



WOOL2LOOP

Mineral wool waste back to loop with advanced sorting, pre-treatment, and alkali activation

Call/Topic: Raw materials innovation for the circular economy: sustainable processing, reuse, recycling and recovery schemes

Type of action: Innovation action

Duration: 36 months

Project start: 1st of June, 2019

Project budget: 6,7 MEUR

Total EU funding: 5,3 MEUR



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 821000.

The opinions expressed in this document reflect only the author's view and in no way reflect the European Commission's opinions. The European Commission is not responsible for any use that may be made of the information it contains.



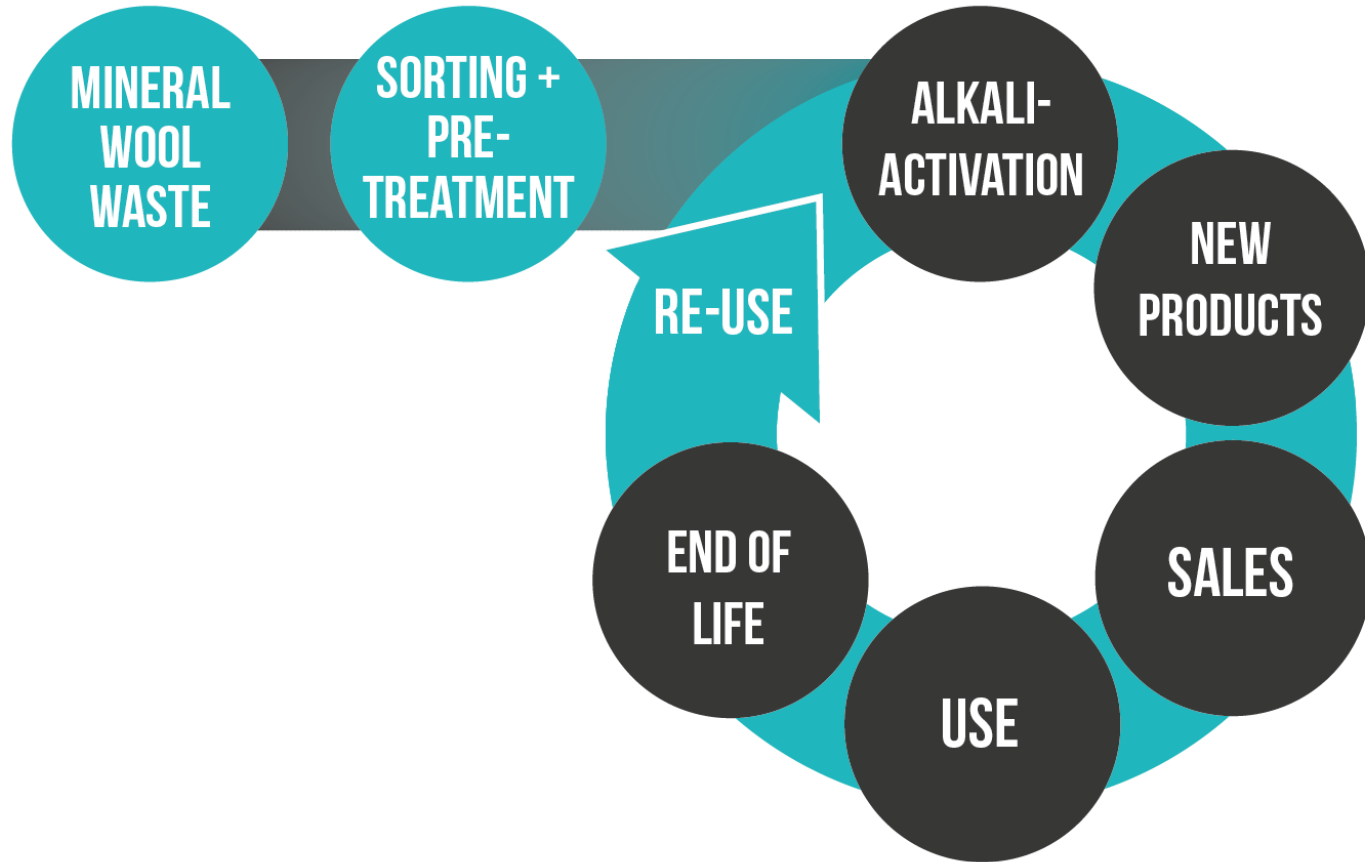
Mineral wool = glasswool and stonewool building insulation material

Background

Mineralwool in construction and demolition waste (CDW) of buildings totals up to 2.5 Mt annually in EU*. Majority of it is landfilled with different environmental, economic and societal impacts.

*Väntsi O, Kärki T (2013) Mineral wool waste in Europe: a review of mineral wool waste quantity, quality, and current recycling methods.

Objective



- The project aims to divert mineral wool from landfilling and introducing novel technology and value chain to CDW sorting, analysis, pre-treatment, processing, novel product development market introduction and commercialization.
- New products and applications for construction are prepared with sustainable, alternative, non-conventional raw material with ***geopolymer technology***.



DEMOLITION WASTE
MINERAL WOOL
MANUFACTURING
BY-PRODUCTS

SMART DEMOLITION
& PRE-DEMOLITION
AUDITS
PULVERIZATION

TRANSPORT OF
MINERAL WOOL
POWDER

ALKALI-ACTIVATION

ARCHITECTS
DESIGNERS
BUILDING OWNERS

RECYCLING OF ALKALI-ACTIVATED MATERIAL



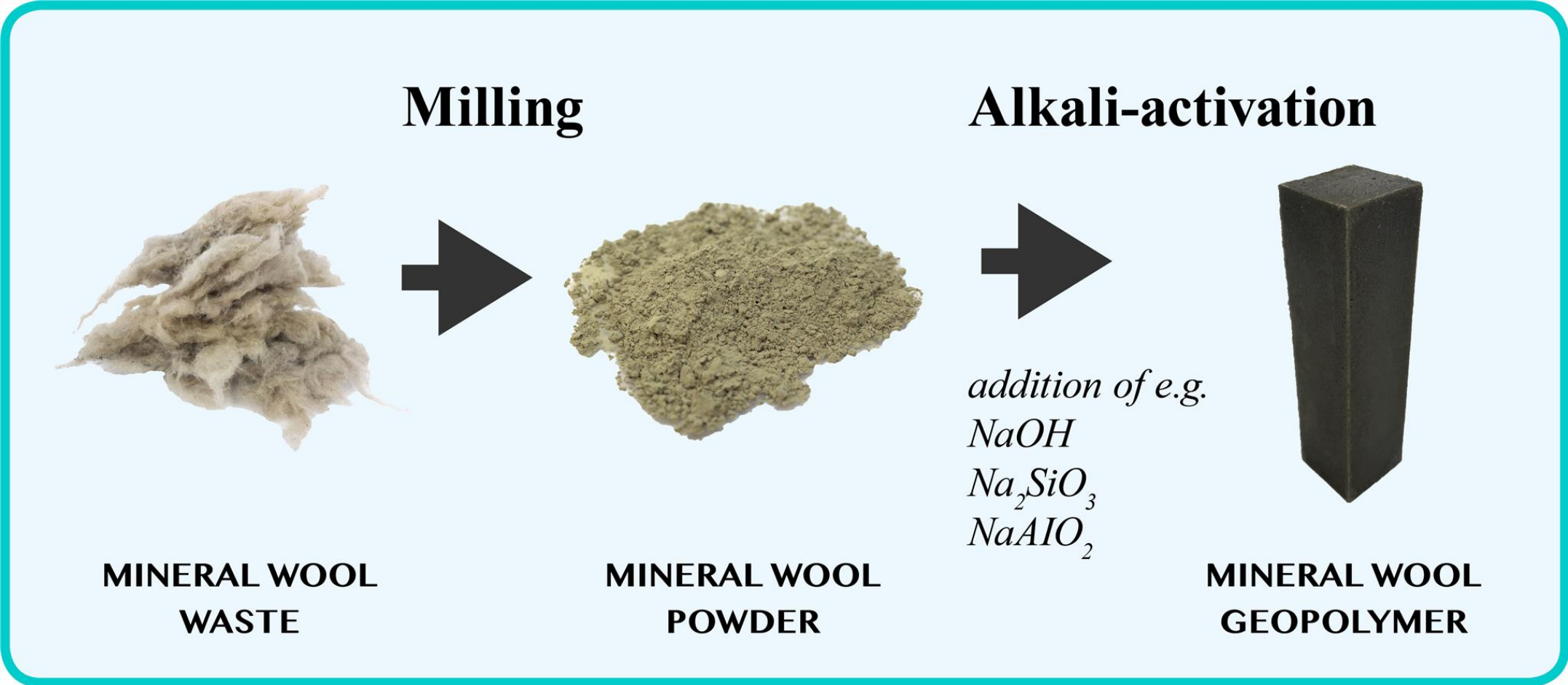
What are geopolymers i.e. alkali- activated materials?



- **Based on the chemistry of the most abundant elements in the crust**
- Oxides of silicon and aluminum (SiO_2 ja Al_2O_3)
- Also MgO , CaO , Fe_2O_3
- **Available in ashes, clays, slags, etc.**
- And in mineral wools!

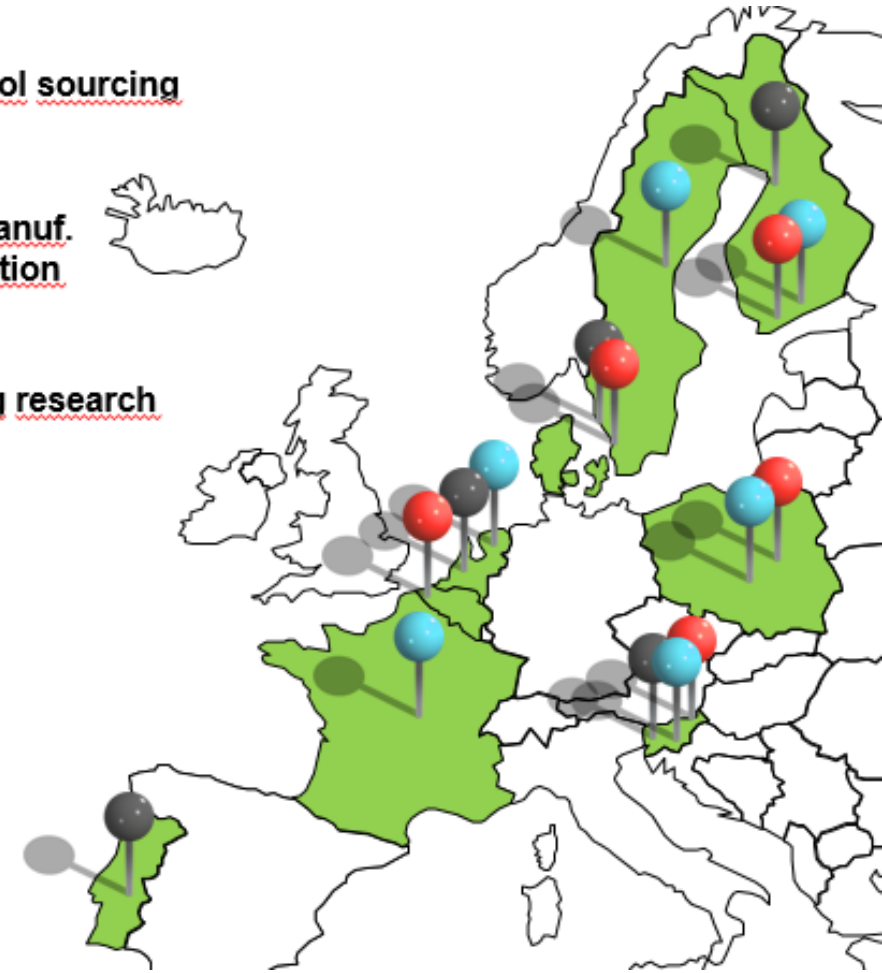
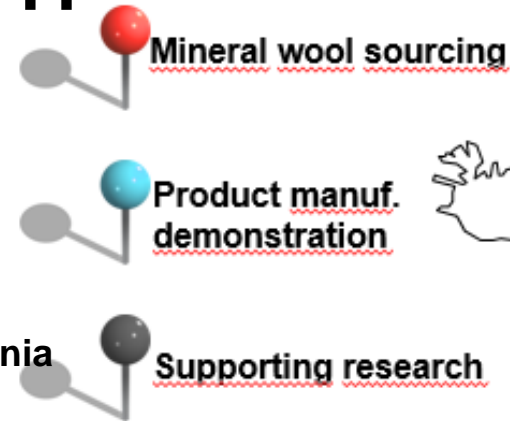
- **In addition, alkali activator needed**
- **Results in ceramic or concrete like material, with tunable properties**
- **Room temperature process**

In nutshell

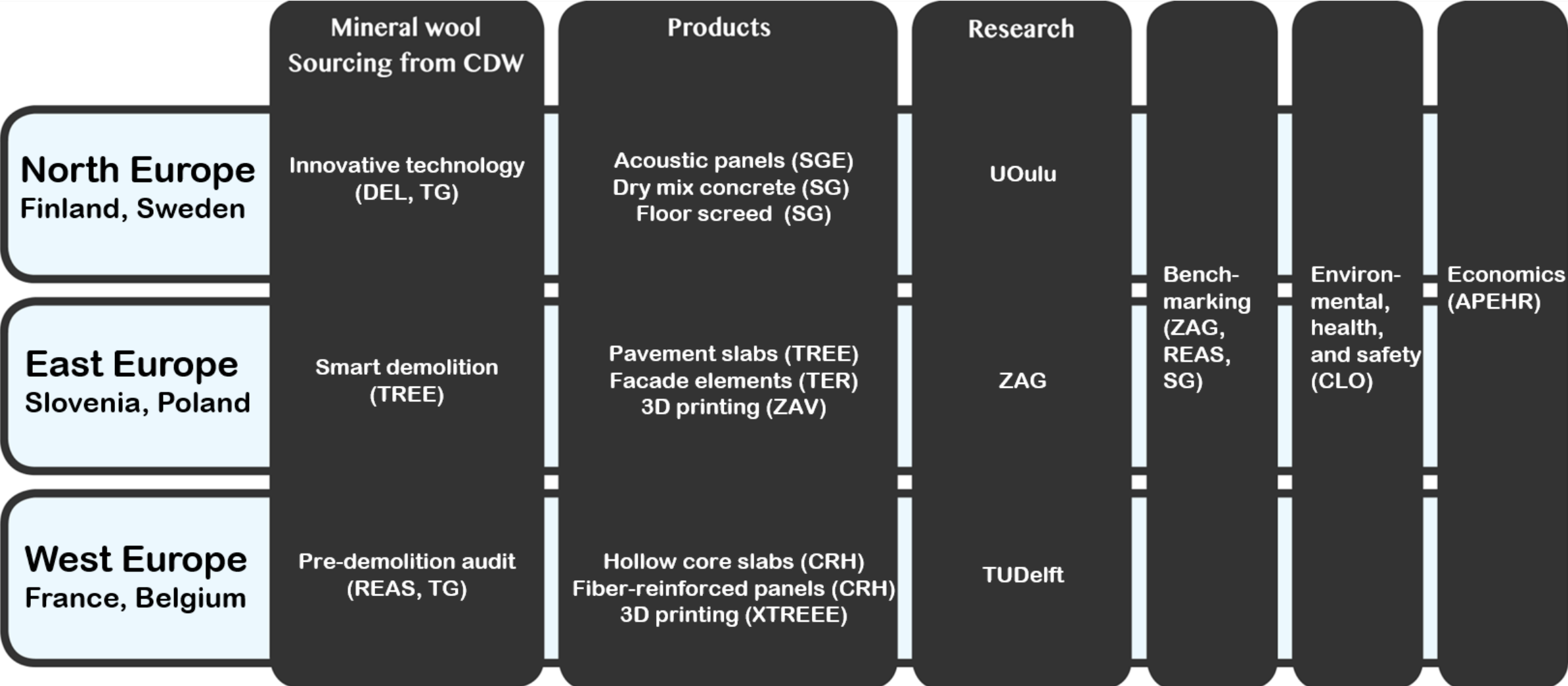


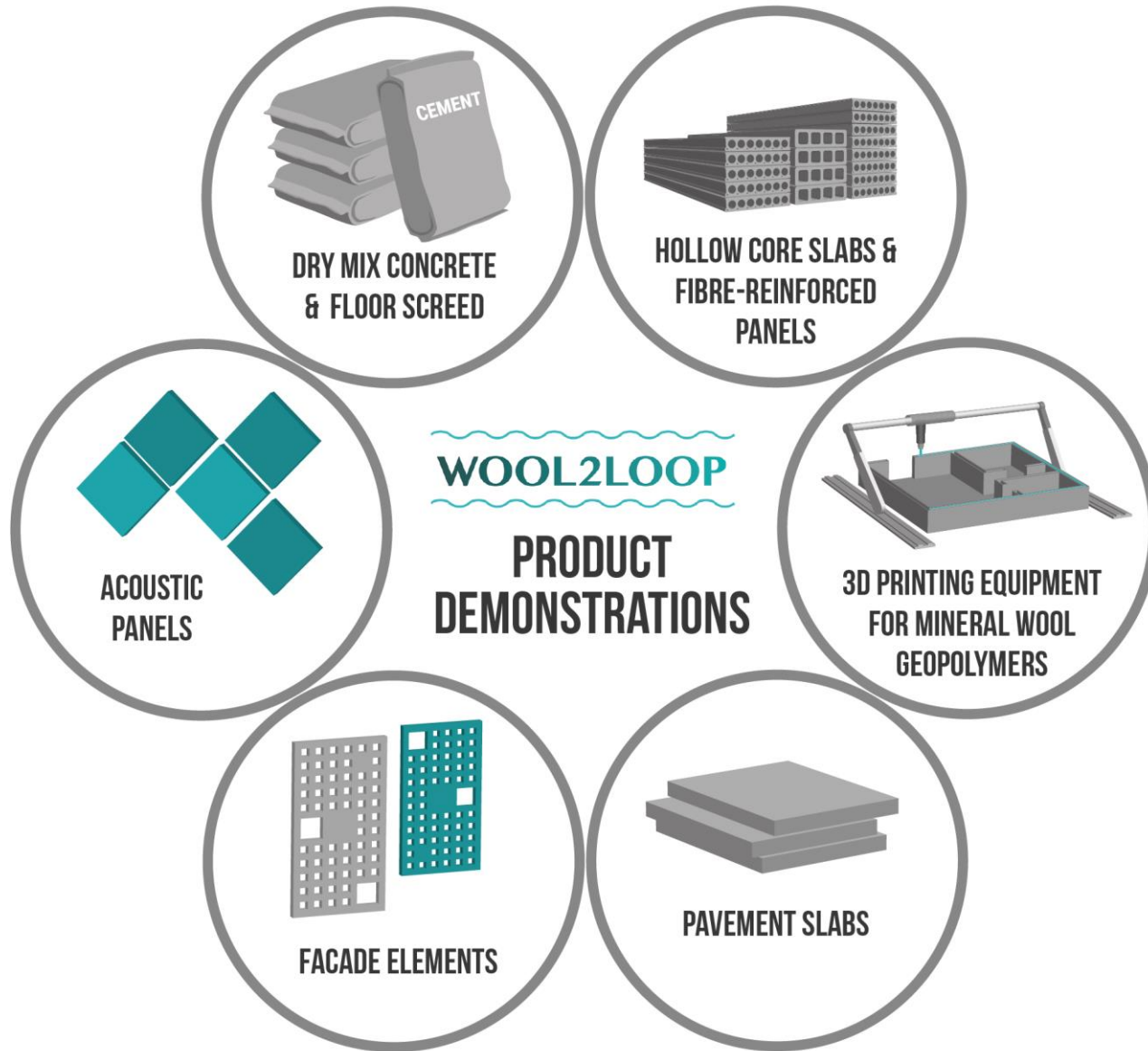
WOOL2LOOP Consortium

Saint-Gobain Finland Oy (SG), Finland – Coordinator
University of Oulu (UOULU), Finland – Scientific coordinator
Saint-Gobain Ecophon AB (SGE), Sweden
Timegate Instruments Oy (TG), Finland
Slovenian National Building and Civil Engineering Institute (ZAG), Slovenia
Termit (TER), Slovenia
Clover Strategy Ltd (CLO), Portugal
Institute of Applied Economics and Health Research (APEHR), Denmark
Recycling Assistance BVBA (REAS), Belgium
Technical University of Delft (TUDelft), Netherlands
XTREEE, France
Zavod 404 (ZAV), Slovenia
CRH, Netherlands
Tree Capital (TREE), Poland
Delete Finland Oy (DEL), Finland



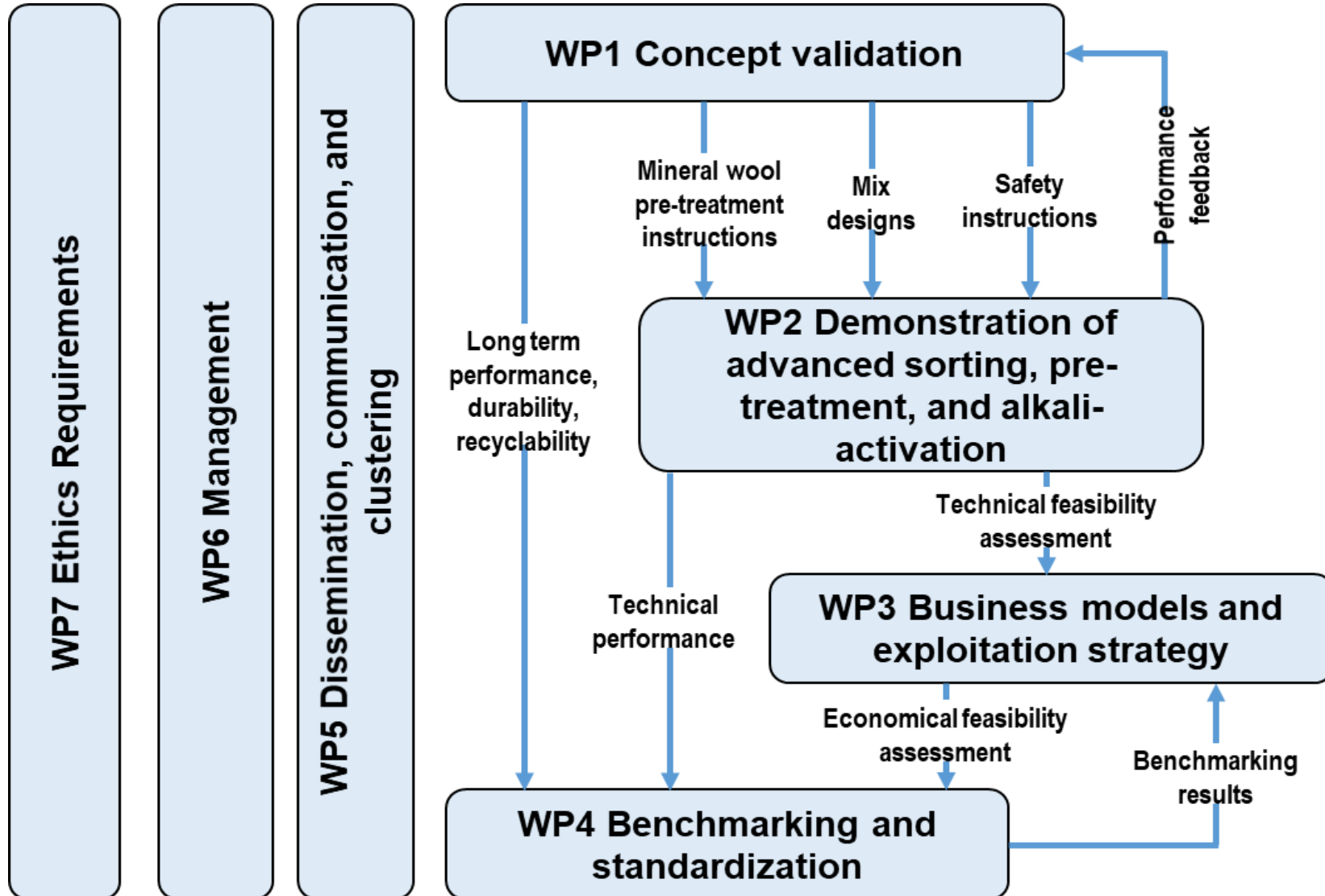
Partner roles





- By careful mix design of mineral wool geopolymers, it is possible to product a wide range of value-add products with different properties e.g. durability, density, compressive and flexural strenght.
- Mineral wool geopolymer can enhance the sustainability profile of traditional concrete products. Up to 80 % CO₂ footprint reduction compared to OPC can be expected.
- Mineral wool geopolymers can provide performance improvement compared to traditional concrete.
- Contributing to standardization of geopolymers / AAMs.
- Creating new markets for “waste” materials, necessary step for the transition to circular economy.

WOOL2LOOP Workpackages & Leaders



WP	WP Leader
1	Juho Yliniemi (UOULU)
2	Arno Keulen (CRH)
3	Birgitte Holt-Andersen (APEHR)
4	Vilma Ducman (ZAG)
5	n.n. (UOULU)
6	Anne Kaiser (SG)
7	Anne Kaiser (SG)



WOOL2LOOP

For further information:

Saint-Gobain Finland Oy
Sustainability Manager

Anne Kaiser

anne.kaiser@saint-gobain.com

+358 400 289 933

University of Oulu, Fibre & Particle Engineering Research Unit

Professor

Mirja Illikainen

mirja.illikainen@oulu.fi

+358 40 588 5904