

● ● ● Soils
SOLO for
● ● ● Europe



Soils for Europe supporting the European Mission 'A Soil Deal for Europe'

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Rooting for Healthy Soils in Europe, 16 April 2024, Brussels and Online



Funded by the European Union.

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EU Soil strategy for 2030 (2021)

The EU soil strategy sets out a framework and concrete measures to protect and restore soils, and ensure sustainable use of soils

- Healthy soils by 2050
- No net land take, soil pollution reduced to levels no longer considered harmful to human health or ecosystems by 2050
- Protecting soils, managing them sustainably and restoring degraded soils = common standard by 2050
- Concrete actions by 2030
- Key deliverable of the EU biodiversity strategy for 2030 and Green Deal objectives

Mission: A Soil Deal for Europe (2021)

Goals:

Leading the transition towards healthy soils by 2030 by:

- Funding an ambitious research and innovation programme
- Network of 100 living labs and lighthouses to co-create knowledge, test solutions and demonstrate their value in real-life conditions
- Harmonised framework for soil monitoring in Europe
- Raising people's awareness on the vital importance of soils

Horizon Europe research and innovation programme for the years 2021-2027

Mission: A Soil Deal for Europe (2021)

Mission objectives:

1. Reduce land degradation relating to desertification
2. Conserve and increase soil organic carbon stocks
3. No net soil sealing and increase the reuse of urban soils
4. Reduce soil pollution and enhance restoration
5. Prevent erosion
6. Improve soil structure to enhance habitat quality for soil biota and crops
7. Reduce the EU global footprint on soils
8. Increase soil literacy in society across Member States

→ Reduce soil pollution and enhance restoration:

Mission: A Soil Deal for Europe (2021)

Mission targets related to Mission objective 4: Reduce soil pollution and enhance restoration, in line with EU and global commitments:

T 4.1: reduce the overall use and risk of chemical pesticides by 50% and the use of more hazardous pesticides by 50%

T 4.2 reducing fertilizer use by at least 20%

T 4.3: reduce nutrient losses by at least 50%

T 4.4: 25% of land under organic farming

T 4.5: Reduce microplastics released to soils to meet 30% target of zero pollution action plan

T.4.6 Halt and reduce secondary Salinization

All to be achieved by 2030 to contribute to meeting the target by 2050 that soil pollution is reduced to levels no longer considered harmful to health and natural ecosystems.

In line with the Biodiversity strategy, the Farm to Fork Strategy and the Zero Pollution Action plan.

Soils For Europe SOLO project (Horizon Europe)

2022 - 2027

11 EU member states, 17 partner organisations



UNIVERSITÄT
LEIPZIG



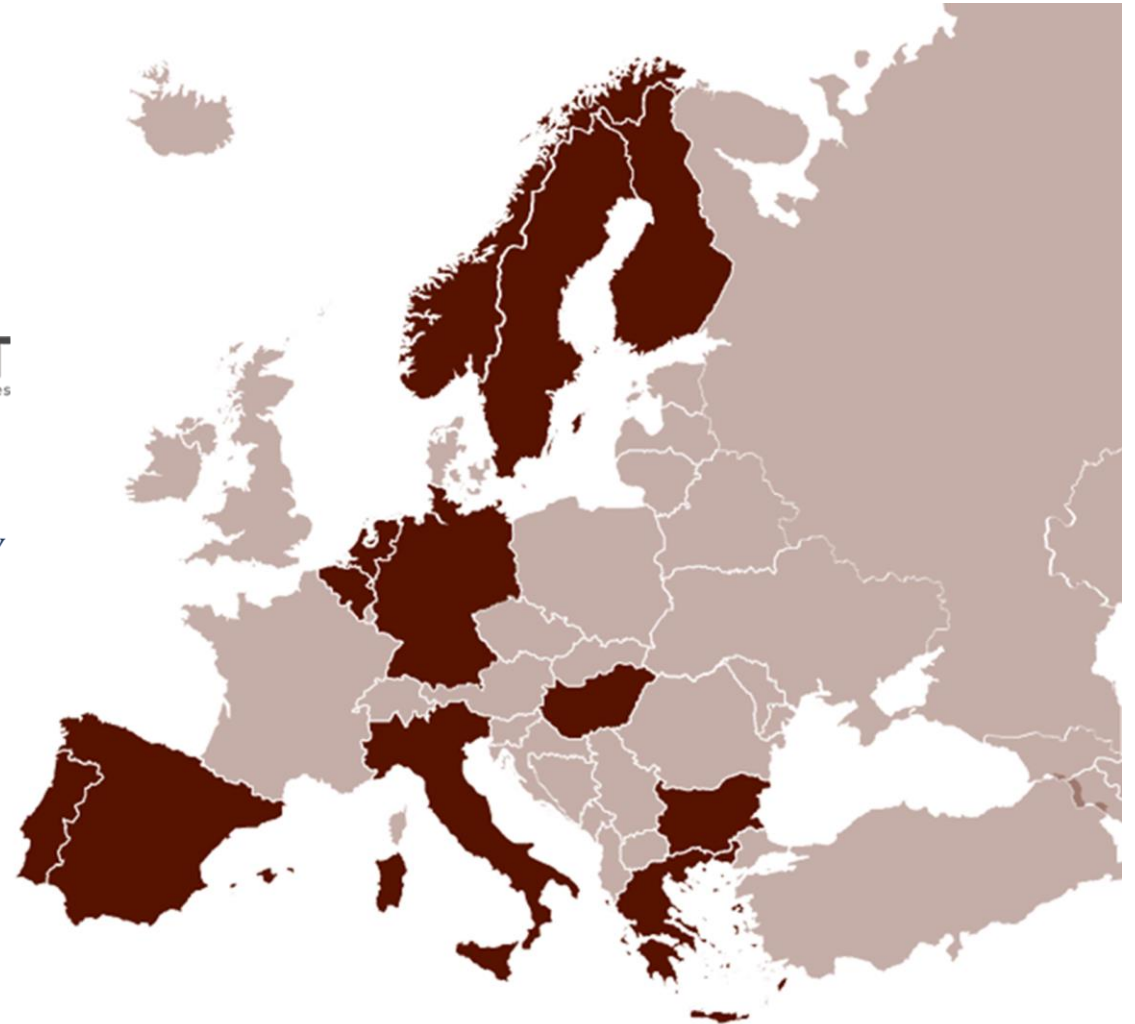
LEITAT
managing technologies



LUND UNIVERSITY



Norwegian University
of Life Sciences



Objectives SOLO

Work Packages



Project Management and Coordination



Soil Mission Think Tanks



Drivers of soil health



Roadmaps Integration



Operational Framework



- Identifying current **knowledge gaps, drivers, bottlenecks and novel research and innovation approaches** to be considered in **the European Soil Mission research and innovation roadmap**

- Create a **knowledge hub for soil health research and innovation** that will last beyond the project's lifespan (strategic partnerships and participatory process)

→ **10 Think Tanks**

→ Linked to Mission objectives + Nature conservation of soil biodiversity



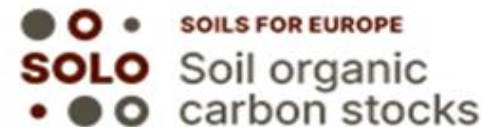
Think Tanks SOLO

Think Tank on Soil Pollution and Restoration:

Leaders:

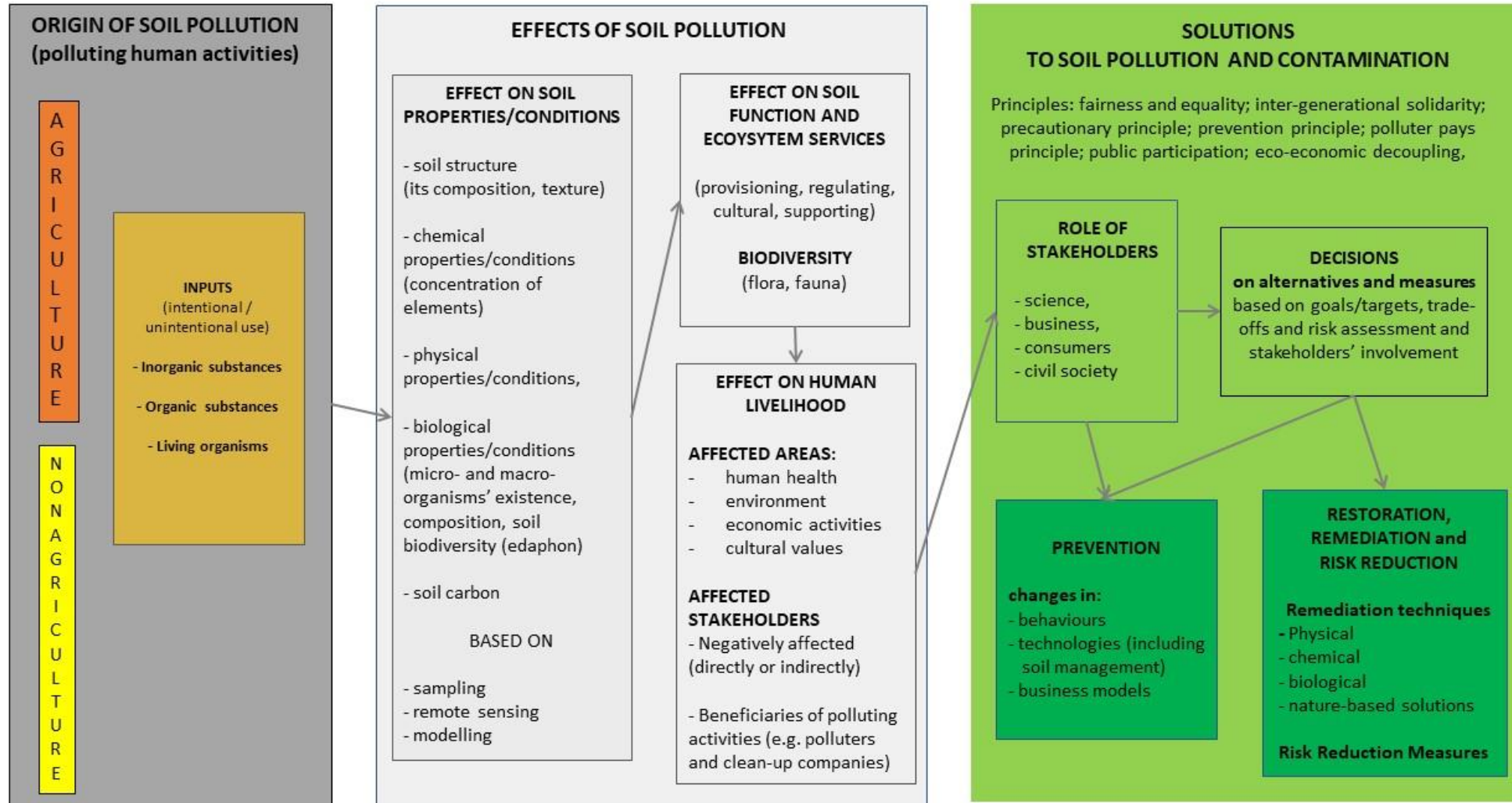
The institute of Advanced Studies Kőszeg (iASK)
Pesticide Action Network Europe (PAN Europe)

The Think Tank gathers stakeholders from various backgrounds (science, policy, practice, industry, civil society, ...)



Think Tank on Soil Pollution and Restoration:

FRAMEWORK FOR SCOPING SOIL POLLUTION DOMAIN





Definition, scope, sources and loads of soil pollution



Affected soil properties, soil biodiversity, ecosystem functioning and services



Affected/Involved Stakeholders and their role (health, social and economic impacts)



Solutions to Soil Pollution and needed conditions

Think Tank on Soil Pollution and Restoration:

First phase:

- Establishing network of stakeholders (23)
- Identification of Knowledge gaps on Soil Pollution and Restoration

Need for further research, increased data availability regarding:

- A clear definition of soil pollution and classification framework of soil pollutants
- The important data gaps on sources and loads of soil pollution
- The lack of (systemized gathering of) comprehensive data on i) sources of pollution and ii) the extent and severity of soil pollution
- Lack of data on the mixtures of contaminants soils are exposed to over time
- Lack of data on the fate of soil polluting compounds
- Lack of data on contributions of soil pollution to water and air pollution, and vice versa.
- E.g. need for increased information on the scope of leaching and volatilization of soil contaminants to ground water, surface water, air, ...
- E.g. need for increased data of the contribution of air- and water pollution to soil pollution
- ...

Need for further research and enhanced understanding of:

- The effects (toxicity) of both individual pollutants and mixtures of pollutants (cumulative/synergistic effects) on soil characteristics and functioning
- The behaviour or soil contaminants: persistence, bioaccumulation and degradation of soil contaminants
- How soil pollution affects, directly and long-term, soil biodiversity, the interactions between soil organisms and soil processes and the provision of ecosystem services
- The impacts on ecosystems and their functioning/services beyond soils, e.g. impact on air and water quality, linkages between belowground and aboveground biodiversity (e.g. insects)
- Baseline period/situation to assess progress towards targets
- Soil descriptors and associated criteria fit for purpose to assess healthy soil functioning
- ...

Need for further research and enhanced understanding of:

- Which different stakeholders are affected by soil pollution
- How the different stakeholders are affected by soil pollution
- The effects of both individual pollutants and mixture of pollutants (cumulative/synergistic effects) on human health. The direct and long-term health, social and economic impacts of soil pollution
- How stakeholders can affect soil pollution, policy, research and innovation
- The linkages between different stakeholders
- The impact of soil pollution on land use
- How different stakeholders would benefit from decreased soil pollution/enhanced restoration
- The incentives, barriers (social, financial, ...) and bottlenecks involved in implementing new practices, changing behaviours, ...
- ...

Need for further research and enhanced understanding of:

- Practical/technical, policy and economic/market tools to prevent/decrease inputs from different sources of soil pollution
- Agricultural practices which decrease inputs of pollution and enhance soil restoration
- Nature-based, biological, physical and chemical soil remediation and restoration techniques (e.g. use of microbes, crop use and management (integrated pest management, low-input and regenerative farming ...))
- Modelling instruments to assess the impact of (reduction of) soil pollution and effects on the delivery of ecosystem services, and linked economic impact
- Fitness for purpose assessment and identification of bottlenecks, opportunities and needs of/in current policy frameworks and available tools (social, financial, ...) regarding prevention, reduction, monitoring and remediation of soil pollution, and soil restoration
- ...

Think Tank on Soil Pollution and Restoration:



Next phase: development of a Roadmap, along a timeline (short term Year 1-5, middle term Year 6-10, long term Years 10-20): identifying:

- Today's and future soil-related research activities in the EU including
 - Novel technological developments,
 - Societal, economic and cultural options that foster the implementation of the TT relevant Soil Mission objective

- Major bottlenecks and risks which might hinder the impact of Mission research and innovation activities (social, environmental, economic, legal, ...)

Your Roadmap								
No	knowledge gap title	knowledge gap short description	time frame				link to further knowledge gaps (No)	Link to bottlenecks (No)
			current	short	middle	long		
1	Data gaps on soil pollution in soils	Lack of data on anorganic and organic pollutants in soils (which pollutants are present, in which concentrations, source)	x	x	x	x	2, 3, 4, 5, 6	
2	Lack of systemized monitoring	Lack of systemized gathering of comprehensive data on sources of pollution and the extent of soil pollution	x	x	x	x	1, 3, 4, 5, 6	
3	Behaviour/fate of soil pollutants	Lack of data on the Persistence, bioaccumulation, degradation and leaching/volatilization of soil contaminants	x	x	x	x	1, 2, 4, 5, 6, 10, 11	

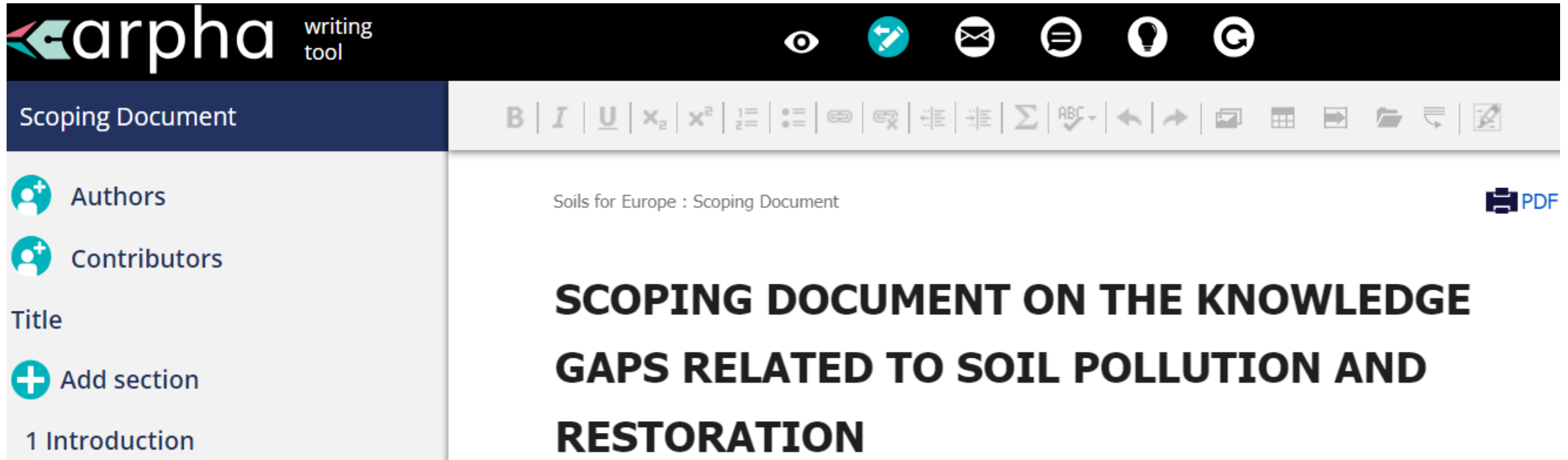
Think Tank on Soil Pollution and Restoration:

Currently:

→ Processing feedback of reviewers on Scoping document

Identifying knowledge gaps

→ 2nd round of review beginning of May, afterwards public review



The screenshot shows the 'arpha' writing tool interface. The top bar includes the 'arpha writing tool' logo and several icons (eye, pencil, envelope, list, lightbulb, refresh). Below the top bar is a dark blue header for the document titled 'Scoping Document'. A rich text editor toolbar is visible with various formatting options like bold, italic, underline, and lists. On the left side, there is a sidebar with 'Authors', 'Contributors', 'Title', 'Add section', and '1 Introduction'. The main content area displays the document title 'Soils for Europe : Scoping Document' and a large, bold heading: 'SCOPING DOCUMENT ON THE KNOWLEDGE GAPS RELATED TO SOIL POLLUTION AND RESTORATION'. A PDF icon is located in the top right corner of the document area.

Soils For Europe SOLO project



Would you like to get involved in the SOLO project, e.g. as a reviewer, joining a think tank, receiving regular updates, ...?

Website SOLO project: <https://soils4europe.eu/>

Feel free to contact:

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