

*Horizon Europe - Work Programme 2023-2025
Missions and Cross-cutting Activities*

- Utilise advanced modelling approaches to analyse the collected data, identify patterns and relationships between soil biogeochemical processes and nitrogen fluxes, and improve predictive tools that can be used to inform management strategies on a regional to continental scale.
- Implement and monitor pilot projects that test the effectiveness of the developed management strategies in diverse pedo-climatic zones, accounting for local environmental conditions, agricultural practices both in conventional and organic farming systems, and socio-economic factors that may influence adoption and outcomes.
- Synthesise the findings from field studies, modelling efforts, and pilot projects into a comprehensive estimation of the full nitrogen budget at the European continental scale contributing to the EU Soil Observatory through the provision of high-quality datasets for monitoring, reporting and verification.
- Development of scenarios on how climate change and land use change will affect nitrogen cycling through the soil-plant-atmosphere system.

Proposals should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the Joint Research Centre’s EU Soil Observatory (EUSO) and the project Soil-WISE. In particular, to ensure inter-operability between existing databases and models and their integration in the EUSO.

Proposals should include a dedicated task and appropriate resources to build on the work of other projects working on quantification of nitrogen fluxes in Europe that are being funded by other entities, including philanthropic organisations, particularly where there is geographical or thematic complementarity.

In this topic, the integration of the gender dimension (sex and gender analysis) in research and innovation content is not a mandatory requirement.

HORIZON-MISS-2024-SOIL-01-05: Soil health, pollinators and key ecosystem functions

Specific conditions	
<i>Expected EU contribution per project</i>	The Commission estimates that an EU contribution of around EUR 7.50 million would allow these outcomes to be addressed appropriately. Nonetheless, this does not preclude submission and selection of a proposal requesting different amounts.
<i>Indicative budget</i>	The total indicative budget for the topic is EUR 7.50 million.
<i>Type of Action</i>	Research and Innovation Actions
<i>Eligibility conditions</i>	The conditions are described in General Annex B. The following exceptions apply:

	Proposals must apply the multi-actor approach. See definition of the multi-actor approach in the introduction to this Mission.
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Expected Outcome: Activities under this topic will help to progress towards the objectives of the Mission ‘A Soil Deal for Europe’, in particular its specific objectives 4 “Reduce soil pollution and enhance restoration”, 6 “Improve soil structure to enhance habitat quality for soil biota and crops” and 8 “Improve soil literacy in society”. Activities will also contribute to the EU Biodiversity Strategy for 2030, to the revised EU Pollinators Initiative “[A new deal for pollinators](#)”, to the future EU Nature Restoration Law and the proposed Soil Monitoring and Resilience Directive, to the EU Farm to Fork Strategy, including the EU Action Plan on the Development of Organic Production, and to the goals of the UN CBD COP-15. It also directly contributes to the achievement of several of the Sustainable Development Goals ([SDGs](#)) in particular SDG 15 by halting biodiversity loss and halting and reversing land degradation and SDG2 on food security as activities are expected to improve pollination ecosystem services, which are key for food production.

Projects results are expected to contribute to all of the following outcomes:

- Improved knowledge and understanding of the biology and ecology of insect species spending part of their life cycle on or in the soil, with specific focus on ground-nesting pollinators.
- Better understanding of the major causes of the decline of these insects and the synergistic effects of various threats, including the quantitative and qualitative aspects related to the magnitude of their decline.
- More effective measures to tackle the loss of soil-dependent insects.

Scope: Soil-dependent insects are under threat because of non-adapted soil management practices such as tillage and issues like contamination, compacting or sealing. A better understanding of the causes of their decline and effective measures to tackle them are needed.

Pollination is a key ecosystem service for crops and food production. Therefore, a specific focus on pollinating insects is required. Many solitary wasps and 70% of wild bees nest below ground and require protection during this crucial period of their lifecycle. Other ground-nesting pollinators also contribute to soil quality and other ecosystem functions, but little is known about their below ground lives.

The “New Deal for Pollinators” calls for more research to better understand the taxonomic and functional diversity of pollinator communities and their distribution, as well as the threats to pollinators and their interactions.

Proposed activities should:

- Improve the knowledge on the biology, ecology and population dynamics of insects spending part of their life cycle on or in the soil, with specific focus on ground-nesting pollinators, as well as on the interactions between life below and above ground. Focus

should be put on lesser-known species, regions and major threats and causes of their decline. The potential buffer and protective role of soil against threats in different soil and land uses, including applied agricultural practices, such as ploughing (e.g., agricultural, forestry, urban and natural areas) should be explored.

- Contribute to the development of monitoring methods including on threats and pressures that can be of relevance for the pollinator monitoring framework, under the revised EU Pollinators Initiative : “A New deal for Pollinators”.
- Identify soil conditions associated with a high diversity of pollinators and map regions of particular importance for the protection of soil-dependent pollinators.
- Analyse the effects of different soil management practices, including different plant protection and/or soil management methods, across different farming systems, such as organic farming or conventional approaches, and compare intensively managed areas with protected areas.
- Develop and demonstrate soil remediation and mitigation practices to address the causes of insect (and in particular pollinator) decline.
- Provide recommendations for best soil management practices to integrate pollinator conservation and restoration across the wider landscape and enhance habitat connectivity and pollination services.

Projects should seek potential synergies and capitalise on the results of past or ongoing projects (e.g., Horizon projects [Safeguard](#), [PollinERA](#) and WILDPOSH⁴⁹⁷). Furthermore, specific tasks and resources should be envisaged to collaborate and capitalise on activities and results from projects financed under other Work Programme topics of the Mission ‘A Soil Deal for Europe’, in particular [BIOserviceES](#) and [SOB4ES](#) and under the topic HORIZON-MISS-2024-SOIL-01-06: Harnessing the multifunctional potential of soil biodiversity for healthy cropping systems.

Proposals should demonstrate a route towards open access, longevity, sustainability and interoperability of knowledge and outputs through close collaboration with the Joint Research Centre’s EU Soil Observatory and the SoilWISE project and the EU Knowledge Centre for Biodiversity.

International cooperation and links to global conservation actions are encouraged. Potentially, the projects funded under this topic could also cooperate with living labs and lighthouses that will be created in this and future calls of the Mission ‘A Soil Deal for Europe’.

Proposals must implement the multi-actor approach and should involve at least researchers, landowners and/or land managers, and representatives of civil society notably environmental NGOs.

⁴⁹⁷ European-funded consortium project that seeks to evaluate the risks of exposure of wild pollinators to pesticides across Europe