

Tree bark as a renewable source of wood protection materials for building applications (BarkBuild)

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Network of 6 European countries

List of partners

Partner No *	Partner organisation name	Country
1 (Coordinator)	Stockholms universitet (SU)	Sweden
2	Latvian State Institute of Wood Chemistry (LSIWC)	Latvia
3	Renewable Materials and Healthy Environments Research and Innovation Centre of Excellence, InnoRenew CoE (IR)	Slovenia
4	Teknologian tutkimuskeskus VTT Oy (VTT)	Finland
5	Norsk Institutt for Bioøkonomi (NIBIO)	Norway
6	Warsaw University of Life Sciences (WULS)	Poland

BarkBuild Team: The Unique Combination of Skills

Mika Sipponen, PhD, Stockholm University

- **Lignin valorization**

Marc Borrega, PhD, VTT

- **Biorefinery processes and biobased products**

Andreas Treu, PhD, NIBIO

- **Forest products and bioeconomy**

Matthew Schwarzkopf, PhD, InnoRenew

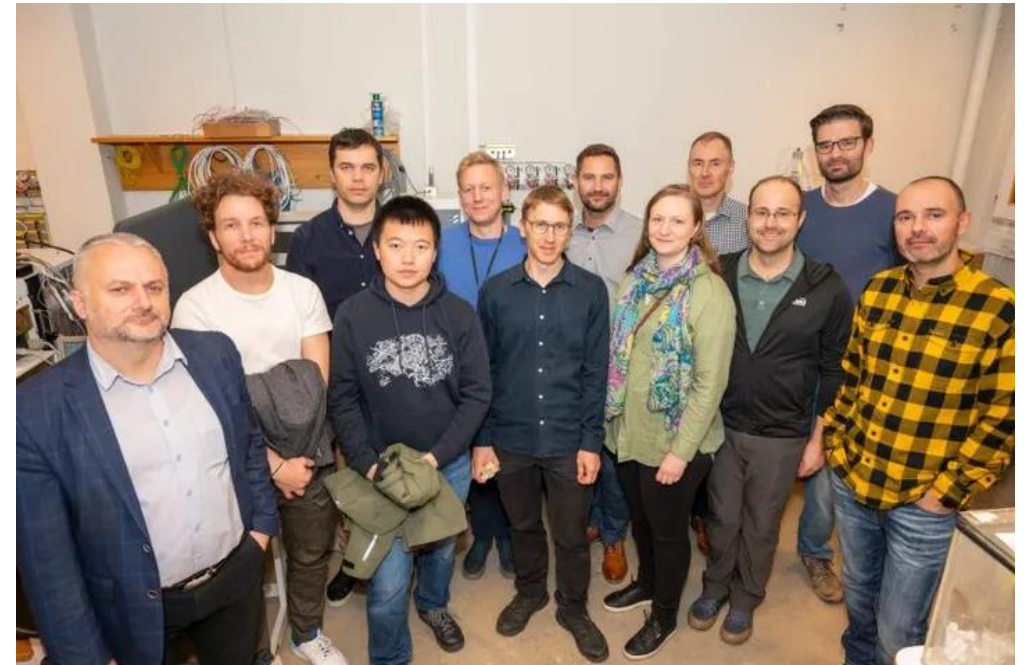
- **Sustainable building materials**

Aji Mathew, PhD, SU

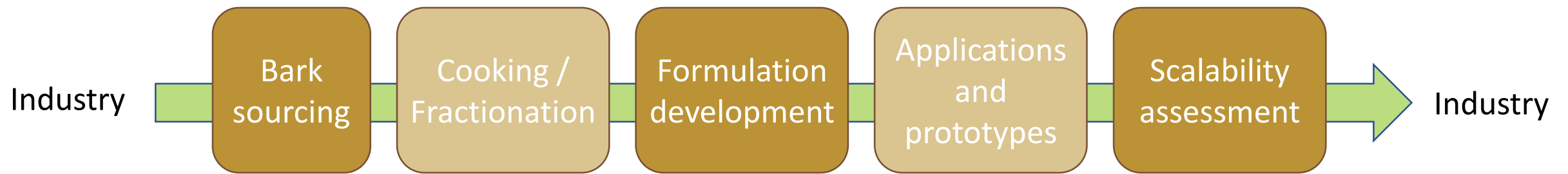
- **Professor in materials chemistry**

Grzegorz Kowaluk, PhD, WULS

- **Furniture and wood technology**



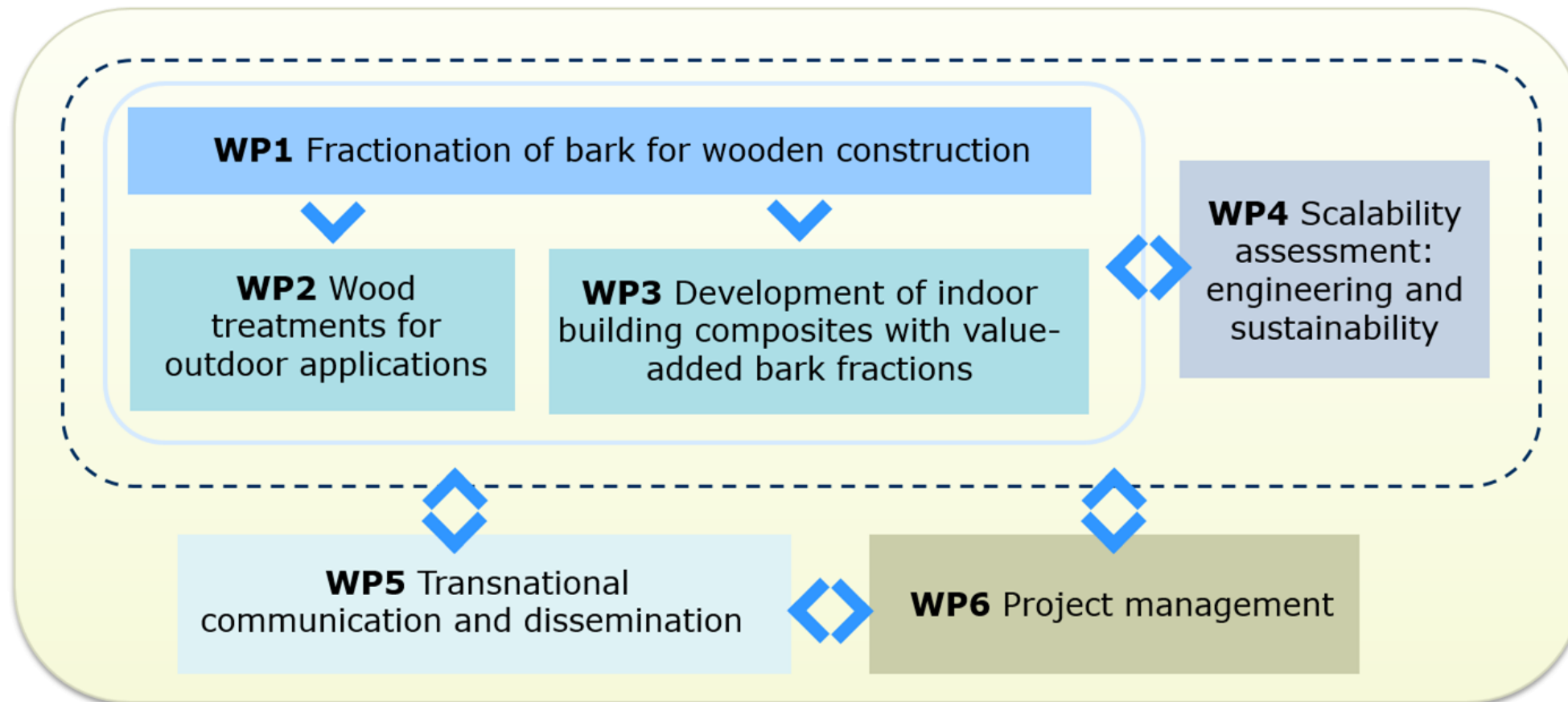
From industrial residues to new industrial products



Partners



Overview of work packages



WP1: Bark fractionation: polyphenols



Spruce bark



Alkaline
extraction



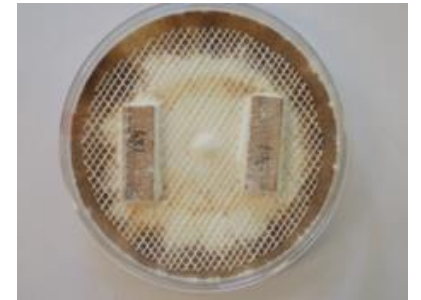
Bark polyphenols



Pressure
impregnation



Pine wood impregnated with
polyphenols



Fungal decay testing



Coating



Spruce wood coated with
polyphenols and biochar

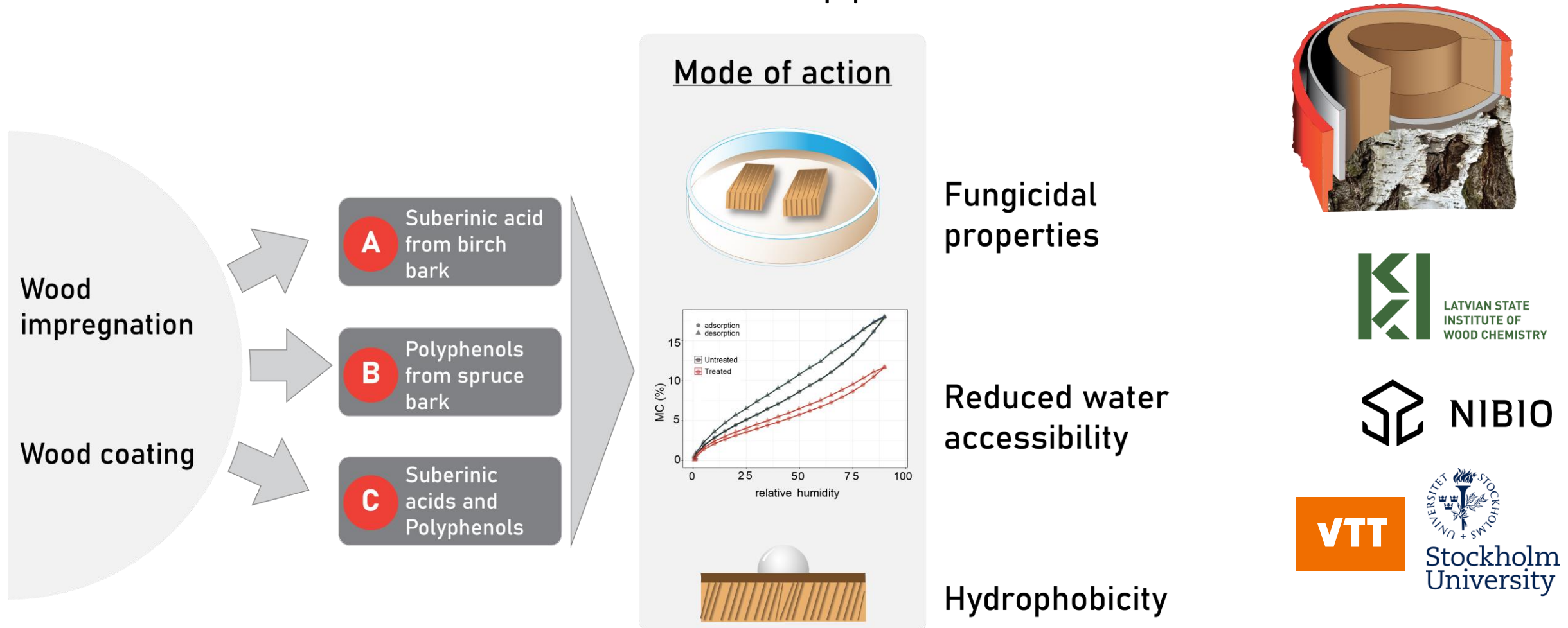


VOC absorbance testing

Bark polyphenols act as natural preservative and prevent wood decay caused by brown rot.

Coatings based on bark polyphenols act as binder for VOC absorbents to improve air quality.

WP2: Wood treatment for outdoor applications - overview



WP2: A water-resistant wood coating



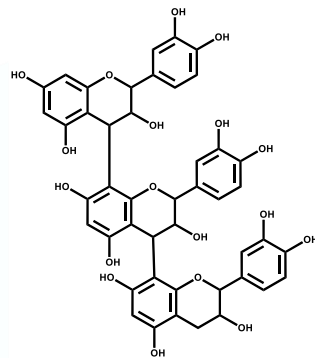
Birch bark



Spruce bark



Suberinic acids



Polyphenols



Curing



Waterborne coating

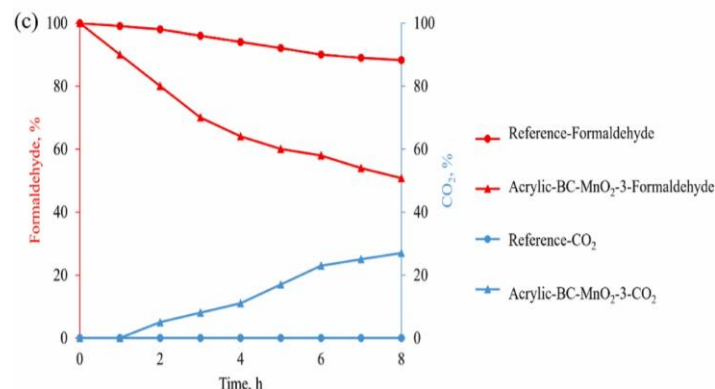
WP3: Indoor applications of bark compsites (no more formaldehyde!)

Coatings for indoor formaldehyde removal (InnoRenew)



before

after



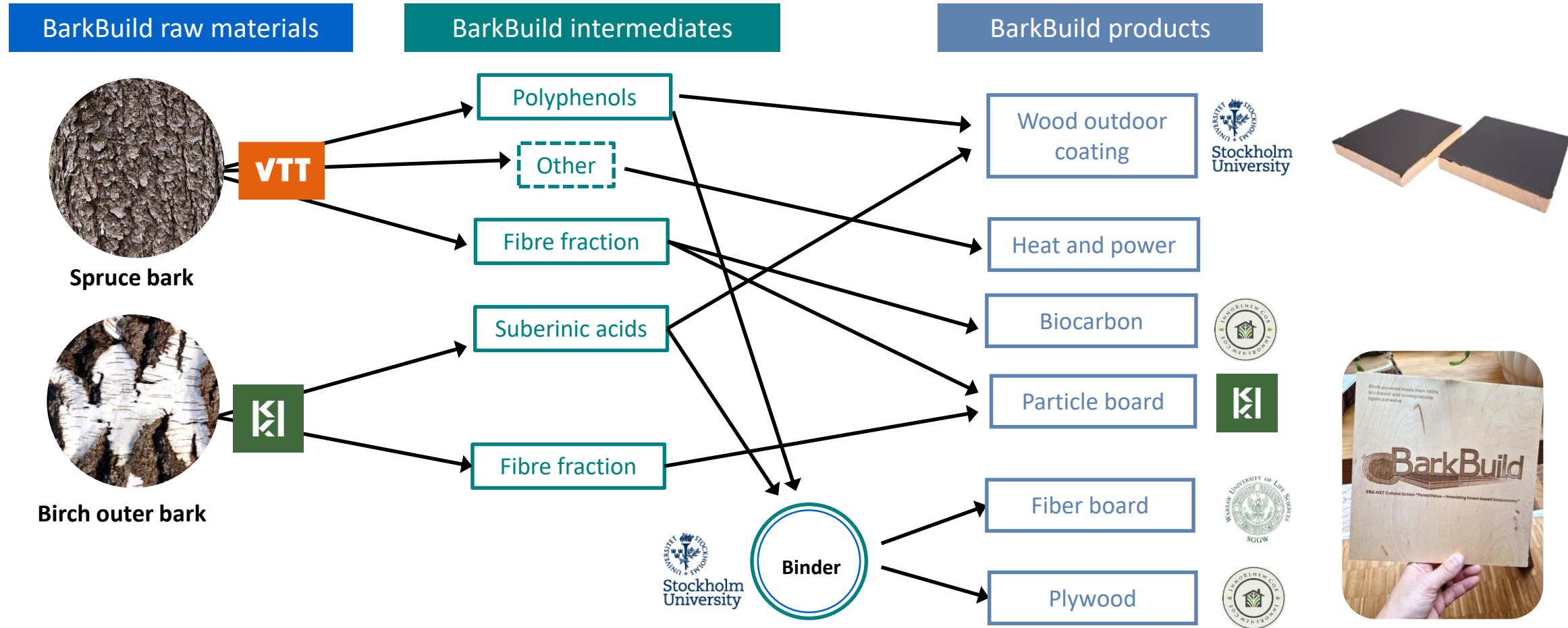
Formaldehyde-free plywood (InnoRenew + SU)



Formaldehyde-free fiberboard production (WULS + InnoRenew + SU)



WP4: Optimising bark use: TEA and LCA



Final steps, and the new opportunities

- TEA and LCA to be finalized – Case study of efficient use of bark
- Engagement with industry (Latvijas Finieris, Holmen, Lumir)
- "The full potential of bark is not yet fully utilized."





Thank you!

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WP leaders and participants

No.	Work package title	WP Leader	Partners involved
1	Fractionation of bark for wooden construction	Marc Borrega , VTT	LSIWC
2	Wood treatments for outdoor applications	Andreas Treu , NIBIO	SU, VTT, LSIWC
3	Development of indoor building composites with value-added bark fractions	Matthew Schwarzkopf , InnoRenew	WULS, SU, VTT
4	Scalability, sustainability and safety assessment	Aji Mathew , SU	All
5	Transnational dissemination and communication activities	Grzegorz Kowaluk , WULS	All
6	Project management	Mika Sipponen , SU	All