ReCon Soil | Reconstructed soils from waste

Interreg France (Channel Manche) England

EUROPEAN UNION

RECON SOIL PROJET : RECONSTRUCTED SOILS FROM WASTE

WORKSHOP EVENT

1ST JUNE 2022 – 9H-15H30

Géosciences pour une Terre durable

brgm

RECONSOIL – WORKSHOP EVENT – 1ST JUNE 2022

Program :

9.00-9.30am – Guests arrival

9.30-10.10am – ReCon'Soil project presentation

10.10-10.30am – Q&A

10.30-11.30am – Workshop 1 : Regulatory barriers associated with the recovery of construction waste and dredged sediments in agriculture, and potential solutions **11.30-12.30pm** – Workshop 2 : Construction waste and dredged sediments uses prospects in construction or replenishment of fertile soils

12.30-2.00pm – Lunch at the Kerisnel

2.00-3.00pm – Visit of onsite Recon'Soil experiments

3.00-3.30pm – Workshop's restitution and conclusion of the day

RECONSOIL PROJECT PRESENTATION

9h30-10h10 – RECONSOIL PROJET PRESENTATION

- Context
- Partners
- Objectives
- Realised experiments and first results
- Next steps

CONTEXT

- 21st century's global challenges:
  - Food safety
  - Agricultural sustainability

- Soil: largest carbon reservoir on the planet

- Disposal of earth from construction sites: 3.5 billion euros per year spent by companies in France (sources: CGDD, ADEME, BRGM, VALTEX)

- Need of new ways to reuse earth from the construction and public works industries

- Need to be able to reuse reconstructed soils safely (safe, suitable and sustainable soils)

PARTNERS

Recon'Soil is an INTERREG program

https://www.channelmanche.com/fr/projets/projets/

France :

- **BRGM**
- **Station expérimentale du Caté**
- **Université du Havre**

England :

- **University of Plymouth**
- **University of East Anglia**
- **CL:AIRE**
- **Cornwall College Eden Projet Learning**

OBJECTIVES

- Reduce the disposal of those wastes and the greenhouse gas emissions associated with these practices
- Answering to circular economy practices
- Improving agricultural soils from construction waste, excavated land and dredging sludge
- Propose and optimize reconstructed soil recipes
- Develop a document for stakeholders wishing to use reconstructed soils (soil recipes and methodology used)

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EXPERIMENTS AND FIRST RESULTS

- Experiments to develop a soil recipe carried out at Caté
- Objectives: improve the texture of loamy soil (therefore prone to beating) by adding clays
- 2 wastes tested: a **clayey excavated soil**, and a quarry **sludge from washing aggregates**
  - Mixing clay waste by liquid means in a concrete mixer
  - Different proportions tested to obtain a suitable texture

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- Filling lysimeters with different soil recipes

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- Installation of probes in each lysimeter: humidity and temperature monitoring at different depths
- Continuous monitoring and recording of data since February 2022
- CO_2 measurements at T_0 in February, T_{final} in September

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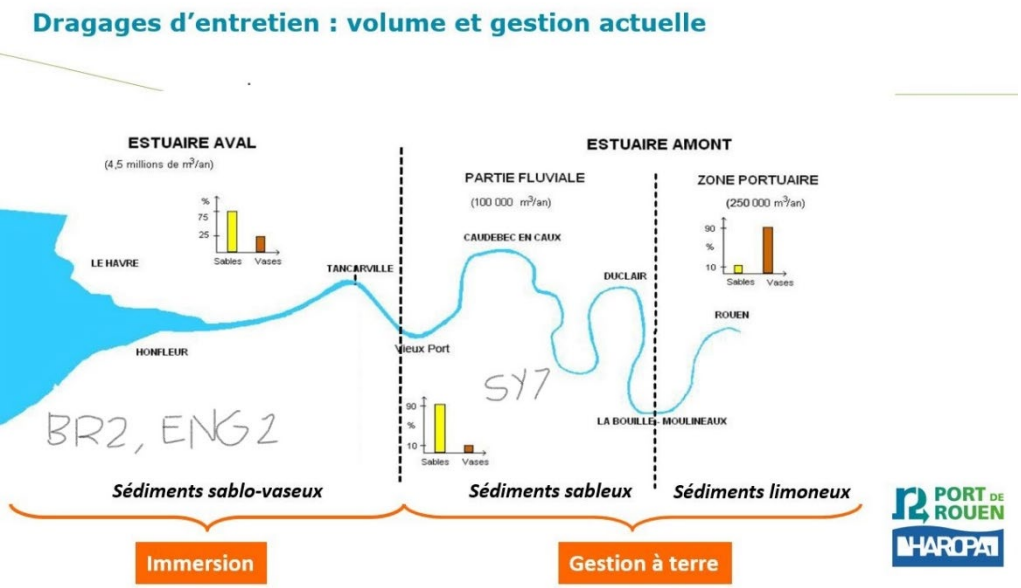
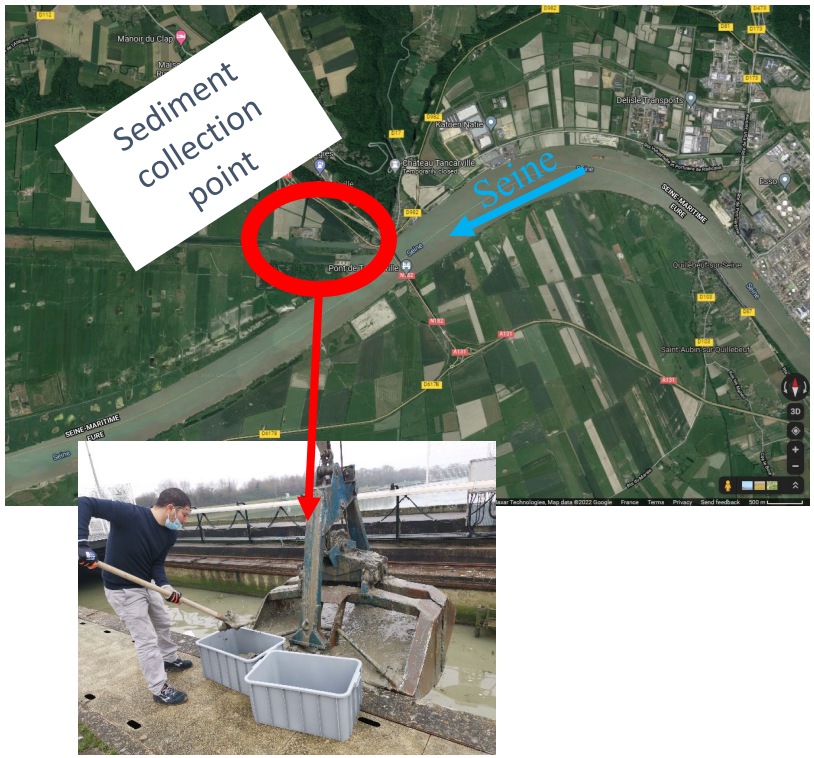
- Pilot site at Caté
- 4 lysimeters containing elaborate recipes of reconstructed soils
- 2 lysimeters containing control soils (excavated soil from Caté)

Sampling site: Tancarville (20220110)



Screening of dredged sediments in the Normandy region



Beneficial re-use of dredged sediments collected from Tancarville, upper Seine River estuary, Normandy

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UNIVERSITÉ LE HAVRE NORMANDIE

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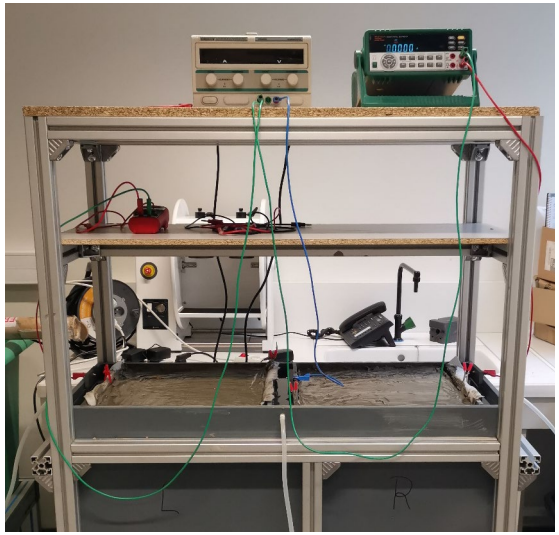
UNIVERSITY OF PLYMOUTH Sustainable Earth Institute

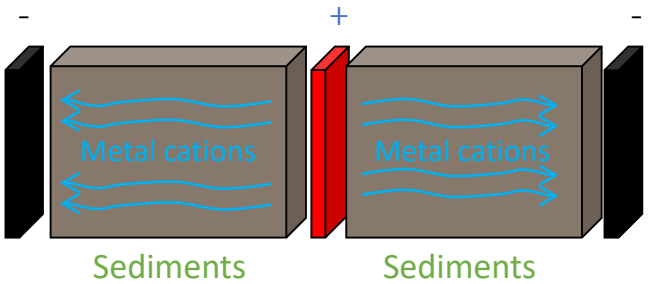
1

Sediment treatment

Electrokinetic remediation for 21 days



Magnitude of treatment is examined by physico-chemical (e.g., pH, salinity), chemical (metal content), mineral (e.g., carbonates) and organic characteristics



2

Effect on courgette growth

	Treatment
1	Treated sediments (100%)
2	Treated sediments + agricultural soil (30%-70%)
3	Non-treated sediments (100%)
4	Non-treated sediments + agricultural soil (30%-70%)
5	Control (agricultural soil, 100%)

- Life Cycle Assessment (LCA): A method for assessing all environmental impacts during the life cycle of a product

- Evaluation of the recycling process and transportation associated with the Recon'soil project for simplicity and the timeframe of the project (2 years)

- No assessment of long-term carbon sequestration by vegetation and soil or improvement of agricultural yield

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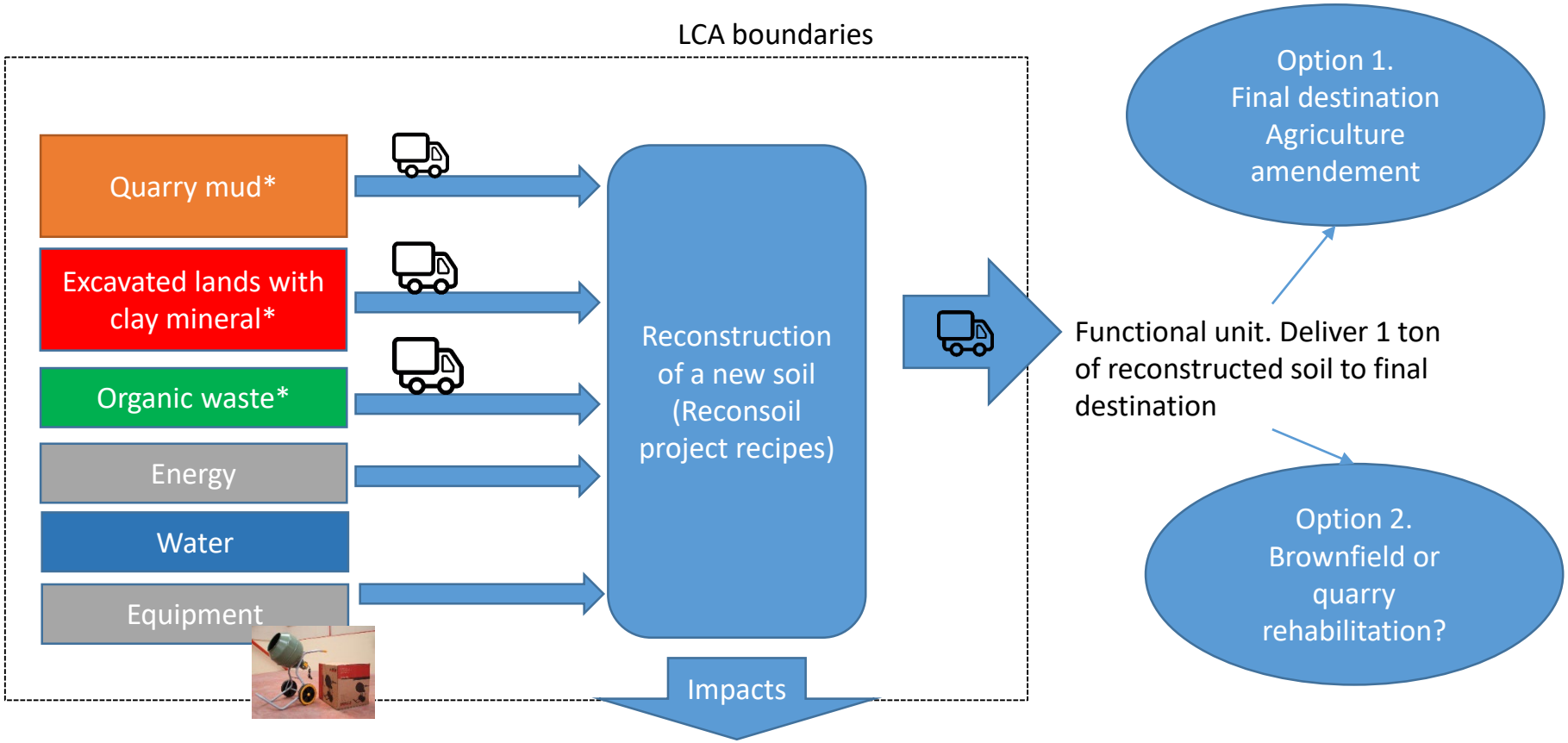
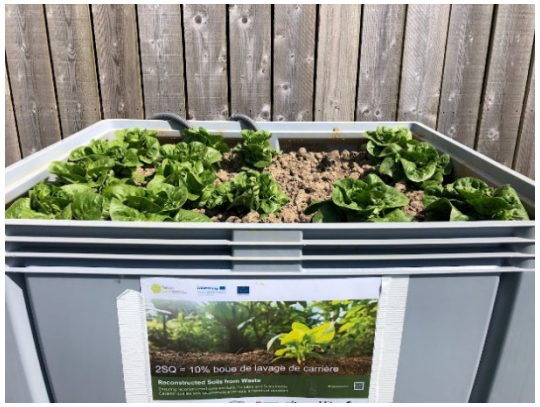


* Consideration of avoided impacts in a BAU situation (landfill, etc.)

EXPERIMENTS AND FIRST RESULTS

	March 8th 2022	April 25th 2022
Control		
Reconstructed		

Currently ongoing bioaccumulation analysis of pollutants and metals in order to verify the sanitary and environmental safety of the lettuces.

NEXT STEPS

- Stakeholders networking : waste producers, farmers, quarries.
  - Two additional workshops planned in Normandy and Pas-de-Calais
- Raising awareness among State services on the regulatory issues encountered.
- Raising awareness of soil degradation among a wider public (schoolchildren, students, civil society).
- Finalisation of the document integrating the recipes and methodology for the first quarter of 2023.
  - Large diffusion of this public document

QUESTIONS ET REPONSES
Q&A