



REMIND WALLONIA WASTES2CEM

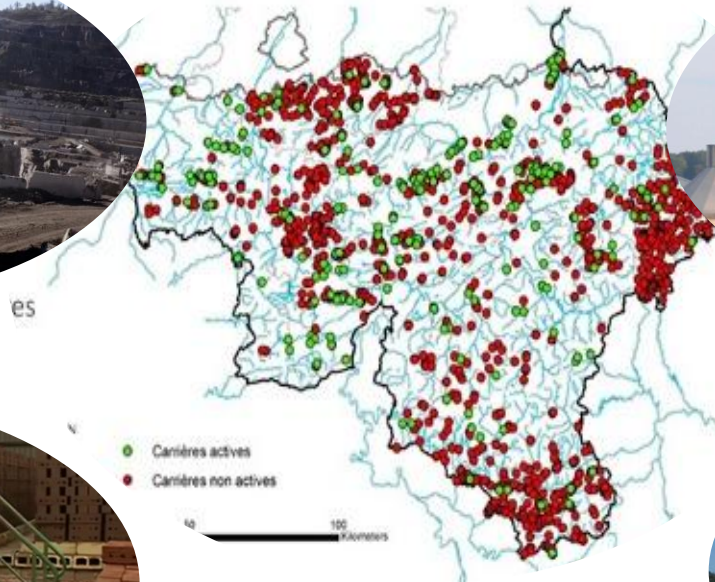
**Minimising the Environmental Impact of Clinker by
Incorporating Secondary Mineral Materials (SMM) into the
raw mix**

**Dr. eng. Claudia Neculau
Projects Coordinator**



**Funded by the
European Union**
NextGenerationEU





- More than 1,500 quarries in Wallonia, 160 of which are still in operation.
- The concrete industry, brickworks, ornamental rock production, cement works and lime works generate around 5,000 direct jobs and 10,000 indirect jobs.
- One of the challenges facing the primary minerals industry is CO2 emissions.



- Wallonia, a place where various recycling and secondary materials recovery initiatives have been launched
- The goal? Identify the processes and uses that add value to materials, inert waste, plasterboard, insulation, fly ash and slag, and try to move towards upcycling.

Reduce footprint C

Projects, infrastructures,
...

Quality of materials
(Upcycling)

Mineral Industry
« primary »
(Extraction and
production of materials)

Secondary" mineral
industry (Recycling)

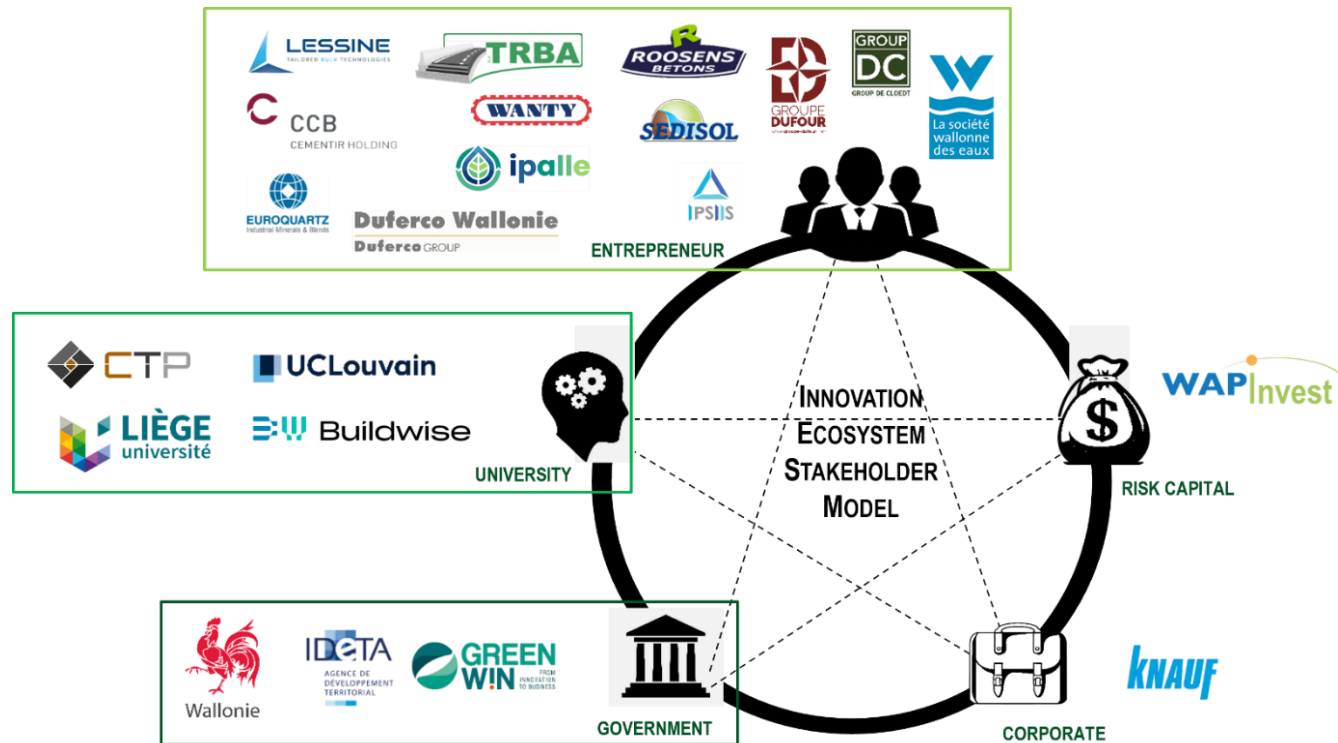
Scarcity of natural
resources

Not enough
valorisation channels
of products

Circularity of raw materials « minerals »

Carbon footprint of the sector (45% of ETS* in Wallonia)

(*) ETS : Emission Trading Scheme for CO2



Remind Wallonia represents an innovative model of collaboration between the private sector, academia and public authorities, aimed at making Wallonia a European leader in the circularity of mineral materials. Chat GPT



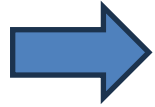
Projects in 4 areas :

- sustainable construction materials (IRMA and RECOB2)
- high-performance concretes (CIBER and C-GROUT)
- alternative binders (WASTES2MAT and **WASTES2CEM**)
- carbonated materials (CARBOC)

Focus : « WASTES2CEM » :

Liant circulaire alternatif à base de scories et de cendres volantes

Alternative circular binder based on slag and fly ash



slag and fly ash from brownfields



Gisements historiques de scories
sidérurgiques



Gisements historiques de cendres
volantes



Four de cimenterie



WASTES2CEM

TARGET MARKETS

UPSTREAM MARKET: *resale of treated MMS and remediated sites (land)*

- *Historic steelmaking slag: DUFERCO*
- *Historic fly ash: DC Environment*
- *Extension to other sites → forward-looking approach*

DOWNSTREAM MARKET

- *Cement market (± 1.9 Mt/year in Wallonia)*
- *Current CCB market: 2 Mt/year (Belgium, France and Netherlands)*

WASTES2CEM

TESTS FOR THE SLAGS LD

➤ DUFERCO La Louvière, September 2024



> 20 mm



> 80 mm





SUBSTITUTION OF CLINKER RAW MATERIALS BY SLAG

- Pre-treatment of LD and white slag OK
 - ✓ Validation by CCB via tests with its metal detector
- Chemical analysis of slag after magnetic separation OK,
 - ✓ Validated by CCB
 - ✓ Can be incorporated into raw meal: max. 4%.

THE FLY ASH DEPOSIT

Heterogeneous samples

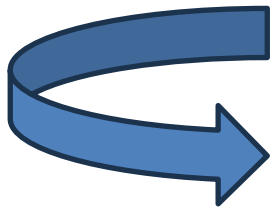


WASTES2CEM

WASTES2CEM

FLY ASH CHARACTERIZATION

- Based on site mapping, $\pm 90\%$ of the DC fly ash deposit complies with :
 - ✓ the chemical requirements of standards EN 450-1 and EN 197-1
 - ✓ the activity index (AI) criteria
- The remaining 10% of the deposit is unsuitable.



NEXT: Pre-treatment (drying, etc.) to optimize ash marketing potential

Challenge – what energy to use for drying the fly ash?

Challenges and opportunities

- Qualiroutes
- End of waste
- Paradigms and mind set
- Authorisations for excavation of secondary raw materials/permits
- Etc...





- New projects, new partners, new collaborations
- Identification of funding sources and calls for projects at Walloon and European level
- Alignment with DPR and with Circular Wallonia 2.0
- Secure and diversify funding
- Leverage European funds (Horizon Europe, Innovation Fund, LIFE, etc.).
- Explore revenue models based on carbon performance (carbon market, CO₂ credits, etc.).mitigation of risks

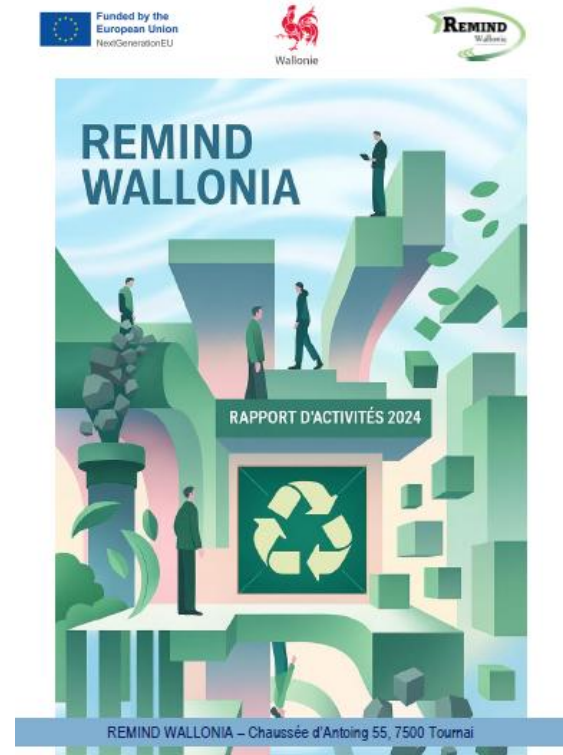


WWW.REMIND-WALLONIA.BE

INFO@REMIND-WALLONIA.BE



claudia.neculau@remind-wallonia.be



WWW.REMIND-WALLONIA.BE

INFO@REMIND-WALLONIA.BE

