



BASAJAUN

Sustainable wood construction value chains: Linking product innovations and regional stakeholders in the Basajaun project

Uwe Kies ◦ InnovaWood
BIOREGIONS Forestry Speed Dating ◦ 17 June 2022
Theme 2: Bio-based solutions for sustainable construction

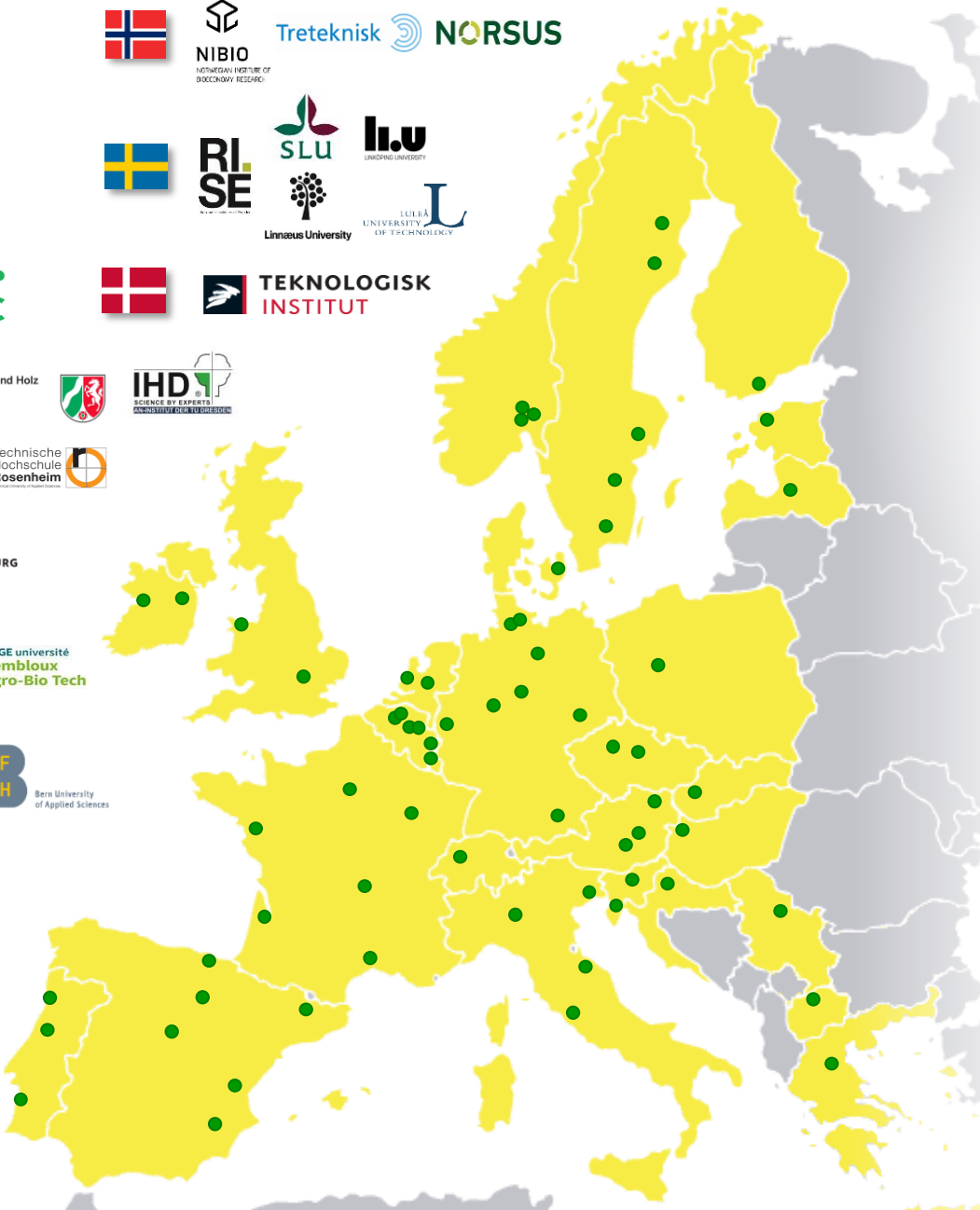
This project has received funding from the European Union's Horizon 2020
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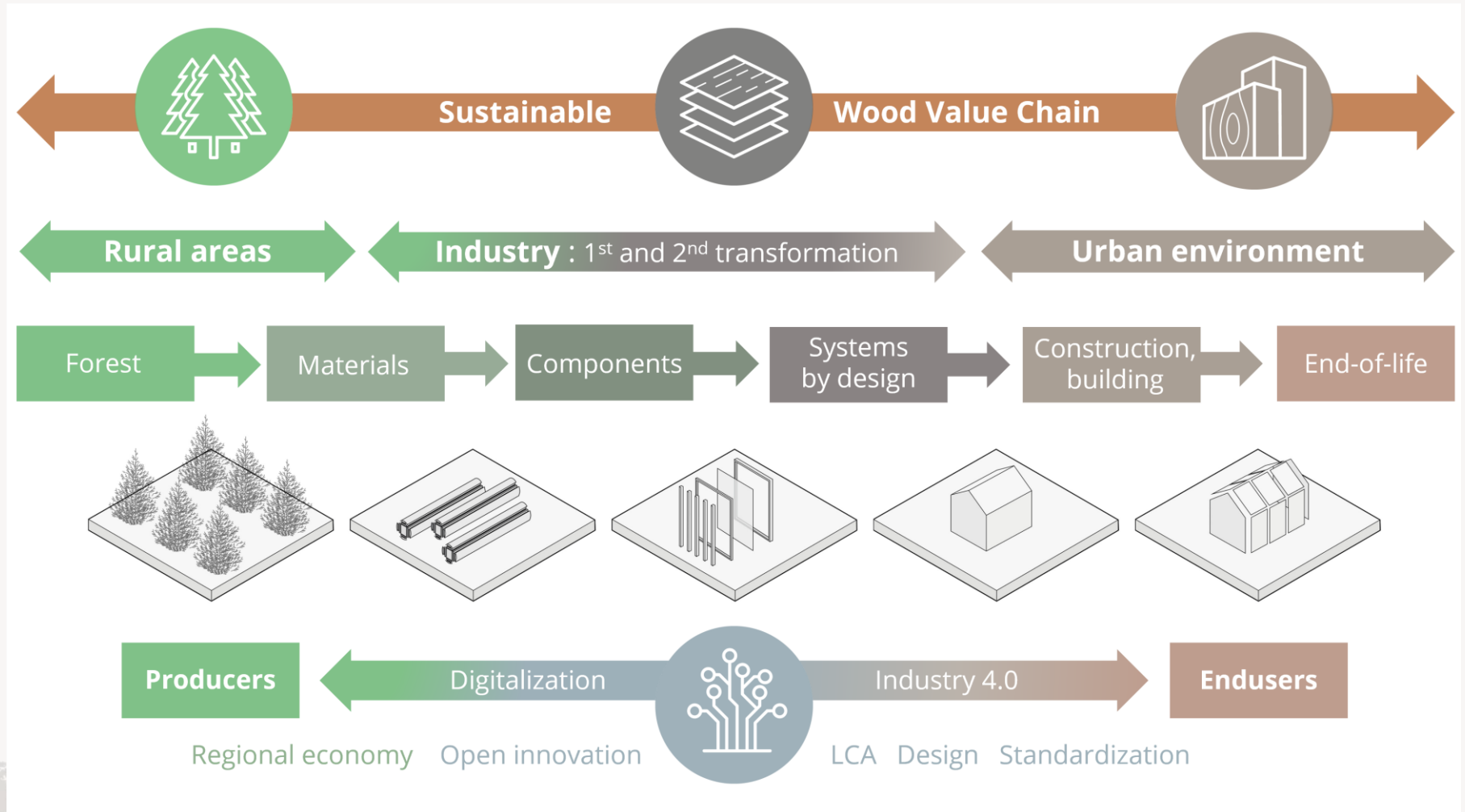


Members map 2022

Google map bit.ly/iwnetwmap



Sustainable Wood Construction fostering Rural Development and Urban Transformation



Sustainable Wood Construction fostering Rural Development and Urban Transformation

Horizon 2020 IA
grant no. 862942
Call LC-RUR-11Part B

Consortium
29 partners in
12 countries

Oct 2019 – Sep 2023
Total budget 12.2 M€
Total EC grant 10M€

Coordinator
Tecnalia Research and Innovation
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Main innovations a nutshell



WP1 Sustainable wood construction value chain

European forest potential, rural and urban areas



WP2 Recyclability, environmental issues

End of Life - recyclability and reusability of BASAJAUN products



WP3 Forest 2 building digital framework

Design of a 'backbone' architecture



WP4 Innovative materials

Fire retarded WPC • Foamed WPC • Insulations • Structural insulation panels (SIP) • Coatings

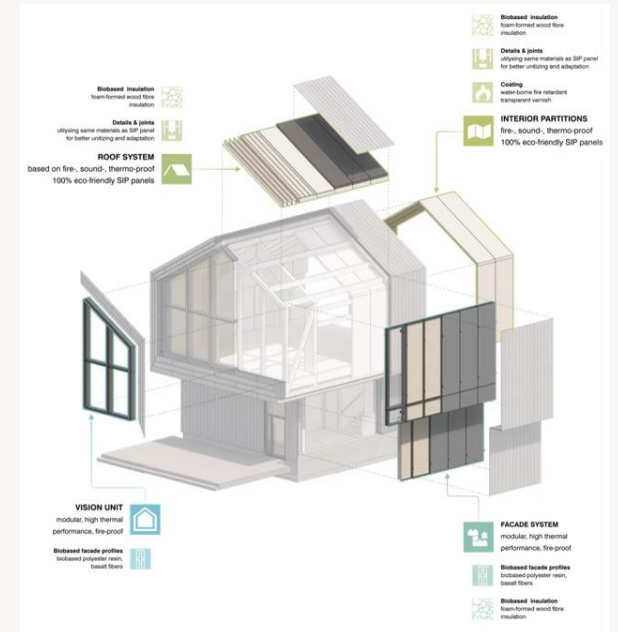


WP5 Building systems and products

Structural components, Facades, Roofs, Bio-composite profiles

WP6 Demo buildings

Demo building Southern France • Virtual demo Finland



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Slide n° 6

- Biobased insulation**
foam-formed wood fibre insulation
- Details & joints**
utilising same materials as SIP panel for better unitizing and adaptation
- ROOF SYSTEM**
based on fire-, sound-, thermo-proof 100% eco-friendly SIP panels



- Biobased insulation**
foam-formed wood fibre insulation
- Details & joints**
utilising same materials as SIP panel for better unitizing and adaptation
- Coating**
water-borne fire retardant transparent varnish
- INTERIOR PARTITIONS**
fire-, sound-, thermo-proof 100% eco-friendly SIP panels

- VISION UNIT**
modular, high thermal performance, fire-proof
- Biobased facade profiles**
biobased polyester resin, basalt fibers

- FACADE SYSTEM**
modular, high thermal performance, fire-proof
- Biobased facade profiles**
biobased polyester resin, basalt fibers
- Biobased insulation**
foam-formed wood fibre insulation



Demo buildings: France & Finland



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Demo building New Aquitaine, France



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Demo building New Aquitaine, France



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Demo building New Aquitaine, France

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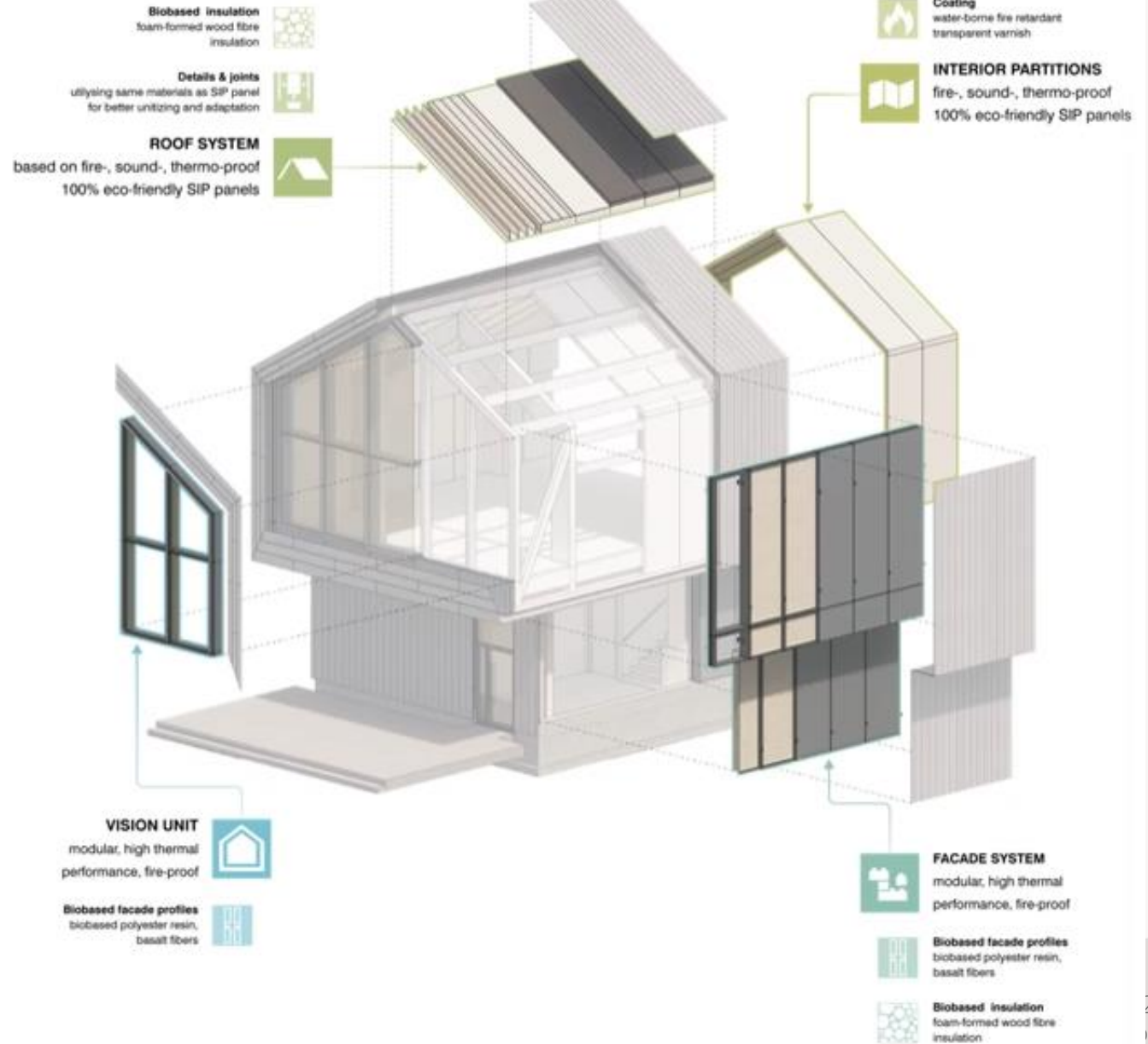


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Slide n° 11





Open Innovation Platform for Sustainable Wood Construction - Technologies, Materials & Products

WP7 - Draft concept for a European collaborative platform



New European Bauhaus : a grassroots movement for the Green Deal



"Sustainably harvested timber can reduce a building's carbon emissions by up to 60%. Pope Francis is so right when he says that humans are not meant to be inundated by cement and steel. Building more with natural elements, like wood, is both good for the planet, and good for the wellbeing of people."

Ursula von der Leyen, President of the European Commission

Speech at Pontifical Academy of Sciences, Vatikan, 9 June 2022
ec.europa.eu/commission/presscorner/detail/en/speech_22_3563



Prof. John Schellnhuber
PIK, Bauhaus Earth



"Reforesting the Planet, Retimbering the City"

Alliance of EU umbrella organisations as NEB-Partner

- InnovaWood network for wood research, innovation and education
- European Confederation of Woodworking Industries (CEI-Bois)
- European Panel Federation (EPF)
- European Organisation of the Sawmill Industry (EOS)
- European Federation of Building and Woodworkers (EFBWW)
- InnoRenew CoE




European Federation
of Building
and Woodworkers



tecna:a

MEMBER OF BASQUE RESEARCH
& TECHNOLOGY ALLIANCE

Wood Sector Alliance for the New European Bauhaus

Brussels, 23 June 2021

**Policy recommendations to encourage
nature-based materials like wood in construction
and renovation of the built environment**







The Wood4Bauhaus Alliance is convinced that a **refurbished and energy efficient EU building stock has a key role to play in the post Covid-19 recovery** and will pave the way for the decarbonisation of one of Europe's largest energy consuming sectors¹. The transformation of the building sector to a truly sustainable sector must be a top priority of the European Commission because it will leverage decisive opportunities to create more green jobs, and spur regenerative growth, inclusion and sustainable development (ecological, economic, social) in both urban centres and rural areas.

Nature-based materials, and especially wood-based products, offer green building solutions that are **renewable, recyclable and have far better environmental performance** (lower carbon footprint) during their life cycle(s) than other conventional materials. Prefabricated solutions using wood also offer modular possibilities to redesign and modernise buildings in a non-invasive and more flexible way (i.e., additional storeys, roof extensions, interior refurbishment), limiting the need for demolition to a last resort. Nature-based solutions are at the heart of the *Circular Economy* and will, with the right policy support, drive the transformation of Europe towards the goals of the *Green Deal*.

The **New European Bauhaus** has unleashed a genuine opportunity to enable the transformation of the construction ecosystem. We need to rethink our relationship with nature and turn the built environment into a carbon sink, especially by using more nature-based materials, such as wood, in construction and renovation. In the words of Prof. John Schellnhuber, we need to "*Reforest the Planet and Retimber the City*", for Europe to become the first carbon neutral continent by 2050. An integrated systems approach encompassing the whole value chain from forest resources to harvested wood products and final engineered products in the built environment is needed to make the "forest-building-pump" work. The key will be a **co-creation movement of all involved actors developing and rolling out an array of more Sustainable, Affordable and Beautiful solutions** for the well-being of Europe's natural environment and all its citizens.

Fully in line with the objectives of the Bioeconomy Strategy, the upcoming post-2020 Forest Strategy, and the New Circular Economy Action Plan, the Wood4Bauhaus Alliance emphasises the importance of the overarching principles of *Circularity* and *Resource Efficiency* for all raw material-dependent sectors.

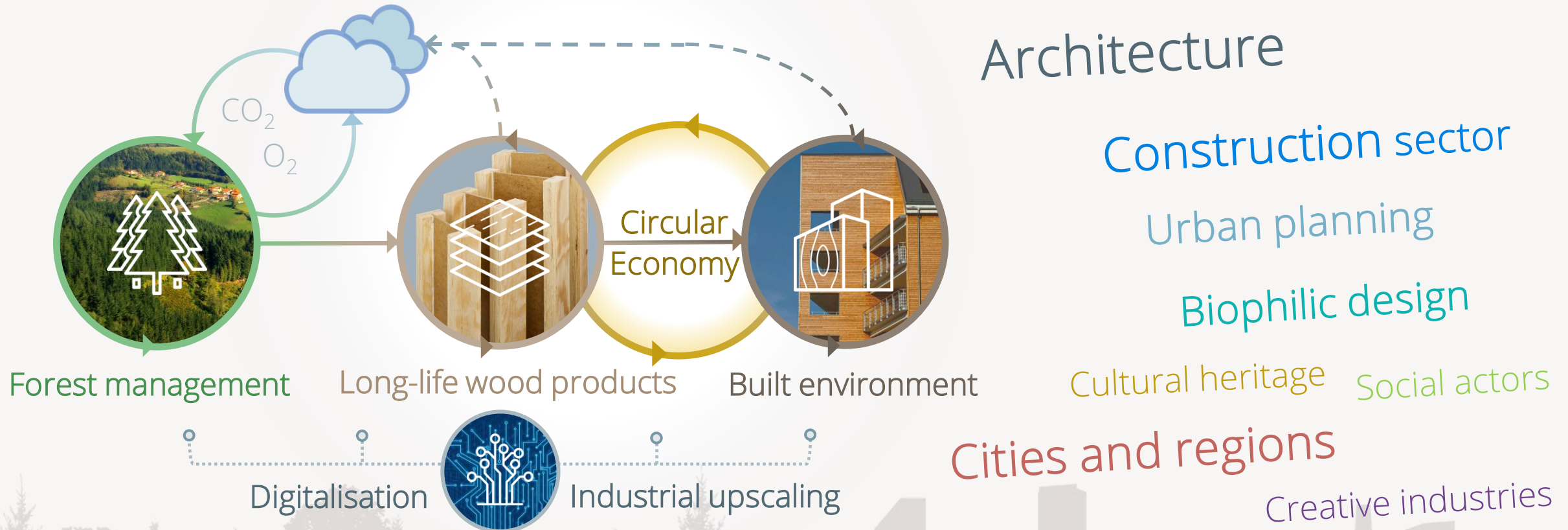
¹ Buildings are accountable for more than one third (36%) of the total CO₂ emissions in the EU. Half of the final energy consumption in the Union is attributable to heating and cooling of which 80% in buildings.

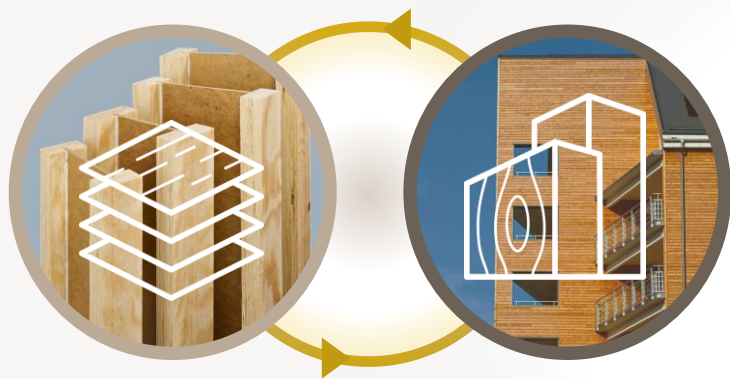
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Open platform for raising awareness and co-creation about wood

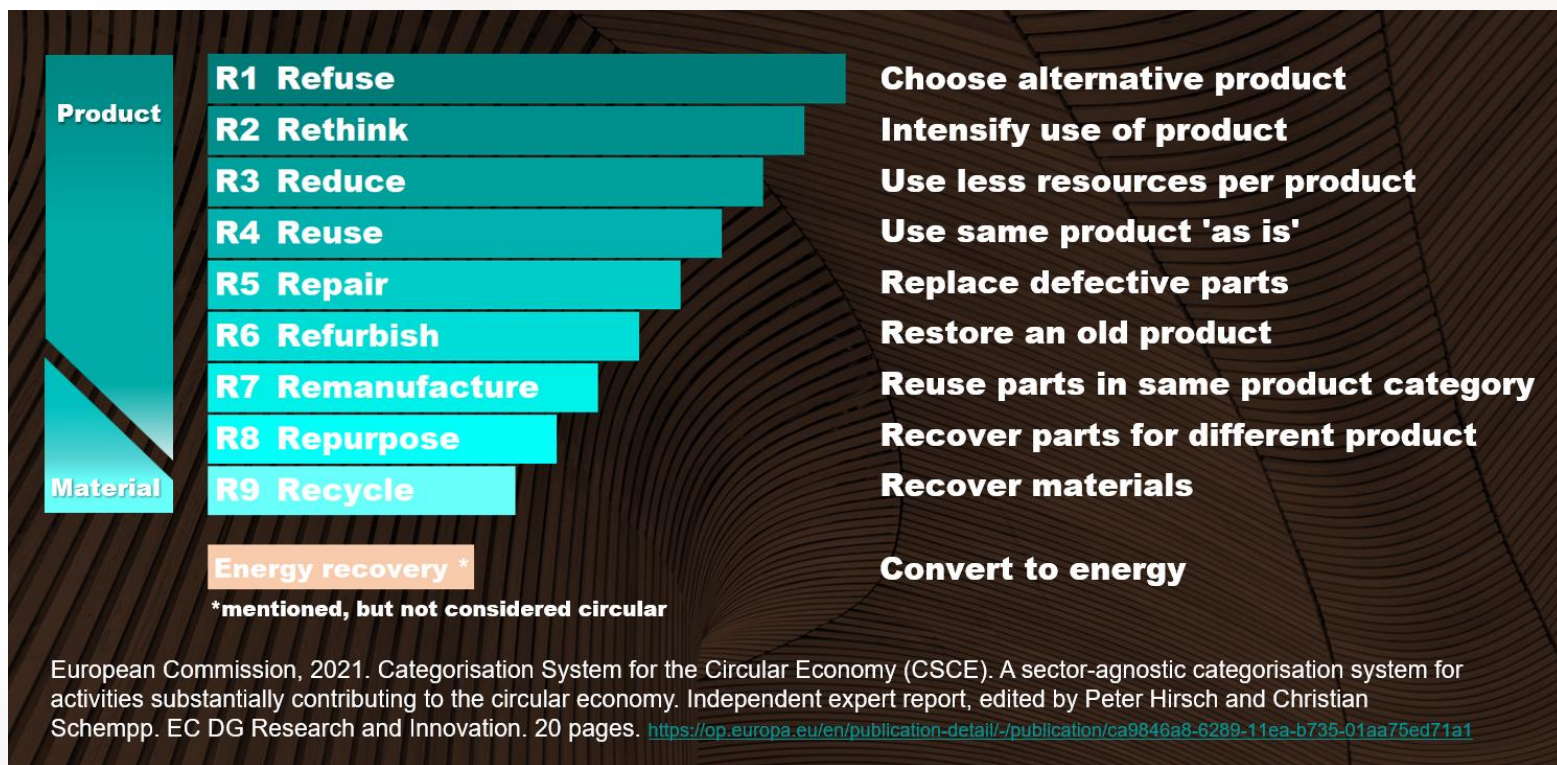


Circularity of wood products: 9R principles of the CSCE Framework




Underpinning the vital role of the forest-based sector in the Circular Bio-Economy

Kies & Jancke, 2022. Innovative Practices of Wood Industries in the Circular Economy in Europe. WoodCircus D3.2 final report. Zenodo. <https://doi.org/10.5281/zenodo.5865052>



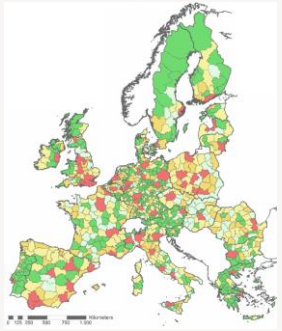
European Commission, 2021. Categorisation System for the Circular Economy (CSCE). A sector-agnostic categorisation system for activities substantially contributing to the circular economy. Independent expert report, edited by Peter Hirsch and Christian Schempp. EC DG Research and Innovation. 20 pages. <https://op.europa.eu/en/publication-detail/-/publication/ca9846a8-6289-11ea-b735-01aa75ed71a1>

Why Open Innovation in Wood Building?

Climate benefits of building with wood for the green transformation are gaining more attention

- Construction sector becomes more interested in wood products; yet architects & civil engineers lack good understanding of wood solutions.
- Wood products have a carbon storage/substitution advantage, but they are not particularly resource efficient or circular.
- Lots of good R&I results remain in the lab drawer; exploitation of novel solutions in further research, technology transfer and market uptake action is limited and insufficient.
- EU patchwork of national construction markets, regulations and business contexts puts the breaks on upscaling and industrialization.
- Major need to interconnect regional knowledge in Europe and speed up results exploitation in more R&I and market uptake.

Why should we connect EU regions?



Innovation ecosystems are shaped by regional factors

- Diverse forest types
- Different building traditions, regulations, functions
- SME-dominated wood industries
- Cultural heritage & architecture
- National/regional initiatives often disconnected from EU
- Funding not well geared to wood construction chains

➤ Need to strengthen and increase the visibility of regional forest-based sectors and all innovation stakeholders



Five pilot regions in Europe

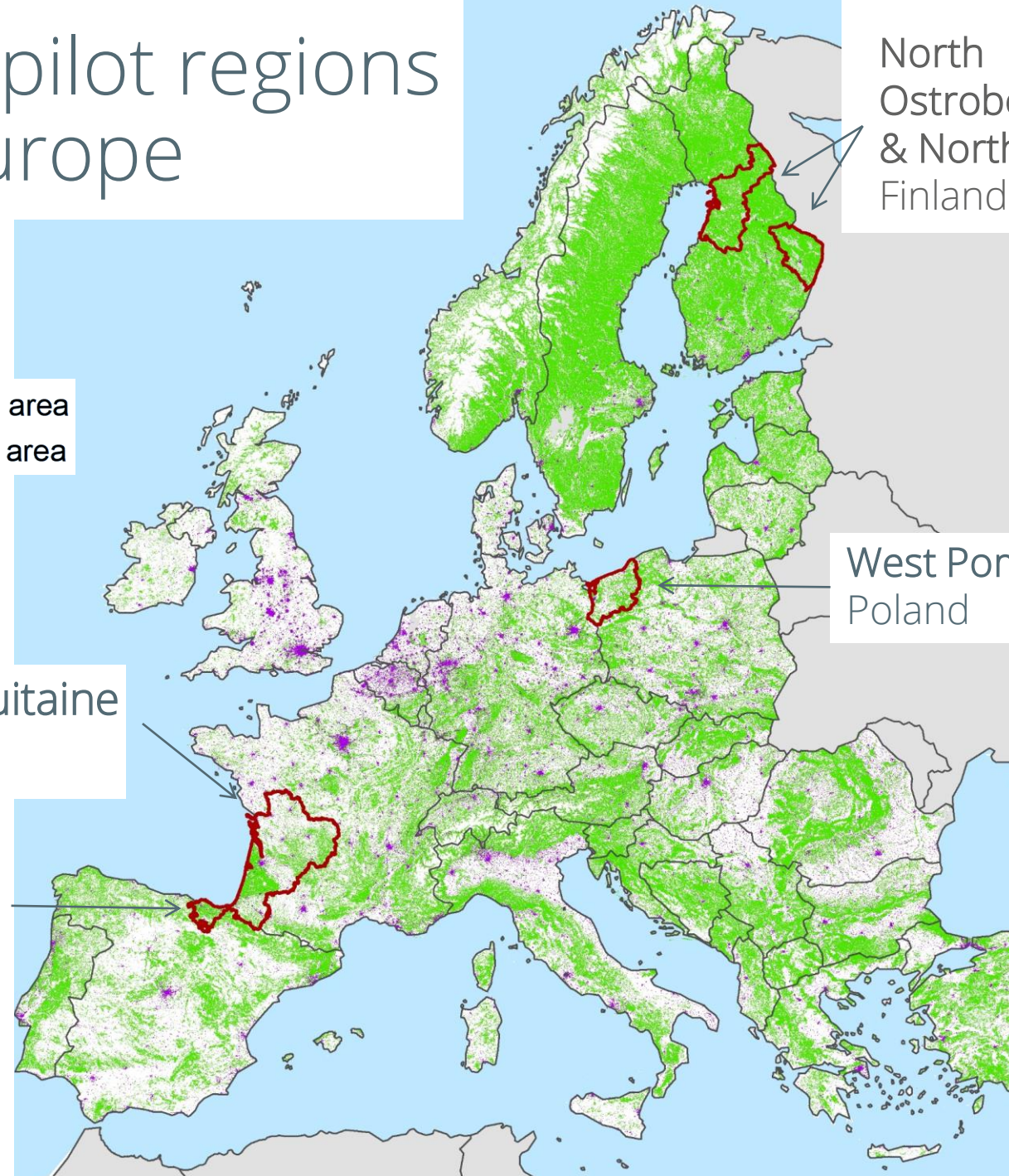
 Forest area
 Urban area

New Aquitaine
France

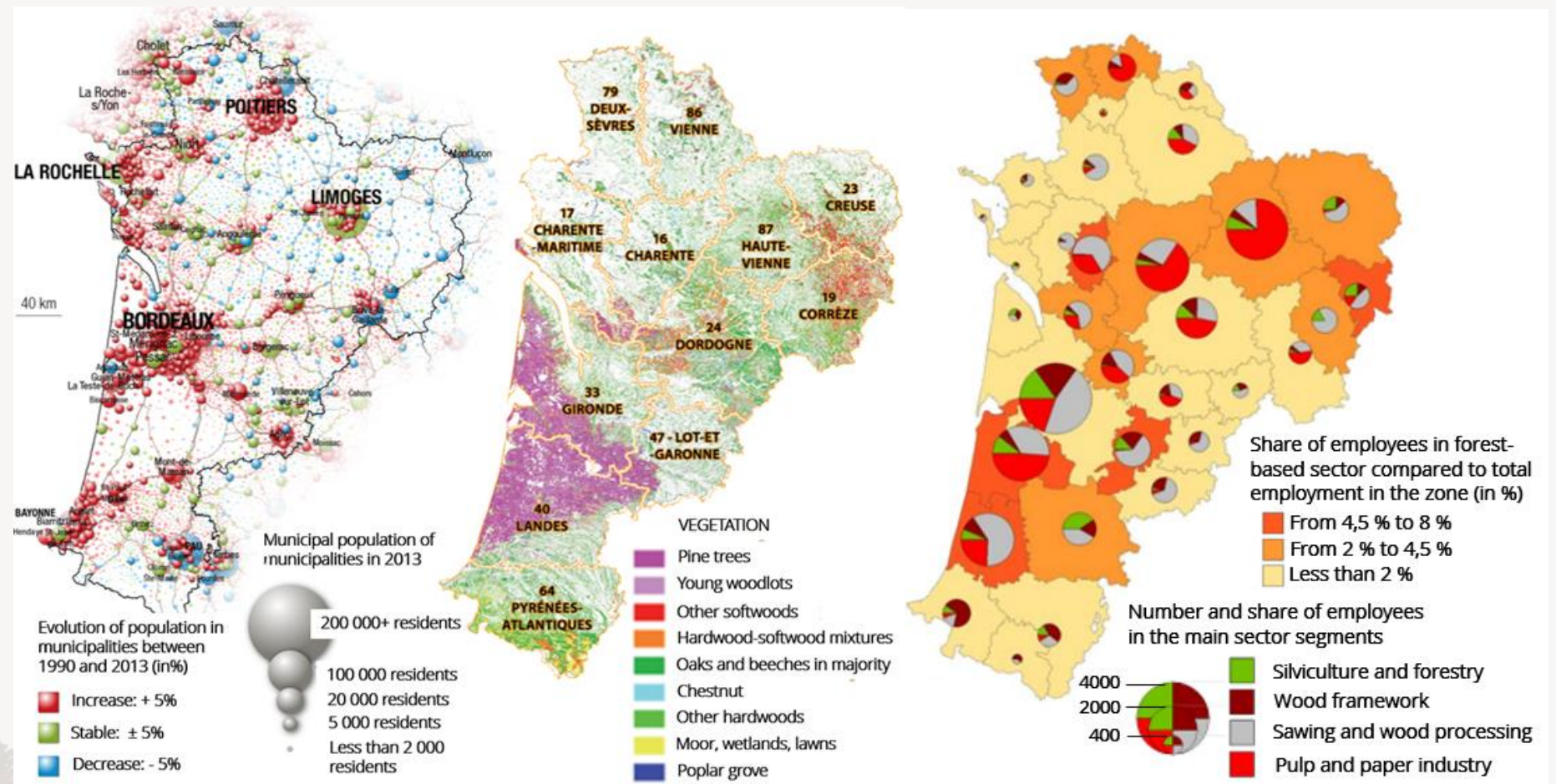
Basque Country
Spain

North
Ostrobothnia
& North Karelia,
Finland

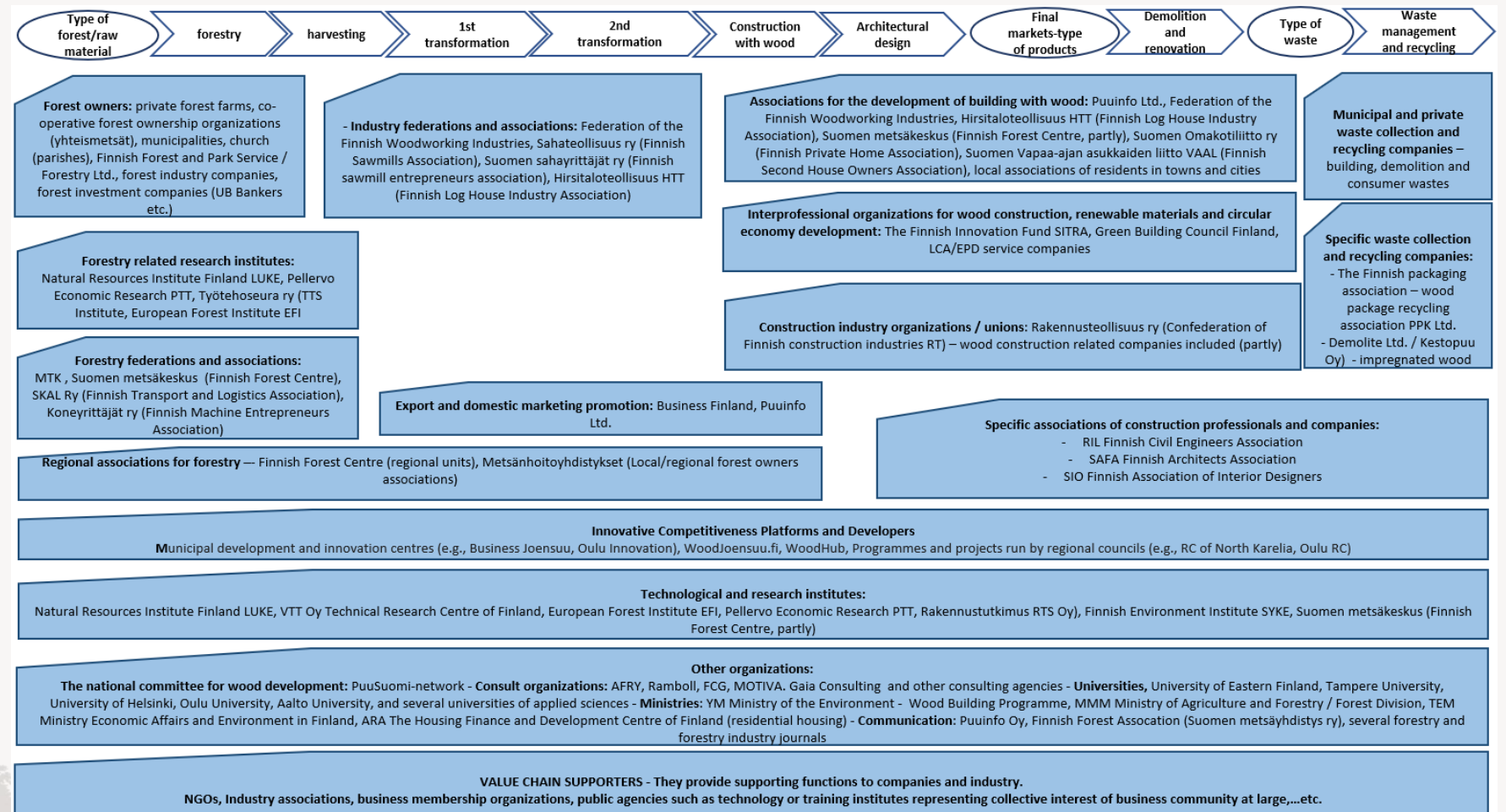
West Pomerania
Poland



Mapping the wood innovation ecosystem



Mapping the wood innovation ecosystem



Mapping the wood innovation system

National

Climate Change Act => carbon neutrality in 2035

- Decarbonize construction sector => Use more wood?
- Increase forest C sinks => Harvest less timber?
=> Dilemma!

The Wood Building Programme (2016–2022)

- Aim: Considerable increase in wood use in public construction

Regional

Regional Forest Programs by Finnish Forest Centre (2021-2025)

- Both regions support wood construction

Regional Strategic Programme (2022-2025)

- North Karelia aims at greener building
- North Ostrobothnia does not recognize wood construction as a priority, yet the region has strong house manufacturing industries

Smart Specializations Strategies (NK 2017, NO 2021-2024)

- Focus on "bioeconomy", "circular economy" + cross-disciplinarity, not "wood construction" as such

Regional Land Use Plan

- Logistics infrastructure (roads, water, railways), future industrial production sites, nature conservation areas

Mapping the wood innovation ecosystem

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> ▪ Universities, technology and research centers that can help propose solutions to the challenges facing society and the sector. ▪ Well-structured forestry-wood sector that will favour the incorporation of the knowledge-innovation generated by this plan. ▪ Specialization in the forest-wood chain that improves the competitiveness of the industry. ▪ PEFC Regional Certification. ▪ Support from administrations. 	<ul style="list-style-type: none"> ▪ Complex orography. ▪ Smallholding and age of the owners. ▪ Lack of sectorial incentives to achieve adequate timber mobilization. ▪ Industries mostly far from industry 4.0, and great dependence on commodities. ▪ Research centers have failed to capture the trust of the forestry-wood sector. ▪ Unprofessional mountain management and lack of machinery adapted to mountainous terrain. ▪ Small forestry research teams without infrastructure to establish long-term trials.
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> ▪ Ability to create national and international strategic alliances. ▪ Nature Tourism to complete rents in rural areas. ▪ Carbon market. ▪ Circular Bioeconomy and Green Economy. ▪ Payments for Ecosystem Services ▪ Scientific-technological capacity to increase the added value of forest products. 	<ul style="list-style-type: none"> ▪ Abandonment of forestry investment. ▪ Possible loss of interest due to long waiting cycles. ▪ Inconsistencies in planning instruments to manage the territory. ▪ Climate change: uncertain future. ▪ Health status of forest stands. ▪ Need to intensify wood production due to increased demand. ▪ Strong industry specialization in radiata pine and eucalyptus, which makes it difficult to put other species of interest on the local market.

Open Innovation Platform (OIP)

Main objective: Foster more wood construction and regional development by joining forces to leverage R&I opportunities

1. Easy access to and wider dissemination of R&I results co-financed by EU and national funding programmes
 2. More synergies from European collaboration and larger market outreach, faster upscaling of demonstration projects of solutions
 3. Better connection/exploitation with industry, faster time-to-market, R&I co-designed for industry needs
- Open innovation to enhance sharing of data/results and to team up for pre-competitive R&I trends exploration and project development

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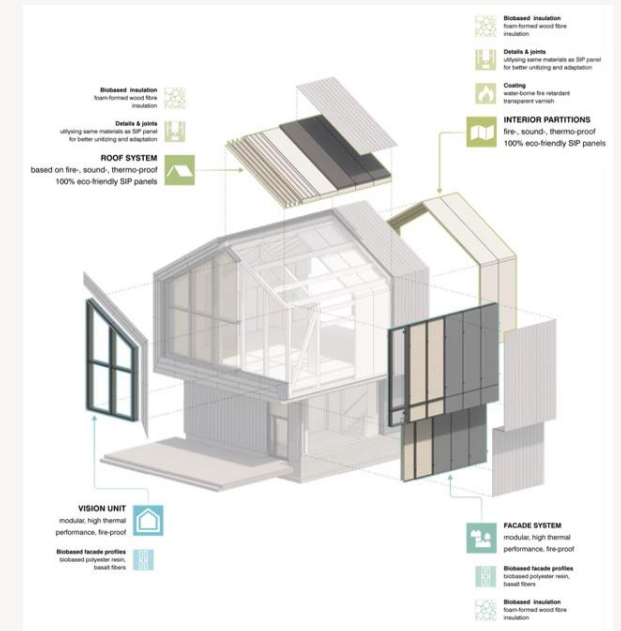


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BASAJAUN WP7 publication

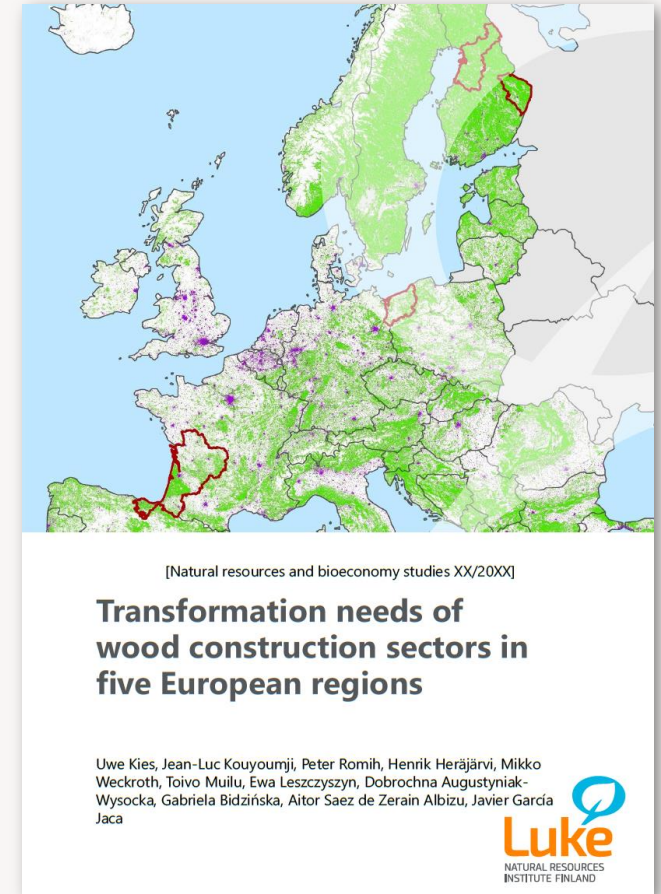
- Mapping of innovation system and needs in five European regions
- Starting points for regional roadmaps

Kies U., Kouyoumji J.-L., Romih P., Heräjärvi H., Weckroth M., Muilu T., Leszczyszyn E., Augustyniak-Wysocka D., Bidzińska G., Saez de Zerain Albizu A., García Jaca J.

Transformation needs of wood construction sectors in five European regions. Natural resources and bioeconomy studies 58/2022. Natural Resources Institute Finland. Helsinki

ISBN 978-952-380-468-5

URN <http://urn.fi/URN:ISBN:978-952-380-468-5>



BASAJAUN Public deliverables

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- Heräjärvi, Henrik, Lehtonen, Olli, Hiltunen, Antti-Petteri, Muilu, Toivo, Verkasalo, Erkki, Lanvin, Jean-Denis, Leszczyszyn, Ewa, & Bidzińska, Gabriela. (2021). Building with wood as a driver for sustainable development in rural regions. BASAJAUN Public report D1.2 (v1.1). Zenodo. <https://doi.org/10.5281/zenodo.4781092>
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