Iceland Liechtenstein Norway grants

CIRCULAR2B

Circular Construction in Energy-Efficient Modular Buildings

Consortium

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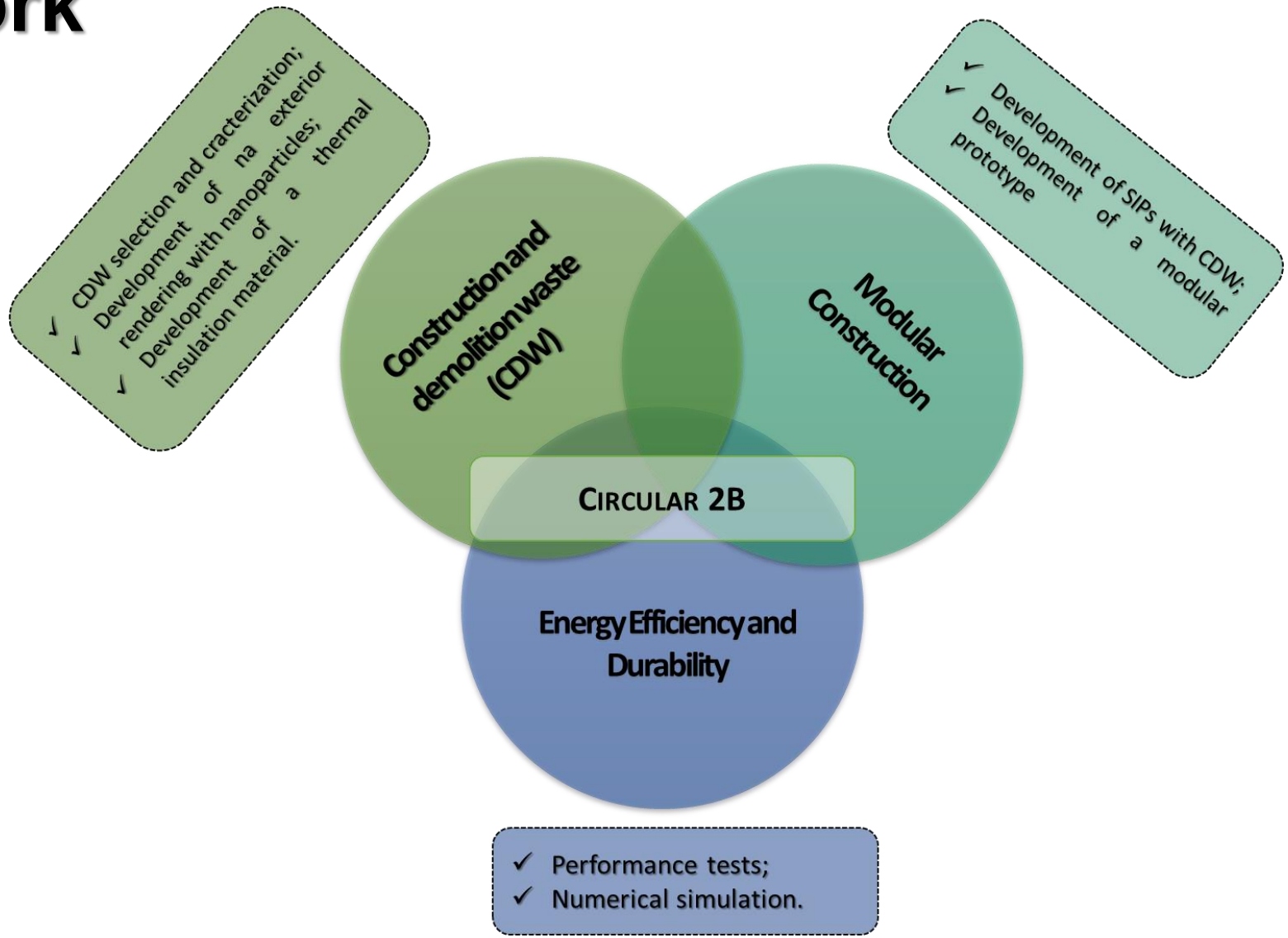
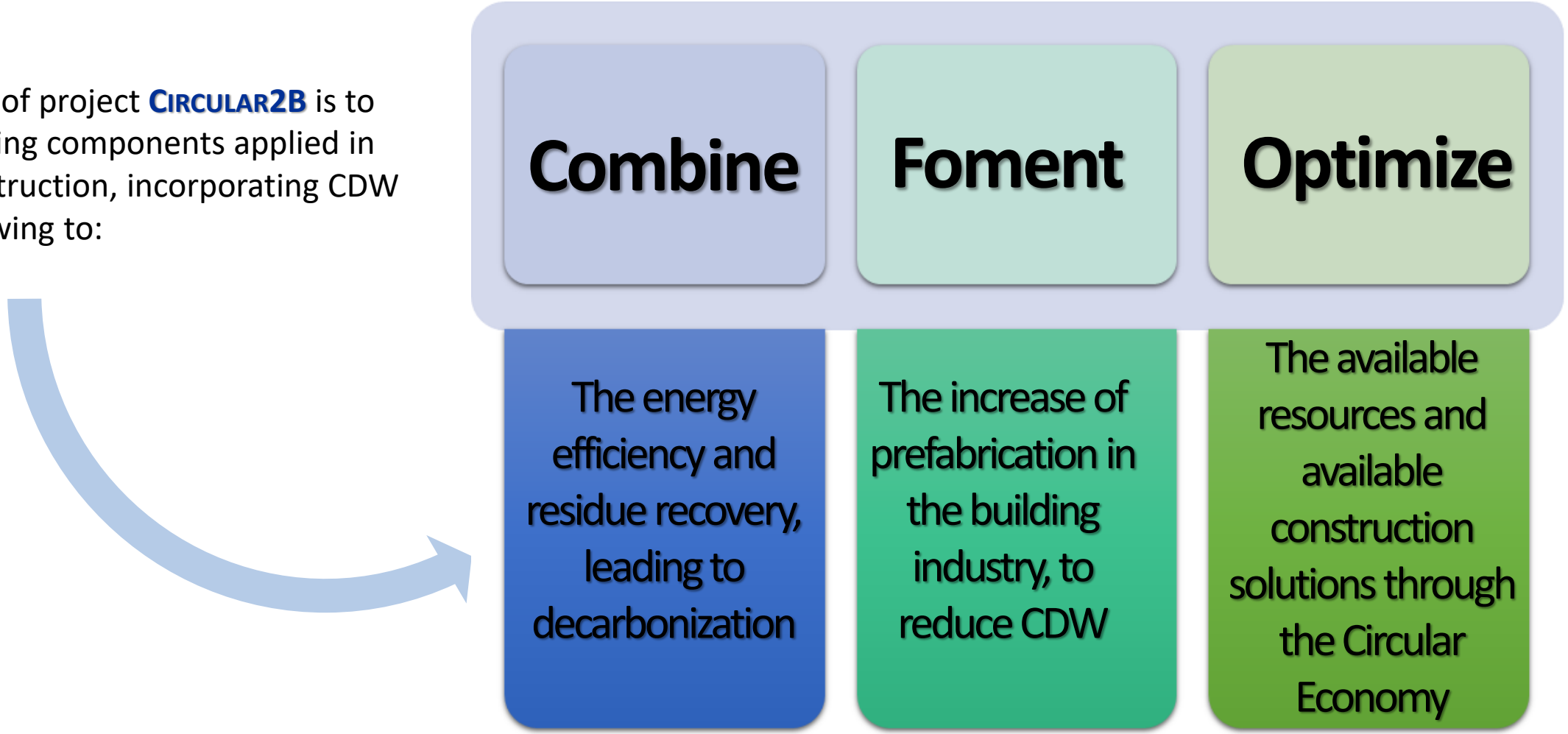
SINTEF

Framework


✓ CDW selection and cracterization;
✓ Development of na exterior rendering with nanoparticles;
✓ Development of a thermal insulation material.
Construction and demolition waste (CDW)
Modular Construction
✓ Development of SIPs with CDW;
✓ Development of a modular prototype
CIRCULAR 2B
Energy Efficiency and Durability
✓ Performance tests;
✓ Numerical simulation.

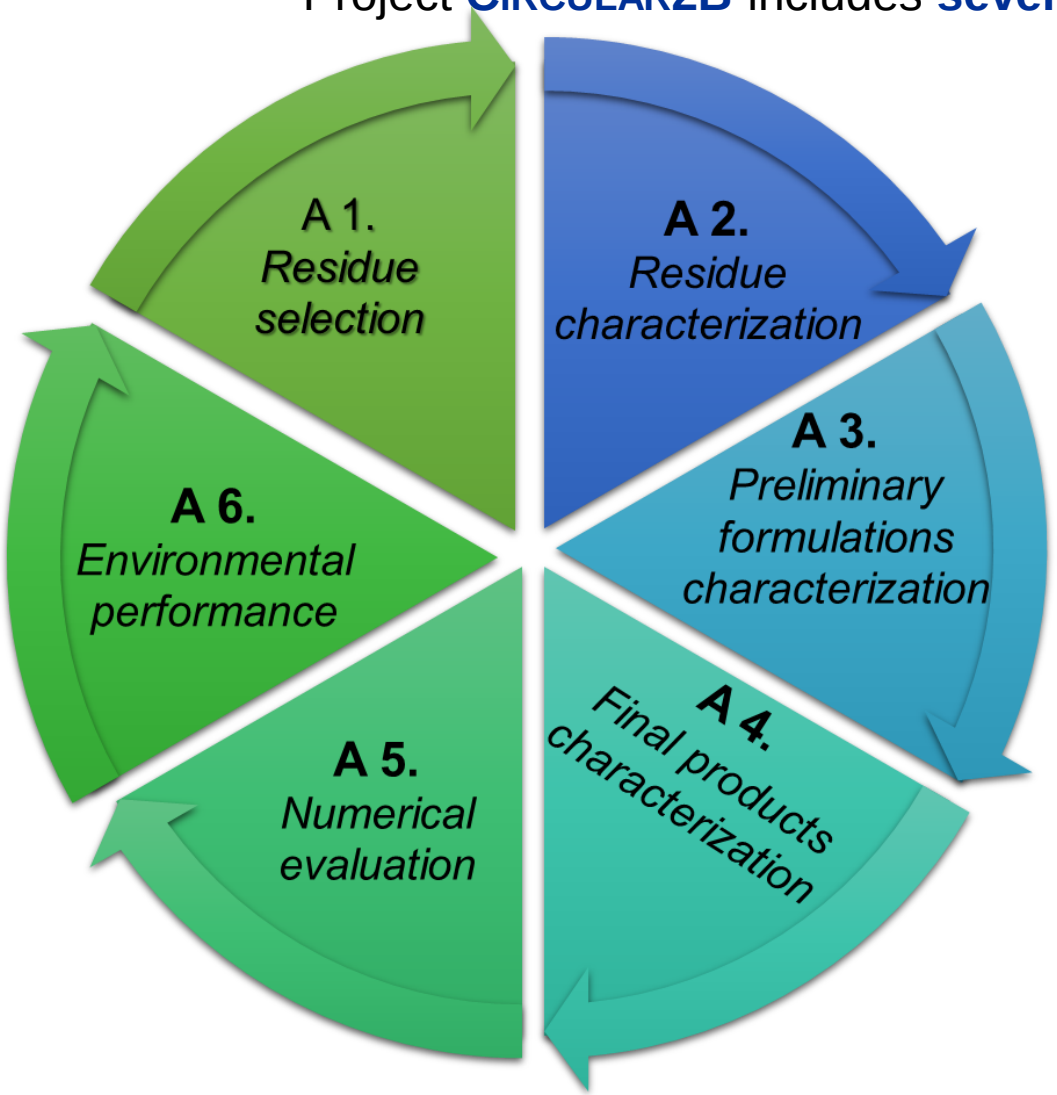
Objectives

The objective of project **CIRCULAR2B** is to develop building components applied in modular construction, incorporating CDW and slag, allowing to:



Activities

Project **CIRCULAR2B** includes **seven ativities**



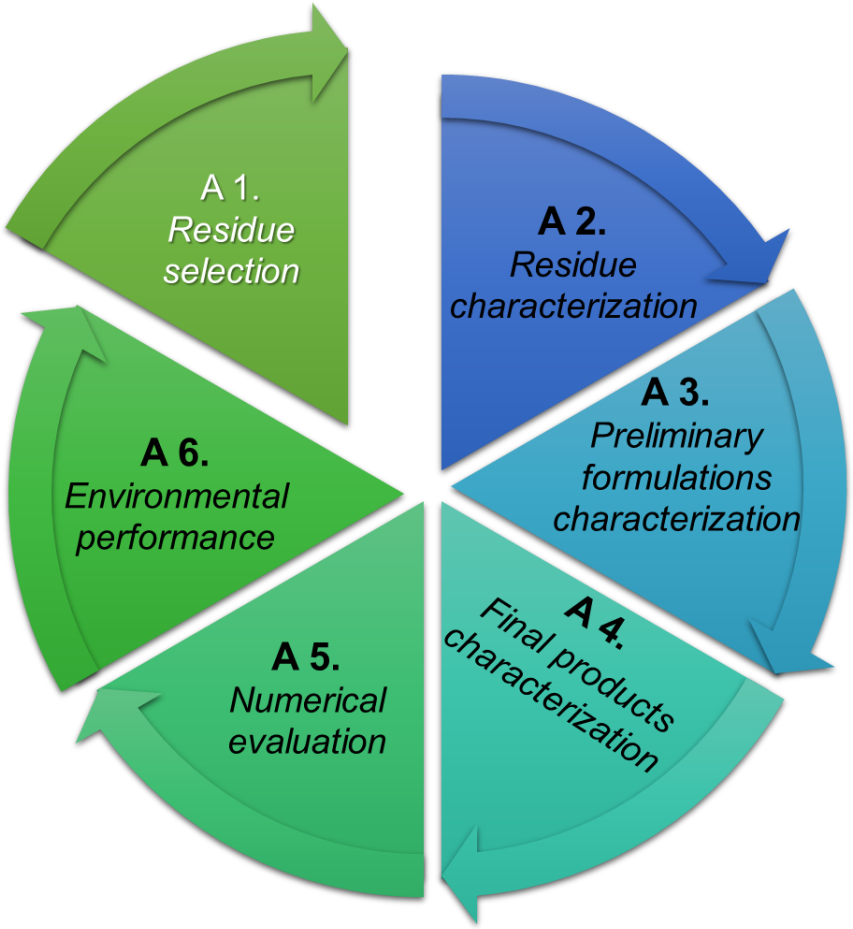
A 7.
Comunication and dissemination:

- ✓ Workshops;
- ✓ Conferences;
- ✓ Scientific articles;
- ✓ Web.

Transversal to all activities

Activities

> The **six** operational activities are defined as:



- The origin of the waste will be exclusively national, in sufficient quantity for the future needs of creating the innovative materials for this project.
- The objective will be to optimize existing processes, making them more environmentally friendly, thus reducing material waste and encouraging recycling.

Activities

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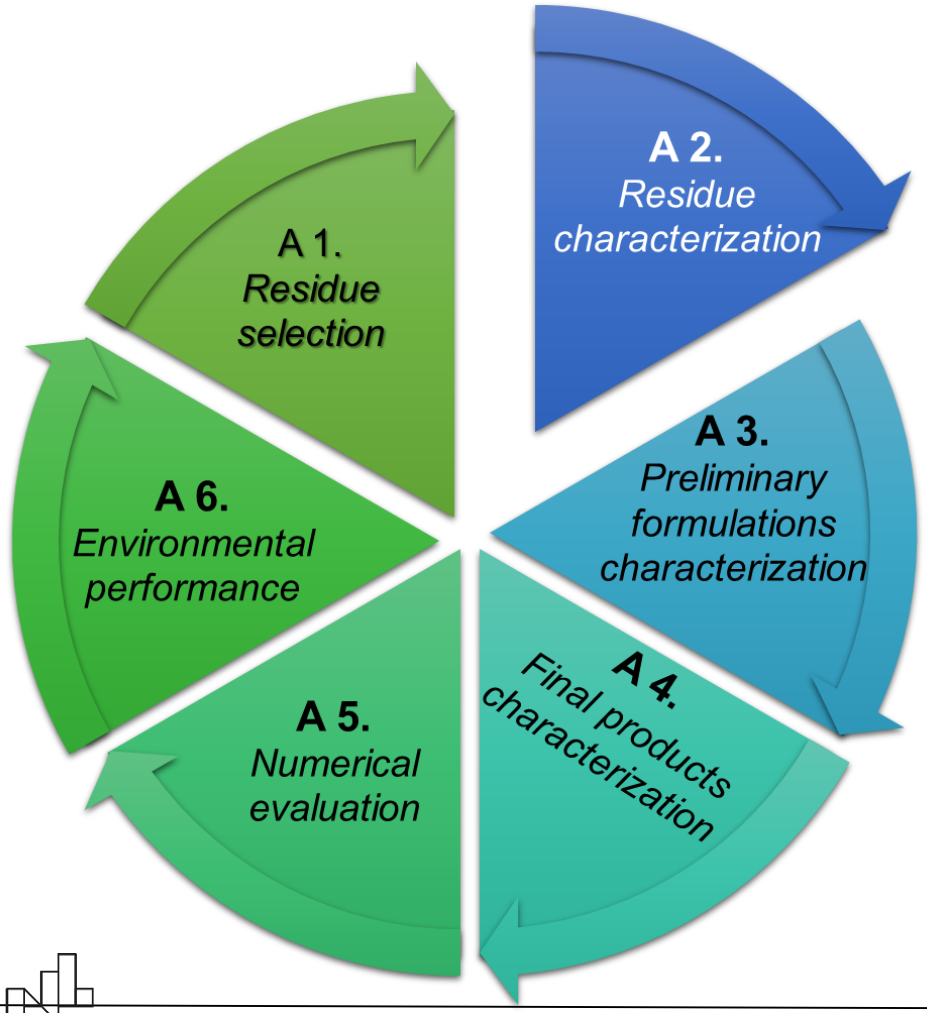

> Characterization of residues, at the macro and nano level, to be included in the finishing mortar and insulation of the core of the SIPs.

Plastic	Glass	Slag
PVC	Nanosilica	Al_2O_3 / SiO_2
Reduce termal conductivity	Improve durability	Promote fracture toughness
		Optimize thermal insulation

Activities

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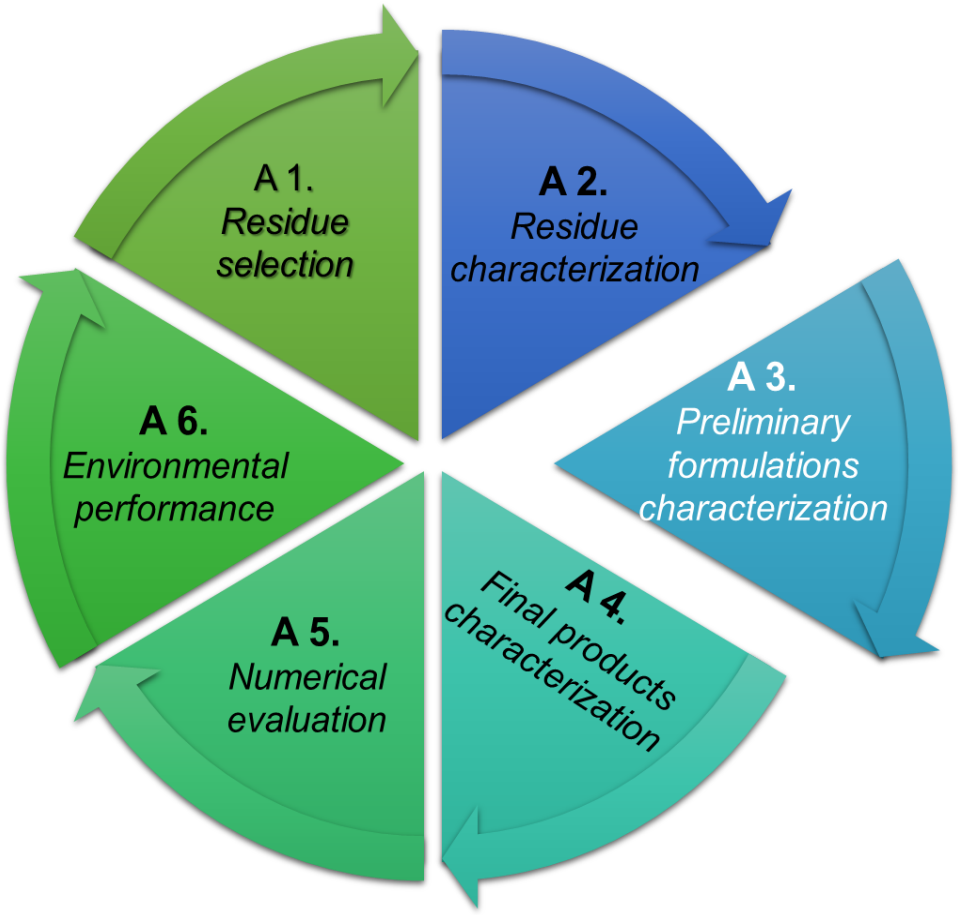
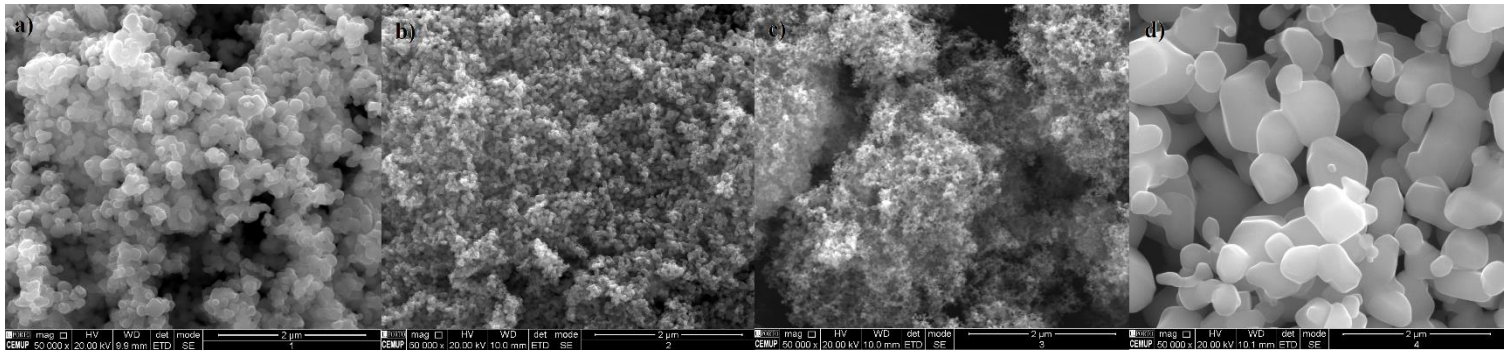


> Characterization and study of mechanical, hygrothermal and durability performance

> Study of the size, distribution and shape of nanomaterials in the performance of the finishing mortar.



Activities

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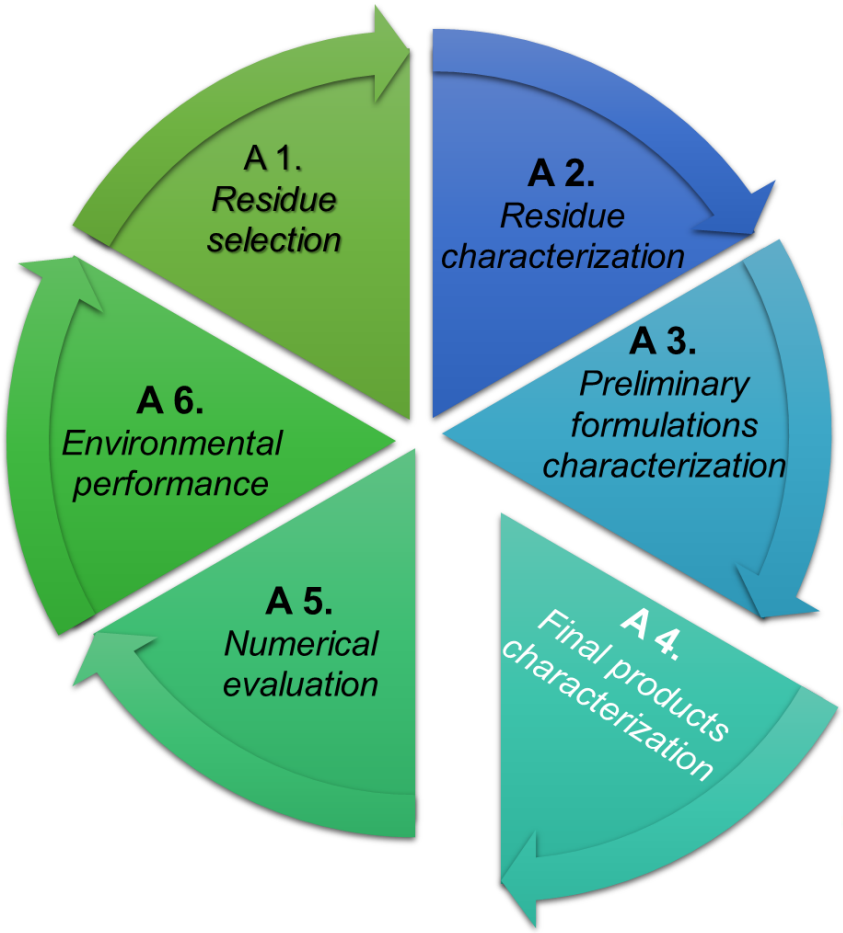
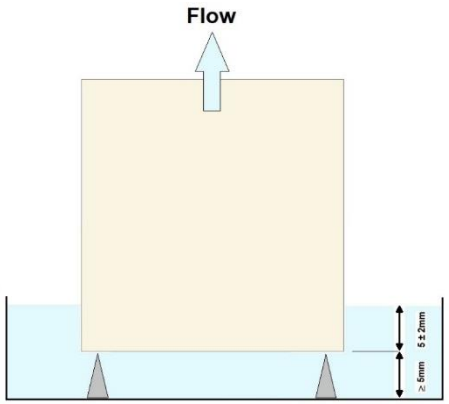
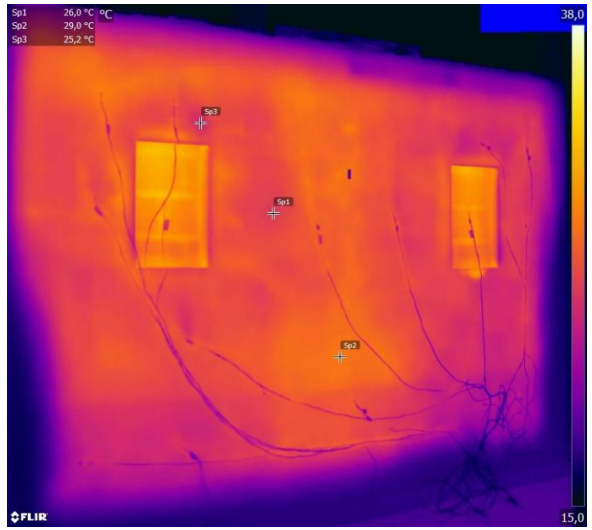


- The pastes validated by mechanical performance tests will be subjected to a second screening related to hygrothermal performance.
- The best formulations will lead to the two innovative products of this project, the exterior finishing mortar and the SIP.





Activities

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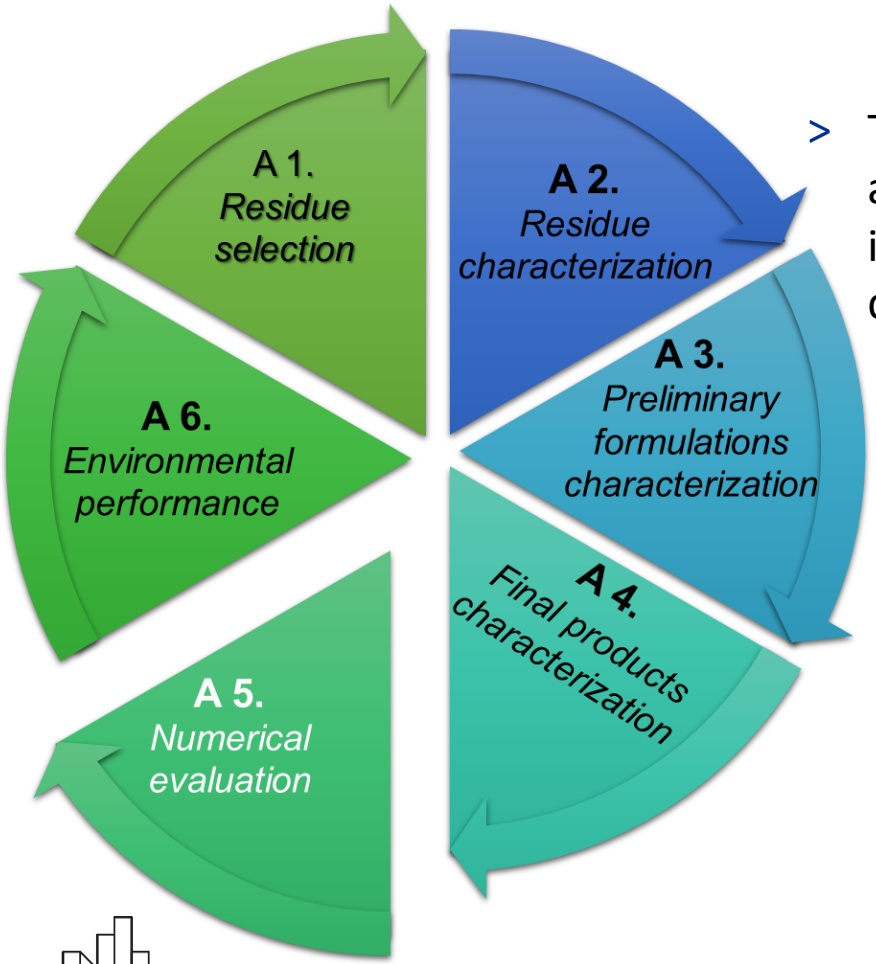
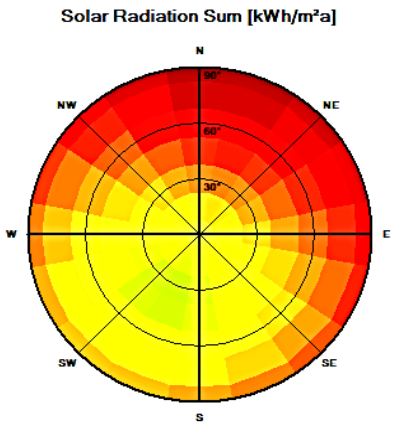
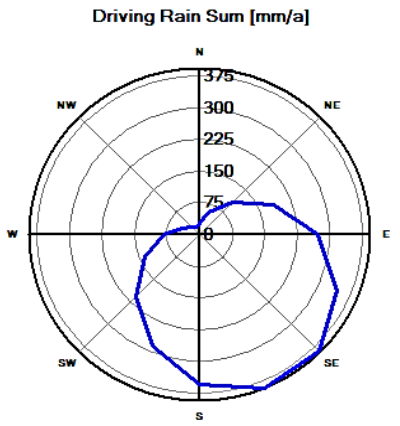
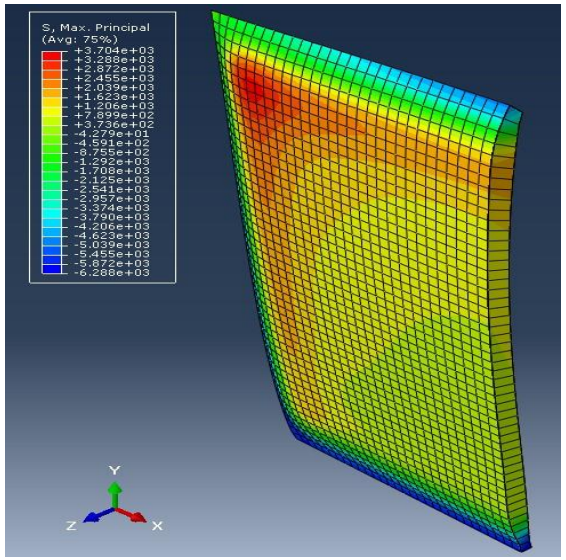


- The objective of this task is to develop and apply simulation procedures that adequately reproduce the hygrothermal, mechanical and energy efficiency improvements of the innovative product, taking into account the formulations developed in Activity 4.







Activities

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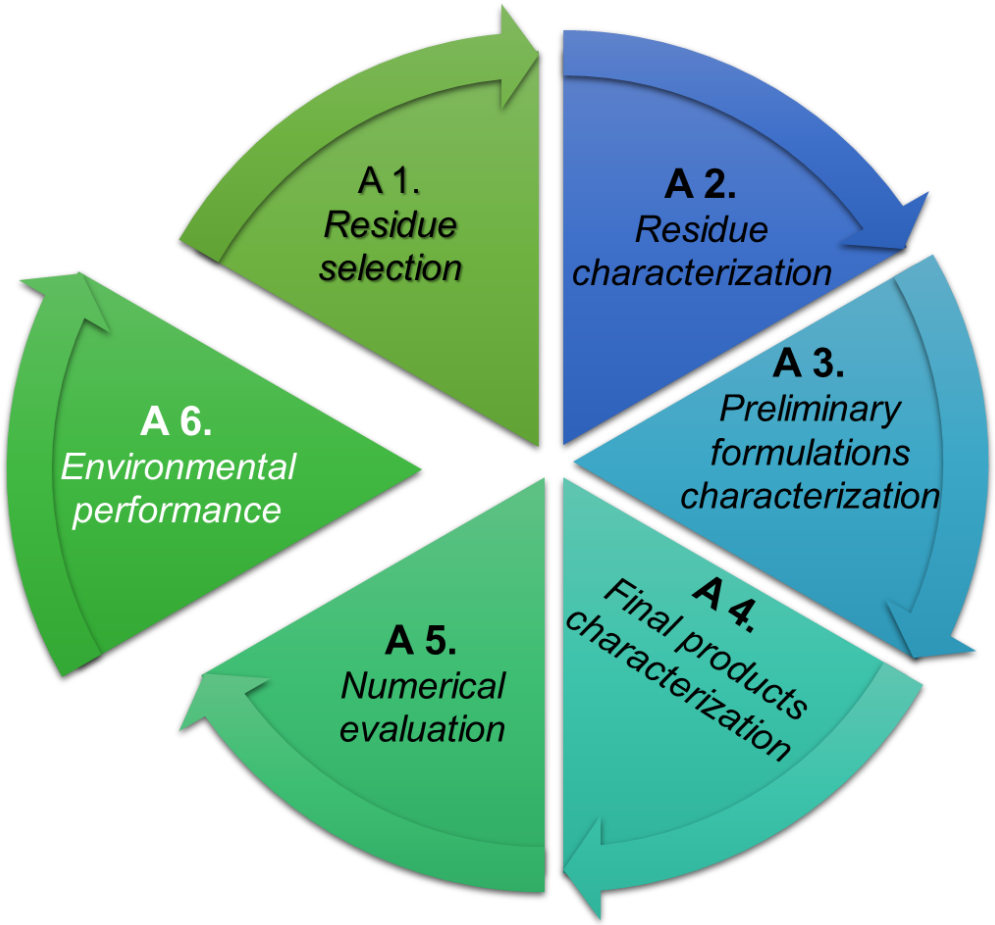

> The purpose of this activity is to analyze the environmental performance of products from a life cycle perspective

> The results will be used as inputs for a workshop, where the products are evaluated through multi-criteria decision making, taking into account environmental performance, costs and technical performance to identify preferable solutions.

Expected results

CDW and other wastres

Recycling and recovery

Application in Modular Construction

Acknowledgements

Thank you!

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