



Soil Health Matters

Integrating soil health into
contaminated land management

Virginie Derycke (BRGM) & Paul Drenning (Chalmers University)

With help from Nazaré Couto, Vannessa Correia (NOVA) and Kristiina Nuottimäki (GTK)



What does it mean to consider soil health in remediation and redevelopment projects?

Based on science (important as it is) BUT also about integrating stakeholder perspectives:

Point 1: CLM perspective : no major changes/practical approach

Point 2: SH perspective : create space for SH in CLM/ truly impact decision making

→ **Approach: Dual-scale strategy & compromise to address both SH and CLM perspectives**

- **Broad-scale perspective : from risk assessment, to remediation to land use planning**

→ Fine analysis of CLM process : smallest adjustments (aligns with pt 1)

→ Highlighting consistent inclusion of SH throughout CLM at key moments (aligns with pt2)

- **Fine-scale tools for precision in decision-making**

→ Refine SH tools and indicators to align with CLM constraints : knowledge level, risk assesment, remediation & land use choices (aligns with pt.1)

→ Build SH science-based tools (aligns with pt 2)



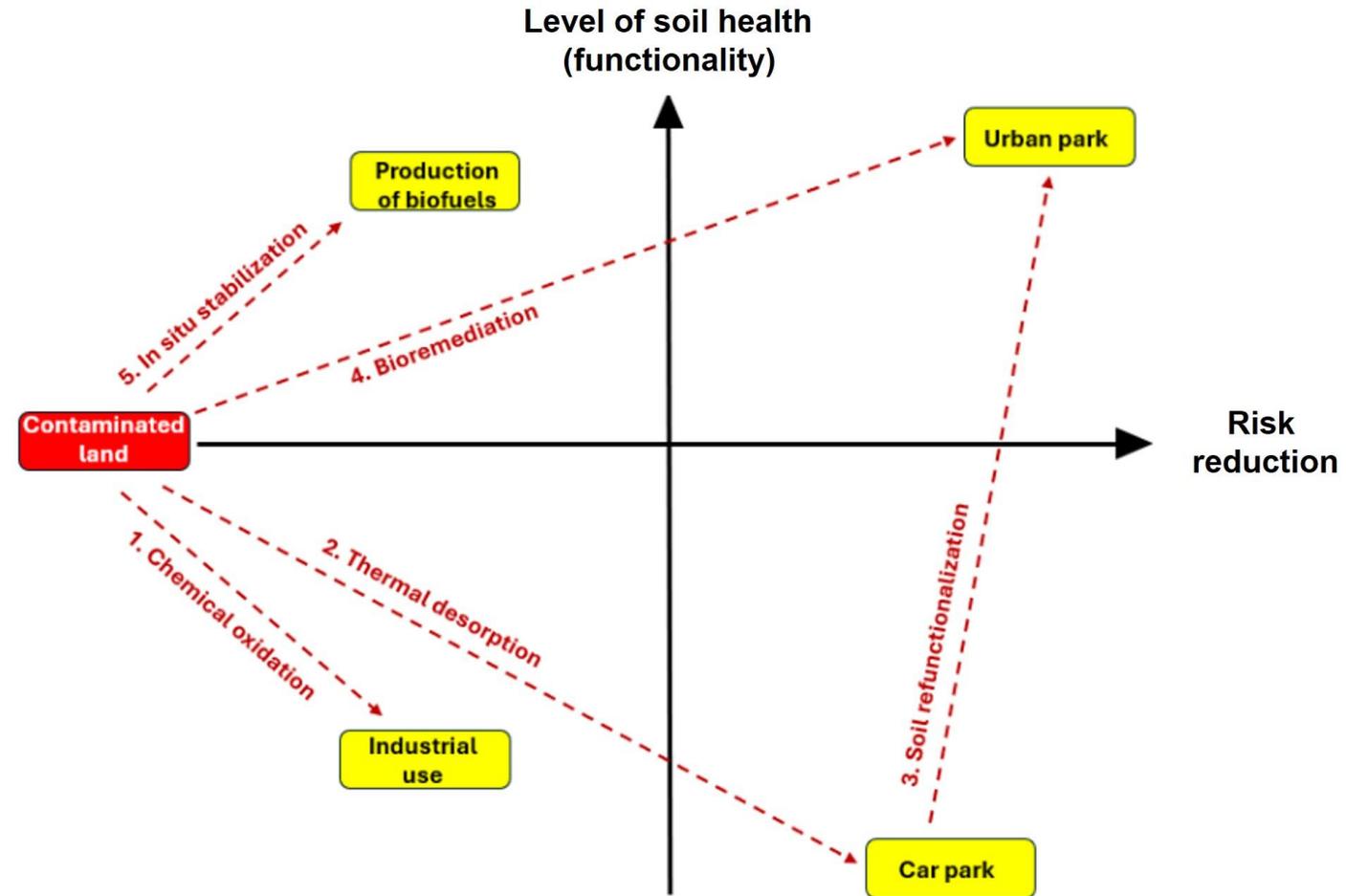
What does it mean to consider soil health in remediation and redevelopment projects?

A risk-based approach to soil health :

balancing soil health and risk levels

- Matching the land use suitability to soil quality (both in term of soil health and risks)

→ Remediation & land use : choice of soil trajectories



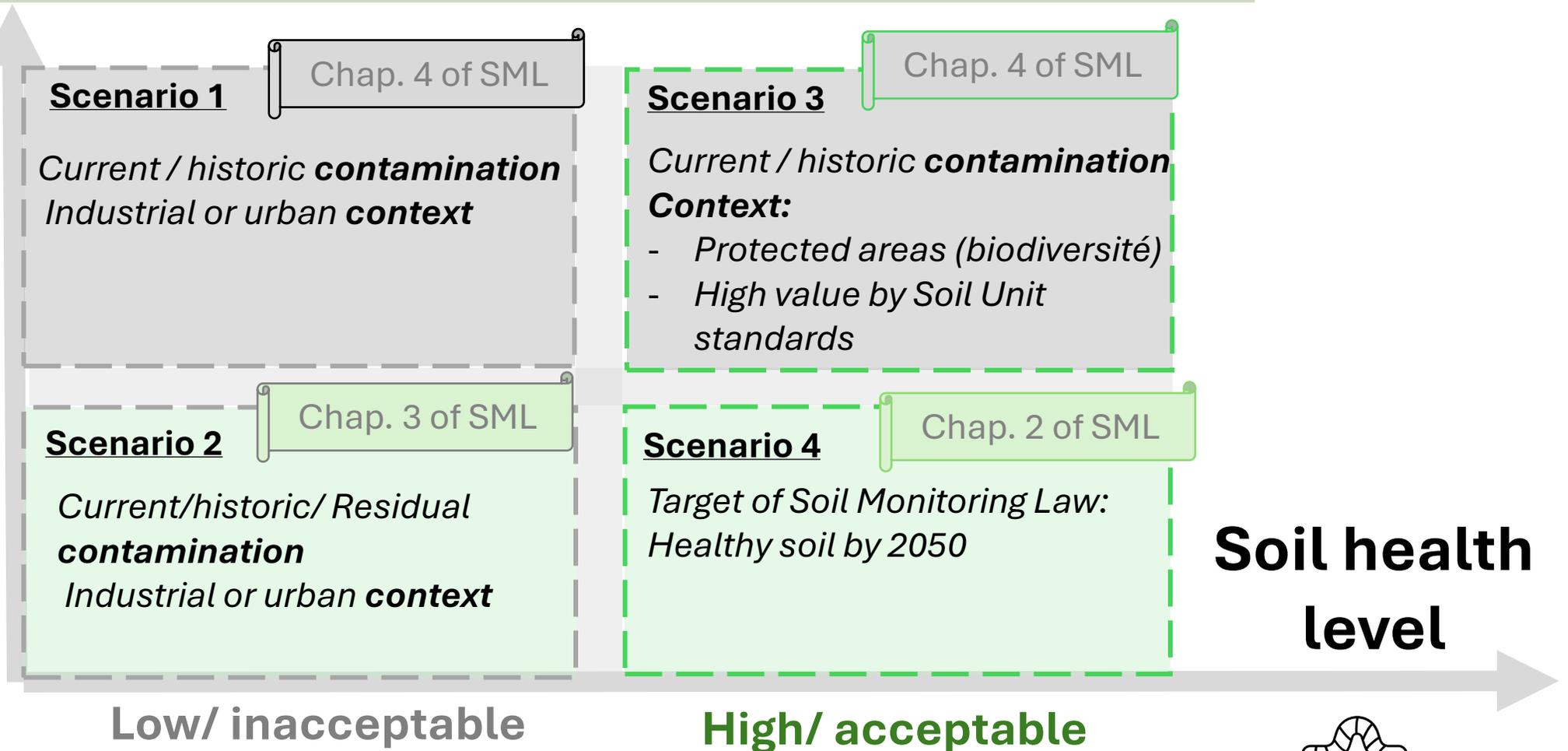
Strategies for healthier soils: Defining soil health scenarios

Risk level



High/
inacceptable

Low/
acceptable



How to integrate soil health in contaminated land management?

Today: Current contaminated land management legislation primarily focuses on human health risk and exposure when defining future land use – remediation often legally mandated when trigger values are exceeded

- While not “healthy”, contaminated soils can still perform functions to deliver ecosystem services during its transition to new use and a cleaner state – important for future land use decision
- Remediation techniques can have considerable negative impacts on soil functionality

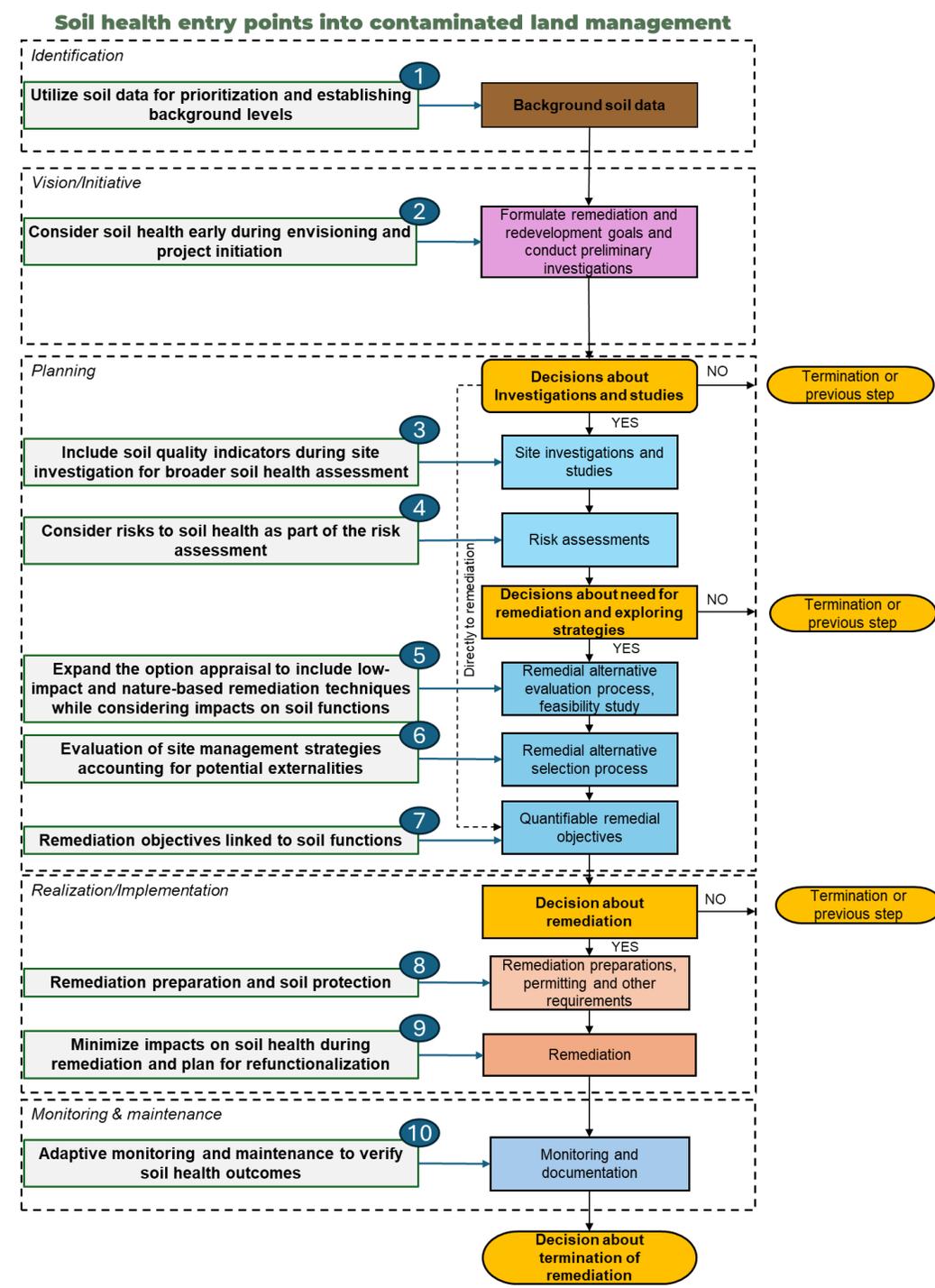
There are two (interconnected) contexts in which soil health needs to be considered in contaminated site remediation:

- 1) Looking at soil health as a “receptor” in the context of managing risks from contamination
→ Impacts on soil health (providing ES) itself as a risk – not only the health and ecological risk
- 2) The impacts (positive or negative) of the remediation process itself on soil health

10 Soil health entry points into CLM

Roughly divided according to “project phase” – corresponding to the ISLANDR Roadmap:

- Identification
- Vision/Initiative
- Planning
- Realization/Implementation
- Monitoring & Maintenance

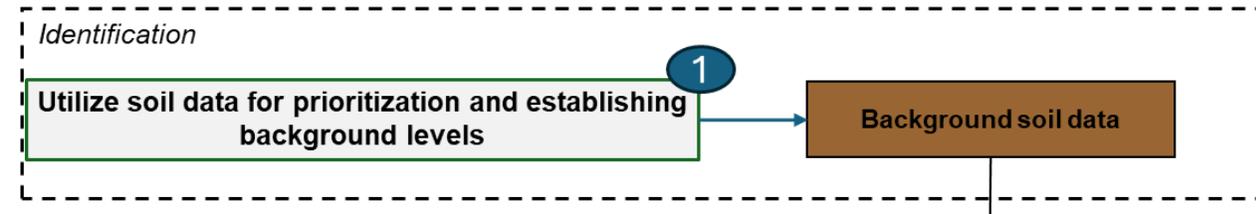


10 Soil health entry points into CLM

Identification

- Background soil data – regarding both contamination/degradation and soil quality
 - Establishing thresholds/references
 - Prioritization of sites/actions based on risk and soil health objectives

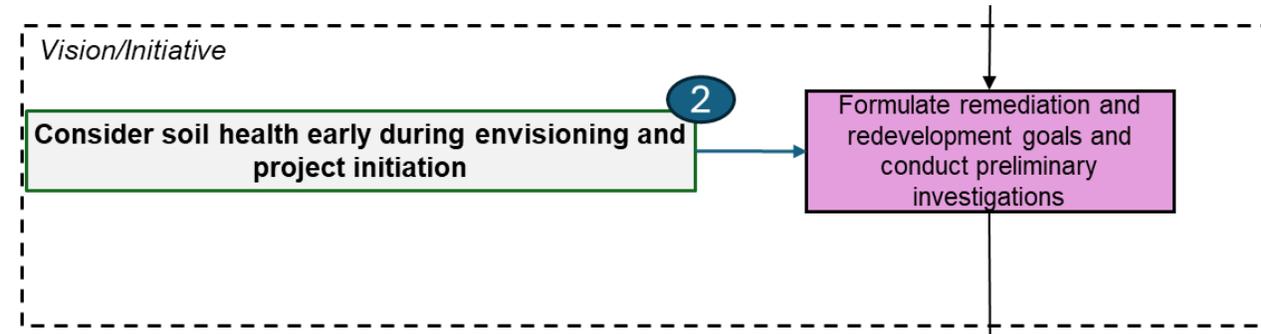
Soil health entry points into contaminated land management



10 Soil health entry points into CLM

Vision/Initiative

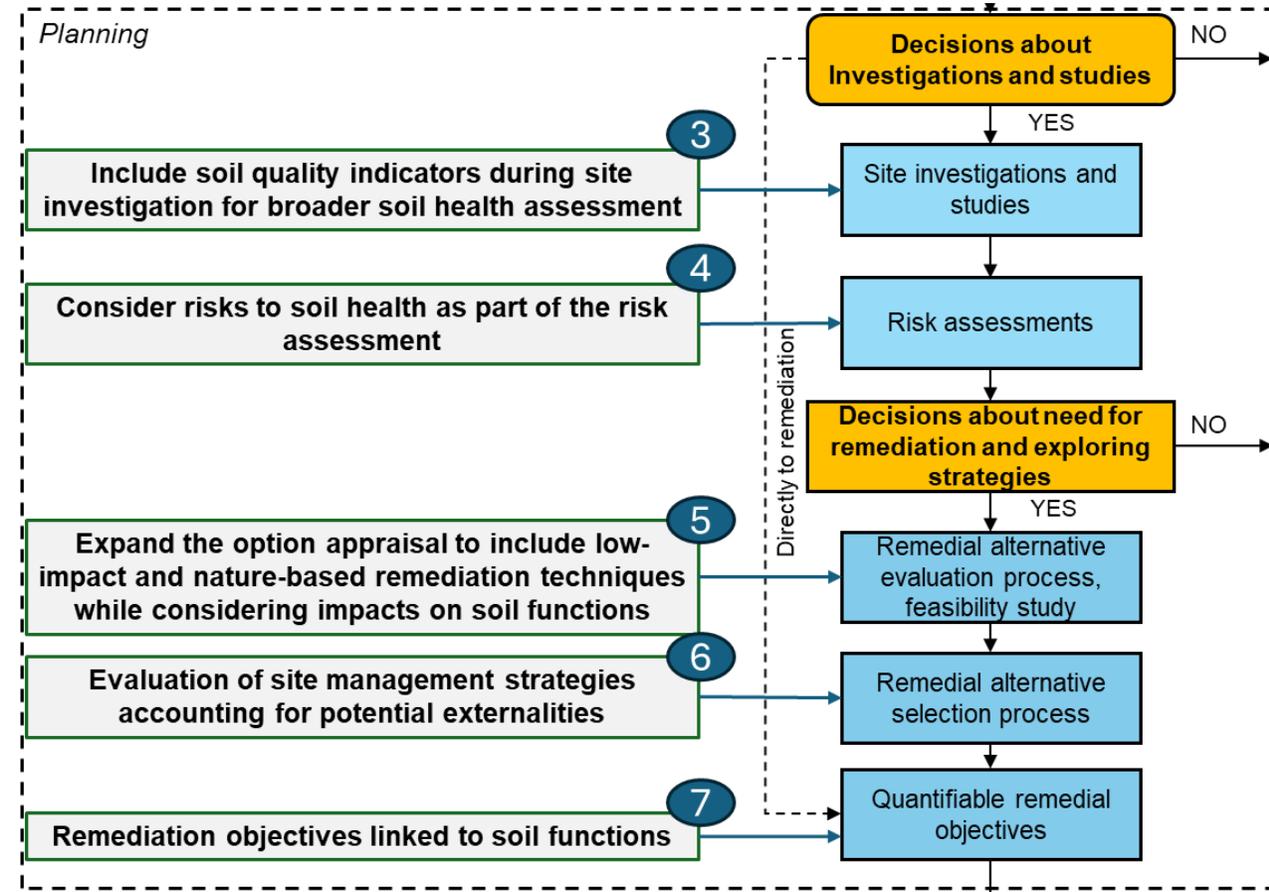
- Consider soil health early – connected to future land use
- Include as part of preliminary site investigations and risk assessment (e.g., CSM)
- Fitness-for-use could include both risk and required soil functionality



10 Soil health entry points into CLM

Planning

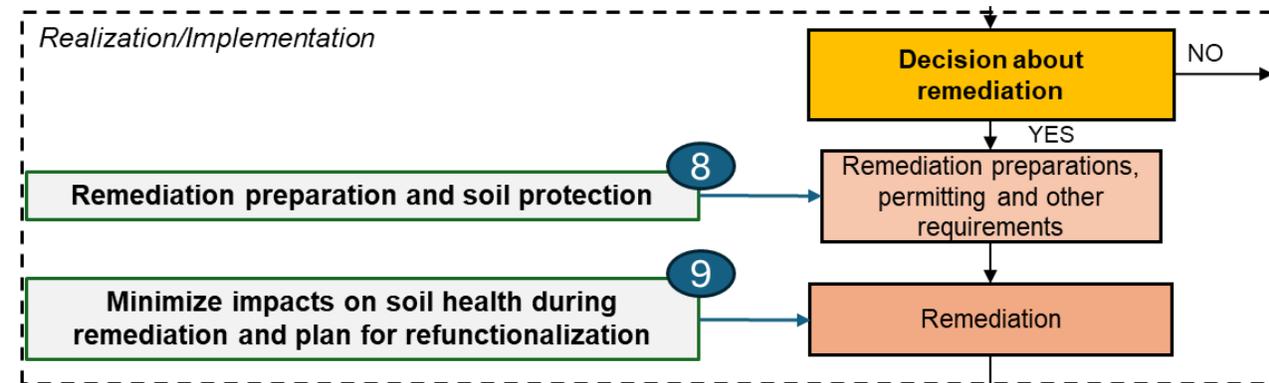
- Soil quality indicators selected according to future land use and soil functionality
- Consider risks to soil health
- Expand the option appraisal (NbS) and consider impacts on soil functions
- Externalities → wider costs/benefits that are associated with the project
- Remediation objectives linked to quantifiable soil quality indicators (need to develop thresholds)



10 Soil health entry points into CLM

Realization/Implementation

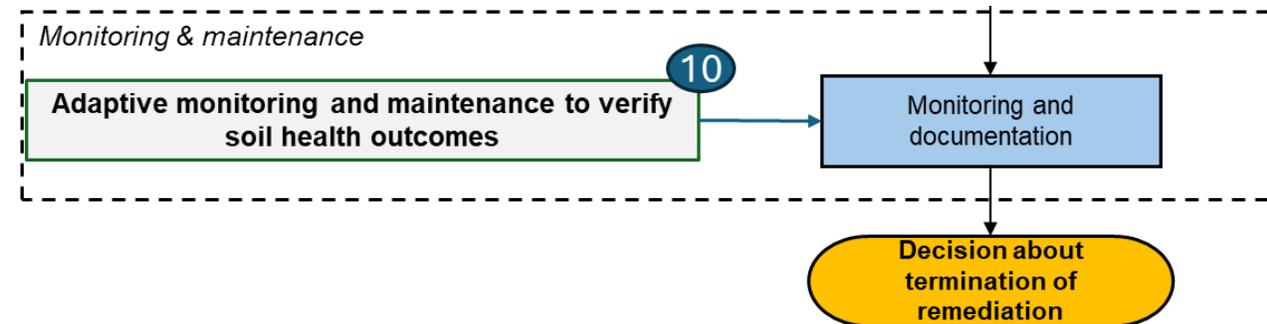
- Soil functionality “zones” – and establishing protections
- Minimize disturbances
- Plan for refunctionalization – rehabilitation of soils as part of the remediation process (not an afterthought)



10 Soil health entry points into CLM

Monitoring & Maintenance

- Adaptive monitoring and maintenance
- Verify outcomes – both regulatory compliance and soil function



Take-home messages and future work in ISLANDR

Integrating soil health into contaminated land management is essential for better decision-making
'Fitness-for-use' should cover both risk and soil functionality for future land use

ISLANDR is working to:

- Identify **soil health entry points** into CLM and align the working processes
- Consider **soil health trajectories and scenarios** – balancing risk reduction and soil functionality – for different site management strategies
- Finetuning **indicators-based tools** to adapt decision-making for SH inclusion
- Soil Health as an important building block in the **ISLANDR Roadmap**

→ More information in 2 **ISLANDR Deliverables** (*not yet public*):

→ **Detailed approach** described in **D2.3 Soil Health Risk Assessment**

→ **Overall guidance** of Soil Health inclusion in **ISLANDR D3.2 Holistic SRBLM guidance for the ISLANDR Roadmap**

Visit the ISLANDR website for more information and sign up for the newsletter!

<https://islandr-project.eu/>



Partners



Funding Acknowledgement

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.



**Funded by
the European Union**

UK partner in ISLANDR is supported by UKRI grant. Swiss partner in ISLANDR is supported by Swiss grant.



**UK Research
and Innovation**

Project funded by



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs,
Education and Research EAER
**State Secretariat for Education,
Research and Innovation SERI**





THANK YOU



contact@islandr-project.eu



[X](#) @islandr-project



islandr-project.eu

