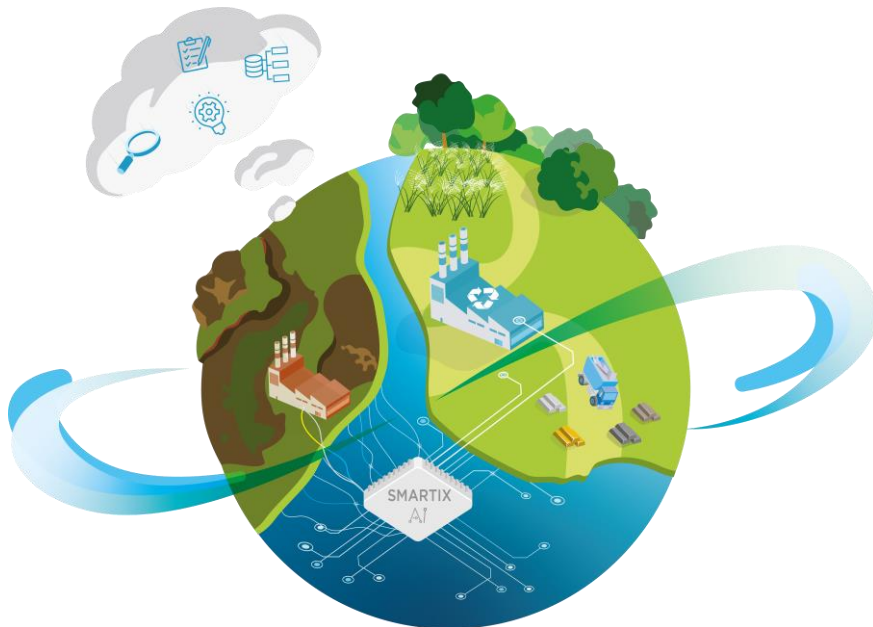
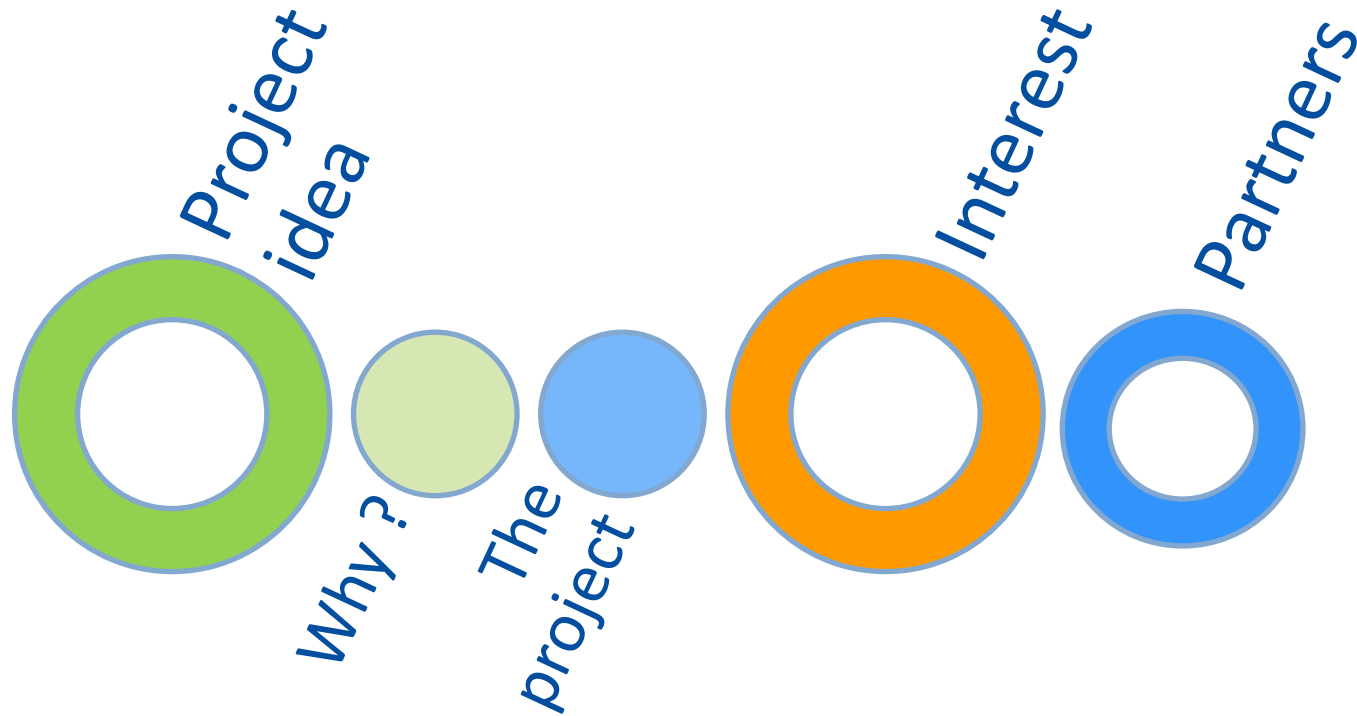


Presentation of the NWE-REGENERATIS project



Dr. eng. Claudia Neculau
Project coordinator
Spaque





Project idea

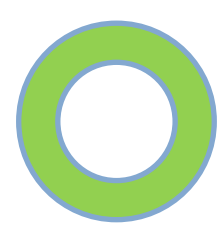
Regeneration of past metallurgical sites and deposits through innovative circularity for raw materials = REGENERATIS

- 13% of the 2.5 million potentially polluted sites in the EU are metallurgical sites
- Approximately **100,000 sites** may have metal recovery potential
- **While recent wastes are recovered**, this is **not the case for old aggregate materials** with high ferrous and other metal content, white and black slags, etc;



-Possibility to valorise these deposits by **urban mining**
-Several initiatives at European level (METGROW, etc.)
-Difficulty in identifying the optimal extraction processes
-**No links** between historical studies and tailings quality
-**Financial risks** related to the yield of metal extraction processes and their subsequent use

Project focus: Past Metallurgical Sites and Deposits (PMSD) in NWEurope



WHY?



Slag valorization

Chemical industry
Cement industry
Agriculture
Others..

CO2 emission reduction
Less space needed for deposits
Wins for society



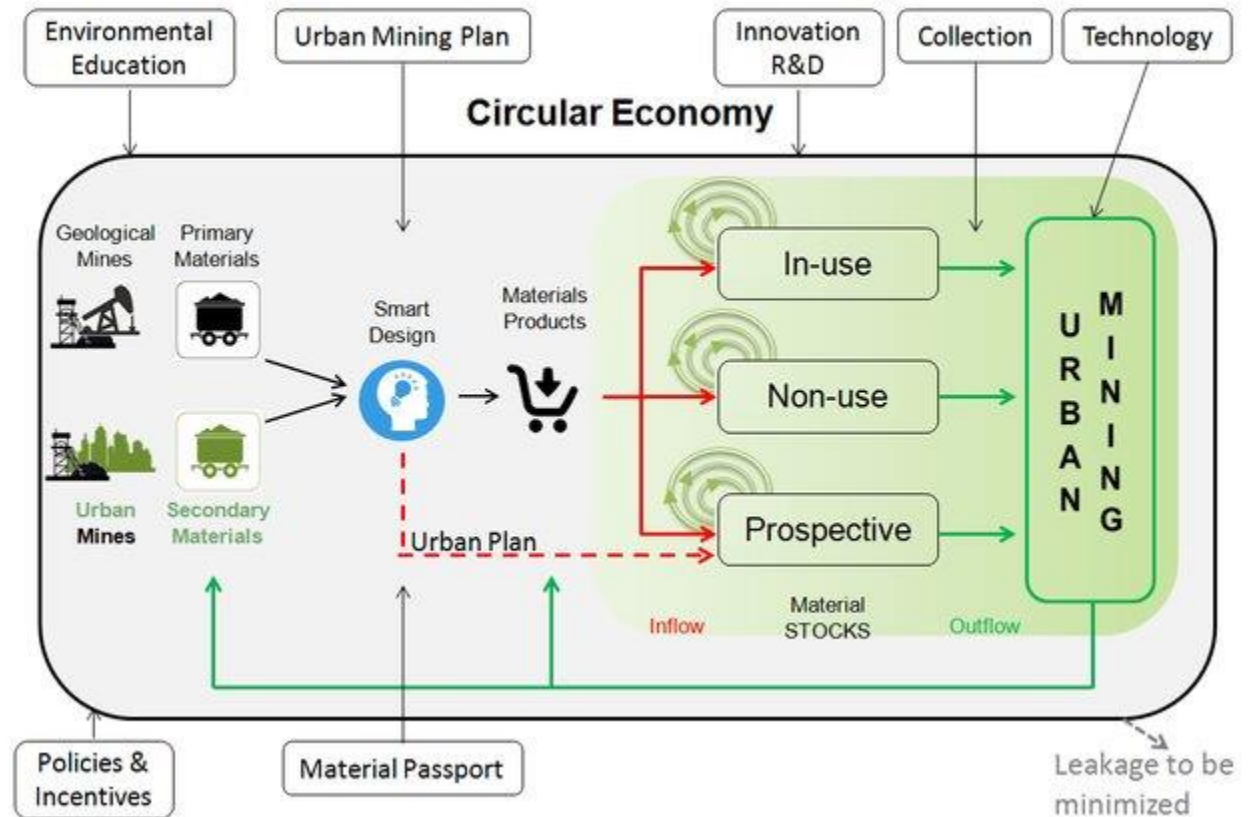


WHY?



To recover :

- Land
- Materials
- Soil
- Metals

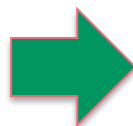
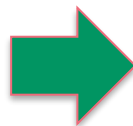




THE PROJECT

Current issues :

- Lack of information on the economic potential of brownfield sites (quantity, quality and value of materials and land)
- Costly investigation methods
- Heavy metals = pollutants

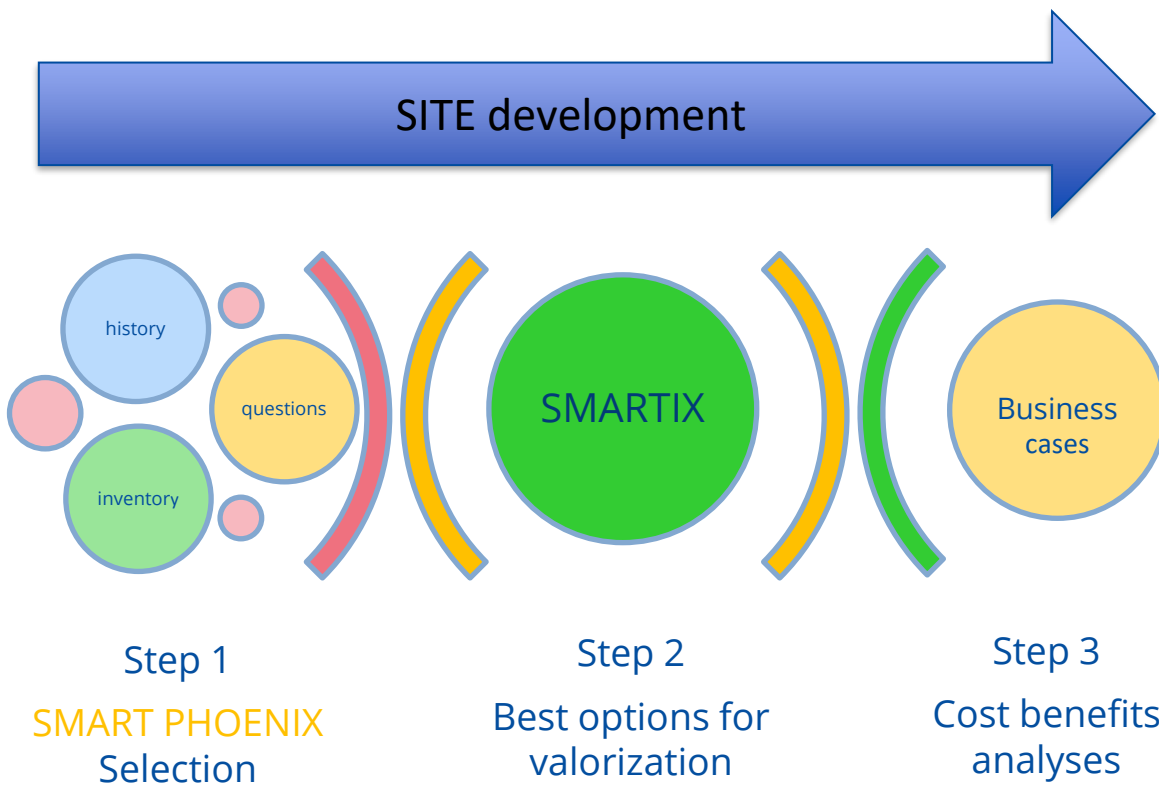


-Solution of the NWE-REGENERATIS:

- ✓ **Links** between historical studies and tailings quality
- ✓ **Links** between tailings/slugs quality and metal extraction processes
- ✓ **New inventory structure (MESIS) by integrating the economic potential of brownfields**
- ✓ More efficient and less costly site **characterisation method** (tested on pilot sites)
- ✓ **SMARTIX tool – best options for the valorisation of metals, materials, soil, land and eco-catalyst**
- ✓ **Optimized business model for each site**



THE PROJECT



REMICRRAM

Final users: public/ private PMSD owners and managers,
public agencies, raw materials' users, engineering companies



THE PROJECT

Step 1 – SMART PHOENIX

1. Does it contain a landfill, **deposit** or backfill that may contain **metallic residues**?
2. Is the site a **PMSD**?
3. Is the site registered in a **database/inventory**?
4. What is the expected **volume of metallurgical residues**?
5. What is the **site area occupied by residues**?
6. What are the **main kind of metallurgical residues** present?
7. Are the residues **separated** ?
8. What area is still occupied by **construction**?
9. What area is occupied by **trees**?
10. Is there **historical data** easily available?
11. Is the site easily **accessible** for trucks and heavy equipment?
12. Is the site classified as a **hazardous/high-risk site**?
13. Does the site need to be **rehabilitated**?
14. Is there a known interest for the **reconversion** of the site?
15. What area is still occupied by **low vegetation** - grass, bushes (i.e., soil suitable for eco-catalysis)?
16. What is the **current use** of the site?





THE PROJECT



4 categories of materials

Question	recovery of minerals	recovery of metals	soil improvement	ecocatalyst production
Does it contain a landfill, a deposit or a backfill with possible metallic residues (Pb, Cu, Zn, Fe)?				
Yes	40	40	0	0
No	20	20	0	0
Is the site a PMSD?				
Yes	200	200	0	200
No	0	0	0	0
Is the site registered in a database/inventory?				
Yes	10	10	0	0
No	0	0	0	0
Unknown				
What is the volume of the residues from metallurgical origin (m3)?				
0 to 100 000	0	0	0	0
100 000 to 500 000	10	10	0	0
> 500 000	20	20	0	0
What is the site area occupied by residues (m2)?				
0 to 10 000	10	10	10	0
10 000 to 100 000	10	10	10	20
> 100 000	10	10	10	20
Unknown				

Weights for
each category
of materials

Final scores



THE PROJECT

Step 2 – SMARTIX

- ✓ Technical elements
- ✓ Economic thresholds

Links
Values
...



- ✓ Historical studies
- ✓ Geophysics and sampling
- ✓ Civil engineering
- ✓ Mineral processing
- ✓ Metallurgical extraction
- ✓ Soil fertility amendments
- ✓ Biomass for ecocatalyst production

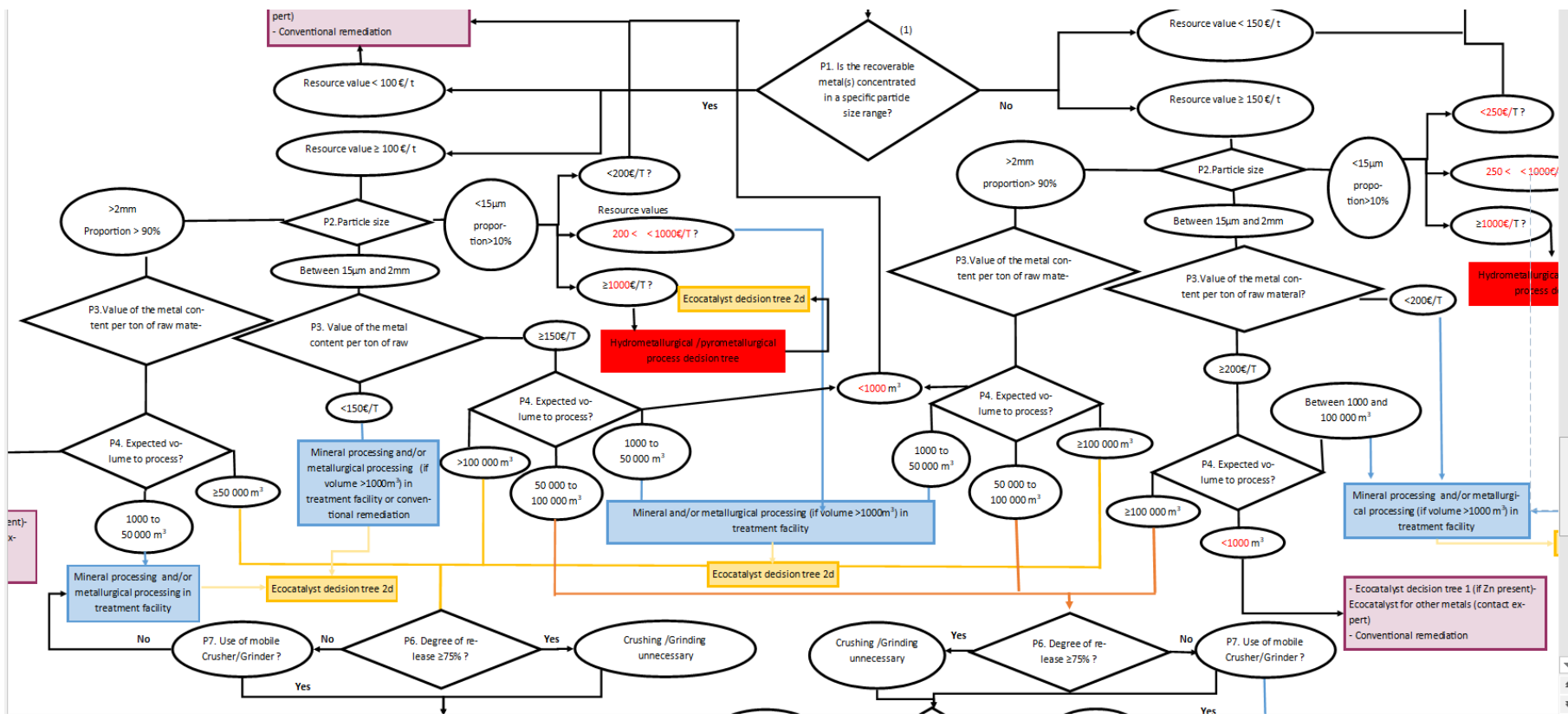




THE PROJECT



Step 2 – SMARTIX





THE PROJECT

Step 2 – SMARTIX

Several scenarios



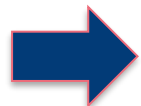
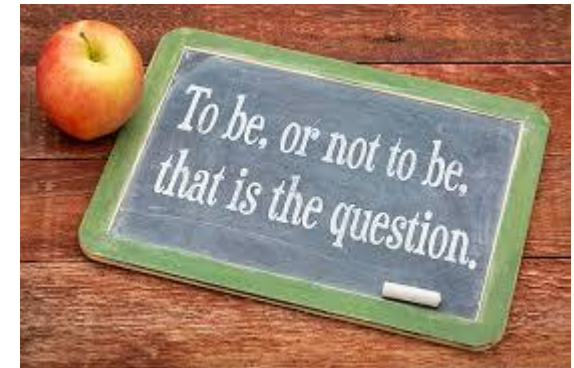
Recommendations



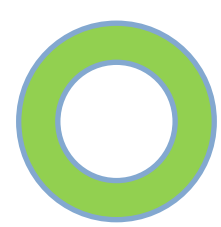
THE PROJECT

Step 3

- Cost benefits analyses for each scenario from SMARTIX, related to the development of the site – based on data collected on more than 100 rehabilitated sites
- Estimations based on pilot tests and Ia analysis
- Advantages of REMICRRAM vs. traditional metallurgical site remediation methods
- Optimisation of valorisation options : quantities, localisation, processes, costs, revenues, benefits for people, planet ...,



Decision : **to start or not to start ?**



THE PROJECT

Pilot sites

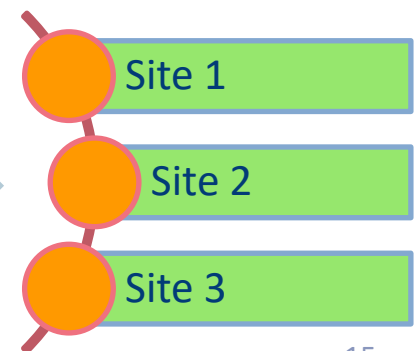
- La Louvière (Wallonia, Belgique)
- Teesside (UK)
- Pompey (France)
- 6 additional sites : La Campine, STPI, Nyrstar, Vieille Montagne, etc..

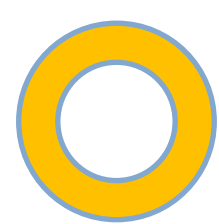


Data from Pilot sites

- ✓ Historical studies
- ✓ Prospection and investigation
- ✓ Lab tests & pilot tests
- ✓ Links between areas of expertise

→ SMARTIX →

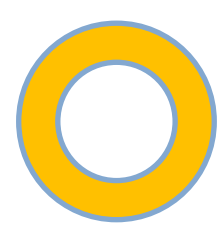




Interest

- Improve/develop tools - to allow a **better management** of the post-metallurgical sites;
- **Improve the management of uncertainties** related to the degree and location of pollution of a site, to the quantity and quality of recoverable materials, to the innovative recycling/recovery methods to be implemented in order to optimise the recovery of materials etc. ;
- To develop a **database of residues/deposits** and identify optimal recovery methods : **REGENERATIS platform**
- To **reduce the costs of rehabilitation** of sites and to develop more easily projects on these sites (the possibility to rehabilitate some sites at lower cost, by reusing/recycling some residues present on the respective sites the costs of rehabilitation will be reduced, with the same budgets more hectares could be put back in the economic circuit)

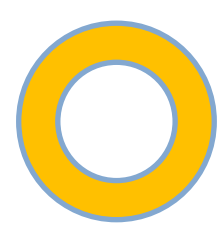




Interest

- REGENERATIS enables the integration of optimised management in the promotion of the **circular economy** and the reflection on mining redevelopment and the extraction of secondary materials
- REGENERATIS promotes the **recovery of materials and land** close to urbanised areas, with the development of the industry of **mineral recovery and brownfields**, creating **local jobs** and leading-edge expertise at international level





Interest

UE priorities

- Green Deal - Circular economy strategy
- Climate change
- Biodiversity
- SDGs
- End of waste
- CRMs

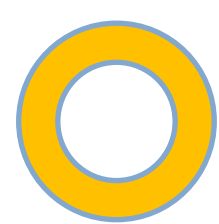


Indicator 15.3.1
Proportion of land that is
degraded over total land area



Biodiversity





Collaboration LT

- Policy Task Force and a Knowledge exchange group
- Group of policy promoters
- Workshops/site visits
- Recommendations/policy brief
- e- library
- Open acces platform
- Training courses
- Final event – april 2023

To ensure the roll out and sustainability



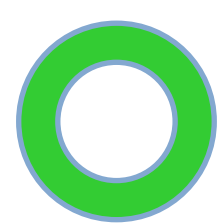
Do you want to join us ?

<https://www.nweurope.eu/nwe-regeneratis>

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Partners

14 partners

- Wallonia: SPAQuE, CTP, ULiège, ATRASOL, DUFERCO
- Flanders : OVAM
- France : BRGM, Ixsane, Team2, Yncrea
- UK : MPI, University of Cranfield
- Germany : TU Köln, BAV



➤ 35 Associated partners (observers)

For more details about the project, please visit the site:
<https://www.nweurope.eu/nwe-regeneratis>



Liège, 1st SC meeting – march 2020
and then, the lockdown...





Interreg



EUROPEAN UNION

North-West Europe

NWE-REGENERATIS

European Regional Development Fund

MERCI...questions?

Thank you!

c.neculau@spaqua.be