svetovne strokovnjake, ki nam svetujejo in nas usmerjajo pri raziskovalnem in poslovnem razvoju.

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GLOBAL EXPERTS / SVETOVNI STROKOVNJAKI

Prof. Holger Militz, PhD

Prof. Callum Hill, PhD

Prof. Eric Hansen, PhD

ACT ON ORGANISATION OF POSITIONS / AKT O ORGANIZACIJI DELOVNIH MEST

Director

Science
(Head - Director)

Five research groups:

1. Human health in the built environment
2. Wood modification
3. Sustainable building with renewable materials
4. Renewable materials composites
5. Information and computer tecnhnologies

- Research group leader
- Researchers
- Assistant researchers, and
- Technicians

Experimental Design and Data Analysis:

- Data scientist (head of unit)
- Consulting statistician
- Data analyst

Global experts:

- Wood modification
- Environmental impact assessment
- Human health
- Information technology
- Business innovation

Support Services
(Head - Assistant Director)

Administration unit:

- Human Resources
- Accounting
- Project management
- Public relations

Technical Services unit:

- Information Technology specialist (head of unit)
- Information Technology support
- Technical equipment support

Technology Transfer unit:

- Business development and outreach
- Patents and Licensing

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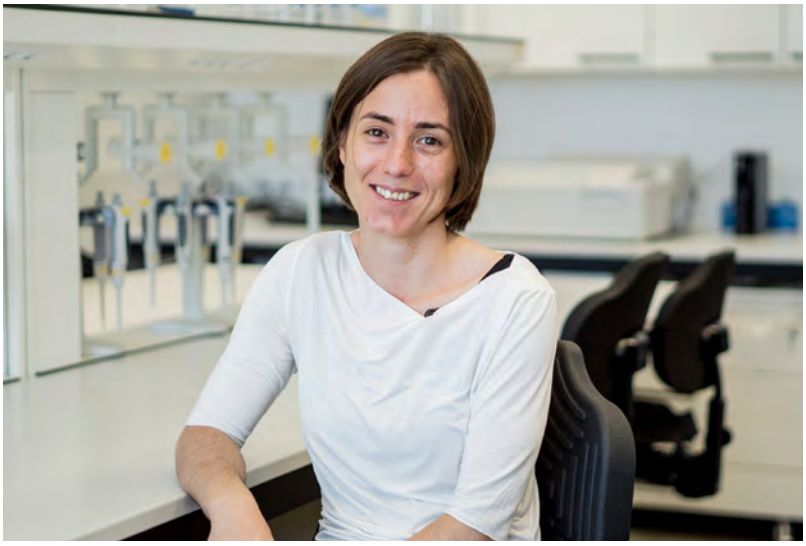
LEADERSHIP / VODSTVO



Assoc. Prof. Andreja Kutnar, PhD, director

Izr. prof. dr. Andreja Kutnar, direktorica

Assist. Prof. Michael David Burnard, PhD, deputy director and research group leader in human health in the built environment

Doc. dr. Michael David Burnard, namestnik direktorice in vodja raziskovalne skupine Človekovo zdravje v grajenem okolju

RESEARCH GROUP LEADERS /
VODJE RAZISKOVALNIH SKUPIN

Assist. Prof. Dr Anna Sandak, research group leader in wood modification

Doc. dr. Anna Sandak, vodja raziskovalne skupine Modifikacija lesa

Assoc. Prof. Dr David DeVallance, research group leader in renewable materials composites

Izr. prof. Dr. David DeVallance, vodja raziskovalne skupine Kompoziti iz obnovljivih materialov

Assist. Prof. Dr Iztok Šušteršič, research group leader in sustainable building with renewable materials

Doc. dr. Iztok Šušteršič, vodja raziskovalne skupine Trajnostna gradnja z obnovljivimi materiali

Assoc. Prof. Dr Miklós Krész, research group leader in information and computer technologies

Izr. prof. Dr. Miklós Krész, vodja raziskovalne skupine Informacijske in računalniške tehnologije

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RESEARCHERS / RAZISKOVALCI

Dr Ana Slavec, researcher and consulting statistician

Dr. Ana Slavec, raziskovalka in svetovalka za statistiko

Dr Balázs Dávid, researcher in the field of information and computer technology

Dr. Balázs David, raziskovalec na področju informacijske in računalniške tehnologije

Dr Črtomir Tavzes, researcher in the field of biotechnology

Dr. Črtomir Tavzes, raziskovalec na področju biotehnologije

Dr Erwin M. Schau, researcher in the field of industrial economics and technology management

Dr. Erwin M. Schau, raziskovalec na področju industrijske ekonomije in tehnološkega managementa

Dr Igor Gavrić, researcher in the field of civil engineering

Dr. Igor Gavrić, raziskovalec na področju gradbeništva

Assist. Prof. Dr Jakub Sandak, researcher in the field of wood science and technology

Doc. dr. Jakub Sandak, raziskovalec na področju znanosti o lesu in tehnologiji

Dr Jure Pohleven, researcher in the field of biotechnology

Dr. Jure Pohleven, raziskovalec na področju biotehnologije

Dr Kelly Peeters, researcher in the field of analytical chemistry

Dr. Kelly Peeters, raziskovalka na področju analitične kemije

Dr Laetitia Marrot, researcher in the field of material science

Dr. Laetitia Marrot, raziskovalka na področju znanosti o materialih

Assist. Prof. Dr Matthew John Schwarzkopf, researcher in the field of wood science and materials science

Doc. dr. Matthew John Schwarzkopf, raziskovalec na področju znanosti o lesu in o materialih

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Prof. Dr Michael Mrissa, researcher in the field of information and computer technology

prof. Dr. Michael Mrissa, raziskovalec na področju informacijske in računalniške tehnologije

Assist. Prof. Dr Václav Sebera, researcher in the field of wood mechanics and wood-based composites

Doc. dr. Václav Sebera, raziskovalec na področju mehanike lesa in lesnih kompozitov

ASSISTANT RESEARCHERS / RAZISKOVALNI ASISTENTI

Aarne Niemelä, assistant researcher and architect

Aarne Niemelä, raziskovalni asistent in arhitekt

Aleksandar Tošić, assistant researcher in the field of computer science

Aleksandar Tošić, raziskovalni asistent na področju računalništva

Aleš Oven, assistant researcher in the field of geography

Aleš Oven, raziskovalni asistent s področja geografije

Amy Simmons, assistant researcher in the field of forest hydrology and science communicator

Amy Simmons, raziskovalna asistentka na področju gozdne hidrologije in strokovnjakinja za znanstveno komunikacijo

Barbara Rovere, assistant researcher and project manager in the field of innovation management

Barbara Rovere, raziskovalna asistentka in vodja projektov na področju inovacijskega managementa

Dean Lipovac, assistant researcher in the field of human health in the built environment

Dean Lipovac, raziskovalni asistent na področju zdravja ljudi v grajenem okolju

Eva Prelovšek Niemelä, assistant researcher and architect

Eva Prelovšek Niemelä, raziskovalna asistentka in arhitektka

Jaka Pečnik, assistant researcher in the field of wood modification

Jaka Pečnik, raziskovalni asistent na področju modifikacije lesa

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László Hajdu, assistant researcher in the field of information and computer technology

László Hajdu, raziskovalni asistent na področju informacijske in računalniške tehnologije

Marica Mikuljan, assistant researcher in the field of environmental science

Marica Mikuljan, raziskovalna asistentka na področju okoljske znanosti

Nastja Podrekar, assistant researcher in the field of health sciences and ergonomics

Nastja Podrekar, raziskovalna asistentka na področju ved o zdravju in ergonomije

Sašo Vozel, assistant researcher in the field of civil and geodetic engineering

Sašo Vozel, raziskovalni asistent na področju gradbeništva in geodezije

Tatiana Abaurre Alencar Gavric, assistant researcher in the field of architecture

Tatiana Abaurre Alencar Gavric, raziskovalna asistentka na področju arhitekture

Vesna Starman, assistant researcher in the field of social pedagogical science

Vesna Starman, raziskovalna asistentka na področju socialnopedagoških znanosti

SUPPORT AND BUSINESS DEVELOPMENT /
PODPORA IN POSLOVNI RAZVOJ

Alijana Batič, project management - administrative support

Alijana Batič, vodenje projektov – administrativna podpora

Elizabeth Ann Dickinson, project manager and language editor

Elizabeth Ann Dickinson, vodenje projektov, pisanje in urejanje projektnih prijav

Jerneja Svanjak, human resources

Jerneja Svanjak, človeški viri – kadrovska služba

Julija Uršič, language editor

Julija Uršič, lektorica

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Kim Turk Mehes, InnoRenew CoE Living Lab manager and policy consultant

Kim Turk Mehes, vodja živega laboratorija in svetovalka pri pripravi politik

Lea Primožič, public relations

Lea Primožič, odnosi z javnostmi

Manca Drobne, project manager

Manca Drobne, vodja projektov

Nataša Škorja Djikanović, accountant

Nataša Škorja Djikanović, računovodstvo

Prof. Dr Roberto Biloslavo, head of technology transfer unit

prof. Dr. Roberto Biloslavo, vodja enote za prenos tehnologije

Tamara Turk, accountant

Tamara Turk, računovodkinja

Tine Šukljan, information technology specialist (head of unit)

Tine Šukljan, specialist informacijske tehnologije (vodja enote)

TECHNICIAN / TEHNIK

Rudi Grahek, technician in the field of mechanical engeneering

Rudi Grahek, tehnik na področju strojništva

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Two of our employees successfully defended their PhD dissertations. Dr Michael David Burnard prepared his doctoral dissertation on the topic of wood and stress in the built environment at the University of Primorska. Dr Balázs Dávid prepared his doctoral dissertation on the topic of application-oriented scheduling problems in public bus transportation at the University of Szeged.

Among the InnoRenew CoE employees, there are six assistant researchers who are enrolled in PhD programs: Barbara Rovere, Dean Lipovac, Jaka Pečnik, Nastja Podrekar, Aleksandar Tošić, and László Hajdu.

Dva izmed naših zaposlenih sta uspešno zaključila doktorski študij. Dr. Michael David Burnard je doktorsko delo na temo lesa in stresa v grajenem okolju zagovarjal na Univerzi na Primorskem. Dr. Balázs Dávid pa je z doktorskim delom o problemih aplikacij in urnikov pri javnem avtobusnem prevozu doktorat zaključil na Univerzi v Szegedu.

Trenutno je med zaposlenimi tudi 6 raziskovalnih asistentov in doktorskih študentov: Barbara Rovere, Dean Lipovac, Jaka Pečnik, Nastja Podrekar, Aleksandar Tošić in László Hajdu.

WORKSHOPS AND TRAININGS / DELAVNICE IN IZOBRAŽEVANJA ZA ZAPOSLENE

At the InnoRenew CoE, we created a working environment that offers personal and professional development for all employees. In the last 2 years, the InnoRenew CoE's employees participated in 19 national (table 1) and 20 international (table 2) workshops.

V InnoRenew CoE smo ustvarili delovno okolje, ki vsem zaposlenim omogoča osebni in strokovni razvoj. V zadnjih dveh letih so se zaposleni v InnoRenew CoE udeležili 19 nacionalnih (tabela 1) in 20 mednarodnih delavnic (tabela 2).

Table 1 - Participation at national workshops /
Tabela 1 - Udeležba na nacionalnih delavnicah

	Name	Location	Date	Who
		2017		
1	5th International Week of the University of Primorska	Koper, Slovenia	16/5/2017	Andreja Kutnar, Marko Posavčević
2	Forestry and Wood	Ljubljana, Slovenia	23/5/2017	Andreja Kutnar
3	Alpine Europe Summer School	Izola, Slovenia	29/6/2017	Andreja Kutnar, Amy Simmons, Eric Hansen
4	Slovenian Centre of Excellence on 3D geodata; Teaming 1	Ljubljana, Slovenia	7/9/2017	Micheal David Burnard
5	Data analyses seminar	Celje, Slovenia	20/9/2017	Ana Slavec
6	Protection of personal data	Ljubljana, Slovenia	17/10/2017	Ana Slavec
7	Corporation tax seminar	Ljubljana, Slovenia	23/10/2017-25/10/2017	Nataša Škorja Djikaović, Tamara Turk
8	Initiation workshop SLO-ACE, Agricultural Institute of Slovenia	Ljubljana, Slovenia	7/11/2017	Andreja Kutnar
9	Involving research on seismic safety of timber connections with Getzner products	Ljubljana, Slovenia	14/11/2017	Jan Weckendorf, Iztok Šušteršič
10	Construction law	Laško, Slovenia	15/10/2017-16/11/2017	Eva Prelovšek Niemela
11	Days of science communication workshop	Ljubljana, Slovenia	28/11/2017	Ana Slavec, Lea Primožič
12	LIFE Programme - for the environment and climate action	Portorož, Slovenia	14/12/2017	Črtomir Tavzes, Barbara Rovere
		2018		
1	Data Protection Officer	Ljubljana, Slovenia	30/1/2018	Ana Slavec
2	Competence Center for Human Resources Development in Wood Science, KOCles 2.0	Ljubljana, Slovenia	9/3/2018	Andreja Kutnar, Iztok Šušteršič
3	Scientific communication	Koper, Slovenia	8/5/2018	Lea Primožič, Ana Slavec
4	Electronic public procurement	Ljubljana, Slovenia	9/5/2018	Alijana Batič
5	Quality of indoor air	Ljubljana, Slovenia	10/5/2018	Jure Pohleven
6	EURAXESS - Researchers in Motion	Ljubljana, Slovenia	29/5/2018	Jerneja Svanjak
7	Analysis of social media	Ljubljana, Slovenia	21/11/2018	László Hajdu, Ana Slavec

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Table 2 - Participation at international workshops / Tabela 2 - Udeležba na mednarodnih delavnicah

	Name	Location	Date	Who
		2017		
1	International Wood Recycling Workshop 2017	Hanover, Germany	23/5/2017	Andreja Kutnar
2	NOVA PhD Course, Innovation System in Bioeconomy	Helsinki, Finland	28/08/2017-01/09/2017	Barbara Rovere
3	COST connect: Cultural Heritage in the Digital Era	Brussels, Belgium	25/10/2017	Barbara Rovere
4	COST Action CA16226 Indoor living space improvements: Smart Habitat for the Elderly	Brussels, Belgium	25/10/2017	Micheal David Burnard
5	TEAMING 1 Coordinators Day	Brussels, Belgium	9/11/2017	Andreja Kutnar
6	COST Action CA16114 Rethinking Sustainability Towards a Regenerative Economy	Lancaster, UK	16/11/2017	Micheal David Burnard, Marko Posavčević
7	42nd FTP Advisory Committee meeting	Brussels, Belgium	28/11/2017	Črtomir Tavzes
		2018		
1	COST Action CA16226 Indoor living space improvements: Smart Habitat for the Elderly	Alicante and Murcia, Spain	18/2/2018-22/2/2018	Michael David Burnard, Marko Posavčević
2	Interreg Europe	Trieste, Italy	19/2/2018	Ana Slavec
3	COST Action FP1407 Understanding wood modification through an integrated scientific and environmental impact approach	Firenze, Italy	25/2/2018-26/2/2018	Andreja Kutnar, Michael David Burnard
4	Introduction to the COST Framework Programme	Ljubljana, Slovenia	12/3/2018	Andreja Kutnar, Michael David Burnard
5	COST Association 1st Grant Holder Managers Seminar	Brussels, Belgium	26/4/2018-27/4/2018	Amy Simmons
6	The CODATA-RDA Research Data Science Advanced Workshops on Bio-informatics, Climate Data Sciences, Extreme sources of data and Internet of Things (IoT)/Big-Data Analytics	Trieste, Italy	20/8/2018-24/8/2018	László Hajdú
7	Bio-oriented Technology Research Advancement Institution "Development of harvester head equipped for log quality judgement with the aid of ICT and robot technologies"	Tsukuba, Japan	5/9/2018	Jakub Sandak
8	COST Action CA17136 Indoor Air Pollution Network	Brussels, Belgium	6/9/2018	Jure Pohleven
9	Workshop on FEA & CFD using Ansys system	Ljubljana, Slovenia	3/10/2018	Vaclav Sebera
10	COST Action CA16215 European network for the promotion of portable, affordable and simple analytical platforms	Brno, Czech Republic	14/10/2018-17/10/2018	László Hajdú, Balázs Dávid, Jakub Sandak
11	COST Academy Working with the media – mastering media interviews	Brussels, Belgium	29/10/2018	Amy Simmons
12	State Aid for RDI Projects Advanced Training	Brussels, Belgium	12/11/2018-14/11/2018	Manca Drobne
13	COST Action CA17136 Indoor Air Pollution Network	York, UK	12/12/2018-15/12/2018	Jure Pohleven

Participation by InnoRenew CoE employees included one three-month study visit at Oregon State University in the USA, two short-term scientific missions at NIBIO institute in Norway, and two research exchanges at the University of Göttingen in Germany.

Med drugim smo omogočili trimesečni študijski obisk ameriški Državni univerzi v Oregonu, 2 obiska na norveškem inštitutu NIBIO v okviru kratkoročnih znanstvenih misij ter 2 izmenjavi raziskovalcev z nemško Univerzo v Göttingenu.

Barbara Rovere: "I had the great privilege to spend the Spring Term 2018 as a Visiting Scholar at the Oregon State University (OSU) College of Forestry. Besides attending graduate courses in quantitative research methods in social science and industrial marketing in the wood products sector, I had the opportunity to work closely with my doctoral thesis supervisor and InnoRenew CoE Global Expert, Professor Eric Hansen, and members of his research lab. The stay at OSU greatly contributed to my development as a researcher and my commitment to the pursuit of excellence in academic research."

Barbara Rovere: »Imela sem ta privilegij, da sem preživela spomladanski semester 2018 kot gostujoča študentka na Fakulteti za gozdarstvo Državne univerze v Oregonu (OSU – Oregon State University). Poleg tega, da sem lahko obiskovala predmete na podiplomskem programu kvantitativnih raziskovalnih metod v družboslovju in industrijskem trženju lesnih izdelkov, sem imela priložnost tudi tesno sodelovati s profesorjem Ericom Hansenom, svojim mentorjem in svetovnim strokovnjakom v InnoRenew CoE, ter s člani njegovega raziskovalnega laboratorija. Bivanje v OSU je bistveno prispevalo k mojemu raziskovalnem razvoju in moji zavezanosti k doseganju odličnosti v akademskih raziskavah."

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WOOD MODIFICATION
MODIFIKACIJA LESA

The long-term goals of the Wood Modification (WM) research group are to create, test, develop, and industrialise wood modification methods that improve the service life and performance of wood, add new functionalities, develop new methods to assess materials and their performance, and improve the environmental impacts of modified wood.

Wood modification is vitally important to increase the share of wood and other renewable materials in our built environment and other products. In order to use more wood, it must be able to perform well in a variety of challenging situations while not producing negative environmental impacts. Wood modification can improve its durability, enhance its strength, change its appearance, and improve its performance in variety of situations.

Research conducted by the WM group will ensure wood can reach its full potential by producing new scientific and technological developments that establish all wood species can have useful and efficient applications in buildings and other products. The work of this group will lead to increased use of under-utilised species, new ways of using wood and other renewable materials, and advanced techniques to characterise materials and treatments.

Dolgoročni cilji raziskovalne skupine za modifikacijo lesa (ML) so ustvariti, preizkusiti, razviti in industrializirati metode modifikacije, ki izboljšujejo življenjsko dobo in učinkovitost lesa, dodajajo nove funkcionalnosti, razvijajo nove metode za ocenjevanje materialov in njihove učinkovitosti ter izboljšujejo vplive modificiranega lesa na okolje.

Modifikacija lesa je ključnega pomena pri povečevanju deleža lesa in drugih obnovljivih materialov v grajenem okolju in pri drugih izdelkih. Da bi se uporaba lesa lahko povečala, mora biti ta zmožen dobro delovati v različnih zahtevnih situacijah, ne da bi negativno vplival na okolje. Modifikacija lesa lahko izboljša njegovo trajnost, poveča njegovo moč, spremeni njegov videz in izboljša njegovo učinkovitost v različnih situacijah.

Raziskave skupine ML bodo z ustvarjanjem novih znanstvenih in tehnoloških dosežkov omogočile, da les razvije vse svoje zmogljivosti in da se uporabnost in učinkovitost vseh vrst lesa uveljavi v stavbah in pri drugih izdelkih. Delo te skupine bo privedlo do večje uporabe premalo izkoriščenih vrst lesa, novih načinov uporabe lesa in drugih obnovljivih materialov ter naprednih tehnik za karakterizacijo materialov in obdelav.

HUMAN HEALTH IN THE BUILT ENVIRONMENT
ČLOVEKOVO ZDRAVJE V GRAJENEM OKOLJU

The Human Health in the Built Environment (HHBE) research group has the long-term objective to establish methods to create buildings and other built environments with positive impacts on occupants and users. To achieve this objective, the HHBE group focuses on two primary tasks: 1) to determine how the interaction between humans and buildings, furniture, and other components of the built environment impact human health, and 2) to convert current and new scientific knowledge to design guidelines for practitioners to create better buildings.

Research performed by the HHBE group includes examining the capabilities of wood products to improve indoor comfort, determining if building design and material selection impacts human responses to negative stimuli (e.g., stressful events) in buildings, using wood in adaptable furniture for active offices and safe, accessible habitats for the elderly, and examining the positive effects volatile organic compounds from wood may have on humans. To do so, the group emphasises high-quality science in the field with robust experimental design and state-of-the-art technology. Ultimately, these experiments (and others) will underpin the evidence-based design paradigm of Restorative Environmental and Ergonomic Design (REED), which will provide guidelines for improving human health in buildings, improve environmental impacts, and meet the social and economic needs of buildings. The work of this group will lead to a happier, healthier, and more productive society by ensuring our buildings provide more than only the most basic needs and connect us more closely with the natural environment.

Raziskovalna skupina Človekovo zdravje v grajenem okolju (ČZGO) ima dolgoročni cilj, da vpelje metode za ustvarjanje zgradb in drugih grajenih okolij, ki pozitivno vplivajo na stanovalce in uporabnike. Za dosego tega cilja se skupina ČZGO osredotoča na dve glavni nalogi: (1) ugotoviti, kako interakcija med ljudmi in zgradbami, pohištvom in drugimi komponentami grajenega okolja vpliva na zdravje ljudi, in (2) pretvoriti obstoječa in nova znanstvena spoznanja v smernice za strokovnjake, da bi ti ustvarili ustreznejše stavbe.

Raziskave, ki jih je izvedla skupina ČZGO, med drugim proučujejo, kakšne so zmožnosti lesenih izdelkov, da bi izboljšali notranje udobje, ugotavljajo, ali oblikovanje stavbe in izbira materialov vplivata na odzive ljudi na negativne dražljaje (npr. stresne dogodke) v stavbah, preiskujejo uporabo lesa v prilagodljivem pohištvu za aktivne pisarne in varne, dostopne habitate za starejše in proučujejo pozitivne učinke hlapnih organskih spojin iz lesa na ljudi. Da bi to dosegli, skupina poudarja visokokakovostno znanost z robustnim eksperimentalnim

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načrtovanjem in najsodobnejšo tehnologijo. Ti (in drugi) poskusi bodo podprli paradigmo restorativnega okoljskega in ergonomskega oblikovanja (REED – restorative environmental and ergonomic design), ki temelji na dokazih in bo zagotavljala smernice za izboljšanje zdravja ljudi v stavbah, izboljšanje okoljskih vplivov in izpolnjevanje socialnih in gospodarskih potreb stavb. Delo te skupine bo vodilo k srečnejši, bolj zdravi in produktivnejši družbi, saj zagotavlja, da bodo naše zgradbe omogočile več kot zgolj najosnovnejše potrebe in nas bodo tesneje povezale z naravnim okoljem.

INFORMATION AND COMPUTER TECHNOLOGIES
INFORMACIJSKE IN RAČUNALNIŠKE TEHNOLOGIJE

The Information and Computer Technologies (ICT) research group seeks to improve the digitalisation of the industrial and human environment related to renewable materials and sustainable buildings on the product and process levels. Through its activities, the ICT group will enhance the competitiveness, innovativeness, and sustainability of the forest sector.

Modern techniques for acquiring data (i.e., during production, across the value chain, and within performance) have created new opportunities to analyse the efficiency of the forest sector, monitor material and building performance, and provide insightful information to society, industry, and policy makers. Not only can buildings, processes, and materials be monitored, the way we interact with buildings and materials can be assessed to provide information that will help us improve products, processes,

Raziskovalna skupina Informacijske in računalniške tehnologije (IRT) si prizadeva izboljšati digitalizacijo industrijskega in človekovega okolja, povezanega z obnovljivimi materiali in trajnostnimi stavbami na ravni proizvodov in postopkov. Skupina IRT bo s svojimi dejavnostmi povečala konkurenčnost, inovativnost in trajnost gozdarskega sektorja.

and the overall sustainability of the forest sector.

The main activities of the ICT group are to gather data, improve the digital readiness of the sector, and develop complex information processing frameworks for complete functionality and high efficiency for the design, production, and life cycle management of renewable materials and sustainable buildings. The group is involved in important contemporary aspects of the forest sector including, sensor networks and their collected data, building information modeling (BIM), and industrial optimisation. These topics are important outside of the forest sector, as well, providing ample opportunity to work with challenging problems and integrate ICT tools and services into the value chain, buildings, and personal devices to help overcome many challenges, such as individual and societal health, sustainability, and safety that are critical for the long-term success the forest sector and beyond.

Sodobne tehnike za pridobivanje podatkov (med proizvodnjo, v vrednostni verigi in v okviru uspešnosti) so ustvarile nove priložnosti za analizo učinkovitosti gozdarskega sektorja, spremljanje učinkovitosti materialov in zgradb ter zagotavljanje informacij, koristnih za družbo, industrijo in politiko. Ne samo, da je mogoče spremljati zgradbe, procese in materiale, spremljamo lahko tudi naše interakcije z zgradbami in materiali, da bi pridobili informacije, ki nam bodo pomagale izboljšati izdelke, procese in splošno trajnost gozdarskega sektorja.

Glavne dejavnosti skupine IRT so zbiranje podatkov, izboljšanje digitalne pripravljenosti sektorja in razvoj kompleksnih okvirov za izmenjavo informacij za vsestransko funkcionalnost in visoko učinkovitost pri načrtovanju, proizvodnji in upravljanju življenjskega cikla obnovljivih materialov in trajnostnih zgradb. Skupina je vključena v pomembne sodobne vidike gozdarskega sektorja, ki vključujejo senzorska omrežja in njihove zbrane podatke, informacijsko modeliranje zgradb (BIM – Building Information Modeling) in industrijsko optimizacijo. Te teme so pomembne tudi zunaj gozdarskega sektorja, saj ponujajo veliko priložnosti za delo z zahtevnimi izzivi in integracijo orodij IRT in storitev v vrednostno verigo, stavbe in osebne naprave, da bi pomagali premostiti številne izzive, kot so zdravje posameznika in družbe, trajnost ter varnost, ki so ključnega pomena za dolgoročni uspeh gozdarskega sektorja in širše.

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SUSTAINABLE BUILDING WITH RENEWABLE MATERIALS

TRAJNOSTNA GRADNJA Z OBNOVLJIVIMI MATERIALI

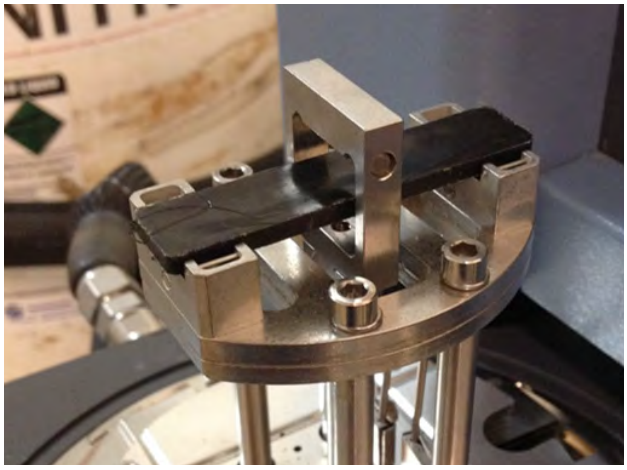
The Sustainable Building with Renewable Materials (SBRM) research group works to address critical challenges in the built environment, such as improving the overall sustainability of construction and buildings through the rational use of wood and other renewable materials, advancing engineering in timber buildings that allow the use of wood in tall buildings, and creating adaptable spaces for a rapidly changing population (i.e., an aging demographic). The SBRM group is dedicated to and focused on systemic building design specific to timber construction. This can only be achieved through the collaborative work of experts from different fields, including architecture, engineering, material science, human health, ICT, and sustainability.

Work performed by the SBRM group will identify new design solutions that improve building and occupant safety in seismic zones, in case of fire, and in other difficult situations. The group will seek to improve building sustainability by reducing the

Raziskovalna skupina Trajnostna gradnja z obnovljivimi materiali (TGOM) se ukvarja s ključnimi izzivi grajenega okolja, kot so izboljšanje splošne trajnosti gradnje in stavb z racionalno rabo lesa in drugih obnovljivih materialov ter izboljševanje inženiringa v lesenih stavbah, ki omogoča uporabo lesa v visokih stavbah in ustvarjanje prilagodljivih prostorov za hitro spreminjajoče se prebivalstvo (tj. demografsko staranje). Skupina TGOM se osredotoča na sistemsko načrtovanje zgradb z leseno konstrukcijo. To je mogoče doseči le s sodelovanjem strokovnjakov z različnih področij, kot so arhitektura, inženirstvo, znanost o materialih, zdravje ljudi, IRT in trajnost.

Delo skupine TGOM bo opredelilo nove rešitve oblikovanja, ki bodo izboljšale varnost stavb in prebivalcev v primeru potresov, požarov in drugih nevarnih situacij. Skupina si bo prizadevala izboljšati trajnostnost stavb z manjšo porabo materiala v masivnih lesenih konstrukcijah, s povečanjem uporabe premalo izkoriščenih lesnih vrst in z uporabo naprednih kompozitov in modificiranih materialov, ki so jih ustvarile raziskovalne skupine InnoRenew CoE. Z razvojem novih metod za krepitev starejših stavb, ki jih je treba preurediti, da bi izpolnile trenutne varnostne standarde, pa si bo skupina prizadevala tudi za ohranitev pomembne kulturne dediščine, ki je prisotna v našem grajenem okolju.

material requirements in massive timber construction, increasing the use of under-utilised species, and applying the advanced composites and modified materials created by the InnoRenew CoE's research groups. Moreover, the group will seek to maintain the important cultural heritage present in our built environment by developing new methods of reinforcing and strengthening older buildings that are in need of retrofitting to meet current safety standards.



RENEWABLE MATERIALS COMPOSITES
KOMPOZITI IZ OBNOVLJIVIH MATERIALOV

The Renewable Material Composite (RMC) group has a long-term goal to advance innovations in renewable composites by developing value-added composites from under-valued and under-utilised biomass for use in high-performance applications.

Research within the RMC group is at the core of a growing trend in utilising natural, sustainable materials. Innovations developed within the group are expected to enhance the scientific and technological understanding of the mechanics of structural composites in the built environment and provide data and simulation models for evaluating and predicting behaviour of structural composite materials. The research performed by this group will help design and assemble novel renewable material-based composites with optimised physical, mechanical, and thermal performance, with the ultimate goal of providing new materials with enhanced societal benefits.

Dolgoročni cilj raziskovalne skupine Kompoziti iz obnovljivih materialov (KOM) je, da z razvijanjem kompozitov z dodano vrednostjo iz premalo cenjene in izkoriščene biomase izboljša inovacije v obnovljivih kompozitih, ki bodo uporabni v zahtevnih okoliščinah.

Raziskave v skupini KOM so v središču naraščajočega trenda uporabe naravnih, trajnostnih materialov. Inovacije, razvite v skupini, bodo izboljšale znanstveno in tehnološko razumevanje mehanike strukturnih kompozitov v grajenem okolju ter zagotovile podatke in simulacijske modele za ocenjevanje in napovedovanje vedenja strukturnih kompozitnih materialov. Raziskave te skupine bodo z optimiziranimi fizičnimi, mehanskimi in toplotnimi lastnostmi pomagale oblikovati in sestaviti nove kompozite, zasnovane na obnovljivih materialih. S tem bodo zagotovile nove materiale, ki družbi prinašajo večjo korist, kar je tudi končni cilj skupine.

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CURRENT RESEARCH PROJECTS

We are currently undertaking the following start-up projects in collaboration with our project partners: advanced materials for cultural heritage storage, evaluation of fire effluents with respect to ecotoxicity, development of formaldehyde-free fibreboards, building information modelling, innovative connections for CLT buildings, and ergonomic, adaptable, and active office furniture.

In addition, we have successfully achieved projects listed bellow.

1. Protection of bronze monuments in the changing environment

PROJECT LEADER: Ropret Polonca, PhD/Jakub Sandak, PhD (for InnoRenew CoE)

PERIOD: 1. 7. 2018 – 30. 06. 2021

FINANCED: Slovenian Research Agency (ARRS)

PARTNERS:

- Coordinator of the project: Institute for the protection of Cultural Heritage of Slovenia (Slovenia);
- Partner organisations: InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); Slovenian National Building and Civil Engineering Institute (Slovenia).

The project aims to a holistic approach in the care for bronze cultural heritage objects. The progress beyond the state-of-the-art will therefore bring original results in scientific as well as social aspects, such as advanced and effective monitoring systems, new databases, correlations of corrosion development in the changing climate, effective and tailored protection systems for outdoor bronze objects, advanced ICT tools, and new social mechanisms in order to include society in the care of cultural heritage. Each of these results will impact the development of science. The new protective systems will greatly influence the development of restoration/conservation and preventive conservation scientific fields, as they will be tailored according to the composition of the objects, including the presence of patinas, as well as to their exposure in the specific polluted environment. The proposed tailored protection systems for outdoor bronze objects against environmental factors in different climatic conditions is not described in either scientific nor technical literature, which increases the importance and novelty of the results of the project. The results will be patentable and publishable in scientific high-impact journals. Furthermore, the new guidelines for the use of the developed protection coatings will influence conservation/restoration, conservation science, and preventive conservation fields. All these will fundamentally influence the development of the technical art history field.

RAZISKOVALNI PROJEKTI, KI TRENUTNO POTEKAJO

V sodelovanju z našimi projektnimi partnerji izvajamo naslednje zagonske projekte: napredni materiali za shranjevanje kulturne dediščine, vrednotenje požarnih odpadkov z vidika ekotoksičnosti, razvoj vlaknenih plošč brez formaldehida, informacijsko modeliranje zgradb, inovativne povezave za stavbe CLT, ergonomsko, prilagodljivo in aktivno pisarniško pohištvo.

Poleg tega smo uspešno pridobili naslednje projekte:

1. Zaščita bronastih spomenikov v spremenljivem okolju

VODJA PROJEKTA: dr. Ropret Polonca/dr. Jakub Sandak (za InnoRenew CoE)

TRAJANJE: 1. 7. 2018 – 30. 06. 2021

FINANCIRANJE: Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)

PARTNERJI:

- Koordinator projekta: Javni zavod Republike Slovenije za varstvo kulturne dediščine (Slovenija);
- Partnerske institucije: InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Zavod za gradbeništvo Slovenije (Slovenija).

Cilj projekta je celosten pristop k varovanju bronastih kulturnodediščinskih predmetov. Napredek najsodobnejšega tehničnega razvoja bo tako na znanstvenem kot družbenem področju prinesel izvirne rezultate„ kot so napredni in učinkoviti sistemi spremljanja okoljskih dejavnikov, nove podatkovne baze, korelacija razvoja korozij in spreminjajočih se podnebnih pogojev, učinkoviti in prilagojeni zaščitni sistemi na prostem predstavljenih bronastih predmetov, napredna orodja IRT in novi družbeni mehanizmi za vključevanje družbe v varovanje kulturne dediščine.

Vsak od teh rezultatov bo vplival na razvoj znanosti. Novi zaščitni sistemi bodo močno vplivali na razvoj konservatorstva/restavratorstva in preventivnega konservatorstva, saj bodo prilagojeni glede na sestavo brona, vključno z umetniškimi patinami, in glede na okolje, ki so mu predmeti izpostavljeni. Tako prilagojeni sistemi za zaščito zunanjih bronastih spomenikov niso opisani ne v znanstveni ne v strokovni literaturi, kar povečuje pomembnost rezultatov projekta, ki jih bomo lahko patentirali in objavili v znanstvenih revijah z visokim faktorjem vpliva. Poleg tega bodo nove smernice za uporabo razvitih zaščitnih prevlek vplivale na razvoj konservatorstva/restavratorstva in preventivnega konservatorstva ter konservatorske znanosti, vse to pa bo vplivalo na razvoj tehnične umetnostne zgodovine.

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InnoRenew CoE main activities in the project

To develop a better understanding of the corrosion process of bronze monuments exposed to external weather conditions by developing a dose-response model of degradation. The set of data required will be collected during the experimental campaign, where four monuments will be monitored by a specially designed set of sensors. The second objective is to develop IT tools supporting engagement of the public to bronze monument deterioration by reporting any damage observed. This will allow better protection of monuments and also an understanding of visitor preferences and behaviours.

2. Wood and wood products over a lifetime – WOOLF

PROJECT LEADER: M SORA/Iztok Šušteršič, PhD (for InnoRenew CoE)

PERIOD: 1. 12. 2018 – 1. 12. 2021

FINANCED: European Union – European Regional Development Fund (ERDF) – Call for proposals "to support Research and development projects (TRL 3-6)".

PARTNERS:

- Principal consortium partner: M SORA d.d. (Slovenia);
- Partners in consortium: Slovenian Forestry Institute (Slovenia); InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); L-TEK d.o.o (Slovenia); REM d.o.o. (Slovenia); University of Ljubljana, Biotechnical Faculty (Slovenia); XLAB d.o.o. (Slovenia); Slovenian National Building and Civil Engeneering Institute (Slovenia).

The basic goal of the WOOLF project is to develop wooden structural and window systems that will enable the construction of multi-story modular wooden buildings and to integrate newly developed sensor technology into them. In combination with the newly developed ICT smart system, it will be possible to monitor the quality of wood and wooden objects in real time and to predict their service lifetime.

InnoRenew CoE main activities in the project

Provide structural design and develop detailing for construction of multi-story modular timber construction. Assess the socioeconomic impacts of the products developed within the project.

Glavne dejavnosti InnoRenew CoE pri projektu

Za boljše razumevanje procesa korozije bronastih spomenikov, izpostavljenih zunanjim vremenskim razmeram, bomo razvili model razvoja degradacije odziva na odmerek. Potrebni podatki bodo zbrani med eksperimentom, kjer bodo štiri spomenike spremljali posebej zasnovani sklopi senzorjev. Drugi cilj je razviti orodja informacijske tehnologije, ki bodo tudi javnosti omogočala, da obvešča o o morebitni ugotovljeni škodi na bronastih spomenikih. To bo prispevalo k boljši zaščiti spomenikov, pa tudi k razumevanju, kakšne želje imajo obiskovalci in kakšno je njihovo vedenje.

2. Les in leseni izdelki v življenjski dobi – WOOLF

VODJA PROJEKTA: M SORA, trgovina in proizvodnja, d. d./dr. Iztok Šušteršič (za InnoRenew CoE)

TRAJANJE: 1. 12. 2018 – 1. 12. 2021

FINANCIRANJE: Evropska unija - Evropski sklad za regionalni razvoj (ESRR). Javni razpis »Spodbujanje izvajanja raziskovalno-razvojnih projektov (TRL3-6).«

PARTNERJI:

- Koordinator projekta: M SORA, trgovina in proizvodnja d. d.(Slovenija);
- Partnerske ustanove: Gozdarski inštitut Slovenije (Slovenija), InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); L-tek elektronika d. o. o. (Slovenija); REM montaža in kleparstvo d. o. o. (Slovenija); Univerza v Ljubljani, Biotehniška fakulteta (Slovenija); XLAB razvoj programske opreme in svetovanje d. o. o. (Slovenija); Zavod za gradbeništvo Slovenije (Slovenija).

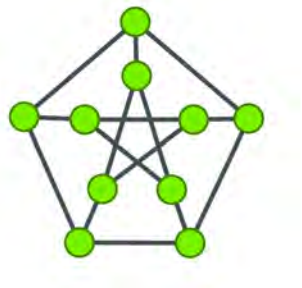
Osnovni cilj projekta WOOLF je razviti lesene konstrukcijske in okenske sisteme, ki bodo omogočali izgradnjo večnadstropne modularne lesene stavbe, ter vanje vnesti novorazvito senzorsko tehnologijo. V povezavi z novo razvitim pametnim sistemom IKT bo omogočeno spremljanje kakovosti lesa in lesenih izdelkov v dejanskem času ter napovedovanje njihove življenjske dobe.

Glavne dejavnosti InnoRenew CoE pri projektu

Projektantska podpora in razvoj detajlov večetažne modularne lesene gradnje. Oceniti socialno-ekonomske vplive proizvodov, razvitih v okviru projekta.

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

3. Traversability of vertex-transitive graphs



PROJECT LEADER: Klavdija Kutnar, PhD/Krész Miklós, PhD (for InnoRenew CoE)

PERIOD: 1 .7. 2018 – 30. 06. 2021

FINANCED: Slovenian Research Agency (ARRS)

PARTNERS:

- Coordinator of the project: University of Primorska, Andrej Marušič Insitute (Slovenia);
- Partner organisations: InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); University of Primorska, Faculty of Mathematics, Natural Sciences and Information Technologies (Slovenia); University of Ljubljana, Faculty of Education (Slovenia). Slovenian National Building and Civil Engeneering Institute (Slovenia).

Graph theory is one of the most important research areas in discrete mathematics. Mostly because graphs provide optimal models of different real-life situations. For example, in the natural and social sciences, they model relations among societies, companies, etc. In computer science, they represent networks of communication, data organization, computational devices, and more. In statistical physics, graphs can represent local connections between interacting parts of a system. And finally, in mathematics, since graphs carry a natural metrics, they are useful in geometry and topology as well as in group theory specifically via the so-called Cayley graphs which naturally arise from groups. In various applications of graphs, one often finds that graphs exhibiting optimal behaviour are highly symmetric structures, that is, admitting a large automorphism group. Highly symmetric structures considered in this proposal are vertex-transitive graphs with special emphasis given to Cayley graphs, the idea of which was invented in the 19th century in order to investigate properties of groups. The main property considered in this proposal is traversability with special emphasis given to the existence of Hamiltonian cycles and paths.

InnoRenew CoE main activities in the project

We will develop and implement algorithms for generating vertex-transitive graphs with given properties and focus on algorithmic development and implementation for searching Hamiltonian paths and cycles, in particular vertex-transitive graphs.

3. Prehodnost v točkovno tranzitivnih grafih

VODJA PROJEKTA: dr. Klavdija Kutnar/dr. Krész Miklós (za InnoRenew CoE)

TRAJANJE: 1. 7. 2018 – 30. 06. 2021

FINANCIRANJE: Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)

PARTNERJI:

- Koordinator projekta: Univerza na Primorskem, Inštitut Andrej Marušič (Slovenija);
- Partnerske ustanove: InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Univerza na Primorskem, Fakulteta za matematiko, naravoslovje in informacijske tehnologije (Slovenija); Univerza v Ljubljani, Pedagoška fakulteta (Slovenija).

Teorija grafov je eno od najpomembnejših raziskovalnih področij v diskretni matematiki. Večinoma zato, ker grafi zagotavljajo optimalne modele različnih realnih situacij. Na V naravoslovnih in družbenih vedah na primer modelirajo odnose med družbami, podjetji itd. V računalništvu predstavljajo komunikacijske mreže, organiziranost podatkov, računalniških naprav in še veliko več. V statistični fiziki lahko grafi predstavljajo lokalne povezave med interakcijskimi deli sistema. In ne nazadnje, v matematiki jih zaradi naravne metrike uporabljamo v geometriji in topologiji kot tudi v teoriji skupin, posebej preko tako imenovanih Cayleyjevih grafov, ki nastajajo iz skupin. Pogosto ugotovimo, da so grafi, ki kažejo optimalno vedenje, zelo simetrične strukture, kar spada v veliko skupino avtomorfizmov.

Visoko simetrične strukture, obravnavane v tem projektu, so točkovno tranzitivni grafi s posebnim poudarkom na Cayleyjevih grafih, ki so jih naredili v 19. stoletju, da bi raziskali lastnosti skupin. V projektu je obravnavana prehodnost grafov s posebnim poudarkom na obstoju Hamiltonovih ciklov in poti.

Glavne dejavnosti InnoRenew CoE pri projektu

Razvoj in implementacija algoritmov za generiranje prehodnih grafov s podanimi lastnostmi ter algoritemski razvoj in implementacija za iskanje hamiltonskih poti in ciklov, zlasti v točkovno tranzitivnih grafih.

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

4. Optimisation for sustainable supply chains

PROJECT LEADER: Andreja Kutnar, PhD (for InnoRenew CoE)/Tamas Kis, PhD

PERIOD: 36 months (starting in timeline of a period of one year from 23. 10. 2018 on)

FINANCED: Slovenian Research Agency (ARRS)

PARTNERS:

- InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); Institute for Computer Science and Control, Hungarian Academy of Sciences (Hungary).

The main goal of this research is the optimisation of supply chains considering environmental impact and energy costs. Special attention is given to the field of reverse logistics, where raw materials partly come from recycled sources.

New planning models and algorithms are to be developed as the result of this research, and a Collaborative Supply Chain will also be designed for platforms that mainly exist in scientific fields and have not been applied in the industry yet.

InnoRenew CoE main activities in the project

Our main activities will be in analysing and specification of the related industrial problems, identifying constraints and parameters, and defining the decision support framework. Moreover, we will monitor the developed methods. For this goal, a demonstration and simulation environment will be developed by the InnoRenew CoE researchers. We will evaluate the models and the methods with the help of demonstration and simulation environment.

4. Optimizacija trajnostnih oskrbovalnih verig

VODJA PROJEKTA: dr. Andreja Kutnar (za InnoRenew CoE)/dr. Tamas Kis

TRAJANJE: 36 mesecev (začetek: v roku enega leta od izdaje sklepa ARRS z dne 23. 10. 2018)

FINANCIRANJE: Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)

PARTNERJI:

- InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Institute for Computer Science and Control, Hungarian Academy of Sciences (Madžarska).

Primarni cilj raziskave je optimizacija oskrbovalnih verig s poudarkom na okoljskih vplivih in stroških energije. Posebna pozornost je namenjena področju obratne logistike, kjer surovine za proizvodnjo deloma pridobimo s pomočjo recikliranja.

V sklopu raziskave bodo razviti novi modeli in algoritmi. Vzpostavljena bo nova oskrbovalna veriga, ki vključuje delitev neizkoriščenih virov za platforme, ki primarno obstajajo samo v znanstvenih krogih in še niso bili implementirani v praksi in gospodarstvu.

Glavne dejavnosti InnoRenew CoE pri projektu

Naše glavne dejavnosti bodo analiziranje in specificiranje s tem povezanih industrijskih problemov, opredelitev omejitev in parametrov ter opredelitev okvira za podporo odločanju. Poleg tega bomo spremljali izdelane metode. V ta namen bodo raziskovalci v InnoRenew CoE razvili predstavitveno in simulacijsko okolje. Ovrednotili bomo modele in metode s pomočjo demonstracijskega in simulacijskega okolja.

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

5. Spectroscopy and multivariate data analysis for quality control of modified wood - MULTI-SPEC (bilateral project)

PROJECT LEADER: Anna Malgorzata Sandak, PhD

PERIOD: 1 .09. 2018 – 31. 08 .2020

FINANCED: Slovenian Research Agency (ARRS)

PARTNERS:

- InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); University of Modena and Reggio Emilia (Italy).

Infrared radiation was discovered over 200 years ago, but for many years, the near infrared (NIR) region was neglected due to demanding spectra interpretation. NIR is now used as a routine method in several sectors; however, its regular implementation toward biomaterials characterization is still problematic due to their natural variability. The project MULTI-SPEC will use non-destructive spectroscopic techniques with advanced data mining for systematic and extensive characterization and evaluation of modified wood. A bottom-up approach, allowing prediction of several macro properties of wood from the information recorded at the molecular level, will be implemented. The MULTI-SPEC project will compare influence of selected wood modification processes, available at industrial scale in Italy and Slovenia. The objective is to develop chemometric models allowing fast and non-destructive comparison of modification extent. Two types of instruments, a bench laboratory FT-N IR and a portable one, will be used for extensive sample measurements. Comparison of equipment performance and calibration transfer protocol will be developed. Such approach is in line with an increased interest in bringing sensors out to "where the samples are," as opposed to the bringing samples to the lab approach. It is expected that the output of the project will bring confidence in practical applications of NIR spectroscopy for in-situ and on-line applications and its future industrial implementation.

InnoRenew CoE main activities in the project

The MULTI-SPEC project employs non-destructive spectroscopic techniques with advanced data mining for systematic and extensive characterization and evaluation of modified wood. InnoRenew CoE is responsible for the spectral fingerprint of raw and modified wood and supports UNIMORE with data evaluation and numerical modeling of modification processes.

5. Spektroskopija in multivariatna analiza podatkov za nadzor kakovosti modificiranega lesa – MULTI-SPEC (bilateralni projekt)

VODJA PROJEKTA: dr. Anna Malgorzata Sandak

TRAJANJE: 1. 09. 2018 – 31. 08. 2020

FINANCIRANJE: Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)

PARTNERJI:

- InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Univerza v Modeni in Reggiu Emilia (Italija).

Infrardeče sevanje so odkrili pred več kot 200 leti, a je bilo bližnje infrardeče sevanje (ang. near infrared region, NIR) zaradi zahtevne interpretacije spektra več let zapostavljeno. NIR se zdaj kot ena od rutinskih metod uporablja na mnogih področjih, kljub temu pa je njegova uporaba pri karakterizaciji produktov v gozdnem sektorju problematična zaradi njihove naravne variabilnosti.

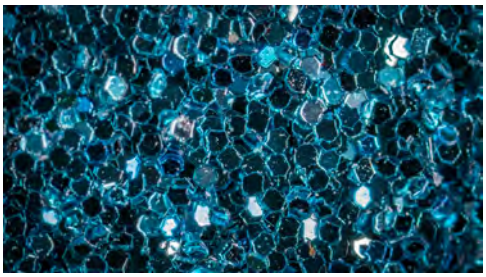
Namen projekta MULTI-SPEC, ki bo združil nedestruktivne metode spektroskopije z naprednimi metodami podatkovnega rudarjenja, je sistematično in poglobljeno ocenjevanje in karakterizacija modificiranega lesa. Uporabili bomo pristop »od spodaj navzgor«, da bi na podlagi podatkov, pridobljenih na nivoju molekule, lahko napovedali več makro lastnosti lesa. Projekt MULTI-SPEC bo primerjal vpliv izbranih procesov modifikacije lesa, ki so v Italiji in Sloveniji dostopni na ravni industrije.

Glavne dejavnosti InnoRenew CoE pri projektu

Projekt MULTI-SPEC uporablja nedestruktivne spektroskopske tehnike z napredno metodo rudarjenja podatkov za sistematično in obsežno karakterizacijo in vrednotenje modificiranega lesa. InnoRenew CoE je odgovoren za spektralni prstni odtis surovega in modificiranega lesa ter podpira UNIMORE z vrednotenjem podatkov in numeričnim modeliranjem procesov modificiranja.

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

6. The use of chemical wood modifications to protect wood against wood-borers in the marine environment (bilateral project)



PROJECT LEADER: Andreja Kutnar, PhD

PERIOD: 27. 06. 2018 – 31. 12. 2019

FINANCED: Slovenian Research Agency (ARRS)

PARTNERS:

- InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); University of Belgrade, Faculty of Forestry (Serbia).

Wood is a widely available, inexpensive, renewable material and is used in lots of marine structures. Despite these favourable characteristics, a principal restriction has been its susceptibility to destructive attack by wood-borers. Degradation of wood by marine wood-boring species causes worldwide major economic losses. Data confirm that the yearly costs to repair or renew wooden constructions in the marine environment can be really high. In this project, several chemical modifications and concentrations will be screened and it will be defined how the chemicals are bound to the wood. The new knowledge about the influence of wood modification agents on wood-borers and interactions between wood modification agents, wood, and the marine environment will be amalgamated into and presented in a minimum of three publications in professional or high-ranking scientific journals, and a minimum of three presentations at scientific conferences. New IT-supported databases will be prepared with information about short- and long-term effects of modification agents on wood, the necessary wood treatment processes, and its chemistry, which gives a promise for the development of so-called "rational design" of wood applications in marine environments in the future. These databases can be also a valuable prediction tool for wood modification, emphasizing environmental friendliness of new products, its impact on different wood-borer species, and service life and after service life scenarios for the modified wood. Recommendations will be prepared to assist authorities and researchers concerned with the protection of wood in the sea. The project is also a great opportunity for a certain amount of early stage researchers to develop their careers, starting with their thesis preparation and defence. The collaboration with Serbia will not be only a scientific exchange, but also, equally important, a cultural exchange and people will learn to work together with others with different backgrounds (cultural, socio-economic, education, etc.). As the protection against wood-borers would be of a great economic importance, a further development of the most economical and environmental promising chemical wood modification procedure is foreseen, beyond the scope of this basic project, in collaboration with the industrial partners.

6. Kemična modifikacija kot zaščita lesa v morskem okolju pred morskimi lesnimi škodljivci (bilateralni projekt)

VODJA PROJEKTA: dr. Andreja Kutnar

TRAJANJE: 27. 06. 2018 – 31. 12. 2019

FINANCIRANJE: Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)

PARTNERJI:

- InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Univerza v Beogradu, Gozdarska fakulteta (Srbija).

Les je široko dostopen, poceni obnovljiv material, uporabljamo pa ga lahko za izdelavo številnih objektov v morskem okolju. Kljub naštetim ugodnim lastnostim njegovo uporabo omejuje dovzetnost za napade morskih lesnih škodljivcev (MLŠ), ki na svetovni ravni povzročajo veliko gospodarsko škodo. Podatki potrjujejo, da so letni stroški popravil ali obnove lesenih konstrukcij v morskem okolju lahko zelo visoki.

V tem projektu bomo izvedli presejalne teste več kemičnih modifikacij lesa z različnimi koncentracijami učinkovin. Pri tem bomo proučevali načine vezave učinkovin z lesom, dokaze za potek kemijskih reakcij pa ugotavljali z infrardečo in drugimi spektroskopijami. Opazovali bomo vpliv postopkov modifikacije na izbrane vrste najpomembnejših MLŠ. Ti imajo vsak svoj način življenja, zato bomo poskuse izvajali za vsako vrsto ločeno, v akvarijih z razmerami (temperatura morske vode itd.), ki jim ustrezajo. Novo znanje o vplivih sredstev za modifikacijo lesa na MLŠ in o interakcijah med sredstvi za modifikacijo, lesom in naravnim morskim okoljem bo združeno in predstavljeno v vsaj treh znanstvenih prispevkih, objavljenih v strokovnih revijah oziroma kakovostnih znanstvenih revijah. Izsledki bodo tudi predstavljeni na vsaj treh znanstvenih konferencah. Oblikovali bomo tudi nove elektronske baze podatkov, ki bodo vsebovale informacije o kratkotrajnih in dolgotrajnih učinkih modifikacijskih sredstev na les ter o temeljnih procesih modifikacije lesa in njihovih kemijskih vidikih. Zbiranje teh podatkov bo osnova za razvoj tako imenovanega »racionalnega oblikovanja« lesenih poizvodov za uporabo v morskem okolju. Te baze podatkov lahko predstavljajo tudi dragoceno napovedno orodje na področju modifikacije lesa, in sicer s poudarkom na okoljski prijaznosti novih izdelkov, učinkih modifikacijskih procesov na različne vrste MLŠ ter na daljši življenjski dobi izdelkov pa tudi na razvijanju scenarijev za rabo modificiranega lesa po izteku življenjske dobe. Pri tem bomo za raziskovalce in ustanove, ki skrbijo za zaščito lesa v morju, pripravili tudi priporočila. Projekt bo določenemu številu raziskovalcev, ki so na začetku svoje poti, predstavljal izjemno karierno priložnost, za začetek že s pripravo in zagovorom teze. Sodelovanje s Srbijo bo predstavljalo ne le znanstveno, temveč tudi kulturno izmenjavo, pri čemer bodo udeleženci pridobili izkušnjo sodelovanja z ljudmi z različnimi ozadji (kulturnimi, družbeno-gospodarskimi, izobraževalnimi ...). Ker je zaščita lesa pred MLŠ za gospodarstvo zelo pomembna, načrtujemo tudi nadaljnji razvoj okolju najbolj prijaznega in cenovno učinkovitega procesa kemične modifikacije lesa. Tak razvoj presega obseg tega projekta, zato ga načrtujemo pozneje s partnerji iz gospodarstva.

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

InnoRenew CoE main activities in the project

Our main activities are to identify naturally occurring substances in water condensates of wood thermal modification or steaming processes, to evaluate the technical feasibility to use them as wood preservatives, and durability testing of wood impregnated with above selected compounds in the marine environment.

7. Synchrotron-based analysis of densified wood impregnated with curing resins (bilateral project)

PROJECT LEADER: Matthew John Schwarzkopf, PhD

PERIOD: 1. 10. 2018 – 30 .9. 2020

FINANCED: Slovenian Research Agency (ARRS)

PARTNERS:

• InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); Forest Products Laboratory (USA).

There has been renewed interest in the production and use of modified wood. Consumers and policy makers are promoting the usage of natural and sustainable materials for various reasons, including: low environmental impact, linkage to local cultural heritage, and benefits to human health. Wood modification techniques have been used to help valorise under-utilised wood materials and increase their performance with respect to durability, mechanical characteristics, and to achieve new forms and functions desired by consumers and designers alike. The motivation for this project is to more fully understand the mechanisms behind dimensional stability and mechanical performance of impregnated, densified wood. More specifically, this research will address the lack of fundamental knowledge regarding: 1) adhesive and curing resin penetration into the densified wood micro-structure; 2) mechanical performance and load transfer efficacy of impregnated, densified wood on a micro-scale. Building off the project collaborators' previous experience and expertise in the fields of wood modification, XFM, XCT, and synchrotron-based micro-scale analysis, the project will merge the Slovenian and American research groups to create a tool that will be used for the technical assessment of adhesives/curing resins and densification methods used for wood with respect to dimensionally stability.

InnoRenew CoE main activities in the project

Synchrotron-based x-ray computed tomography is being coupled with in-situ mechanical testing to assess load transfer in wood-adhesive bondlines. Low-molecular weight resins have been chemically modified for high attenuation and contrast making phase separation easily achieved.

Glavne dejavnosti InnoRenew CoE pri projektu

Naše glavne aktivnosti bodo zajemale identifikacijo naravne snovi v vodnih kondenzatih pri toplotni modifikaciji lesa ali postopkih obdelave s paro, ocenjevanje tehnične izvedljivosti njihove uporabe kot sredstva za zaščito lesa in preskusi trajnosti lesa, impregniranega z zgoraj izbranimi spojinami v morskem okolju.

7. Na sinhrotronu osnovana analiza zgoščenega lesa impregniranega s strjevalnimi smolami (bilateralni projekt)

VODJA PROJEKTA: dr. Matthew John Schwarzkopf

TRAJANJE: 1. 10. 2018 – 30. 9. 2020

FINANCIRANJE: Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)

PARTNERJI:

- InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Forest Products Laboratory (Madison, WI, USA).

V zadnjem času se zanimanje za izdelavo in uporabo modificiranega lesa spet povečuje. Potrošniki in politiki uporabo naravnih in trajnostnih materialov spodbujajo iz različnih razlogov, kot so majhen okoljski vpliv, povezanost z lokalno kulturno dediščino in korist za človekovo zdravje. Tehnike modifikacije lesa se uporabljajo pri vrednotenju manj izkoriščenih lesnih materialov in pri izboljševanju njihovih lastnosti glede na obstojnost, mehanske značilnosti in ustvarjanje novih oblik ter funkcij po željah potrošnikov in tudi oblikovalcev.

Namen tega projekta je globlje razumevanje mehanizmov, ki so v ozadju dimenzijske stabilnosti in mehanskih lastnosti impregniranega, zgoščenega lesa. Natančneje, ta raziskava bo dopolnila pomanjkljivo temeljno znanje o: 1) penetraciji lepila in strjevalnih smol v mikrostrukuro zgoščenega lesa; 2) mehanskih lastnostih in učinkovitosti prenosa obremenitve na mikronivoju pri impregniranem, zgoščenem lesu. Projekt, ki bo nadgradil pretekle izkušnje in strokovno znanje sodelujočih partnerjev projekta, RFM, RRM, in na sinhrotronu zasnovano analizo na mikroravni, bo združil slovenske in ameriške raziskovalne skupine ter ustvaril orodje, ki bo uporabno pri tehnični oceni lepil/strjevalnih smol in pri metodi zgoščevanja lesa v povezavi z dimenzijsko stabilnostjo.

Glavne dejavnosti InnoRenew CoE pri projektu

Za določanje prenosa obremenitve v lesno-lepilne vezi se sinhrotronska rentgenska računalniška tomografija povezuje z mehanskimi preskusi in situ. Smole z nizko molekulsko maso so bile kemijsko modificirane za visoke slabljenje in delanje kontrasta, kar omogoča enostavno ločevanje faz.

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

8. Perception and performance assessment in bio-based architecture (bilateral project)

PROJECT LEADER: Anna Sandak Malgorzata, PhD

PERIOD: 1 .10. 2018 – 30. 9. 2020

FINANCED: Slovenian Research Agency (ARRS)

PARTNERS:

- InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); Oregon State University, Department of Wood Science and Engineering (USA).

The trend for constructing sustainable buildings and the increasing environmental awareness observed nowadays leads to the resurgence of bio-architecture as an alternative to other construction techniques. The unique properties and natural beauty of bio-based materials make these products desirable for various applications in construction, both for structural and non-structural uses. While the low carbon footprint during extraction and production of bio-based materials is one of the main arguments motivating their choice as sustainable alternatives to conventional building materials, their performance over time (and therefore their sustainability in the long run) is sometimes called into question. For these materials to have a significant role in the built environment and in a new bio-economy, it is important to understand how performance of bio-based building materials is perceived by specifiers and final users and how customers' perception relates to actual performance measures. This project is a great opportunity to perform cross-sectorial investigations and reinforce collaboration between OSU and InnoRenew CoE.

InnoRenew CoE main activities in the project

This project investigates perception and performance of biomaterials in architecture by the development of alternative methods combining ICT tools with psychological responses. InnoRenew CoE is responsible for identification and testing of the tools for customers' perception measurement, evaluation of perception of natural and modified wood and its change in time, as well as for the assessment of post-occupancy satisfaction and human well-being.

8. Percepcija in lastnosti bioarhitekture (bilateralni projekt)

VODJA PROJEKTA: dr. Anna Malgorzata Sandak

TRAJANJE: 1. 10. 2018 – 30. 9. 2020

FINANCIRANJE: Javna agencija za raziskovalno dejavnost Republike Slovenije (ARRS)

PARTNERJI:

- InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Državna univerza v Oregonu, Oddelek za znanost o lesu in tehnologijo (Oregon State University Department of Wood Science and Engineering) (ZDA).

Sodobna usmeritev k izgradnji trajnostnih stavb in povečevanju okoljske ozaveščenosti spodbuja tudi oživljanja bioarhitekture kot alternative drugim gradbenim pristopom. Edinstvene lastnosti in naravna lepota bioloških materialov povečujejo zaželenost teh izdelkov za razne aplikacije v gradbeništvu, tako za strukturno kot za nestrukturno rabo. Eden glavnih motivov, da se zanje odločajo kot za trajnostno alternativo konvencionalnim gradbenim materialom, je nizkoogljični odtis med ekstrakcijo in proizvodnjo bioloških materialov, a njihovo delovanje je v daljšem časovnem obdobju (in zato tudi njihova dolgoročna trajnost) včasih postavljeno pod vprašaj. Da bi ti materiali imeli pomembno vlogo v grajenem okolju in v novem biogospodarstvu, je pomembno razumeti, kako delovanje biozgradb vidijo projektanti in končni uporabniki ter kako je zaznavanje uporabnikov povezano z dejanskimi meritvami delovanja.

Projekt ARCHI-BIO je odlična priložnost za izvajanje medsektorskih raziskav in krepitev sodelovanja med ameriško Državno univerzo v Oregonu in InnoRenew CoE.

Glavne dejavnosti InnoRenew CoE pri projektu

Pri projektu raziskujemo percepcijo in učinkovitost biomaterialov v arhitekturi z razvojem alternativnih metod, ki združujejo orodja IKT s psihološkimi odzivi. InnoRenew CoE je pri projektu odgovoren za identifikacijo in testiranje orodij za merjenje zaznavanja uporabnikov, ocenjevanje zaznavanja naravnega in modificiranega lesa ter njihovih sprememb v odvisnosti od časa, kot tudi za ocenjevanje zadovoljstva in blaginje ljudi v času uporabe stavbe.

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

9. Development of novel functional proteins and bioactive ingredients from rapeseed, olive, tomato and citrus fruit side streams for applications in food, cosmetics, pet food and adhesives - Pro-Enrich

LEADING INSTITUTION: TEKNOLOGISK INSTITUT (DTI)/ Matthew John Schwarzkopf, PhD (for InnoRenew CoE)

PERIOD: 1. 5. 2018 – 30. 4. 2021

FINANCED: EU, Horizon 2020 – Bio-Based Industries JU

PARTNERS:

- Coordinator of the project: Teknologisk Institut (DTI) (Denmark);
- Partner organizations: Bangor University (Bangor) (UK); InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); Gea Westfalia Separator Group GMBH (Germany); Anecoop Sociedad Cooperativa (Spain); Tailorzyme APS (Denmark); Agro Business Park As (Demnark); Emmelev As (Denmark); Vertech Group (France); Franka Marzi (Slovenia); Chimar Hellas Ae (Greece); Eurizon SI (Innovarum) (Spain); Olivar De Segura, S.COOP.AND. (Spian); Mars GMBH (Germany); Natac Biotech SI (France); G. C. Hahn and company limited (Tate & Lyle) (UK).

The project is led by the Danish Technological Institute and is designed to develop sustainable and competitive bio-based industries in Europe. Pro-Enrich will develop an integrated sustainable biorefinery approach capable of processing a range of agricultural residues for the delivery of high value protein and bioactive product streams, suited to the needs of a wide range of high value end uses. The consortium with the involved industries sees a huge potential and a strong need for developing more cost- and energy-efficient biorefining technologies and processing methods. These technologies must achieve purity levels that meet market specifications and regulations. Pro-Enrich will address these challenges by producing a range of proteins and bioactive compounds suitable for applications in food, pet food, adhesives, and cosmetics. Specifically, Pro-Enrich will define, develop, and test new and sustainable optimised technologies for pre-treatment, extraction, separation, and the purification of target compounds including functional proteins, polyphenols, dietary fibres, and pigments meeting the market expectations from side streams in the processing of rapeseed, olives, citrus, and tomatoes. The structure of the work is designed to facilitate the development of key biomass fractionation and separation technologies from Technology Readiness Level – TRL 2 (technology concept formulated) through to TRL 4 (technology validated in lab) and TRL 5 (technology validated in relevant environment), through an iterative process of feedstock mapping, laboratory process development, functionality/performance testing of samples, pilot upscaling, and demonstration of best business cases. The InnoRenew CoE, supported by the University of Primorska, will strongly contribute to this project by characterising and analysing the targeted compounds after experimental treatments, extraction efficacy, and their suitability for use with industrial partner needs.

9. Razvoj novih uporabnih proteinov in bioaktivnih sestavin iz stranskih proizvodov predelave repičnih semen, oliv, paradižnika in agrumov za uporabo v hrani, kozmetiki, živalski hrani ter lepilih – Pro-Enrich

VODILNA INSTITUCIJA: TEKNOLOGISK INSTITUT (DTI)/dr. Matthew John Schwarzkopf (za InnoRenew CoE)

TRAJANJE: 1. 5. 2018 – 30. 4. 2021

FINANCIRANJE: EU, Obzorje 2020 – Bio-Based Industries JU

PARTNERJI:

- Koordinator projekta: TEKNOLOGISK INSTITUT (DTI) (Danska)
- Partnerske ustanove: Univerza v Bangorju (Bangor University) (Združeno kraljestvo Velike Britanije); InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Gea Westfalia Separator Group GMBH (Nemčija); Anecoop Sociedad Cooperativa (Španija); Tailorzyme Aps (Danska); Agro Business Park As (Danska); Emmelev As (Danska); Vertech Group (Francija); Franka Marzi (Slovenija); Chimar Hellas Ae (Grčija); Eurizon Sl (Innovarum) (Španija); Olivar De Segura, S.Coop.And. (Španija); Mars GMBH (Nemčija); Natac Biotech Sl (Francija); G. C. Hahn And Company Limited (Tate & Lyle) (Združeno kraljestvo Velike Britanije).

Projekt je namenjen razvoju trajnostnih in konkurenčnih bioloških industrij v Evropi, vodi pa ga danski Tehnološki inštitut. Glavni cilj projekta je razvijanje integriranega trajnostnega postopka v biorafinerijah, s katerim je možno vrsto kmetijskih ostankov predelati v proteinske in bioaktivne izdelke visoke vrednosti in široke uporabe.

Konzorcijski partnerji projekta in industrije, vpletene v projekt, opažajo vse večjo potrebo po razvoju stroškovno in energetsko učinkovitejših tehnologij za biorafiniranje in postopke predelave. Tehnologije morajo pri tem doseči visoko raven čistosti in obenem upoštevati tržne posebnosti in predpise.

Odgovore na te izzive projekt Pro-Enrich ponuja s proizvodnjo različnih proteinov in bioaktivnih spojin, primernih za uporabo v človeški in živalski hrani, lepilih in kozmetiki. Natančneje, Pro-Enrich bo opredelil, razvil in testiral nove in trajnostne optimizirane tehnologije za predhodno obdelavo, ekstrakcijo, ločevanje in prečiščevanje ciljnih spojin, vključno z uporabnimi proteini, polifenoli, dietetičnimi vlakni in pigmenti. Ti stranski proizvodi, ki nastajajo pri obdelavi repičnih semen, oliv, agrumov in paradižnikov, med drugim izpolnjujejo tudi tržna pričakovanja.

Delovni proces je zasnovan tako, da pospešuje razvoj ključnih tehnologij frakcioniranja in ločevanja biomase, in sicer od tehnološkega nivoja pripravljenosti (TRL – Technology Readiness Level) – od TRL 2 (opredelitev tehnološkega koncepta) do TRL 4 (tehnologija, potrjena v laboratoriju) in TRL 5 (tehnologija, potrjena v ustreznem okolju) – prek iterativnega postopka določanja surovin, razvoja laboratorijskih procesov, testiranja

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

InnoRenew CoE main activities in the project

The Pro-Enrich project takes the process of fractionising agricultural residues to a new level, identifying proteins, polyphenols, dietary fibres, and pigments for use as food ingredients, pet food, cosmetics, and adhesives. Agricultural residue streams include rapeseed meal, olives, tomatoes, and citrus fruit industries.

10. Underpinning the vital role of the forest-based sector in the Circular Bio-Economy – WoodCircus

LEADING INSTITUTION: Teknologian tutkimuskeskus VTT Oy,

Michael David Burnard, PhD (for InnoRenew CoE)

PERIOD: 1. 11. 2018 – 31. 10. 2021

FINANCED: EU, Horizon 2020

PARTNERS:

- Coordinator of the project: Teknologian tutkimuskeskus VTT Oy (Finland);
- Partner organizations: Institut technologique FCBA (France); InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); Nova-Institut Fur Politische Und Okologische Innovation GMBH (Germany); Fundacion Tecnalia Research & Innovation (Spain); Consorzio Del Mobile SCPA (Italy); LUONNONVARAKESKUS (Finland); INNOVAWOOD ASBL (Belgium); Sahateollisuus ry (Finland); Alfa Natura d.o.o (Slovenia); Asociación Baskegur (Spain); Consorzio Nazionale per la raccolta, il recupero e il riciclaggio degli imballaggi di legno - Rilegno (Italy); EGOIN SA (Spain); Forest-Based Sector Technology Platform (Belgium); European Panel Federation AISBL (EPF) (Belgium); VEOLIA PROPRETE (France); SAIB (Italy).

The main goal of the WoodCircus is to increase knowledge, raise awareness, and improve conditions for an uptake of resource-efficient processing and recycling in wood-based value chains, fostering increased competitiveness of the European woodworking sector. WoodCircus identifies, evaluates, and disseminates the outstanding good practices in process efficiency, wood waste collection, management, and recycling in the woodworking value chains in Europe, with a focus on construction with wood. Achieving a thorough evaluation of the overall system's performance and a validation of the most relevant transferable solutions, WoodCircus produces sound, critical evidence and tangible decision

uporabnosti/zmogljivosti vzorcev do predstavitve najboljših poslovnih primerov.

InnoRenew CoE, ki ga pri tem podpira Univerza na Primorskem, k projektu Pro-Enrich prispeva pomemben delež: določanje in analiziranje tako ciljnih spojin po poskusnih obdelavah kot učinkovitega procesa ekstrakcije in ustreznosti ciljnih spojin za potrebe industrijskih partnerjev.

Glavne dejavnosti InnoRenew CoE pri projektu

Projekt Pro-Enrich postavlja postopek frakcioniranja kmetijskih ostankov na novo raven, pri čemer identificira beljakovine, polifenole, prehranska vlakna in pigmente, ki so uporabni kot sestavine živil, hrane za hišne živali, kozmetike in lepil. Kmetijski ostanki vključujejo oljno ogrščico, oljke, paradižnike in industrijo agrumov.

10. Podpiranje ključne vloge gozdarskega sektorja v krožnem biogospodarstvu – WoodCircus

VODILNA INSTITUCIJA: Teknologian tutkimuskeskus VTT Oy/dr. Burnard Michael David (za InnoRenew CoE)

TRAJANJE: 1. 11. 2018 – 31. 10. 2021

FINANCIRANJE: EU, Obzorje 2020

PARTNERJI:

- Koordinator projekta Teknologian tutkimuskeskus VTT Oy (Finska);
- Partnerske ustanove: Institut technologique FCBA (Foretcellulose Bois-Construction Ameublement) (Francija); InnoRenew CoE Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); nova-Institut für politische und ökologische Innovation GMBH (Nemčija); Fundación Tecnalia Research & Innovation (Španija); Consorzio Del Mobile SCPA (Italija), LUONNONVARAKESKUS (Finska); INNOVAWOOD ASBL (Belgija); Sahateollisuus ry (Finska); Alfa Natura d. o. o (Slovenija); VEOLIA PROPRETÉ (Francija); SAIB (Italija); Asociación Baskegur (Španija), Consorzio Nazionale per la raccolta, il recupero e il riciclaggio degli imballaggi di legno – Rilegno (Italija); EGOIN SA (Španija); Forest-Based Sector Technology Platform (Belgija); European Panel Federation AISBL (Belgija).

Glavni cilj projekta WoodCircus je povečati znanje, dvigniti ozaveščenost in izboljšati pogoje pri predelavi in recikliranju v vrednostnih verigah, ki temeljijo na lesu, ter spodbujati večjo konkurenčnost evropskega lesnopredelovalnega sektorja. Projekt WoodCircus identificira, vrednoti in razširja izjemno dobre prakse pri procesni učinkovitosti, zbiranju lesnih odpadkov, ravnanju z njimi in recikliranju v vrednostnih verigah za obdelavo lesa v Evropi, s poudarkom na gradnjah z lesom. Da bi dosegli temeljito oceno uspešnosti celotnega sistema in validacijo najpomembnejših prenosljivih praks, WoodCircus zagotavlja

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support information for market actors, stakeholders, and policymakers. WoodCircus establishes a well-integrated network between wood processing industries and the waste management sector, engaging excellence for future-oriented joint promotion of the wood sector in the circular bioeconomy. WoodCircus implements the EU Action Plan for the Circular Economy and the EU Bioeconomy Strategy targets, ensuring intelligent utilisation of forest resources and sets up an interface to the EC Raw Materials Information System and the JRC Bioeconomy Knowledge Centre. WoodCircus is based on a balanced mix of leading RTO and companies with proven expertise all along the woodworking and construction value chains, including waste valorisation and associations at the local, national, and international level.

InnoRenew CoE main activities in the project

The main activities InnoRenew CoE are to lead the "Transferable Practices, Strategic RTDI & Policy Support Actions" work package, where the primary task is to combine the knowledge gained in other work packages and create industry and policy guidance on supporting the role of the forest sector in the circular bioeconomy. The InnoRenew CoE will participate in other activities as well, including information gathering, network building, and dissemination activities.

11. Boosting a novel and innovative tRAining approaCh of Key Enabling Technologies – BRACKET

LEADING INSTITUTION: Institut za razvoj i međunarodne odnose/ Michael David Burnard, PhD (for InnoRenew CoE)

PERIOD: 1. 11. 2018 – 30. 4. 2021

FINANCED: EU, Erasmus+

PARTNERS:

- Coordinator: Institut za razvoj i međunarodne odnose (Croatia);
- Partner organizations: Danmar Computers SP Z O.O. (Poland); Technologiko Ekpedeftiko Idryma Thessalias (Greece); Asociacion Empresarial De Investigacion Centro, Tecnologico Del Muebley La Madera De La Region De Murcia (Spain); Biedriba Eurofortis (Latvia); Ljudska Univerza (Slovenia); Zavod za izobraževanje in kulturo (Slovenia); InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia).

BRACKET arises from a strategic partnership (SP) composed of associations, companies, research centres, universities, and adult and vocational education and training (VET) centres that will actively cooperate among themselves and key stakeholders (VET centres, regional and national bodies, associations, etc.) for the development of an open e-learning platform for VET centres. The objectives address horizontal and sectoral needs for VET as

zanesljive, ključne dokaze in oprijemljiv odločevalski informacijski sistem za akterje na trgu, zainteresirane strani in oblikovalce politik. WoodCircus vzpostavlja dobro povezano mrežo med lesno predelovalno industrijo in sektorjem ravnanja z odpadki, ki vključuje odličnost za skupno promocijo lesnega sektorja v krožnem biogospodarstvu, usmerjeno v prihodnost. WoodCircus implementira akcijski načrt EU za krožno gospodarstvo in cilje strategije biogospodarstva EU, ki zagotavlja pametno uporabo gozdnih virov in vzpostavlja vmesnik do informacijskega sistema za surovine ES in Centra za bioekonomsko znanje JRC. WoodCircus temelji na uravnoteženi mešanici vodilnih RTO in podjetij z dokazanim strokovnim znanjem v celotni vrednostni verigi lesa in gradbeništva, vključno z valorizacijo in združenji na lokalni, nacionalni in mednarodni ravni.

Glavne dejavnosti InnoRenew CoE pri projektu

Glavna dejavnost InnoRenew CoE je vodenje delovnega sklopa »Prenosljive prakse, strateški ukrepi na področju RTDI in političnih podpor«, kjer je primarna naloga združiti znanje, pridobljeno v drugih delovnih sklopih, ter oblikovati smernice za industrijo in politiko, ki bodo podprle prepoznavanje pomembne vloge gozda v krožnem biogospodarstvu. InnoRenew CoE bo sodeloval tudi pri drugih dejavnostih, vključno z zbiranjem informacij, vzpostavljanjem omrežij in razširjanjem rezultatov.

11. Spodbujanje novega in inovativnega pristopa k usposabljanju za uporabo ključnih tehnologij – BRACKET

VODILNA INSTITUCIJA: Institut za razvoj i međunarodne odnose/dr. Burnard Michael David (za InnoRenew CoE)

TRAJANJE: 1. 11. 2018 – 30. 4. 2021

FINANCIRANJE: EU, Erasmus+

PARTNERJI:

- Koordinator projekta: Institut za razvoj i međunarodne odnose (Hrvaška);
- Partnerkse ustanove: Danmar Computers sp z o.o. (Poljska); Technologiko Ekpedeftiko Idryma Thessalias (Grčija); Asociacion Empresarial De Investigacion Centro, Tecnologico Del Muebley La Madera De La Region De Murcia (Španija); Biedriba Eurofortis (Latvija); Ljudska univerza (Slovenija); Zavod za izobraževanje in kulturo (Slovenija); InnoRenew CoE Center Odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija).

BRACKET temelji na aktivnem sodelovanju deležnikov v strateškem partnerstvu, ki ga sestavljajo združenja, podjetja, raziskovalna središča, univerze, centri za izobraževanje odraslih in poklicno izobraževanje (VET), ter ključnih zainteresiranih strani (centri za poklicno izobraževanje, regionalni in nacionalni organi, združenja itd.), ki si bodo prizadevali za razvoj odprte platforme za e-učenje na centrih poklicnega izobraževanja in usposabljanja. Cilji

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related to key enabling technologies: micro and nanoelectronics, nanotechnology, industrial biotechnology, advanced materials, photonics, and advanced manufacturing technologies.

All partners are actively involved in research and innovation initiatives, which will strengthen the links between education, research, and business to promote an excellence development. The project will develop new training material, a new concept for training delivery based on interactive materials, gamification, and other technologies, and develop materials to train the trainers to ensure excellence in VET beyond the scope of the project. The project will include multiplier events and other dissemination activities to spread awareness of the outputs.

InnoRenew CoE main activities in the project

The InnoRenew CoE will participate in producing all of the intellectual outputs in the BRACKET project, including performing background research on the key enabling technology of advanced materials, creating training materials for VET learners and trainers. The InnoRenew CoE will host a multiplier event to raise awareness of the project outputs.

12. Dynamic Response of Tall Timber Buildings under Service Load – DynaTTB

LEADING INSTITUTION: RISE, Research Institute of Sweden/ Iztok Šušteršič, PhD (for InnoRenew CoE)

PERIOD: 1. 3. 2019 – 1. 3. 2022

FINANCED: European Union – ForestValue Research Programme & MIZŠ

PARTNERS:

- Coordinator of the project: RISE Research Institute of Sweden (Sweden);
- Partner organizations: NTNU Norwegian University of Science and Technology (Norway); University of Exeter (UK); University of Ljubljana (Slovenia); InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); Centre Scientifique et Technique du Bâtiment (France); Linnaeus University (LNU) (Sweden); Moelven Töreboda AB (Sweden); Moelven Limtre AS (Norway); SWECO Norge AS avd Lillehammer (Norway); Smith and Wallwork Engineers Ltd (UK); GALEO (Spain); Eiffage Immobilier Sud Ouest (France); ARBONIS (France).

Wooden houses represent one of the most efficient ways of storing CO2 in the built environment. They address principal environmental challenges and contribute to a circular economy in the building industry. High-rise building offers high cost and space efficiency. However, we need to better understand vibrations caused by the wind, which contribute to

obravnavajo horizontalne in sektorske potrebe po poklicnem izobraževanju in usposabljanju, povezane z uporabo ključnih tehnologij, ki se bodo osredotočale na področja mikro- in nanoelektronike, nanotehnologije, industrijske biotehnologije, naprednih materialov, fotonike in napredne proizvodne tehnologije.

Vsi partnerji so aktivno vključeni v raziskovanje in inovacije, kar bo okrepilo povezave med izobraževanjem, raziskovanjem in podjetji za spodbujanje razvoja odličnosti. Projekt bo razvil nova znanja za usposabljanje in nov koncept za izvajanje usposabljanja, ki bo temeljil na interaktivnih materialih, gamifikaciji in drugih tehnologijah, ter razvil gradivo za usposabljanje trenerjev, da bi zagotavili odličnost v poklicnem izobraževanju in usposabljanju, ki presega obseg projekta. Projekt bo vključeval multiplikacijske dogodke in druge aktivnosti za razširjanje rezultatov in ozaveščanja o novostih.

Glavne dejavnosti InnoRenew CoE pri projektu

InnoRenew CoE bo pri projektu BRACKET sodeloval pri izdelavi vseh intelektualnih rezultatov, vključno z izvajanjem osnovnih raziskav o ključni tehnologiji in ustvarjanju učnih gradiv za študente in vodje usposabljanj v poklicnem izobraževanju. Gostili bomo tudi dogodek za ozaveščanje javnosti o rezultatih projekta.

12. Dinamični odziv visokih lesenih zgradb pri uporabni obratovalni obtežbi – DynaTTB

VODILNA INSTITUCIJA: RISE, Research Institute of Sweden/dr. Iztok Šušteršič (za InnoRenew CoE)

TRAJANJE: 1. 3. 2019 – 1. 3. 2022

FINANCIRANJE: Evropska Unija – ForestValue Research Programme in Ministrstvo za izobraževanje, znanost in šport Republike Slovenije

PARTNERJI:

- Koordinator projekta: RISE Research Institute of Sweden (Švedska);
- Partnerske institucije: Norveški univerzi za znanost in tehnologijo (NTNU –Norwegian University of Science and Technology) (Norveška); Univerza v Exetru (University of Exeter) (Združeno kraljestvo Velike Britanije); Univerza v Ljubljani (Slovenija); InnoRenew CoE Center Odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Centre Scientifique et Technique du Bâtiment (Francija); Univerza Linnaeus (Linnaeus University) (Švedska); Moelven Töreboda AB (Švedska); Moelven Limtre AS (Norveška); SWECO Norge AS avd Lillehammer (Norveška); Smith and Wallwork Engineers Ltd (Združeno kraljestvo Velike Britanije); GALEO (Španija); Eiffage Immobilier Sud Ouest (Francija); ARBONIS (Francija).

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size, shape, and mass design in order to minimize effects on physical well-being. Therefore, we need to obtain information about oscillation time and damping of high-rise buildings that are susceptible to resonance with wind vibration. Despite the increased popularity for high-rise building, currently only some information and little knowledge is known regarding damping, mass distribution, and rigidity in this kind of building. Dynamic properties of the building are mostly dependent on damping in wooden connections as well as in non-structural elements. To solve this problem, we are designing new, more detailed experimental research, with calibrated numerical models, that will enable us to better describe and predict high-rise building behavior under wind load. TRL stage is estimated at 3-4. The methodology involves experimental measurements of components of building structures (mainly wood joints) and already constructed buildings. They will serve to verify numerical models based on the finite element method. By using this approach, it will be possible to more accurately evaluate the parameters that are currently given as an estimate and are not consistently scientifically verified. More precise models will enable more reliable planning of the high-rise buildings, which will promote greater use of high-rise wooden buildings as part of urban development, with the possible increase of growth value and market for renewable products in the forest economy.

InnoRenew CoE main activities in the project

InnoRenew CoE will be responsible for analysis of existing experimental results with the focus on damping in CLT connections and performance of additional experiments, 3D models of buildings which will be tested in-situ, coordinating the dissemination activities, and for development of guidelines for the design of tall timber buildings on wind load.

13. CLICK DESIGN - delivering fingertip knowledge to enable service life performance specification of wood

LEADING INSTITUTION: BRE/Jakub Sandak, PhD (for InnoRenew CoE)

PERIOD: 1. 3. 2019 – 1. 3. 2022

FINANCED: European Union – ForestValue Research Programme and the Ministry of Education, Science and Sport of the Republic of Slovenia

PARTNERS:

• BRE (UK); University of Goettingen (Netherland); Lund University (Sweden); VTT Technical Research Centre of Finland (Finland); InnoRenew CoE Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence (Slovenia); Institute Technological FCBA (France); Norwegian Institute of Bioeconomy Research NIBIO (Norway); Research Institute for the

Lesene stavbe predstavljajo enega najboljših načinov za skladiščenje ogljika v grajenem okolju. Naslavljajo poglavitne okoljske izzive in prispevajo h krožnemu gospodarstvu v sklopu gradbene industrije. Visoke lesene stavbe obenem ponujajo možnost stroškovno učinkovite izrabe prostora. Ne razumemo pa še dobro vibracij, ki jih v tovrstnih zgradbah povzroča veter in posledično narekuje njihovo načrtovanje v okviru velikosti, oblike in teže, ki minimizirajo neugodno počutje. Potrebujemo več informacij o lastnih nihajnih časih in dušenju visokih zgradb, ki so dovzetne za resonanco z vibracijami vetra. Kljub vse večji priljubljenosti visokih lesenih zgradb je trenutno na voljo le malo informacij in znanja v zvezi z dušenjem, porazdelitvijo mase in togosti pri nihanju tovrstnih konstrukcij. Na dinamične lastnosti pa vplivajo predvsem dušenje v lesenih spojih in nekonstrukcijski elementi.

Rešitev problema načrtujemo z razvojem novih, natančnejših numeričnih modelov, umerjenih z eksperimentalnimi preiskavami, ki bodo omogočali bolj zanesljivo napovedovanje obnašanja visokih lesenih stavb pri obratovalni obtežbi vetra.

Natančnejši modeli bodo omogočili bolj zanesljivo načrtovanje visokih lesenih stavb, kar bo spodbudilo večjo uporabo visokih lesenih zgradb v okviru urbanega razvoja, z možnostjo, da se povečata tudi vrednost in trg obnovljivih proizvodov gozdnega gospodarstva.

Glavne dejavnosti InnoRenew CoE pri projektu

InnoRenew CoE bo zadolžen za analizo obstoječih rezultatov, pri čemer se bo osredotočil na dušenje v stikih CLT konstrukcij in izvedbo dodatnih eksperimentov, za izdelavo 3D modelov obstoječih zgradb, ki bodo eksperimentalno preizkušene na terenu, za vodenje delovnega sklopa diseminacije ter za koordinacijo razvoja in priprave smernic za projektiranje visokih lesenih zgradb na vetrno obtežbo.

13. Zagotavljanje »fingertip« znanja, ki omogoča določitev lastnosti lesa v odvisnosti od življenjske dobe - CLICK DESIGN

VODILNA INSTITUCIJA: BRE/dr. Jakub Sandak (za InnoRenew CoE)

TRAJANJE: 1. 3. 2019 – 1. 3. 2022

FINANCIRANJE: Evropska unija – ForestValue Research Programme in Ministrstvo za izobraževanje, znanost in šport Republike Slovenije

PARTNERJI:

- BRE - Building Research Establishment (Združeno kraljestvo Velike Britanije); Univerza v Göttingenu (Nizozemska); Univerza v Lundu (Švedska); VTT Technical Research Centre of Finland (Finska); InnoRenew CoE Center Odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja (Slovenija); Institut technologique FCBA (Francija); Norwegian Institute of Bioeconomy Research NIBIO (Norveška); Research Institute for the Biology of Insect (Francija) in podjetje Hygiène Office (Francija).

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Biology of Insect (IRBI) (France) and the company Hygiène Office (France).

CLICK DESIGN will develop a performance based specification protocol to enable provision of a software tool for architects and specifiers to embed service life performance specification for wood. The expected major breakthrough of CLICK DESIGN is the development of a performance based specification protocol for wood in construction and enables provision of a software tool for service life performance specification for planners and architects. This major innovation will expand the reach of wood products to new users beyond the small proportion of specifiers who are xylophiles and 'wood aware', increasing market confidence with users for wood as a reliable product and expand possibility for new product innovations. This supports the forest sector's vision to triple market share for wood products and services in construction by 2030. The CLICK DESIGN tool will facilitate reaching this goal by combining an easy-to-use tool with pedagogic background information.

InnoRenew CoE main activities in the project

Our main activities are to define a numerical quantifier of the aesthetical state of wooden elements exposed to weathering, to design a procedure for determination of aesthetical limit states for the customer tolerance to material deterioration, to implement whether dose-response modelling approach for simulation of the wooden elements appearance changes along service life, to develop an optimization tool for scheduling of cleaning/maintenance/replacement, and to integrate simulation of building aesthetical changes with visualization software.

Namen projekta CLICK DESIGN, ki med seboj povezuje skupino raziskovalcev in industrijo, je razvijanje specifikacijskega protokola, zasnovanega glede na uspešnost rezultatov, ki bo arhitektom in drugim strokovnjakom omogočil programska orodja s specifikacijo delovanja lesa glede na njegovo življenjsko dobo. S tem bo v gradbeništvu specifikacija lesa prvič določena na podlagi lastnosti; danes uporabniki z lastnostmi lesa večinoma niso seznanjeni, kar jim lahko predstavlja težave.

Projekt bo zagotovil znanstveno razumevanje lastnosti lesa v odvisnosti od njegove izpostavitve vremenskim vplivom. Združil bo programsko orodje in različne modele ter podatkovne baze lastnosti, povezanih z razkrojem in integriteto, estetsko funkcijo in odpornostjo na termite. Projekt bo na tem področju prinesel precejšen napredek in bo novo generacijo oblikovalcev t. i. »zdravega lesa« spodbudil k inovativnim rešitvam pri oblikovanju lesa, pri čemer bo naredil pomemben korak k digitalizaciji znanja in specifikacij. Razvoj programskega orodja na pilotni ravni bo sledil odprtokodnemu standardu (IFS, ISC), kar bo omogočilo njegovo aplikacijo v BIM (Building Information Modeling). Nova programska oprema bo industrijo, ki temelji na lesarstvu, usmerila k specifikacijam, ki temeljijo na uspešnosti, in s tem odprla nove poslovne priložnosti. To bo povečalo tržno zaupanje uporabnikov v les kot zanesljiv material in izboljšalo optimizirano delovanje lesa v grajenem okolju.

Glavne dejavnosti InnoRenew CoE pri projektu

Glavne dejavnosti v InnoRenew CoE bodo zajemale določanje numeričnih količnikov estetskega stanja lesenih elementov, izpostavljenih vremenskim vplivom, oblikovanje postopkov za določanje estetskih mejnih stanj pri kupčevi toleranci glede na poslabšanje materiala, izvedbo modeliranja odzivanja na vremenske vplive – simulacijo sprememb, ki se pojavljajo pri lesu v njegovi življenjski dobi –, razvoj optimizacijskega orodja za načrtovanje čiščenja/vzdrževanja/zamenjave ter povezovanje in simulacijo estetskih sprememb stavbe z BIM.

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GRANT APPLICATIONS

We have been working to achieve external funds since the beginning of our research work at InnoRenew CoE. Applying for grants and preparing project proposals is a significant part of our daily activities. When possible, we actively involve partners from industry in our project proposals in order to be collaborative and raise awareness of the necessity and usefulness of constant development and research.

In 2017 and 2018, InnoRenew CoE employees submitted grant applications for national and international funding, of which:

1) 14 research proposals were submitted for national funding – "research projects" to the Slovenian Research Agency (total budget 1.325.409,50 EUR). 2 of them were successfully obtained for funding (77.365,50 EUR) and 6 of them are currently pending. There were 6 projects not selected for funding.

2) 10 project proposals for bilateral cooperation were submitted to the Slovenian Research Agency (total budget 45.000,00 EUR), of which 6 were successfully obtained (1 with Serbia, 2 with Bosnia, 1 with Italy, and 2 with USA in total budget of 19.000,00 EUR); 1 with Turkey is pending. Proposals with Japan (1), Argentina (1), and Russia (1) were not selected for financing.

3) There were 13 projects for other schemes of national funding submitted (total budget 326.248,10 EUR), of which 12 were successfully obtained for funding (in the amount of 306.448,10 EUR) and 1 was unsuccessful.

4) 52 proposals were submitted for international funding (Horizon 2020, ForestValue Programme, COST, Interreg programs, Erasmus+, etc.; total amount of budget 21.444.296,32 EUR). Until end of January 2019 13 were successfully obtained for funding (1.067.520,00 EUR) and 11 proposals (in the budget amount of 12.427.651,32 EUR) are pending.

5) There were also 4 other international project proposals submitted (in the amount of 79.000 EUR), of which 1 was successfully obtained for funding (7.000,00 EUR), 3 of them are pending and 1 of them was unsuccessful.

The combined budget of all **93 submitted** proposals designated for InnoRenew CoE was 23.217.953,92 EUR. Currently, there are **20 pending** proposals with the budget for InnoRenew CoE of 13.016.651,32 EUR. There were 36 unsuccessful proposals for InnoRenew CoE in the amount of 8.725.969,00 EUR and **37 successful** proposals totaling 1.475.333,60 EUR in budget for InnoRenew CoE.

PRIJAVE NA PROJEKTE

S pridobivanjem prihodkov iz drugih virov smo se pričeli ukvarjati že na samem začetku našega dela. Prijavljanje na javne razpise je pomemben del naših vsakodnevnih dejavnosti. Kadar je le možno, v partnerstva aktivno vključujemo tudi partnerje iz gospodarstva, da bi krepili sodelovanje in spodbujali zavedanje o potrebnosti in koristnosti nenehnega razvoja in raziskav.

V letih 2017 in 2018 so se raziskovalci InnoRenew CoE prijavili na naslednje nacionalne in mednarodne razpise:

1) 14 vlog za raziskovalne projekte smo oddali Javni agenciji za raziskovalno dejavnost (v nadaljevanju ARRS) v skupni vrednosti 1.325.409,50 EUR, od tega sta bila za sofinanciranje izbrana 2 projekta (v vrednosti 77.365,50 EUR), 6 projektov pa je še v ocenjevanju. 6 projektov ni dobilo finančne podpore;

2) ARRS-ju smo poslali 10 projektnih prijav v okviru znanstveno-raziskovalnega sodelovanja z različnimi državami (45.000 EUR). Od tega je bilo 6 prijav uspešnih (1 s Srbijo, 2 z Bosno in Hercegovino, 1 z Italijo in 2 z Združenimi državami Amerike, skupna vrednost projektov je 19.000 EUR). Prijave z Japonsko, Argentino in Rusijo niso bile uspešne, prijava s Turčijo pa je še v ocenjevanju;

3) 13 projektov je bilo prijavljenih v različne programe nacionalnega financiranja (v skupni vrednosti 326.248,10 EUR), 12 od teh je bilo odobrenih (306.448,10 EUR), eden pa finančne podpore ni dobil;

4) 52 predlogov smo prijavili v različne mednarodne programe (Obzorje 2020, ForestValue Programme, COST, Interreg programi, Erasmus+ itd.; njihova skupna vrednost je 21.444.296,32 EUR). Do konca januarja 2019 je bilo uspešnih 13 projektov (1.067.520 EUR), 11 prijav pa je še v postopku ocenjevanja (12.427.651,32 EUR);

5) 4 projekte smo prijavili na druge mednarodne razpise (79.000 EUR), od teh je bil 1 uspešen (7.000 EUR), 3 projekti so še v ocenjevanju, eden od njih pa finančne podpore ni dobil.

Skupna višina sredstev za vseh **93 projektnih prijav** na nacionalne in mednarodne razpise v letih 2017 in 2018, na katere se je prijavil InnoRenew CoE, tako znaša 23.217.953,92 EUR. **V ocenjevanju je trenutno 20 projektnih prijav** v višini 13.016.651,32 EUR. Od 93 prijav je bilo 36 neuspešnih (8.725.969 EUR), **37 projektov pa je bilo uspešnih**; njihova skupna vrednost je 1.475.333,60 EUR.

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DISSEMINATION AND OUTREACH
NACIONALNE IN MEDNARODNE KONFERENCE

Participation at national and international conferences is of great importance for developing new ideas and approaches, for meeting and discussing with worldwide experts, and it certainly offers many networking and educational opportunities. Moreover, it is a place where we have the possibility to position our institute and employees.

All national and international conferences where InnoRenew CoE employees actively participated and presented on behalf of the InnoRenew CoE are listed in Table 3 and Table 4, respectively. InnoRenew CoE employees attended and presented at 22 national conferences and at 59 international conferences. We visited conferences around Europe, China, North and South America, South Africa, South Korea, and Japan.

Udeležba na nacionalnih in mednarodnih konferencah je zelo pomembna za razvoj novih idej in pristopov, za spoznavanje in razpravljanje s svetovnimi strokovnjaki in zagotovo ponuja številne možnosti za povezovanje in izobraževanje. Poleg tega nam konference omogočajo pozicioniranje našega inštituta in naših zaposlenih.

V tabeli 3 in tabeli 4 so prikazane vse nacionalne in mednarodne konference, ki so se jih udeležili zaposleni v InnoRenew CoE. V zadnjih dveh letih smo prisostvovali 22 nacionalnim in 59 mednarodnim konferencam. Poleg številnih konferenc v Evropi smo obiskali tudi konference na Kitajskem, v Severni in Južni Ameriki, Južni Koreji in na Japonskem.

Table 3 - Participation at national conferences
Tabela 3 - Udeležba na nacionalnih konferencah

	Name	Organizer	Location	Date	Who
		2017			
1	Retrace	Government Office for Development and European Cohesion Policy	Ljubljana, Slovenia	04/05/2017-05/05/2017	Andreja Kutnar
2	Forum Living with wood - SloWOODlife	SPIRIT Slovenia - Public Agency for Entrepreneurship, Internationalization, Foreign Investments and Technology	Ravne na Koroškem, Slovenia	22/6/2017	Andreja Kutnar
3	Health of the Working-age Population	University of Primorska, Faculty of Health Sciences and co-sponsored by InnoRenew CoE	Portorož, Slovenia	22/9/2017	Marko Posavčević
4	Woodmagic	Science for Life, European Researchers' Night, University of Primorska	Izola, Slovenia	29/9/2017	Marko Posavčević, Črtomir Tavzes
5	International conference and Investment forum in the field of creative and cultural industries	Technology Park Ljubljana	Ljubljana, Slovenia	4/10/2017	Barbara Rovere

Table 3 - Participation at national conferences (cont.)
Tabela 3 - Udeležba na nacionalnih konferencah (nad.)

	Name	Organizer	Location	Date	Who
		2017			
6	Wood icon 2017	SPIRIT Slovenia - Public Agency for Entrepreneurship, Internationalization, Foreign Investments and Technology	Ljubljana, Slovenia	18/10/2017	Jakub Sandak
7	Challenges in wood science	The Slovenian Wood Society, together with its partners	Ljubljana, Slovenia	9/11/2017	Barbara Rovere, Črtomir Tavzes
8	Opening of the creative center	Museum of Architecture and Design	Ljubljana, Slovenia	16/11/2017	Barbara Rovere
9	2nd International Design Talk	Faculty for Design	Ljubljana, Slovenia	5/12/2017	Barbara Rovere
10	Opportunities for the Slovenian R&I Stakeholders in the European Thematic S3 Partnerships and in Vanguard Initiative Trans-regional S3 Collaboration	Technology Park Ljubljana Ltd, Slovenian Ministry of Education, Science and Sport, Government Office for Development and European Cohesion Policy and Ministry of Economic Development and Technology	Ljubljana, Slovenia	12/12/2017	Črtomir Tavzes
		2018			
1	6th development day of the forestry and wood sector	Wood Association of Slovenia	Ljubljana Exhibition and Convention Centre	14/3/2018	Marica Mikuljan, Črtomir Tavzes
2	Knowledge transfer of wood high school students in economy	Celje fair	Celje, Slovenia	20/4/2018	Marica Mikuljan
3	Charm of Wood - the role of science in wood innovations	Cankarjev dom Ljubljana	Ljubljana, Slovenia	15/5/2018	Marica Mikuljan, Dean Lipovac, Lea Primožič, Václav Sebera, Miklós Krész, Ana Slavec, Jerneja Svanjak, Alijana Batič, Jan Weckendorf, Amy Simmons, Andreja Kutnar, Jure Pohleven, Kelly Peeters, Matthew John Schwarzkopf, Michael David Burnard
4	Charm of Wood - guidelines and innovations of wood coatings	Cankarjev dom Ljubljana	Ljubljana, Slovenia	16/5/2018	Marica Mikuljan, Andreja Kutnar, Dean Lipovac, Michael David Burnard

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Table 3 - Participation at national conferences (cont.)
Tabela 3 - Udeležba na nacionalnih konferencah (nad.)

	Name	Organizer	Location	Date	Who
		2018			
5	Forest and wood 2018, science for future	Wood Institute of Slovenia	Ljubljana, Slovenia	22/5/2018	Iztok Šušteršič
6	The potention of green technologies for sustainable future	Ministry of the Environment and Spatial Planning	Ljubljana, Slovenia	1/6/2018	Črtomir Tavzes
7	Industrial Forum IRT 2018	Industrial Forum IRT 2018	Portorož, Slovenia	4/6/2018-5/6/2018	Václav Sebera
8	Focus on Open Science: Time for Action	Central Technological Library	Ljubljana, Slovenia	11/9/2018	Ana Slavec
9	GreenTech Forum Slovenija 2018	Center for Energy Efficient Solutions - CER	Bled, Slovenia	12/9/2018	Iztok Šušteršič
10	World Hemp Congress	World Hemp Congress	Ljubljana, Slovenia	16/10/2018	Marica Mikuljan, Erwin M. Schau
11	Challenges in Wood 2018	Ministry of Economic Development and Technology of the Republic of Slovenia and Spirit Slovenia	Ljubljana, Slovenia	8/11/2018	Marica Mikuljan
12	Is the academic community in Slovenia inclusive	The Commission for Equal Opportunities in Science	Ljubljana, Slovenia	29/11/2018	Amy Simmons

Table 4 - Participation at international conferences
Tabela 4 - Udeležba na mednarodnih konferencah

	Name	Organizer	Location	Date	Who
		2017			
1	Kareila Symposium	University of Eastern Finland - Faculty of Science and Forestry	Finland	25/4/2017	Andreja Kutnar
2	S3PEnergy Sustainable Buildings Partnership meeting	Partnership of European regions sustainable buldings	Brussels, Belgium	17/5/2017	Andreja Kutnar
3	China-Israel Technology Transfer and Investment Conference	He Nan Productivity Promotion Center MaTRineX ACADEMY International & Strategy	Zhengzhou, China	25/5/2017	Matthew John Schwarzkopf
4	Danube region network of wood research centers	Eberswalde University for Sustainable Development	Eberswalde, Germany	1/6/2017	Matthew John Schwarzkopf
5	14th Wood Technology Conference	Croatian Wood Cluster	Opatija, Croatia	05/06/2017 - 06/06/2017	Marko Posavčević
6	The 2017 IUFRO All-Division 5 (Forest Products) Forest Sector Innovations for a Greener Future Conference	IUFRO Division 5 and the Faculty of Forestry at the University of British Columbia, FPInnovations, and the Society of Wood Science and Technology (60th International Convention)	Vancouver, Canada	12/06/2017-16/06/2017	Michael David Burnard, Andreja Kutnar, Matthew John Schwarzkopf, Marko Posavčević
7	COST Action FP1303 Performance of bio-based building materials Final conference	University of Zagreb	Zagreb, Croatia	7/9/2017	Andreja Kutnar, Anna Sandak
8	COST Action FP1407 3rd Conference: Wood modification research and applications	Department of Forest Products Technology & Timber Construction of Salzburg , University of Applied Sciences	Kuchl, Austria	14/09/2017 -15/09/2017	Andreja Kutnar, Mathew John Schwarzkopf, Michael David Burnard, Kelly Peeters, Jakub Sandak, Holger Militz, Callum Hill
9	International Panel Products Symposium	BioComposites Centre, Bangor University	Llandudno, Wales	4/10/2017	Matthew John Schwarzkopf
10	Nature-based solutions: from innovation to common-use	Estonian Ministry of the Environment and Tallinn University	Tallinn, Estonia	24/10/2017	Črtomir Tavzes
11	International Conference on Wood Adhesive	Forest Products Society	Atlanta, USA	25/10/2017-27/10/2017	Andreja Kutnar
12	The WIDENING CONFERENCE: Towards the Creation of a Widening Community	European Commission	Brussels, Belgium	8/11/2017	Andreja Kutnar
13	Teaming 1 Coordinators´ Day	Research Executive Agency	Brussels, Belgium	9/11/2017	Andreja Kutnar
14	Towards the long-term study of the native forests of Patagonia	Forestry Institute of Chile (INFOR)	Coyhaique, Chile	28/11/2017	Matthew John Schwarzkopf, Andreja Kutnar
15	Adriatic Wood Days	Croatian Wood Cluster	Dubrovnik, Croatia	4/12/2017-5/12/2017	Amy Simmons, Črtomir Tavzes, Ana Slavec, Jan Weckendorf, Georgios Bekas

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Table 4 - Participation at international conferences (cont.)
Tabela 4 - Udeležba na mednarodnih konferencah (nad.)

	Name	Organizer	Location	Date	Who
		2018			
1	COST Action FP1407 Understanding wood modification through an integrated scientific and environmental impact approach Core group meeting	COST Action FP1407	Aveiro, Portugal	8/2/2018	Michael David Burnard, Andreja Kutnar
2	COST Action CA16114 REthinking Sustainability TOwards a Regenerative Economy	COST Action CA16114	Budapest, Hungary	12/2/2018-14/2/2018	Michael David Burnard
3	Chemcys	Royal Flemish Chemical Society	Blankenberge, Belgium	21/2/2018-23/2/2018	Kelly Peeters
4	COST Action FP1407 Understanding wood modification through an integrated scientific and environmental impact approach Workshop	COST Action FP1407	Florance, Italy	26/2/2018	Michael David Burnard, Andreja Kutnar
5	Small samples conference	Utrecht University	Utrecht, Netherlands	5/3/2018-8/3/2018	Ana Slavec
6	COST Action CA16215 European Network for the Promotion of PORTable, Affordable and Simple Analytical Platforms	COST Action CA16215	Porto, Portugal	7/3/2018-9/3/2018	Jakub Sandak
7	COST Action FP1402 Basis of Structural Timber Design	Aalto University	Helsinki, Finland	14/3/2018-17/3/2018	Iztok Šušteršič
8	International Mass Timber conference	Oregon Convention Center	Portland, USA	20/3/2018-22/3/2018	Iztok Šušteršič
9	International Reserach Group on Wood Protection conferece	South African Wood Preservers Association (SAWPA)	Johannesburg, SA	29/4/2018-3/5/2018	Kelly Peeters
10	UNIDO Circular Economy in Tourism: South East Europe conference	Grand Hotel Union	Ljubljana, Slovenia	8/5/2018	Michael David Burnard
11	International Statistical Conference in Croatia (ISCCRO'18)	Croatian Statistical Association (CSA)	Opatija, Croatia	10/5/2018-11/5/2018	Ana Slavec
12	3rd International EPNOE Junior Scientists Meeting: Advances in Fundamental and Applied Polysaccharide Research	University of Maribor	Maribor, Slovenia	15/5/2018	Črtomir Tavzes

Table 4 - Participation at international conferences (cont.)
Tabela 4 - Udeležba na mednarodnih konferencah (nad.)

	Name	Organizer	Location	Date	Who
13	Symposium Perspectives in Renewables	BOKU-University of Natural Resources and Life Sciences Vienna, Department for Material Sciences and Process Engineering, Institute of Wood Technology and Renewable Materials, Wood K plus - Kompetenzzentrum Holz GmbH Competence Centre for Wood Composites and Wood Chemistry	Tulln, Austria	4/6/2018-5/6/2018	Iztok Šušteršič
14	Wood Technology Conference	Croatian Wooden Cluster	Opatija, Croatia	5/6/2018-6/6/2018	David B. De Vallance, Črtomir Tavzes, Marica Mikuljan
15	EUCNC18	IEEE ComSoc and EURASIP, and financially supported by the European Commission	Ljubljana, Slovenia	21/6/2018	Michael David Burnard
16	10th Professional Conference: People, Wood, Furniture 2018	INTERFOB	Banja Luka, Bosnia and Herzegovina	28/6/2018-30/6/2018	Črtomir Tavzes
17	WIRE 2018, Smart Choices for innovative regional ecosystems. The Power of Connectivity, Entrepreneurship and Science & Research	Tiroler Zukunftsstiftung – Standortagentur Tirol, in the context of Austria's EU presidency in cooperation with BMBWF Federal Ministry of Education, Science and Research and cofunded by the European Commission DG Research and Innovation (Horizon 2020 Spreading Excellence and Widening Participation)	Innsbruck, Austria	4/7/2018-6/7/2018	Andreja Kutnar
18	Euroscience Open Forum ESOF 2018	EuroScience	Toulouse, France	10/7/2018-13/7/2018	Ana Slavec
19	World Conference on Timber Engineering WCTE2018	National Institute of Forest Science(NIFoS)	Seoul, Korea	20/8/2018-23/8/2018	Václav Sebera, Iztok Šušteršič, Barbara Rovere
20	Practice and Theory of Automated Timetabling PATAT2018	TU Wien (TUW) Technical University Vienna	Vienna, Austria	26/8/2018-2/9/2018	Balázs Dávid
21	International Conference on Industrial Internet of Things and Smart Manufacturing	IOTSM	London, UK	4/9/2018-6/9/2018	Črtomir Tavzes
22	Federated Conference on Computer Science and Information Systems - WCO 2018		Poznan, Poland	8/9/2018-13/9/2018	László Hajdu
23	European Conference on Wood Modification ECWM9	COST Action FP1407	Arnhem, Netherlands	17/9/2018-18/9/2018	Kelly Peeters, Dean Lipovac
24	Policy forum on Bioeconomy Masterplan for Danube Region	Ministry of Education, Science and Sport	Ljubljana, Slovenia	25/9/2018	Laetitia Marrot, Marica Mikuljan

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Table 4 - Participation at international conferences (cont.)
Tabela 4 - Udeležba na mednarodnih konferencah (nad.)

	Name	Organizer	Location	Date	Who
25	17th International Conference on Operations Researh KOI 2018	Croatian Operational Research Society	Zadar, Croatia	26/9/2018-28/9/2018	Miklós Krész, László Hajdu
26	International Forest Products Congress ORENKO 2018	Karadeniz Technical University	Trabzon, Turkey	25/9/2018-28/9/2018	Andreja Kutnar, Jakub Sandak
27	13th Conference on Advanced Building Skins	Advanced Building Skins GmbH	Bern, Switzerland	1/10/2018-2/10/2018	Eva Prelovšek Niemela, Aarne Niemela
28	COST Action CA16226 Indoor living space improvement: Smart Habitat for the Elderly	COST Action CA16226	Riga, Latvia	9/10/2018-11/10/2018	Dean Lipovac, Michael David Burnard, Anna Sandak
29	Information Society 2018	Jožef Stefan Institute	Ljubljana, Slovenia	11/10/2018	Miklós Krész
30	8th International Hemp Building Symposium	International Hemp Building Association	Brussels, Belgium	15/10/2018-17/10/2018	Laetitia Marrot
31	World Hemp Congress 2018	Association of Herbs from Pomurje	Ljubljana, Slovenia	16/10/2018	Marica Mikuljan, Erwin M. Schau
32	8th Hardwood Conference	University of Sopron and the BOKU University	Sopron, Hungary	24/10/2018-26/10/2018	Václav Sebera, Jaka Pečnik, Barbara Rovere, Andreja Kutnar
33	International Data Week	Gaborone International Convention Centre	Gaborone, Botswana	3/11/2018-10/11/2018	Ana Slavec
34	SWST International Convention	Society of Wood Science and Technology	Nagoya, Japan	5/11/2018-9/11/2018	Jakub Sandak, Anna Sandak, Matthew John Schwarzkopf, Andreja Kutnar, Michael David Burnard, Eva Prelovšek Niemela, Aarne Niemela
35	FTP Conference 2018 - Vision 2040: The future role of the forest bioeconomy in Europe	Federal Austrian Ministry of Sustainability and Tourism	Vienna, Austria	19/11/2018 - 20/11/2018	Črtomir Tavzes
36	COST Action TU1403 Adaptive Facade Network	COST Action TU1403	Lucerne, Switzerland	25/11/2018-28/11/2018	Anna Sandak
37	Wood Interiors conference	Norwegian Institute of Wood Technology	Oslo, Norway	28/11/2018	Michael David Burnard
38	Adriatic Wood Days	Croatian Wood Cluster	Dubrovnik, Croatia	3/12/2018-4/12/2018	Črtomir Tavzes
39	ICT 2018	European Commission	Vienna, Austria	3/12/2018-5/12/2018	Michael Mrissa
40	24th International wood Construction Conferemce 2018	Aalto University, Berner Fachhochschule, Technische Hochschule, Technische Universität Wien, Technische Universität München, University of Northern British Columbia	Garmisch Partenkirchen, Germany	4/12/2018-7/12/2018	Iztok Šušteršič

Table 4 - Participation at international conferences (cont.)
Tabela 4 - Udeležba na mednarodnih konferencah (nad.)

	Name	Organizer	Location	Date	Who
41	International Conference of Wood Science and Technology ICWST 2018	Faculty of Forestry, University of Zagreb	Zagreb, Croatia	5/12/2018-8/12/2018	David B. De Vallance
42	8th VOCAL Optimization Conference: Advanced Algorithms	Pázmány Péter Catholic University and Hungarian Operations Research Society	Esztergom, Hungary	10/12/2018-13/12/2018	Miklós Krész
43	World Open Innovation Conference 2018	UC Berkeley	San Francisco, USA	12/12/2018-17/12/2018	Barbara Rovere
44	COST Action FP1407 Final conference	Faculty of Forestry, University of Belgrade, COST Action FP1407	Belgrade, Serbia	12/12/2018-13/12/2018	Andreja Kutnar, Matthew John Schwarzkopf, Michael David Burnard, Amy Simmons, Anna Sandak, Václav Sebera, Jaka Pečnik, Laetitia Marrot, Lea Primožič, Dean Lipovac, Kelly Peeters, Črtormir Tavzes, David B. DeVallance, Elizabeth Dickinson
		2019			
1	Connected Smart Cities Conference 2019	Open & Agile Smart Cities	Brussels, Belgium	17/1/2019	Iztok Šušteršič
2	CONTEXT Conference	COST Action CA17107 European Network to connect research and innovation efforts on advanced Smart Textiles	Barcelona, Spain	29/1/2019-31/1/2019	Laetitia Marrot

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Our Director Dr Andreja Kutnar and Dr Matthew John Schwarzkopf at the conference Towards the long-term study of the native forests of Patagonia in Chile.

Naša direktorica dr. Andreja Kutnar in dr. Matthew John Schwarzkopf na konferenci v Čilu (Towards the long-term study of the native forests of Patagonia).

Dr Andreja Kutnar and Dr Matthew Schwarzkopf at the Conference in Chile / dr. Andreja Kutnar in dr. Matthew Schwarzkopf na konferenci v Čilu

Dr Matthew John Schwarzkopf: "It was a great opportunity to meet and discuss with land owners, forest workers, government bodies, and researchers from all around the globe."

Dr. Matthew John Schwarzkopf: "Bila je odlična priložnost za srečanje in razpravo z lastniki zemljišč, gozdarji, vladnimi organi in raziskovalci s celega sveta."

Many of our researchers flew to Nagoya in Japan to attend the 61st SWST International Convention, where they presented our institute and our research to the numerous participants.

Veliko naših raziskovalcev se je udeležilo 61. konference Društva znanosti o lesu in tehnologiji (SWST), ki je leta 2018 potekala v japonskem mestu Nagoja, in predstavilo naš raziskovalni inštitut.

InnoRenew CoE researchers in Japan, November 2018 / InnoRenew CoE razikovalci na Japonskem, november 2018

Dr Anna Sandak: "It was a great chance to be updated regarding the newest research with broad topics from timber engineering, wood chemistry, and biorefinery to the role of wood in human health and well-being. Besides great networking opportunities, I had a chance to visit the world-class laboratory of prof. Tsuchikawa and team and discuss recent advancement of spectroscopy and hyperspectral imaging in wood research."

Dr. Anna Sandak: »To je bila odlična priložnost za seznanjanje z najnovejšimi raziskavami na različne teme, od gradnje z lesom, kemije lesa in biorafinerij do vloge lesa pri zdravju in dobrem počutju ljudi. Poleg velikih možnosti za mreženje sem imela tudi priložnost obiskati laboratorij profesorja Tsuchikawa in razpravljati o nedavnem napredku spektroskopije in hiperspektralnega slikanja v raziskavah lesa."

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The 8th Hardwood Conference in Hungary, October 2018 / Konferenca o listavcih na Madžarskem, oktober, 2018

Jaka Pečnik: "The Hardwood conference in Sopron was a great opportunity for me to meet new people working in wood science as well as colleagues I met abroad. By attending this conference, I was able to see some of the latest research topics. I think this is always welcome and helpful in developing future projects."

Jaka Pečnik: »Konferenca o listavcih v Sopronu je bila odlična priložnost, da sem spoznal nove ljudi, ki delajo na področju lesarstva, ter kolege, ki sem jih v tujini že srečal. Z udeležbo na tej konferenci sem lahko pobliže spoznal nekaj najnovejših raziskovalnih tem. Menim, da je to vedno dobrodošlo in koristno pri razvoju prihodnjih projektov. «

Dr Ana Slavec, researcher and consulting statistician, attended the 8th Conference of Slovenian Consortia for International Scientific Literature, titled "Focus on Open Science" that took place in Ljubljana.

Dr. Ana Slavec, raziskovalka in svetovalka za statistiko, se je v Ljubljani udeležila 8. konference slovenskih nabavnih konzorcijev mednarodne znanstvene literature, ki so jo poimenovali Pogled na odprto znanost.

Dr Ana Slavec: "Open access is important for the autonomy of independent and smaller research institutes."

Dr. Ana Slavec: »Odprti dostop je pomemben za samostojnost manjših in neodvisnih raziskovalnih inštitutov.«

In the last two years, the InnoRenew CoE successfully proposed organization of the following two international conferences:

- Society of Wood Science and Technology annual conference in 2020 in Portorož, Slovenia
- NIR Italia in 2020 in Koper, Slovenia

V zadnjih dveh letih smo bili v InnoRenew CoE uspešni pri pridobivanju novih mednarodnih konferenc. Organizirali bomo:

- letno konferenco Društva znanosti o lesu in tehnologiji SWST 2020 v Portorožu,
- NIR Italija 2020 v Kopru.

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INTERNATIONAL EVENTS ORGANIZED BY THE INNORENEW COE AND AWARDS

ORGANIZIRANI MEDNARODNI DOGODKI IN NAGRADE

With the organization of international events, we want to bring together people from different areas of expertise and different parts of the world to discuss and share knowledge. Besides the educational and networking purpose, it is important for building and raising the brand awareness of InnoRenew CoE.

Therefore, in the last two years, we organized and co-organized 23 international events: 7 workshops, 2 exhibitions, 11 meetings, and 3 special events, including the celebration of our first anniversary (table 5).

In Izola, we organized three Living Lab events. At one of the them, we hosted two international facilitators, Dr Lyndall Bull, a globally recognized expert in innovation from Australia, and Dr Eric Hansen, a global expert at the InnoRenew CoE in the field of innovation and marketing from the USA. The two organized workshops on topics of creativity in the Slovenian furniture and furniture design industry and the topic of innovation in the Slovenian wood sector. Both were attended by over 50 participants with different backgrounds, including design, architecture, and research, and hailing from different countries, which made the experience even more unique.

Z organizacijo mednarodnih dogodkov želimo na enem mestu združiti ljudi z različnih področij in delov sveta, da bi lahko skupaj razpravljali in si delili znanja. Poleg izobraževanja in mreženja nam ti dogodki ponujajo tudi odlično priložnost za gradnjo in krepitev prepoznavnosti našega raziskovalnega inštituta.

V zadnjih dveh letih smo organizirali in soorganizirali 23 mednarodnih dogodkov – 7 delavnic, 2 razstavi, 11 srečanj in 3 posebne prireditve, kot je bilo na primer praznovanje naše prve obletnice (tabela 5).

V Izoli smo organizirali 3 dogodke Živega laboratorija. Na enem izmed teh smo gostili 2 mednarodno priznana moderatorja – dr. Lyndall Bull iz Avstralije, svetovno priznano strokovnjakinjo s področja inovacij, in dr. Erica Hansena iz ZDA, svetovnega strokovnjaka s področja inovacij in trženja v InnoRenew CoE. Delavnici sta pokrivali tematiko slovenske pohištvene industrije in inovacij v slovenskem gozdno-lesnem sektorju ter privabili v Izolo več kot 50 udeležencev z različnih področij, od oblikovalcev pa do arhitektov in raziskovalcev, in z različnih koncev sveta.

Dr Jure Pohleven: "These workshops provided an opportunity for people from different specialties to interact and expand their networks."

Dr. Jure Pohleven »Te delavnice so bile dobra priložnost za spoznavanje in povezovanje z ljudmi z različnih področij.«

Table 5 - International events organized by the InnoRenew CoE
Tabela 5 - Organizirani mednarodni dogodki

	Event name	Date	Location
	2017		
1	InnovaWood interactive workshop	18/5/2017 - 19/5/2017	Koper, Slovenia
2	Charm of Wood	19/5/2017	Koper, Slovenia
3	Teaming club meeting	1/6/2017	Koper, Slovenia
4	InnoRenew CoE Project Partner start-up meeting	12/9/2017	Livade, Slovenia
5	Living Lab InnoRenew workshop	13/9/2017	Livade, Slovenia
6	Living Lab InnoRenew (focus group): Collaboration in manufactured home companies	10/10/2017	Koper, Slovenia
7	Living Lab InnoRenew: Fostering creativity in the Slovenian furniture and furniture design industry	11/10/2017	Livade, Slovenia
8	Living Lab InnoRenew: Identifying opportunities for innovation in the Slovenian wood sector	12/10/2017	Livade, Slovenia
	2018		
1	1st InnoRenew CoE Anniversary	15/2/2018	Koper, Slovenia
2	NCP Wide.net Project	27/2/2018	Koper, Slovenia
3	InnoRenew Project Partner meeting	6/3/2018 - 7/3/2018	Koper, Slovenia
4	Meeting with administrative units	15/3/2018	Koper, Slovenia
5	Euroaxess	16/3/2018	Koper, Slovenia
6	InnovaWood meeting	28/3/2018	Koper, Slovenia
7	Charm of Wood (scientific conference): The role of science in wood innovations	15/05/2018	Ljubljana, Slovenia
8	InnoRenew Project Partner meeting	6/6/2018	Ljubljana, Slovenia
9	COST Action CA16114 REthinking Sustainability TOwards a Regenerative Economy meeting	13/6/2018 - 14/6/2018	Koper, Slovenia
10	Charm of Wood	18/7/2018	Koper, Slovenia
11	4th InnoRenew CoE Council of Experts meeting	6/9/2018 - 7/9/2018	Koper, Slovenia
12	European Commission first periodic review	11/9/2018 - 12/9/2018	Koper, Slovenia
13	InnoRenew Project Partner meeting	2/10/2018	Koper, Slovenia
14	Living Lab InnoRenew Workshop: Securing EU funding for innovative SMEs	28/11/2018	Koper, Slovenia
15	ERC workshop	10/12/2018	Koper, Slovenia
	2019		
1	BSA students visit	17/1/2019	Koper, Slovenia
2	COST Action FP1407 workshop	4/2/2019 - 5/2/2019	Koper, Slovenia
3	2nd InnoRenew CoE Anniversary	15/2/2019	Koper, Slovenia

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Living Lab InnoRenew workshop in Izola, October 2017 / Delavnica Živega laboratorija InnoRenew v Izoli, oktober 2017

The InnoRenew CoE team, December 2018 / Ekipa InnoRenew CoE, december 2018

Moreover, we made it official, and we signed the contract with the Municipality of Izola and the University of Primorska that the InnoRenew CoE's new home will be on the Livade Kampus in Izola.

Z Občino Izola in z Univerzo na Primorskem smo podpisali pogodbo za naš novi »dom« v univerzitetnem kampusu Livade, v Izoli.

Aleksej Skok, Dr Andreja Kutnar, Dr Dragan Marušič and Marko Starman receiving the building permit for our new building in Izola / Aleksej Skok, dr. Andreja Kutnar, dr. Dragan Marušič in Marko Starman ob prevzemu gradbenega dovoljenja za našo novo stavbo v Izoli

We also collaborated and co-organized the moving part of the exhibition Charm of Wood, which we placed at the premises of the University of Primorska. Last year the exhibition celebrated its 10th anniversary. After the official opening of the event, where we hosted the Director General of the Wood Industry at the Ministry of Economic Development and Technology, Jože Prikeržnik, the rector of the University of Primorska, Dr Dragan Marušič, and the main organizer of the exhibition and the president of the Association for the Protection of Wood of Slovenia, Dr Franc Pohleven, more than 50 visitors had the opportunity to admire the exhibition products and to discuss with representatives of the companies presenting at the exhibition.

Sodelovali smo in bili soorganizatorji tudi pri potujočem delu razstave Čar lesa 2018, ki je bila na ogled v prostorih Univerze na Primorskem. Lansko leto je razstava praznovala že 10. obletnico. Po uradnem odprtju razstave, pri kateri so sodelovali generalni direktor Direktorata za lesarstvo na Ministrstvu za gospodarski razvoj in tehnologijo Jože Prikeržnik, rektor Univerze na Primorskem dr. Dragan Marušič in glavni organizator razstave ter predsednik Društva za zaščito lesa Slovenije prof. dr. Franci Pohleven, so vsi obiskovalci – bilo jih je več kot 50 – imeli priložnost, da spregovorijo tudi z nekaterimi predstavniki podjetij, ki so na razstavi sodelovali s svojimi izdelki.

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Official opening of the moving part of the exhibition Charm of Wood 2018 in Koper / Uradno odprtje potujočega dela razstave Čar lesa 2018 v Kopru

We attended and actively participated at the event Living with wood – SloWOODlife. Several of our researchers had presentations at the event on different perspectives about REED and biophilic design. Their topics and contributions are also published in the magazine Energy efficient house – Wood 5.0 Construction. Architecture. Design.

Udeležili smo se foruma Bivanje z lesom – SloWoodLife, na katerem so številni raziskovalci InnoRenew CoE predstavili različne poglede in perspektive o REED in o biofiličnem dizajnu. Njihovi prispevki so tudi objavljeni v reviji Varčna hiša – Les 5.0 Gradnja. Arhitektura. Dizajn.

Nastja Podrekar: "SloWOODlife was a great opportunity to communicate and share experiences with the experts. The speakers told of a wide range of topics. However, our common research interests connected them all. My presentation topic on the SloWOODlife forum was 'Promoting active work and active lifestyle in a built environment'. The forum was very well organized and worth a recommendation to more experts and researchers working in the field of wood, design, and other similar fields."

Nastja Podrekar at the Living with wood - SloWoodLife event in Škocjanski zatok / Nastja Podrekar na dogodku Bivanje z lesom - SloWoodLife v Škocjanskem zatoku

Nastja Podrekar: »SloWoodLife je bila odlična priložnost za komuniciranje in izmenjavo izkušenj s strokovnjaki. Govorniki so obravnavali številne teme, naši skupni raziskovalni interesi pa so jih vse povezali med seboj. Moja predstavitev na forumu SloWoodLife je bila »Spodbujanje aktivnega dela in aktivnega življenjskega sloga v grajenem okolju«. Forum je bil zelo dobro organiziran in vreden priporočila vsem strokovnjakom in raziskovalcem s področja znanosti o lesu, oblikovanja in drugih podobnih področij. «

On 11th and 12th September 2018, we hosted representatives from the European Commission for the first periodic review of the InnoRenew CoE. We discussed with representatives of the European Commission, Agnes Hegyvarine Nagy, Dr. Peder Gjerdrum, and Dr. Bruno Andersons, about our objectives, the work of our consortium, and progression according to the work plan about our work packages.

11. in 12. septembra 2018 smo gostili predstavnike Evropske komisije, ki so opravili prvi redni pregled dela InnoRenew CoE. S predstavniki Evropske Komisije – Agnes Hegyvarine Nagy, Pedrom Gjerdrumom in Brunom Andersonsom – smo razpravljali o ciljih inštituta, o delu konzorcija ter o napredku delovnih sklopov glede na naš delovni načrt.

Dr Andreja Kutnar: "We are looking forward to embracing all the feedback and guidelines we received from the European Commission."

Dr. Andreja Kutnar: »Pridobili smo koristne predloge in smernice za nadaljnji razvoj našega raziskovalnega inštituta.«

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InnoRenew CoE employees with partners and representatives of the European Commission at the periodic review / Zaposleni InnoRenew CoE s partnerji in s predstavniki Evropske komisije na rednem pregledu dela

In the last two years, some of our employees received important awards that recognize the quality and importance of their work.

Director Dr Andreja Kutnar received the Zois award for important scientific achievements in the field of wood science. This is an important certificate and award for researchers with high achievements in the field of science, research, and development. The winners are those researchers who permanently contribute to the development of science and research in the Republic of Slovenia.

Nekateri naši zaposleni so prejeli pomembne nagrade, ki dokazujejo kakovost in pomembnost njihovega dela.

Direktorica dr. Andreja Kutnar je prejela Zoisovo priznanje za pomembne znanstvene dosežke na področju lesarstva. To je najvišje državno priznanje, ki se ga podeli za pomembne dosežke na področju znanstveno-raziskovalne in razvojne dejavnosti. Nagrajenci so tisti raziskovalci, ki s svojimi dosežki trajno prispevajo k razvoju znanosti in raziskovanja v Sloveniji.

Dr Andreja Kutnar receiving the Zois award for important scientific achievements in the field of wood science / dr. Andreja Kutnar prejela Zoisovo priznanje za pomembne znanstvene dosežke na področju lesarstva

Dr Andreja Kutnar: "I am honored to receive this award and happy to see that my passion for wood is being shared with the wider society."

Dr. Andreja Kutnar: "»Počaščena sem, da sem prejela to nagrado, in z velikim veseljem ugotavljam, da tudi širša družba z mano deli strast do lesa.«

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Nataša Škorja Djikanović from the accounting department received the Rector's Award for successful work / Nataša Škorja Djikanović iz računovodskega oddelka prejela Rektorjevo nagrado za uspešno delo

Nataša Škorja Djikanović, who handles the accounting and financial tasks at the InnoRenew CoE, received the Rector's Award for her successful work, organization, and leadership of the financial and accounting department at the Faculty of Mathematics, Natural Sciences and Information Technologies at the University of Primorska.

Researcher Dr Kelly Peeters was one of the awardees of the International Research Group on Wood Protection (IRG) Ron Cockcroft Award for 2018, which enabled her to attend the 2018 IRG conference in Johannesburg, South Afrika.

Nataša Škorja Djikanović, ki skrbi za računovodski oddelek v InnoRenew CoE, je prejela Rektorjevo nagrado za uspešno delo, organiziranje in vodenje finančno računovodske službe na Fakulteti za matematiko, naravoslovje in informacijske tehnologije.

Raziskovalka dr. Kelly Peeters je bila ena izmed prejemnic nagrade Ron Cockcrof Award 2018, ki ji je omogočila udeležbo na mednarodni raziskovalni konferenci o zaščiti lesa – The International Research Group on Wood Protection (IRG) v Johannesburgu.

Dr Kelly Peeters: "I was very happy to receive the award and visit the IRG conference since it was a good opportunity for presenting my work and exchange ideas and information. It helped me to build up a network and gain new insight into the research of wood protection. Since I am an early stage researcher and very open for new information and ideas, this was especially valuable for my future work and contribution to the research on wood protection and durability."

Dr. Kelly Peeters: "Zelo sem bila vesela nagrade in obiska konference IRG, saj je bila to dobra priložnost za predstavitev mojega dela in izmenjavo idej in informacij. Pomagalo mi je zgraditi mrežo in pridobiti nov vpogled v raziskave o zaščiti lesa. Ker sem raziskovalka na začetku svoje kariere in ker sem odprta za nove informacije in ideje, je bila ta konferenca še posebej dragocena za moje nadaljnjo delo in prispevek k raziskavam o zaščiti lesa in trajnosti. "

In 2019, research assistant Dean Lipovac will attend the IRG conference in Canada as he is one of the awardees of the Ron Cockcroft Awards for 2019.

Raziskovalni asistent Dean Lipovac se bo v letu 2019 udeležil IRG konference v Kanadi, saj je eden izmed prejemnikov nagrade Ron Cockcroft Award 2019.

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VISITORS / OBISKOVALCI

InnoRenew CoE hosted 117 international visitors from 35 countries, including multiple European countries, Australia, USA, Argentina, Japan, South Africa, New Zealand, Iran, India, and Ghana. The visitors were diverse in their areas of expertise, coming from R&D institutions as well as industry. Hosting visitors ensures that we are well integrated within the international environment and enhances InnoRenew CoE's internationality and interdisciplinarity. We support mobility, knowledge exchange, and collaboration.

Z gostovanjem številnih obiskovalcev z različnih strokovnih področij zagotavljamo trdno vpetost v mednarodno okolje ter podpiramo internacionalnost in interdisciplinarnost.

InnoRenew CoE je gostil 117 mednarodnih obiskovalcev iz številnih evropskih držav pa tudi iz Avstralije, ZDA, Argentine, Japonske, Južne Afrike, Nove Zelandije, Irana, Indije in Gane, skupno kar iz 35 držav. Obiskovalci prihajajo iz raziskovalno-razvojnih ustanov in iz podjetij.

	Name and last name	Affiliation	Country
		2017	
1	Lyndall Bull	Forestry Tasmania	Australia
2	Eric Hansen	Oregon State University	United States of America
3	Pablo Peri	CONICET	Argentina
4	Guillermo Martínez Pastur	CADIC CONICET	Argentina
5	Erland Nybakk	BI Norwegian Business School	Norway
6	Patrick Pammer	WoodKPlus	Austria
7	Callum Hill	JCH Industrial Ecology Ltd	United Kingdom
8	Reza Malekian	University of Pretoria	South Africa
9	Eva Haviavora	Purdue University	United States of America
10	Henry Quesada-Pineda	Virgina Tech	United States of America
11	Jan Weckendorf	/	Germany
12	Lauri Rautkari	Aalto University	Finland
13	Georgios Bekas	/	Greece
14	Miklos Kresz	University of Szeged	Hungary
15	Vaclav Sebera	Mendel University	Czech Republic
16	Jan Tippner	Mendel University	Czech Republic
17	Victoria Herian	SWST	United States of America
18	Dennis Jones	Self employeed	United Kingdom
19	Callum Hill	JCH	United Kingdom
20	Guillermo Martínez Pastur	Cadic	Argentina
21	Yamina Micaela Rosas	Cadic	Argentina
22	Rosie Sargent	SCION	New Zealand
23	Wim Willems	FirmoLin Technologies BV	Neatherlands
24	Edo Kegel	FirmoLin Technologies BV	Neatherlands
25	Dick Sandberg	Lulea University	Sweden
26	Jens Geissmann-Fuchs	WKI	Germany

	Name and last name	Affiliation	Country
27	Marco Wolf	WKI	Germany
28	Bohumil Kasal	WKI	Germany
29	Holger Militz	Faculty of Forest Sciences and Forest Ecology at Georg-August-Universität Göttingen	Germany
30	Yosuke Matsuda	Forestry and Forest Products Research Institute, Department of Wood properties and processing	Japan
31	Yukari Matsumura	Forestry and Forest Products Research Institute, Department of Wood properties and processing	Japan
32	Masahiko Nakazawa	Forestry and Forest Products Research Institute, Department of Forest Engineering	Japan
33	Lyndall Bull	Forestry Tasmania	Australia
34	Eric Hansen	Oregon State University	United States of America
35	Duncan Mayes	StoraEnso	Finland
36	Peter Niemz	University of Applied Science Biel	Swizerland
37	Ritva Toivonen	University of Helsinki	Finland
38	Mariapaola Riggio	Oregon State University	United States of America
39	Jiří Kunecký	University in Prauge	Czech Republic
40	Marta Petrillo	IVALSA	Italy
41	Jan Tippner	Mendel Univeristy in Brno	Czech Republic
		2018	
1	Lothar Clauder	Eberswalde University for Sustainable Development	Germany
2	Marek Wojcik	Beskidzkie Fabryki Mebli Sp. z o. o.	Poland
3	Dennis Jones	Self employeed	United Kingdom
4	Dick Sandberg	Lulea University	Sweden
5	David Robert Fell	FPInnovations	Canada
6	Anders Nyurd	NMBU - Norweigan University of Life Sciences	Norway
7	Dick Sandberg	Lulea University	Sweden
8	Uwe Kies	InnovaWood	Belgium
9	Andreas Kleinschmit von Lengefeld	FCBA	France
10	Edo Kegel	FirmoLin Technologies BV	Neatherlands
11	Barnes Owusu	/	Ghana
12	Dick Sandberg	Lulea University	Sweden
13	Erwin Schau	/	Italy
14	Manfred Dunky	Kronospan	Austria
15	Callum Hill	JCH Industrial Ecology Ltd	United Kingdom
16	Benedikt Neyses	Lulea University	Sweden
17	Trevor Stuthridge	The University of British Columbia | Vancouver Campus	Canada
18	Callum Hill	JCH Industrial Ecology Ltd	United Kingdom
19	Carlo Battisti	COST RESTORE	Italy
20	Dorin Beu	COST RESTORE	Romania
21	Clarice Bleil De Souza	COST RESTORE	United Kingdom
22	Jelena Bleiziffer	COST RESTORE	Croatia
23	Martin Brown	COST RESTORE	United Kingdom

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	Name and last name	Affiliation	Country
24	Dario Cottafava	COST RESTORE	Italy
25	Carsten K. Druhmann	COST RESTORE	Switzerland
26	Kiril Gramatikov	COST RESTORE	fYR Macedonia
27	Edeltraud Haselsteiner	COST RESTORE	Austria
28	Mihaela Hărmănescu	COST RESTORE	Romania
29	Odysseas Kontovourkis	COST RESTORE	Cyprus
30	Ari-Pekka Lassila	COST RESTORE	Finland
31	Miljan Mikic	COST RESTORE	United Kingdom
32	Emanuele Naboni	COST RESTORE	Denmark
33	Suvi Nenonen	COST RESTORE	Finland
34	Oget Nevin Cocen	COST RESTORE	Greece
35	Giulia Peretti	COST RESTORE	Germany
36	Indra Purs	COST RESTORE	Latvia
37	Themistoklis Tsalkatidis	COST RESTORE	Norway
38	Blerta Vula	COST RESTORE	Kosovo (under UNSCR 1244/99)
39	Iva Kovacic	COST RESTORE	Austria
40	Vít Dočkal	Czech Technical University in Prague	Czech Republic
41	Petr Šamánek	Czech Technical University in Prague	Czech Republic
42	Eva Doležalová	Czech Technical University in Prague	Czech Republic
43	Eva Troppová	Czech Technical University in Prague	Czech Republic
44	David Robert Fell	FPInnovations	Canada
45	Veerapandian Ponnuchamy	/	India/France
46	Patrick Pammer	WoodKPlus	Austria
47	Goran Milić	University of Belgrade Faculty of Forestry Department of technology, management and design of furniture and wood products	Serbia
48	Giacomo Goli	University of FLorencxe	Italy
49	Scott Leavengood	Oregon State University	United States of America
50	Nafiseh Janatian	/	Belgium (Iran)
51	Carmen Cristescu	/	Sweeden
52	Laetitia Marrot	/	France
53	Viktor Hristovski	Institute of Earthquake Engineering and Engineering Seismology	FYR Macedonia
54	Holger Militz	Faculty of Forest Sciences and Forest Ecology at Georg-August-Universität Göttingen	Germany
55	Wolfgang Kantner	Metadynea	Austria
56	Kerstin Wallisch	Metadynea	Austria
57	Milan Vatovec	Simpson Gumpertz & Heger, Inc.	United States of America
58	Ritva Toivonen	University of Helsinki	Finland
59	Mariapaola Riggio	Oregon State University	United States of America
60	Peter Niemz	University of Applied Science Biel	Swizerland
61	Duncan Mayes	StoraEnso	Finland
62	Holger Militz	Faculty of Forest Sciences and Forest Ecology at Georg-August-Universität Göttingen	Germany
63	Bohumil Kasal	WKI	Germany

	Name and last name	Affiliation	Country
43	Eva Troppová	Czech Technical University in Prague	Czech Republic
44	David Robert Fell	FPInnovations	Canada
45	Veerapandian Ponnuchamy	/	India/France
46	Patrick Pammer	WoodKPlus	Austria
47	Goran Milić	University of Belgrade Faculty of Forestry Department of technology, management and design of furniture and wood products	Serbia
48	Giacomo Goli	University of FLorencxe	Italy
49	Scott Leavengood	Oregon State University	United States of America
50	Nafiseh Janatian	/	Belgium (Iran)
51	Carmen Cristescu	/	Sweeden
52	Laetitia Marrot	/	France
53	Viktor Hristovski	Institute of Earthquake Engineering and Engineering Seismology	FYR Macedonia
54	Holger Militz	Faculty of Forest Sciences and Forest Ecology at Georg-August-Universität Göttingen	Germany
55	Wolfgang Kantner	Metadynea	Austria
56	Kerstin Wallisch	Metadynea	Austria
57	Milan Vatovec	Simpson Gumpertz & Heger, Inc.	United States of America
58	Ritva Toivonen	University of Helsinki	Finland
59	Mariapaola Riggio	Oregon State University	United States of America
60	Peter Niemz	University of Applied Science Biel	Swizerland
61	Duncan Mayes	StoraEnso	Finland
62	Holger Militz	Faculty of Forest Sciences and Forest Ecology at Georg-August-Universität Göttingen	Germany
64	Jens Geissmann-Fuchs	WKI	Germany
65	Peder Gjerdrum	REA	Belgium
66	Bruno Andersons	REA	Belgium
67	Agnes Hegyvarine Nagy	REA	Belgium
68	Lone Gobakken	Nibio	Norway
69	Carl Kiepe	University of Goettingen	Germany
70	Klas Bard Hagberg	Acouwood AB	Sweden
71	Delphine Bard Hagberg	Acouwood AB	Sweden
72	Maya Hernando	Innovarum	Spain
73	Irene Diaz	Innovarum	Spain
74	Edo Kegel	FirmoLin Technologies BV	Neatherlands
75	Dick Sandberg	Lulea University	Sweden
76	Eric Hansen	Oregon State University	United States of America
		2019	
1	Wolfgang Kantner	Metadynea	Austria
2	Saqib Rasool Chaudhry	/	Saudi Arabia
3	BSA students	Bordeaux Sciences Agro	France

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In addition, we hosted two short-term scientific missions in the framework of the COST Actions. Dr Jiří Kunecký came from the Czech Academy of Science, and he spent three weeks with us working on mechanical investigation of rheological behaviour of thermally modified and unmodified Norway spruce. Marta Petrillo, research assistant at the Trees and Timber Institute of the National Research Council (CNR-IVALSA) in Italy, spent one week with us. She was working on the topic of "Life cycle analysis of bio-based facades materials with a focus on in-service performance, maintenance requirements, and end of service life".

Gostili smo tudi 2 raziskovalca v okviru kratkoročnih znanstvenih misij akcij COST. Dr. Jiří Kunecký iz češke znanstvene akademije je preživel z nami 3 tedne in raziskoval mehanske značilnosti reološkega obnašanja toplotno modificirane in nemodificirane norveške smreke. 1 teden smo gostili tudi Marto Petrillo, raziskovalno asistentko na italijanskem inštitutu za drevesa in les (CNR-IVALSA). Njeno delo se je osredotočilo predvsem na analiziranje življenjskega cikla fasad iz bioloških materialov, na obnašanje takih fasad ter na vzdrževanje.

Dr Jiři Kunecky from the Czech Academy of Science / Dr. Jiři Kunecky iz češke znanstvene akademije

Marta Petrillo from the Trees and Timber Institute of the National Research Council (CNR-IVALSA) / Marta Petrillo iz inštituta za drevesa in les (CNR-IVALSA)

Moreover, we also hosted and collaborated with our colleagues from Canada, Germany, Norway, Serbia, and Sweden.

Gostili in krepili smo tudi sodelovanje z raziskovalci iz Kanade, Nemčije, Norveške, Srbije in Švedske.

Lothar Clauder from the Eberswalde University / Lothar Clauder iz Univerze v Eberswaldu

Our researcher Dr Kelly Peeters and Dr Goran Milić from the University of Belgrade, Faculty of Forestry / Naša raziskovalka dr. Kelly Peeters in dr. Goran Milić iz Gozdarske fakultete, Univerze v Beogradu

Carl Kiepe from the University of Gottingen / Carl Kiepe iz Univerze v Gottingenu

Dr Goran Milić (University of Belgrade): "During my visit of the InnoRenew CoE, I got valuable experience in working with new equipment (DMA, FTIR) and with great people. Hopefully, this was the first step towards establishing long-term cooperation."

Dr. Goran Milić (Univerza v Beogradu): "V času mojega obiska InnoRenew CoE sem pridobil dragocene izkušnje za delo z novo opremo (DMA, FTIR) in z odličnimi ljudmi. Upam, da je bil to prvi korak za vzpostavitev dolgoročnega sodelovanja."

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Edo Kegel from the FirmoLin company / Edo Kegel iz podjetja FirmoLin

Edo Kegel (FirmoLin): "Since I visited Living Lab InnoRenew as a business partner from the early days, I have seen it grow towards today's research and business development organisation. It is productive and efficient with a relaxed mediterranean touch. An enthusiastic team of approachable staff and researchers is involved in actual wood and bio-based science topics and has strong connections with its industry. Always a warm welcome, always creative, always an unexpected positive outcome, always a valuable partner."

Edo Kegel (FirmoLin): »Prvič sem obiskal InnoRenew CoE kot industrijski partner na delavnici Živega laboratorija. Videl sem razvoj tega inštituta od prvih dni pa do danes, ko je organizacija raziskovalno in poslovno že razvita. Produktivna, učinkovita in s pridihom mediteranske sproščenosti. Navdušena ekipa z vljudnim osebjem in raziskovalci je vključena v aktualne znanstvene teme o lesu in bioloških materialih ter ima močne povezave z industrijo. Vedno sem deležen toplega sprejema, vedno je ustvarjalno, vedno so nepričakovani pozitivni rezultati in vedno je dragocen partner.«

COLLABORATION WITH INDUSTRY

Industrial collaboration is fundamental and necessary for our work and development, and with it, we can obtain positive impacts on practice, policy, economy, and society.

InnoRenew CoE cooperates with 30 industrial partners that are collaborators in different consortiums engaged in ongoing national and international projects.

In the project **"Development of novel functional proteins and bioactive ingredients from rapeseed, olive, tomato and citrus fruit side streams for applications in food, cosmetics, pet food and adhesives (Pro-Enrich)"**, financed by Horizon 2020, there are 13 industrial partners involved:

- GEA WESTFALIA SEPARATOR GROUP GMBH (WSPC) (Germany),
- ANECOOP SOCIEDAD COOPERATIVA (ANECOOP) (Spain),
- TAILORZYME APS (Tailorzyme) (Denmark),
- AGRO BUSINESS PARK AS (ABP) (Denmark),
- EMMELEV AS (Emmelev A/S) (Denmark),
- VERTECH GROUP (VERTECH) (France),
- FRANKA MARZI (Franka Marzi) (Slovenia),
- CHIMAR HELLAS AE (CHIMAR) (Greece),
- EURIZON SL (Innovarum) (Spain),
- OLIVAR DE SEGURA, S.COOP.AND. (Olivar) (Spain),
- MARS GMBH (MARS GMBH) (Germany),
- NATAC BIOTECH SL (NATAC) (Spain),
- G. C. HAHN AND COMPANY LIMITED (Tate & Lyle) (UK).

Dr Matthew John Schwarzkopf: "The Pro-Enrich project takes the process of fractionising agricultural residues to a new level, identifying proteins, polyphenols, dietary fibres, and pigments for use as food ingredients, pet food, cosmetics, and adhesives."

Dr. Matthew John Schwarzkopf: »Projekt Pro-Enrich bo postavil postopek frakcioniranja kmetijskih ostankov na novo raven, pri čemer bodo identificirali beljakovine, polifenole, dietetična vlakna in pigmente, ki bodo uporabni v hrani, kozmetiki, hrani za živali ter lepilih.«

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SODELOVANJE Z INDUSTRIJO

Sodelovanje z industrijo je temeljnega pomena in nujno pri našem delu in razvoju; skupaj z njo lahko pozitivno vplivamo na prakso, politiko, gospodarstvo in družbo.

InnoRenew CoE sodeluje s 30 industrijskimi partnerji, ki so prisotni v različnih konzorcijih trenutnih nacionalnih in mednarodnih projektov.

Pri projektu **"Razvoj novih uporabnih proteinov in bioaktivnih sestavin iz stranskih proizvodov predelave repičnih semen, oliv, paradižnika in agrumov za uporabo v hrani, kozmetiki, živalski hrani ter lepilih (Pro-Enrich)«**, ki je financiran v okviru Obzorja 2020, sodelujemo s 13 industrijskimi partnerji:

- GEA WESTFALIA SEPARATOR GROUP GMBH (WSPC) (Nemčija),
- ANECOOP SOCIEDAD COOPERATIVA (ANECOOP) (Španija),
- TAILORZYME APS (Tailorzyme) (Danska),
- AGRO BUSINESS PARK AS (ABP) (Danska),
- EMMELEV AS (Emmelev A/S) (Danska),
- VERTECH GROUP (VERTECH) (Francija),
- FRANKA MARZI (Franka Marzi) (Slovenija),
- CHIMAR HELLAS AE (CHIMAR) (Grčija),
- EURIZON SL (Innovarum) (Španija),
- OLIVAR DE SEGURA, S.COOP.AND. (Olivar) (Španija),
- MARS GMBH (MARS GMBH) (Nemčija),
- NATAC BIOTECH SL (NATAC) (Španija),
- G. C. HAHN AND COMPANY LIMITED (Tate & Lyle) (Združeno kraljestvo).

Dr Matthew Schwarzkopf in Wales at the Pro-Enrich project meeting / dr. Matthew Schwarzkopf v Walesu na sestanku projekta Pro-Enrich

In the project **"Wood and Wood Products Over a Lifetime – WOOLF"**, financed by the European Union – European Regional Development Fund (ERDF) and the Ministry of Education, Science and Sport of the Republic of Slovenia, InnoRenew CoE cooperates with multiple Slovene industrial partners:

- M SORA, trgovina in proizvodnja d.d.,
- L-TEK elektronika d.o.o.,
- REM montaža in kleparstvo d.o.o.,
- XLAB razvoj programske opreme in svetovanje d.o.o.

V projektu Les in leseni izdelki v življenjski dobi – WOOLF, ki ga financira Evropska Unija - Evropski sklad za regionalni razvoj (ESRR) in Ministrstvo za izobraževanje, znanost in šport Republike Slovenije, sodelujemo z naslednjimi partnerji slovenske industrije:

- M SORA, trgovina in proizvodnja d.d.,
- L-TEK elektronika d.o.o.,
- REM montaža in kleparstvo d.o.o.,
- XLAB razvoj programske opreme in svetovanje d. o. o.

Dr Michael Burnard in Bordeaux at the WoodCircus project meeting / dr. Michael Burnard v Bordeauxu na sestanku projekta WoodCircus

In the project **"Underpinning the vital role of the forest-based sector in the Circular Bio-Economy – WoodCircus"**, InnoRenew CoE cooperates with a group that includes these industrial partners:

- Sahateollisuus ry (Finland),
- AlfaNatura d.o.o. (Slovenia),
- EGOIN SA (Spain),
- VEOLIA PROPRETE (VEOLIA) (France),
- SAIB (Italy).

V projektu **"Podpiranje ključne vloge gozdarskega sektorja v krožnem bio-gospodarstvu – WoodCircus"** sodelujemo z naslednjimi partnerji:

- Sahateollisuus ry (Finska),
- AlfaNatura d.o.o. (Slovenija),
- EGOIN SA (Španija),
- VEOLIA PROPRETE (VEOLIA) (Francija),
- SAIB (Italija).

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

In the transnational project **"Dynamic Response of Tall Timber Buildings under Service Load – DynaTTB"**, financed by the European Union – ForestValue Research Programme and the Ministry of Education, Science and Sport of the Republic of Slovenia, InnoRenew CoE collaborates with following industrial partners:

- Moelven Töreboda AB (Sweeden),
- Moelven Limtre AS (Norway)
- SWECO Norge AS avd Lillehammer (Norway),
- Smith and Wallwork Engineers Ltd (UK),
- GALEO (Spain),
- Eiffage Immobilier Sud Ouest (France),
- ARBONIS (France).

V mednarodnem projektu Dinamični odziv visokih lesenih zgradb pri uporabni obratovalni obtežbi – DynaTTB, ki je financiran v okviru raziskovalnega programa Evropske Unije – ForestValue Research Programme in Ministrstva za izobraževanje, znanost in šport Republike Slovenije, sodelujemo z:

- Moelven Töreboda AB (Švedska),
- Moelven Limtre AS (Norveška),
- SWECO Norge AS avd Lillehammer (Norveška),
- Smith and Wallwork Engineers Ltd (Združeno Kraljestvo),
- GALEO (Španija),
- Eiffage Immobilier Sud Ouest (Francija),
- ARBONIS (Francija).

In the transnational project **"CLICK DESIGN - delivering fingertip knowledge to enable service life performance specification of wood"**, financed by the European Union – ForestValue Research Programme and the Ministry of Education, Science and Sport of the Republic of Slovenia, InnoRenew CoE collaborates with Hygiène Office from France.

Moreover, we collaborate with the FirmoLin company from the Netherlands on the project Volatile Organic Compounds and Extractives of Thermally Modified Wood During Thermal Modification FirmoLin™ Process. We work with the Austrian company Metadynea on the use of phenol formaldehyde resin to prevent set recovery of compressive deformation of thermal-hydro-mechanically treated wood. In addition, we collaborate with the Italian Hotel Impero Cortina d'Ampezzo together with Italian architects Silvia Dainese and Stefano Gris.

V mednarodnem projektu Zagotavljanje »fingertip« znanja, ki omogoča določitev lastnosti lesa v odvisnosti od življenjske dobe – CLICK DESIGN, ki je financiran v okviru raziskovalnega programa Evropske Unije – ForestValue Research Programme in Ministrstva za izobraževanje, znanost in šport Republike Slovenije, sodelujemo s francoskim podjetjem Hygiène Office.

Poleg tega sodelujemo tudi s podjetjem FirmoLin iz Nizozemske, s katerim delamo na projektu o hlapnih organskih spojinah in ekstraktih toplotno modificiranega lesa med procesom toplotne modifikacije FirmoLin™. Z avstrijskim podjetjem Metadynea sodelujemo pri projektu o uporabi PF smole za preprečevanje dolgotrajnega obnavljanja stisnjene deformacije termo-hidro-mehansko (THM) obdelanega lesa. Sodelujemo tudi z italijanskim hotelom Impero Cortina d'Ampezzo in z italijanskima arhitektoma Silvia Dainese in Stefano Gris.

Dr Michael David Burnard: "We are advising the project architects on implementing healthy and sustainable building solutions in their hotel based on Restorative Environmental and Ergonomic Design (REED)."

Dr. Michael David Burnard: "Projektantom in arhitektom svetujemo pri implementaciji rešitev za zdravo in trajnostno gradnjo v njihovem hotelu, kar temelji na restorativnem okoljskem in ergonomskem oblikovanju (REED). "

At the Slovenian SME company CBD d.o.o., we performed a training on European projects, and we are working with Slovenian SMEs as partners in national and international proposals.

V slovenskem podjetju CBD d. o. o. smo izvedli usposabljanje glede evropskih projektov, sodelujemo pa še s številnimi drugimi slovenskimi malimi in srednje velikimi podjetji pri različnih nacionalnih in mednarodnih projektih.

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MEMBERSHIPS IN INTERNATIONAL ORGANIZATIONS
ČLANSTVO V MEDNARODNIH ORGANIZACIJAH

The InnoRenew CoE has a strong focus on international collaborations. For this reason, we became members of some of the most prominent associations in our fields. The InnoRenew CoE has joined the organisations listed below.

Ena od pomembnih usmeritev InnoRenew CoE je mednarodno sodelovanje. Prav zato smo postali člani nekaterih najpomembnejših združenj na naših področjih. Pridružili smo se naslednjim organizacijam:

Institutional membership

	Member	Organisation	Type of membership	Start Date – End Date
1	*InnoRenew CoE*	*InnovaWood*	*SPI member*	*April 2017 – ongoing*
2	*InnoRenew CoE*	*Forest Products Society*	*Gold member*	*October 2017 – October 2018*
3	*InnoRenew CoE*	*EFI – European Forestry Institute*	*Associate member*	*December 2017 – ongoing*
4	*InnoRenew CoE*	*EURAXESS network*	*Contact point for researchers in motion*	*March 2018 – ongoing*
5	*InnoRenew CoE*	*International Hemp Building Association*	*Members*	*October 2018 – ongoing*
6	*InnoRenew CoE*	*Woodrise International Alliance*	*Members*	*October 2018 – ongoing*

The InnoRenew CoE considers COST Actions as an incredibly useful networking platform. We are part of thematically appropriate actions to establish and participate in productive, efficient, and enduring networks, which will enable building of sustainable relationships among related researchers from COST countries and other participating countries. Currently we are part of 10 running COST Actions.

V InnoRenew CoE menimo, da so akcije COST izjemno koristna platforma. Vključeni smo v tematsko ustrezne akcije, da bi sodelovali v plodnih, učinkovitih in trajnih mrežah in jih utrdili. Mreže omogočajo ustvarjanje trajnih odnosov med povezanimi raziskovalci iz držav COST in drugih sodelujočih držav. Trenutno smo vključeni v 10 akcij COST.

COST Action involvement

	Organisation	Members
1	COST CA16226 Indoor living space improvement: Smart Habitat for the Elderly	Michael Burnard (MC member, Vice chair) Jakub Sandak (MC substitute) Anna Sandak (MC member) Michael Mrissa (WG member) Dean Lipovac (member)
2	COST CA16114 REthinking Sustainability TOwards a Regenerative Economy	Michael Burnard (MC member, STSM Coordinator/Core Group) Iztok Šušteršič (MC substitute)
3	COST CA16215 European network for the promotion of portable, affordable and simple analytical platforms	Michael Burnard (MC substitute) Jakub Sandak (MC member)
4	COST FP1407 Understanding wood modification through an integrated scientific and environmental impact approach	Andreja Kutnar (MC Chair) Michael Burnard (MC Member, WG4 Vice Leader/Core Group) Jakub Sandak (MC member) Anna Sandak (WG Member) Amy Simmons (Science Communication Manager) Matthew Schwarzkopf (General Assembly member) Dean Lipovac (member) Iztok Šušteršič (member)
5	COST FP1405 Active and intelligent fibre-based packaging - innovation and market introduction (ActInPak)	Anna Sandak (WG Member)
6	COST TU1403 Adaptive façade network	Anna Sandak (WG Member)
7	COST CA15216 European Network of Bioadhesion Expertise: Fundamental Knowledge to Inspire Advanced Bonding Technologies	Anna Sandak (WG Member)
8	COST CA17136, Indoor Air Pollution Network	Jure Pohleven (MC member)
9	COST CA17107 European Network to connect research and innovation efforts on advanced Smart Textiles	Laetitia Marrot (MC substitute)
10	COST FP1402 Basis of structural timber design - from research to standards	Iztok Šušteršič (member)

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Individual memberships of our employees in national and international organizations are presented in the table below.

Članstva naših zaposlenih v nacionalnih in mednarodnih organizacijah so predstavljena v spodnji tabeli.

Table 7 - Individual memberships in international and national assocations of InnoRenew CoE employees

Tabela 7 - Članstva zaposlenih na InnoRenew CoE v mednarodnih in nacionalih združenjih

	Association	Position	Who
1	Young Academy of Europe	Member	Andreja Kutnar
2	Society of Wood Science and Technology	Board member, vice president from July 1, 2018	Andreja Kutnar
		Member	Matthew John Schwarzkopf
		Member	Jakub Sandak
		Member	David B. DeVallance
		Member	Václav Sebera
	Society for Wood Science and Technology, Education and Accreditation Committee	Committee Member	Michael David Burnard
3	Wood & Fiber Science	Editorial Board	Andreja Kutnar
	Society of Wood and Fiber Science	Past Chair of the Membership Committee	David B. DeVallance
4	InnovaWood	Executive Board member	Andreja Kutnar
5	International Society for Plant Spectroscopy (ISPS)	Member	Anna Sandak
6	IUFRO Officeholder	Deputy of division 5.03.05 – Biological resistance of wood	Anna Sandak
7	International Research Group on Wood Protection (IRG)	Member	Anna Sandak
8	Network of Early-carrier Sustainable Scientist & Engineers (NESSE)	Member	Anna Sandak
9	International Committee for Near Infrared Spectroscopy (ICNIRS)	Member of the Commitee	Anna Sandak
10	Italian Society for Near Infrared Spectroscopy (SISNIR)	Member	Anna Sandak
		Member	Jakub Sandak
11	International Research Group of Wood Protection	Member	Kelly Peeters
12	Hungarian Operations Research Society	Member	Dávid, Balázs
		Member	László Hajdu
		Secretary General, Board member (since 2017)	Miklós Krész
13	EU Environmental Footprint Technical Advisory Board; European Commission, Belgium	Member	Erwin A. Meissner Schau

Table 7 - Individual memberships in international and national assocations of InnoRenew CoE employees (cont.)

Tabela 7 - Članstva zaposlenih na InnoRenew CoE v mednarodnih in nacionalih združenjih (nad.)

	Association	Position	Who
14	Forest Products Society	Member	Václav Sebera
		Member, Immediate Past President	David B. DeVallance
15	European Mechanics Society, contact person for MENDELU	Member	Václav Sebera
16	European Council of Doctoral Candidates and Junior Researchers (Eurodoc)	WG Open Science co-coordinator	Ana Slavec
17	Research Data Alliance	Individual member	Ana Slavec
18	Association Young Academy (Mlada akademija)	Management board member	Ana Slavec
19	European Survey Research Association	Member	Ana Slavec
20	Slovenian Statistical Society	Member	Ana Slavec
21	International Wood Machining Seminar (IWMS)	Member of Advisory Committee	Jakub Sandak
22	WVU Student Forest Products Society Chapter	Advisor	David B. DeVallance
23	Slovenian Discrete and Applied Mathematics Society	Member	Miklós Krész
24	Public Body of the Hungarian Academy of Sciences	Member	Miklós Krész
25	National Museum for Architecture and Design	Member of the Board	Barbara Rovere
26	Forest Technology Platform	Chairperson of National Support Group Slovenia	Andreja Kutnar
		Member of the Advisory Committee of the Forest-based sector	Črtomir Tavzes
27	Oregon State University	Faculty member	Amy Simmons
28	Green Building Council (GBC) Slovenia	Member of the board of administration (2017-2018)	Igor Gavrić
29	Slovene Chamber of Architects (ZAPS)	Member	Eva Prelovšek Niemelä
30	Finnish Association of Architects (SAFA)	Member	Aarne Johannes Niemelä

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InnoRenew CoE employees are also actively involved in academic teaching. Currently, they teach at one secondary school and at eight different universities from six countries: Finland, France, Germany, Hungary, Italy, Slovenia, and the USA.

Zaposleni v InnoRenew CoE so aktivno vključeni tudi v izobraževalno delo. Trenutno poučujejo na eni srednji šoli in na 8 različnih univerzah v 6 državah – na Finskem, v Franciji, na Madžarskem, v Nemčiji, Sloveniji in ZDA.

Table 8 - Teaching activities of InnoRenew CoE employees
Tabela 8 - Pedagoška aktivnost zaposlenih na InnoRenew CoE

University	Name and Surname	Position	Field / Course	Faculty
University of Primorska, Slovenia	Michael Mrissa	Full Professor	Engineering sciences and technologies, Computer science and informatics	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Matthew John Schwarzkopf	Assistant Professor	Wood Science, Wood Composites, Wood Technology	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Andreja Kutnar	Associate Professor	Wood Science,Environmental Technologies, Renewable Resources	Faculty of Mathematics, Natural Sciences and Information Technologies; Faculty of Management
University of Primorska, Slovenia	David B. DeVallance	Associate Professor	Wood Science	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Václav Sebera	Assistant professor	Wood Science	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Jakub Sandak	Assistant Professor	Wood Science	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Michael David Burnard	Assistant Professor	Wood Science	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Nastja Podrekar	Assistant	Ergonomics, Sedentary Behaviour, Applied Kinesiology	Faculty of Health Sciences
University of Primorska, Slovenia	Miklós Krész	Regular visiting lecturer (2006-2018)	Theory of computing and algorithmics	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Dávid Balázs	Assistant	Formal Languages and Computability practical course	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	László Hajdu	Assistant	Programming 2 practical course	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Ana Slavec	Teaching assistant	Statistics	Faculty of Mathematics, Natural Sciences and Information Technologies
University of Primorska, Slovenia	Aleksandar Tošić	Teaching assistant	Programming, Prallel and Distributed Programming, Automata Theory	Faculty of Mathematics, Natural Sciences and Information Technologies

Table 8 - Teaching activities of InnoRenew CoE employees (cont.)

Tabela 8 - Pedagoška aktivnost zaposlenih na InnoRenew CoE (nad.)

University	Name and Surname	Position	Field / Course	Faculty
University of Primorska, Slovenia	Roberto Biloslavo	Professor of Management	Management, Strategic management, Leadership, Sustainable development, Knowledge management, Corporate social responsibility	Faculty of Management
Secondary school Izola, Slovenia	Vesna Starman	Professor of Pedagogy	Pedagogy	/
University of Applied Sciences Rosenheim, Germany	Václav Sebera	External lecturer	Wood Science - Advanced Technical Mechanics	Faculty of Wood Technology and Construction
University of Pau and Pays de l'Adour, LIUPPA, France	Michael Mrissa	Full Professor (2016-2018)	Engineering sciences and technologies/Computer science and informatics	College STEE
West Virginia University, USA	David B. DeVallance	Associate Professor	Green building construction; Development of innovative wood-based composite materials and sustainable building products; Biomass densification for bioenergy; Process improvement; Non-destructive evaluation of wood materials; Process control; Wood products marketing/ management; Decision making techniques; Engineered wood material evaluation and testing; Data acquisition and electronic system development, Residential Building Materials (Fall Term 2018), Senior Project 2 (Fall Term 2014-2018), Senior Project 1(Fall Term 2014-2018), Sustainable Construction (Spring Term 2014-2018)	Wood Science and Technology, School of Natural Resources, Davis College of Agriculture, Natural Resources and Design
University of Szeged, Hungary	Miklós Krész	Faculty professor	Mathematics and Computer Science, Algorithmics, Theory of Computing, Operations Research, Information Systems, Data Mining, Artificial Intelligence, Numerical Methods (courses in BSc, MSc and Phd studies)	Faculty of Education, Institute of Informatics, Institute of Applied Sciences and Faculty of Engineering
Turku Centre of Computer Science, Finland	Miklós Krész	Regular visiting lecturer	Algorithm engineering	/
Georg-August-Universität Göttingen, Germany	Andreja Kutnar	Guest Professor	Wood Science	Faculty of Forest Sciences and Forest Ecology
Oregon State University, USA	Andreja Kutnar	Affiliated faculty member	Wood Science	Department of Wood Science and Engineering

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PUBLICATIONS / OBJAVE

Sharing and spreading our knowledge is important for the InnoRenew CoE and is a primary dissemination tool for our research outputs. Therefore, we encourage all our employees to prepare open access publications, which enables us to share our research findings, especially outside academic spheres.

In the last two years, we have prepared 133 publications: 19 original and review scientific articles, five independent scientific component parts or chapters in a monograph, four professional journal articles, 22 published scientific conference contributions, 57 published scientific conference contribution abstracts, one submitted scientific monograph, and two submitted professional journal articles.

Moreover, we have one scientific monograph under preparation.

Deljenje in širjenje znanja je pomembno za naš inštitut in je primarno orodje za razširjanje rezultatov naših raziskav. Prav zato spodbujamo vse zaposlene, da pripravijo objave z odprtim dostopom, kar nam omogoča deljenje naših raziskovalnih ugotovitev, in to še posebno zunaj akademskega okolja.

V zadnjih 2 letih smo pripravili 133 objav, od teh je 19 izvirnih in preglednih znanstvenih člankov, 5 samostojnih znanstvenih sestavkov ali poglavij v monografski publikaciji, 4 strokovni članki, 22 objavljenih znanstvenih prispevkov s konferenc, 57 objavljenih povzetkov znanstvenih prispevkov s konferenc, 1 znanstvena monografija, poslana v objavo, in 2 strokovna članka, poslana v objavo.

Poleg tega je ena znanstvena monografija še v pripravi.

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OUTREACH BEYOND SCIENTIFIC AND PROFESSIONAL COMMUNITIES

DOSEG ONKRAJ ZNANSTVENIH IN STROKOVNIH SKUPNOSTI

The goal of the InnoRenew CoE communications is to raise awareness of the work, outputs, and activities of our institute and consortium partners. We reach out to our target audience of industrial partners, research institutes, high-profile researchers, clusters and associations, the general public, and policy makers in a variety of ways and through multiple channels. We consider one-way and two-way communication to be critical for success in establishing a recognisable brand, positioning the InnoRenew CoE as an institute of scientific excellence and societal value.

The key messages we share with our target audiences are that the InnoRenew CoE conducts high-profile research in line with the needs of industry, raises Slovenia's international profile for RDI, and helps to open new perspectives for employment and economic growth in the wood industry sector in Slovenia. Moreover, we spread news and information about the InnoRenew CoE project, the institute, and its partners (including living lab members), raise awareness of related research in general, engage in strategic and spontaneous interaction with a wide variety of users, and promote further engagement on our platforms.

Ozaveščanje o našem delu in rezultatih ter dejavnostih našega inštituta in konzorcijskih partnerjev je splošni komunikacijski cilj InnoRenew CoE. Naše ciljne skupine – industrijske partnerje, raziskovalne inštitute, pomembne raziskovalce, grozde in društva, splošno javnost in oblikovalce politik – dosegamo s številnimi dejavnostmi in po različnih kanalih. Menimo, da sta enosmerna in dvosmerna komunikacija odločilni za uspeh pri oblikovanju prepoznavne blagovne znamke, ki InnoRenew CoE predstavlja kot znanstveno odlično in družbeno vredno ustanovo.

Ključna sporočila, ki si jih delimo z našimi ciljnimi skupinami, so, da v InnoRenew CoE opravljamo pomembne raziskave, ki so v skladu s potrebami industrije, povečujemo prepoznavnost Slovenije v mednarodni sferi raziskovanja, razvoja in inovacij, odpiramo nova delovna mesta in prispevamo k ekonomski rasti gozdno-lesnega sektorja v Sloveniji. Poleg tega delimo informacije o projektu in o inštitutu InnoRenew CoE ter o naših partnerjih, vključujoč člane Živega laboratorija, povečujemo prepoznavnost raziskav na naših področjih, sodelujemo v načrtovanih in spontanih interakcijah z najrazličnejšimi uporabniki in spodbujamo nadaljnje sodelovanje na naših platformah.

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

The InnoRenew CoE established a website (innorenew.eu) to inform visitors about a variety of aspects of the centre, its past and ongoing research work, trips taken by the InnoRenew CoE staff, and visits to the InnoRenew CoE by other researchers. We constantly monitor our website usage with analytics programmes. In the year 2017, the webpage was visited 6.528 times. At the end of 2018, the number increased to 26.347 webpage visits. Approximately 48 % of users are from Slovenia, about 8 % from the USA, and 4 % from Italy and Germany. Other countries with most visits are France, Hungary, Finland, Sweden, Austria, and UK.

Da bi javnost obveščali o različnih aktivnostih inštituta, preteklih in trenutnih raziskavah, službenih potovanjih naših zaposlenih in obiskih raziskovalcev, ki jih gostimo pri nas, smo na InnoRenew CoE pripravili tudi svojo spletno stran (innorenew.eu). Z analitičnimi programi redno spremljamo obisk in aktivnosti naše spletne strani. Leta 2017 je bila obiskana 6528-krat, konec leta 2018 pa je število obiskov naraslo na 26347. Približno 48 % vseh uporabnikov je iz Slovenije, sledijo jim uporabniki iz ZDA (približno 8 %) ter iz Italije in Nemčije (4 %). Ostale države, ki pogosto obiščejo našo spletni stran, so Francija, Madžarska, Finska, Švedska, Avstrija in Združeno kraljestvo.

Activity	Sub activity	Quantity by 31/01/2019
Social media	Facebook (likes/members)	1207
	Twitter (followers)	1018
	LinkedIn (followers)	144
Newspaper articles	National newspapers	144
	International newspapers	13 (Finland, USA, Argentina, Croatia, Italy, France, Bulgaria, Norway)
TV shows	National	5
Radio shows	National	3

INFRASTRUCTURE AND EQUIPMENT
INFRASTRUKTURA IN OPREMA

The investment project "Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence" represents an investment in the construction of infrastructure and the purchase and installation of equipment.

This investment project is co-financed by the European Regional Development Fund in the framework of the Operational Program for the Implementation of the European Cohesion Policy for the period 2014-2020 in Slovenia and the Ministry of Education, Science and Sport of the Republic of Slovenia.

The purpose of the investment is to build the research infrastructure needed to provide top-level knowledge and to carry out research and innovation in the field of renewable materials and healthy environments. The InnoRenew CoE will act as a generator of knowledge and transfer research results into practice. The research equipment will provide researchers with the basic conditions for the development of new technologies and will enable close cooperation between the research sphere and users, thus enhancing transfer of knowledge from the academic sphere into the public profit and non-profit sectors, while promoting an interdisciplinary research approach.

Investicijski projekt »Center odličnosti za raziskave in inovacije na področju obnovljivih materialov in zdravega bivanjskega okolja« predstavlja naložbo v izgradnjo infrastrukture ter nakup in montažo opreme.

Investicijski projekt sofinancirata Evropski sklad za regionalni razvoj v okviru Operativnega programa za izvajanje evropske kohezijske politike v obdobju 2014–2020 v Sloveniji in Ministrstvo za izobraževanje, znanost in šport Republike Slovenije.

Namen investicije je izgradnja raziskovalne infrastrukture, ki je potrebna za zagotavljanje vrhunskega znanja in za izvajanje raziskav in inovacij na področju obnovljivih materialov in zdravega bivanjskega okolja. InnoRenew CoE bo deloval kot ustvarjalec znanja in prenašalec raziskovalnih izsledkov v prakso. Raziskovalna oprema bo raziskovalcem zagotavljala osnovne pogoje za razvoj novih tehnologij in omogočala tesno sodelovanje med raziskovalno sfero in uporabniki znanja, s čimer se bo krepil prenos znanj iz akademskega okolja v javni profitni in neprofitni sektor in spodbujal interdisciplinarni pristop k raziskovanju.

REPUBLIKA SLOVENIJA
MINISTRSTVO ZA IZOBRAŽEVANJE, ZNANOST, KULTURO IN ŠPORT

EVROPSKA UNIJA
EVROPSKI SKLAD ZA REGIONALNI RAZVOJ
NALOŽBA V VAŠO PRIHODNOST

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

The major laboratory equipment purchased for our reserach needs is listed in the table below.

Glavnina laboratorijske opreme, ki smo jo kupili za raziskave, je navedena v spodnji tabeli.

Item	Description
Agilent 7890B GC-5977B MS	Gas chromatography–mass spectrometry (GC-MS) is an analytical technique used to separate and identify predominantly volatile and semi-volatile compounds.
Agilent 6500LCMS Q-TOF system	Liquid chromatography–mass spectrometry (LC-MS) is an analytical technique used to separate and identify compounds or molecules in a solution. This device is a high performance liquid chromatograph attached with a mass spectrometer. This device is capable of analysing a wide range of components including those that are thermally labile, have high polarity, and that have high molecular mass. Includes an Agilent 1290 Infinity2 HPLC module, an Agilent 6400 LC/MS QQQ mass spectrometer, and a Q-TOF tandem MS.
Leica DCM8 microscope	Combines confocal microscopy with interferometry into one system. This equipment allows the researcher to assess surface features and produce 3D surface maps for measurement of roughness and visualisation. Designed for material metrology. Combines multi-spectral imaging, confocal microscopy, and interferometry to measure surface structures, map topography, analyse surface roughness, and analayse solid materials. No sectioning is required.
Leica TIC3X ion beam milling system	This device uses argon ions to polish specimen surfaces in preperation for microscopic analysis. In addition to polishing, the device can cut in a cross-section mode to produce perfect cross-section cuts. Includes a cooling stage for heat sensitive materials.
Leica TXP target surfacing system	Specimen preperation device used for mechanical surface pred to mill, grind, cut, and polish materials ranging from biological samples to metals. This is used as a prepatory step before both ion beam milling and microtoming.
Langzauner Lab press LZT-UK-30-L	Laboratory press enabling thermo-mechanical modification of wood. Working surface of 600x600mm with a maximum temperature of 300°C and max pressure of 300 bar.
TGA/DSC - Netzsch STA 449 F3 Jupiter	Studying the kinetics of individual reactions with isothermal static thermogravimetry. Can analyse the decomposition temperature of materials, phase transitions, purity, melting/boiling points, polymers, and construct phase diagrams.
Nikon iS50 FTIR spectrometer with TGA/IR interface	Fourier-transform infrared spectroscopy (FTIR) is a technique used to obtain an infrared spectrum of absorption or emission of a solid, liquid, or gas. A diamond ATR module is a system for determining the chemical composition of solids and liquids. The TGA / IR interface is a very sensitive system for identifying gases that develop in the tests in the thermal analyzer STA 449 F3 Jupiter.
Leica DM 2700 M microscope	Flourescent, stereomicroscope for analysis of adhesive dispersion, material morphology, and composite interphases
Mettler Toledo OptiMax synthesis workstation	Sythesis workstation for organic synthesis and chemical process development. Research reactor for experimentation with adhesives, resins, etc.

Leica DCM8 microscope

Leica TIC3X ion beam milling system

Leica TXP target surfacing system

Funded by the Horizon 2020 (H2020-WIDESPREAD-TEAMING: #739574) and the Republic of Slovenia from the European Regional Development Funds.

In February 2018, we signed the tripartite contract with the Municipality of Izola and the University of Primorska for the transfer of building rights on one part of the land in Livade, Izola (6174 m2), and in September we obtained the building permit.

Februarja 2018 smo z Občino Izola in z Univerzo na Primorskem podpisali tripartitno pogodbo o prenosu stavbne pravice na delu zemljišča v izolskih Livadah (6.174 m2). Septembra pa smo pridobili gradbeno dovoljenje, ki je bilo še isti dan razglašeno kot pravnomočno.

Two objects of the InnoRenew CoE research center are planned for the Livade campus in Izola. On the southern part of the plot, there is a main entrance to the building, a park with a deep square at the entrance, and a parking lot. There is direct connection for visitors from the parking lot through outer stairs to the terraces of the connecting objects and first floor of the building. Morphology of the buildings is designed according to the need for natural light in the ground floor laboratories. Narrow, greened atriums in the gaps between laboratories will create a pleasant (shady) climate in the summer heat. In the

Na območju Kampusa Livade v Izoli sta predvidena dva objekta znanstvenoraziskovalnega centra InnoRenew CoE. Na južnem delu parcele je predviden glavni vhod v objekt, park s poglobljenim trgom pri vhodu ter parkirišče za osebna vozila. Iz parterja se bo obiskovalec lahko po zunanjih stopnicah povzpel na terase povezovalnih objektov. Členjenost posameznih volumnov je oblikovana glede na potrebo po naravni svetlobi v pritličnih laboratorijih. Posamezni ozki zazelenjeni atriji, ki pri tem nastanejo, bodo oblikovali prijetno hladno (senčno) klimo v poletnih pripekah. Na vzhodnem

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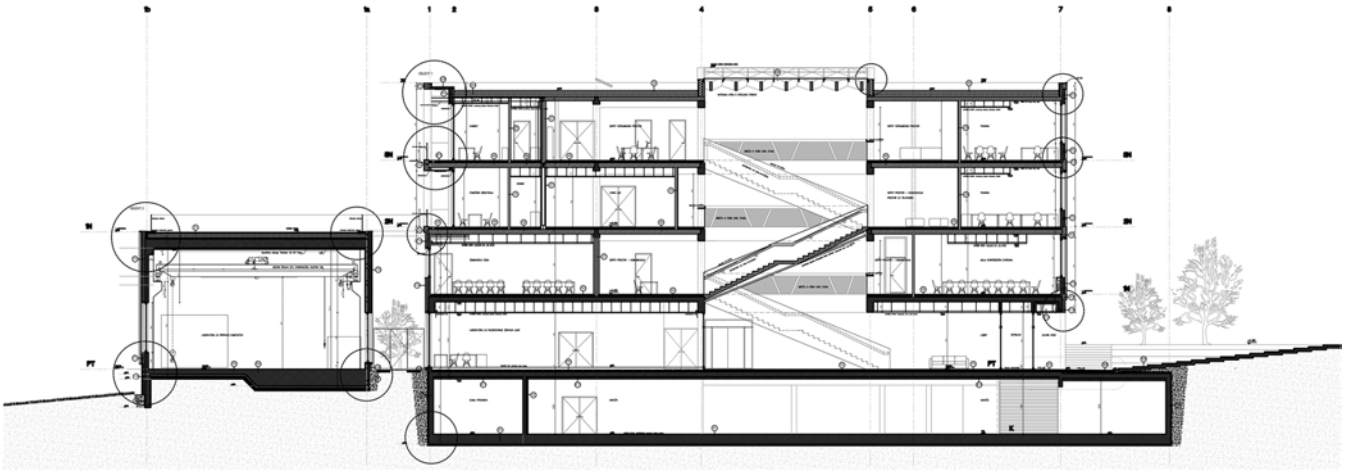
eastern part of the parcel, there is a drive-in underground garage, while along the western part of the plot, an internal delivery path for the laboratories is planned. A total of 64 parking spaces will be located in the garage and on the ground floor in front of building 1, namely: 44 parking places in the garage and 20 on the ground floor parking lot.

delu parcele bo uvoz v podzemno garažo, po zahodnem robu parcele je predvidena interna dostavna pot za laboratorije. Parkirna mesta (skupno 64) bodo v garaži in v parterju pred objektom 1, in sicer: v garaži bo 44 parkirnih mest, v parterju pred objektom pa 20.



In building 1, there is a basement with a garage and technical spaces. On the ground floor, there are seven scientific research laboratories, sanitary facilities, wardrobes, an entrance lobby, two fire stairs, and a bicycle shed. On the first floor, there are seminar and conference rooms, outdoor arcades, and two green roof terraces. On the second floor, there are administrative offices and the office of the director, as well as two outdoor green roof terraces and a balcony. On the third floor, there are study rooms for the heads of laboratories, an open space for researchers (open office), technical spaces, and a balcony. In the middle, there is an open vertical atrium throughout the entire building from the ground floor to the roof, which connects all the floors through a glass lift and

V objektu 1 so v kleti garaža in tehnični prostori. V pritličju je sedem znanstvenoraziskovalnih laboratorijev, sanitarije, garderobe, vhodni lobi, dve požarni stopnišči in kolesarnica. V prvem nadstropju so seminarske in konferenčne dvorane ter zunanje arkade in dve terasi na zelenih strehah. V drugem nadstropju so kabineti za upravo, raziskovalno delo in urad direktorja ter zunanji terasi na zelenih strehah in balkon. V tretjem nadstropju pa so kabineti vodij laboratorijev, odprt večnamenski prostor za raziskovalce (odprta pisarna), strojnica in balkon. Po sredini celotnega objekta od pritličja do strehe poteka odprt vertikalni atrij, ki s steklenim dvigalom in udobnimi lesenimi stopnicami med seboj povezuje vsa nadstropja. Odprti atrij je povezovalni

comfortable wooden stairs. The vertical open atrium is a connecting element that promotes communication and cooperation between employees. At the top of the atrium, there is a glass roof that brings light to the interior of the building.

In building 2, there is a composites manufacturing lab with bridge crane, rooms for the electrical generator and garbage, and a green roof terrace with pergola and trees in containers.

element, ki spodbuja komunikacijo in sodelovanje med zaposlenimi. Na vrhu atrija je steklena streha, ki v notranjost objekta prinaša svetlobo.

V objektu 2 je predviden laboratorij za pripravo kompozitov z mostnim žerjavom, prostor za dizelski agregat in prostor za smeti ter pohodna streha, ki bo zasnovana kot park s pergolo in zezelenitvijo v posodah.

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The load-bearing construction of the buildings is a hybrid mixed system of reinforced concrete, steel, and wooden elements. The wooden construction consists of cross-laminated wooden plates (28 cm thick for in-between floor plates and 24 cm for the roof plate) and walls.

The façades on the ground floor are made of facade plaster, on which wooden battens are mounted in the form of a vertical "latnik", a traditional pergola-like structure in Slovene- Istria. From the first floor onwards, the facades are made of stone and wooden lamellas that resemble window shades. The windows are made of wooden frames.

Nosilna konstrukcija objektov je hibridni mešani sistem armiranobetonske (AB), jeklene in lesene gradnje. Lesena konstrukcija objekta je sestavljena iz križno lepljenih lesenih plošč (debeline 28 cm za medetaže in 24 cm za streho) in sten.

Fasade objektov so v pritličju iz fasadnega ometa, na katerega so nameščene lesene letve v obliki vertikalnega »latnika«, ki spominja na pergolo, tradicionalno konstrukcijo, značilno za slovensko Istro. Od 1. nadstropja naprej pa so fasade narejene iz kamnitih fasadnih oblog in lesenih lamel, ki spominjajo na senčila. Okna imajo lesene okvirje.

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In the table below, we list all past activities regarding our infrastructure.

V spodnji tabeli so navedene vse dosedanje aktivnosti, povezane z našo infrastrukturo.

Table 11 - Infrastructure acquisition activities
Tabela 11 - Aktivnosti pridobivanja infrastrukture

Date	Activity	Purpose
February 6, 2018	Tripartite contract with the Municipality of Izola and University of Primorska was signed.	Transfer of building rights on one part of the land in Livade, Izola, the size of the land is 6.174 m2
February 7, 2018	Documentation for gaining project conditions was turned in: • Komunala Izola, d.o.o. (for connection to sewage and waste disposal) • Municipality of Izola / Office for Economic Activities, Investments and Municipal Development (for interventions in public roads and public lighting) • Telekom Slovenije, Sector for access networks Koper-Nova Gorica (for telephone and CATV connections) • Public company Rižanski vodovod Koper d.o.o. (for an access to fresh water plumbing) • Elektro Primorska, d.d. (for electrical connection) • Institute for the Protection of Cultural Heritage of Slovenia, Regional Unit Piran (for interventions in the route of the historic railway line Trieste - Poreč)	Procedure of gaining building permit started
February 15, 2018	Municipal contribution: Municipality of Izola changed the decree of municipality taxation.	Decree enabled exemption for the payment of a municipal contribution
March 7, 2018	Tripartite contract with Municipality of Izola and University of Primorska: We signed a tripartite contract on mutual cooperation which defined activities that InnoeRenew CoE would make in the future for the benefit of Municipality.	InnoRenew was excused from payent of municipal contribution for building permit
April 4, 2018	Tripartite contract with Municipality of Izola and University of Primorska: We signed a tripartite contract on the establishment of easement with the Municipality of Izola and the University of Primorska and obtained servicing right for overcrowding, laying and connection to the faecal sewerage on parcel No. 2167/14 k.o. Izola.	Procedure of gaining building permit
April 10, 2018	Project consensus: We turned in the documentation to obtain the project consensus to: • Komunala Izola, d.o.o. (for connection to sewage and waste disposal) • Municipality of Izola / Office for Economic Activities, Investments and Municipal Development (for interventions in public roads and public lighting) • Public company Rižanski vodovod Koper d.o.o. (for an access to fresh water plumbing) • Elektro Primorska, d.d. (for electrical connection)	Procedure of gaining building permit
April 10, 2018	The parceling process for the plot No. 2167/15 k.o. Izola was completed at Geodetska uprava Koper.	Procedure of gaining building permit
April 19, 2018	Consent to the operation and municipal contribution: We turned in the documentation to obtain the consent to the operation and the municipal contribution to: • Municipality of Izola / Office for Spatial Planning (for consent to the operation) • Municipality of Izola / Office for Economic Activities, Investments and Municipal Development (for the assessment of the municipal contribution)	Procedure of gaining building permit
April 25, 2018	Plot No. 2167/15 k.o. Izola was registered in Land Registry.	Procedure of gaining building permit

Table 11 - Infrastructure acquisition activities (cont.)
Tabela 11 - Aktivnosti pridobivanja infrastrukture (nad.)

Date	Activity	Purpose
May 4, 2018	PGD documentation was completed and application for building permit was turned in. It included: • Leading map • Architecture plan (incl. landscape architecture plan) • Construction plan • Sewer and plumbing plan • Outdoor layout plan (incl. traffic plan) • Electrical installation plan and electrical equipment • Design of electrical installations and electrical equipment for transformer station TP 20 / 0.4 kV, 1000 kVA InnoRenew and connection SN 20 kV cable line • HVAC and plumbing plan • Detail - Geodetic plan • Detail - Fire safety study • Detail - Building physics study • Detail - Study of noise protection • Detail - A plan for the management of construction waste • Detail - Report on environmental impacts and expert assessment of electromagnetic radiation • Detail - A feasibility study of alternative systems for the supply of energy to buildings • Detail - Geological and geotechnical study	Procedure of gaining building permit
May 4, 2018	Public procurement for so called Super Audit published.	Project and construction managemenet
May 10, 2018	The procedure to register the building right in Land Registry on the plot No. 2167/15 k.o. Izola to InnoRenew CoE was started (Dn90461/2018).	Procedure of gaining building permit
May 10, 2018	Project consensus: We turned in the supplementing documentation to obtain the project consensus to the Municipality of Izola / Office for Economic Activities, Investments and Municipal Development (for interventions in public roads and public lighting).	Procedure of gaining building permit
May 15, 2018	The following project consensuses were obtained: • Consent of Telekom Slovenije d.d. to connect to the TK network (No. 60593 - KP / 64-UA) • Consent of the Municipality of Izola for interventions in the buffer zone and road connection to the categorized municipal road (No. 351-19 / 2018) • Supplement consent of the Municipality of Izola for intervention in the road area for access to fresh water plumbing (No. 351-19 / 2018) • Consent of the Municipality of Izola to the building (No. 3502-160 / 2018) • Consent Elektro Primorska d.d. to project (No. 1119907) • Decision of the Municipality of Izola (No. 354-65 / 2018) that InnoRenew CoE is not liable for the payment of a municipal contribution for construction work on plot No. 2167/15 k.o. Izola • Decision of the Institute for the Protection of Cultural Heritage of Slovenia, Regional Unit Piran, that it is not necessary to obtain the cultural protection conditions and the cultural and conservation consent of the Institute for the Protection of Cultural Heritage (No. 35104-00069 / 2018/2) • Consent of the Rižanski vodovod Koper (No. SO-18/30) to the project solutions for obtaining a building permit for the construction of the InnoRenew CoE on plot No. 2167/15 k.o. Izola (for an access to fresh water plumbing) • Consent of the Komunala Izola d.o.o. (No. 1916/2018) for connection to the municipal network on plot No. 2167/15 k.o. Izola (for connection to sewage and waste disposal) • Consent of the University of Primorska (No. 1171-04/2018) to maintain facilities through parcel No. 2167/14 k.o. Izola	Procedure of gaining building permit

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Table 11 - Infrastructure acquisition activities (cont.)
Tabela 11 - Aktivnosti pridobivanja infrastrukture (nad.)

Date	Activity	Purpose
May, 2018	In May 2018, the InnoRenew CoE bought a set of laboratory equipment from a company in bankruptcy, Brest pohištvo d.o.o., and rented laboratory space from them in Cerknica, where this equipment is located. The rental contract was signed for a 2-yearw period. Besides this equipment, the purchase included furniture, glassware, and other smaller items.	Temporary arrangement of laboratory spaces in Cerknica
June 29, 2018	Change of building permit application: We tuned in a new building permit application with clean copy of the Leading map. Change of buiding permit application allowed us to continue the procedure accoring to the new national construction law, valid from June 1st.	Procedure of gaining building permit accoring to the new national construction law
June 19, 2018	Project consensuses: We turned in the following documentation to obtain the project consent: • Slovenian Environment Agency - ARSO to gain confiramtion that enviromental evaluation of the project is not needed • Municipality of Izola to gain confirmation that buildings were planned correctly according to the urban plan ZN Livade-zahod	Procedure of gaining building permit
June 21, 2018	Project consensus: We turned documentation to obtain project consensus from ARNES regarding internet connection to the building.	
June 28, 2018	We received all additional project consensuses: • confirmation from Slovenian Environment Agency - ARSO that enviromental evaluation of the project is not needed • consent from ARNES (No. 11/2018) regading internet connection to the building • consent from Municipality of Izola that buildings were planned correctly according to the urban plan ZN Livade-zahod	Procedure of gaining building permit
July 18, 2018	Contract with Proplus, d.o.o., company for for so called Super Audit, was signed; supervision of PGD project documentation started	Project and construction management
July 20, 2018	Planning of additional office spaces for InnoRenew in old Pošta building in Koper started.	Temporary additional arrangement of office spaces in Koper
September 11, 2018	Building permit was given and signed as binding.	Building permit gained
October 1, 2018	Additional office spaces for Innorenew in old Pošta building in Koper were opened after renovation.	Temporary additional arrangement of office spaces in Koper
December 10, 2018	PZI documentation (detail planning) was completed, sent to revision by so called Super Audit, and we started to prepare public procurement for construction. PZI documentation included: • Leading map • Architecture plan (incl. landscape architecture plan) • Construction plan • Sewer and plumbing plan • Outdoor layout plan (incl. traffic plan) • Electrical installation plan and electrical equipment • Design of electrical installations and electrical equipment for transformer station TP 20 / 0.4 kV, 1000 kVA InnoRenew and connection SN 20 kV cable line • HVAC and plumbing plan • Technology plan • Detail - Builing accoustics • Detail - Safety plan • Detail - Fire safety plan	Detail planning for construction
December 14, 2018	Public procurement for construction was published.	Public procurement-construction
December 24, 2018	Public procurement for construction supervision was published.	Public procurement-construction supervision

FINANCE

FINANCE

In 2017, the InnoRenew CoE revenues totaled 453,000 EUR. Of this, 99.3 % were from EU sources and 0.7 % were from the Republic of Slovenia.

In 2018, revenues were 1,780,000 EUR. EU sources contributed 94.2 %, 2.6 % came from the Republic of Slovenia, and 3.1 % were earned from market services.

Equipment purchases were 29,000 EUR in 2017 and 1,112,000 EUR in 2018.

V letu 2017 je imel InnoRenew CoE 453.000 EUR prihodkov. Od tega je 99,3 % vseh sredstev prejel iz EU in 0,7 % iz proračuna Republika Slovenije.

V letu 2018 je imel InnoRenew CoE 1.780.000 EUR prihodkov, od tega jih je 94,2 % prejel iz EU in 2,6 % iz proračuna Republike Slovenije, 3,1 % pa jih je pridobil z izvajanji storitev na trgu.

Za nabavo opreme je InnoRenew CoE leta 2017 namenil 29.000 EUR, leta 2018 pa 1.112.000 EUR.

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IMPRINT

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Visit our website, **innorenew.eu**, for the latest information.

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Založnik

InnoRenew CoE

Dogodki

Za najnovejše informacije obiščite našo spletno **innorenew.eu**

The InnoRenew CoE is built on a foundation of strong collaboration between its founding partners, and the support of our project partners:

University of Primorska (UP)
Fraunhofer Institute for Wood Research WKI (Fraunhofer WKI)
University of Maribor (UM)
Institute for the Protection of Cultural Heritage of Slovenia (ZVKDS)
Slovenian National Building and Civil Engineering Institute (ZAG)
Pulp and Paper Institute (ICP)
Zavod eOblak
National Institute of Public Health (NIJZ)
Regional Development Agency of the Ljubljana Urban Region (RRA LUR)
InnoRenew CoE

InnoRenew CoE je zgrajen na podlagi trdnega sodelovanja med ustanovnimi partnerji in podpore projektnih partnerjev:

Univerza na Primorskem (UP)
Fraunhofer inštitut za raziskave lesa WKI (Fraunhofer WKI)
Univerza v Mariboru (UM)
Zavod za varstvo kulturne dediščine Slovenije (ZVKDS)
Zavod za gradbeništvo Slovenije (ZAG)
Inštitut za celulozo in papir (ICP)
Zavod eOblak
Nacionalni inštitut za javno zdravje (NIJZ)
Regionalna razvojna agencija Ljubljanske urbane regije (RRA LUR)
InnoRenew CoE

EVROPSKA UNIJA
EVROPSKI SKLAD ZA REGIONALNI RAZVOJ