

Can we support the Mission - Caring for soil is caring for life? Challenges for 2030

#HorizonEU #MissionSoil

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This presentation is delivered by a member of a Horizon Europe Mission Board, which is an informal group of experts set up by the European Commission to provide advice for the identification and implementation of missions in the future Horizon Europe programme. The contents of the presentation do not represent the official views of the European Commission nor do they constitute a commitment of any kind on its behalf.



The proposed mission:
Caring for soil is caring for life

**ensure 75% of soils are
healthy by 2030
for food, people, nature and
climate**



Research and innovation missions under Horizon Europe



Missions are a “**portfolio of excellence-based and impact driven R&I actions** across disciplines and sectors” and should

- be **bold and inspirational**, with wide societal relevance;
- indicate a clear direction: **targeted, measurable and time-bound**;
- be **ambitious but realistic** research and innovation actions;
- spark innovation **across disciplines, sectors and actors**;
- be based on a bottom-up approach of **multiple solutions**



1st Mazzucato report (2018)
https://ec.europa.eu/info/sites/info/files/mazzucato_report_2018.pdf

Examples of missions in Mazzucato report

- 100 carbon neutral cities by 2030
- A plastic-free ocean
- Decreasing the burden of dementia



Adaptation to climate change, including societal transformation



Healthy oceans, seas, coastal and inland waters



5 mission areas



Cancer

Climate-neutral and smart cities



Soil health and food





Soil health and food - Who is involved?

- Mission area managed across **EU Commission services**: co-lead by DG AGRI and DG RTD + DGs CLIMA, ENV, JRC, MARE, SANTE, ENER and MOVE
- **Secretariat** provided by DG AGRI
- Creation of **Mission Board** to develop ideas for one or more possible missions in the area of soil health and food
- Mission board can be supported by members of a **Mission Assembly**
- **Member States** involved through (shadow) Programme Committee and national activities
- **Stakeholders and citizens** will contribute to the development and implementation of the mission through co-design, co-implementation and co-assessment

Soil health and food – Mission Board



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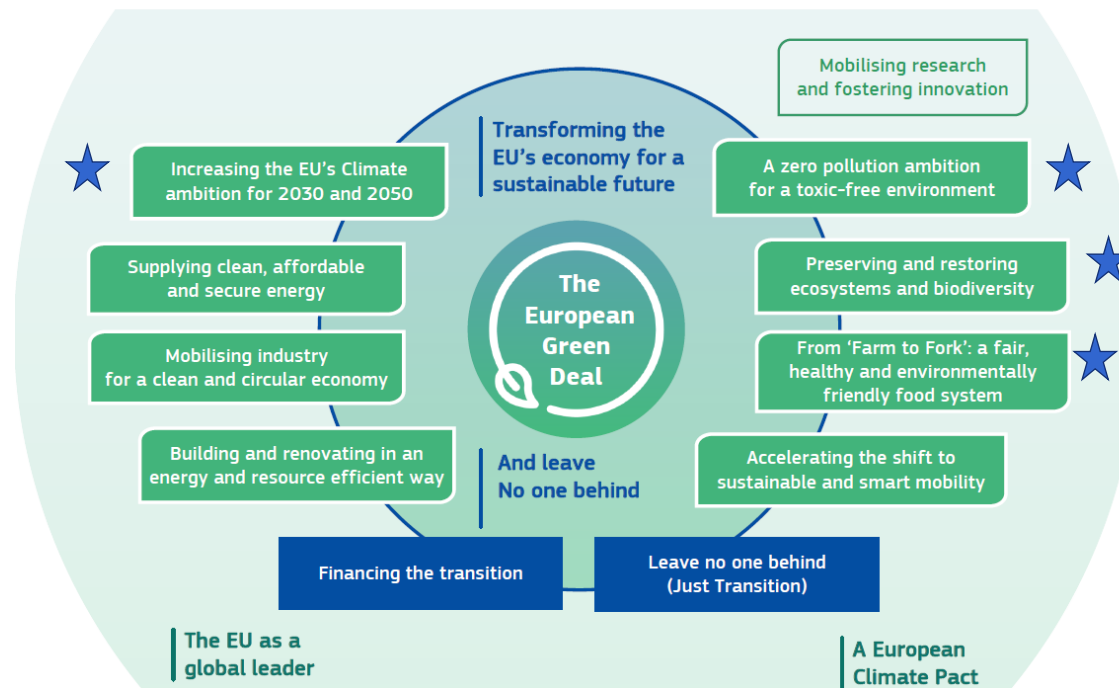
Soil health and food – at the right time!

Mission area is highly **relevant for new Commission priorities under the Green Deal**

Sustainable land/soil management is needed to **meet objectives of policies for**

- Farm to Fork
- Climate
- Biodiversity
- Pollution
- Rural Areas

The European Green Deal



★ Objectives which require action on soils

The need for mission

“Caring for Soil is caring for Life”



- Healthy Soils are the **basis for nutritious and safe food**
- Soils deliver **vital, interconnected ecosystem functions**: water regulation, hosting biodiversity, nutrient cycling, climate mitigation and adaptation, carrying landscapes and cultural services
- Soil is a **scarce, non-renewable resource**: it takes hundreds of years to generate 1 cm of top soil but only a couple of years or less to destroy it
- **Soils are threatened: 60-70% of all soils in Europe are unhealthy** as due to current management practices, pollution, urbanisation and the effects of climate change
- **Soils health is key in the implementation of the Green Deal** and its strategies (Farm to Fork, Biodiversity, Forestry, Zero Pollution and Climate): to address these major challenges

Why do we have to act now?



Soils need our attention! EU Examples:

- 2.8 million potential **contaminated sites** (only 24% inventoried) posing major health risks
- 65-75% of agricultural soils with nutrient inputs at levels risking **eutrophication of soils and water** and affecting biodiversity
- Cropland soils **losing carbon** at a rate of 0.5% per year; 50% of peatlands drained and losing carbon – this is contributing to the climate crisis
- 24% of land with **unsustainable water erosion rates**
- 25% of land at High or Very High risk to **desertification** in Southern, Central and Eastern Europe in 2017
- The **costs associated with soil degradation in the EU exceed 50 billion € per year**

The effects of climate change put further pressure on soils and accelerate land degradation!

What do we want to achieve with this mission?



by 2030, at least 75% of all soils in each EU Member State are either **healthy** or show a **significant measurable improvement for all indicators** where levels are below accepted thresholds, to support the provisioning of essential ecosystem services

for food, people, nature and climate

Indicators to assess current status and track change



- 1) Presence of soil pollutants, excess nutrients and salts
- 2) Soil organic carbon stock
- 3) Soil structure including soil bulk density and absence of soil sealing and erosion
- 4) Soil biodiversity
- 5) Soil nutrients and acidity (pH)
- 6) Vegetation cover
- 7) Landscape heterogeneity
- 8) Forest cover

What do we want to achieve with this mission?



1. **Reduce land degradation**, including desertification and salinization
 - **Restore 50% of degraded land** moving beyond land degradation neutrality
2. **Conserve soil organic carbon stocks** (e.g. in forests, permanent pastures, wetlands)
 - Increase carbon concentration on cultivated land by 0.1-0.4% per year;
 - the area of peatlands losing carbon is reduced by 30-50%.
3. **Stop soil sealing** and increase re-use of urban soils (the current rate of soil re-use is increased from current 13% to 50%)

What do we want to achieve with this mission?



4. **Reduce soil pollution and enhance restoration** - at least 25% area of EU farmland under organic agriculture; an additional 5-25% of land with reduced risk from eutrophication, pesticides, anti-microbials and other contaminants; a doubling of the rate of restoration of polluted sites
5. **Prevent erosion and stop erosion** on 30-50% of land with unsustainable erosion rates
6. **Improve soil structure** to enhance habitat quality for soil biota and crops; reduction of high-density subsoils by 30-50%
7. **Reduce by 20-40% the global footprint of EU's food and timber imports** on land degradation
8. Significantly improve **soil literacy** in all Members States

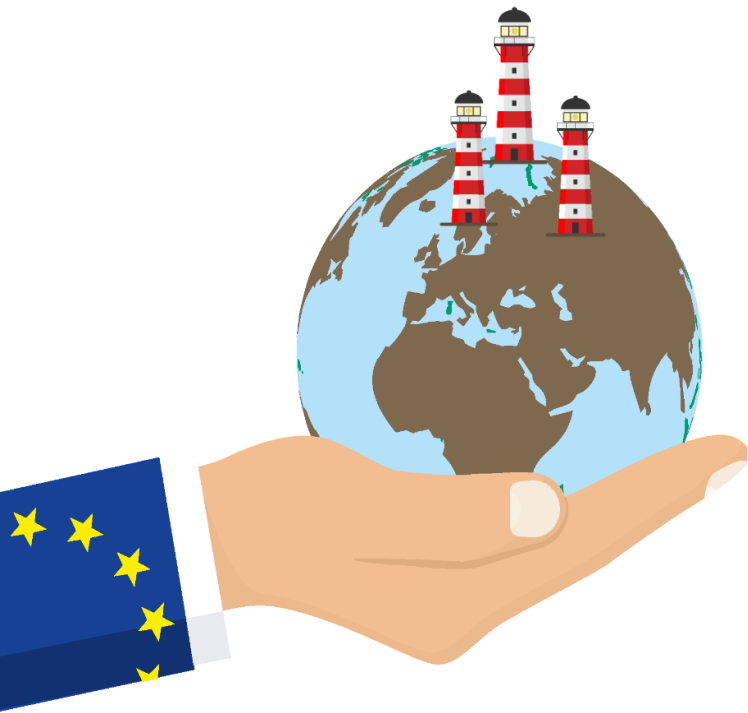
How do we want to meet the mission objectives?



- strategic research and innovation priorities: system approach, interdisciplinarity, co-construction, regional differentiation, societal support, cross-scale
- co-creation, testing and demonstration of solutions in living labs and lighthouses
- a set of 8 indicators and a consistent system for monitoring the status of soils
- strengthening independent advisory services for farmers and foresters
- engaging citizens and society at large
- encouraging changes to policies and day-to-day practices of land managers, industries and consumers

→ **soil health depends on the actions of all of us!**

Cooperation across sectors and citizen engagement at the core of the mission



Co-implementation at the core of the mission:

researchers, land managers, businesses, policy makers and citizens working together in:

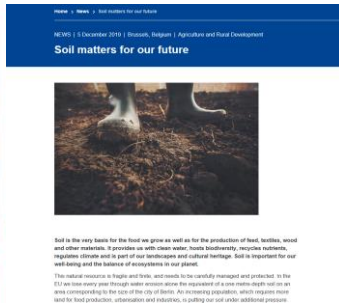
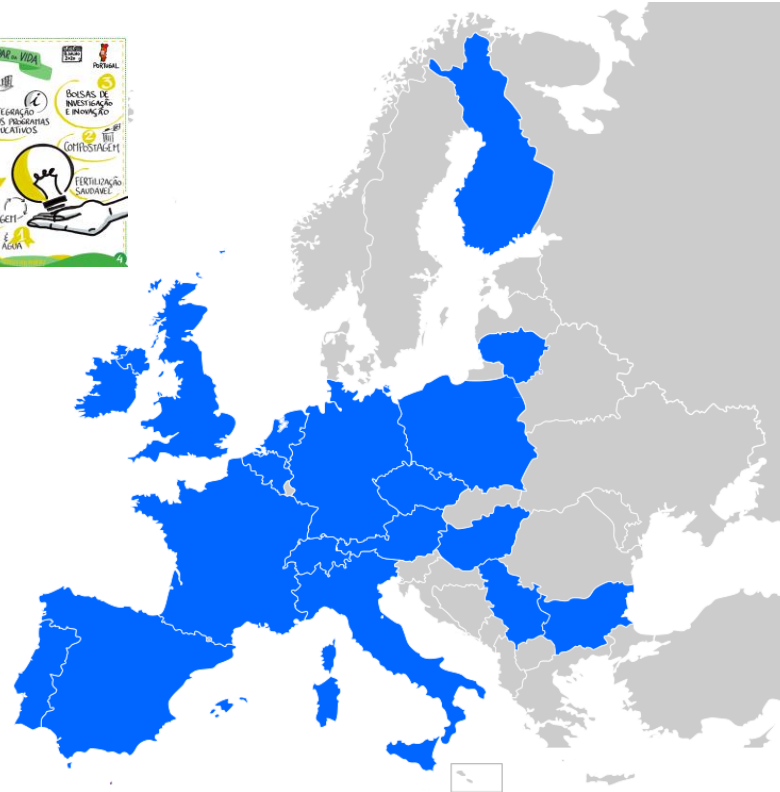
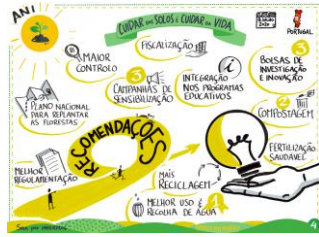
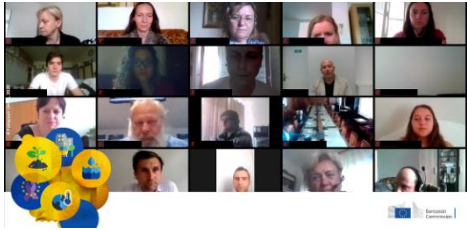
Living laboratories \Longrightarrow create knowledge and design, test and disseminate innovative solutions

Lighthouses \Longrightarrow test and demonstrate good practices

R&I priorities

1. Improve uptake/use of existing knowledge
2. Develop needed innovation in technologies and practices
3. Adapt global food chains and move towards a resilient society
4. Set up an efficient monitoring system

Communication and citizen engagement in the EU and beyond, *to be continued...*



- **World Soil Day – video - tweet:** more than **30,000 views** in less than 24h
- **2 major #EIPAgriSoil campaigns**
- **Articles, press releases, newsletters, social media, videos** (**Mission video** more than **110,000 views** in August)
- **55 co-creation and citizen engagement events** (up to 29/10)
 - in AT, BE, BG, CH, CZ, DE, ES, FI, FR, HU, IE, IT, LT, NL, PL, PT, RS, UK + online reaching worldwide, and a co-organised session with Japan
 - including **2 International fairs:** International Green Week, Salon de l’Agriculture
- **Survey**
 - sent to more than **7000** contacts (EN, FR, DE, PL, CS, PT)
 - **more than 2500** contributions received

Expected Impacts



- **Soil health is the starting point for systemic transformations across value chains and territories**
 - **Practices in agriculture, forestry and in urban areas will support healthy soils and their ecosystems services**
 - **Healthy soils are the basis for nutritious and safe food**
 - **Food and bio-based value chains reward soil friendly practices and minimise their impact on soils**



Expected Impacts



- Soils help us **mitigating and adapting to climate change**
- **Consumers and society** are aware of the importance of healthy soils and **on the role of citizen's in preserving this resource**
- The impact of production and consumption patterns in Europe on soils at global level is reduced – **a lower global footprint**

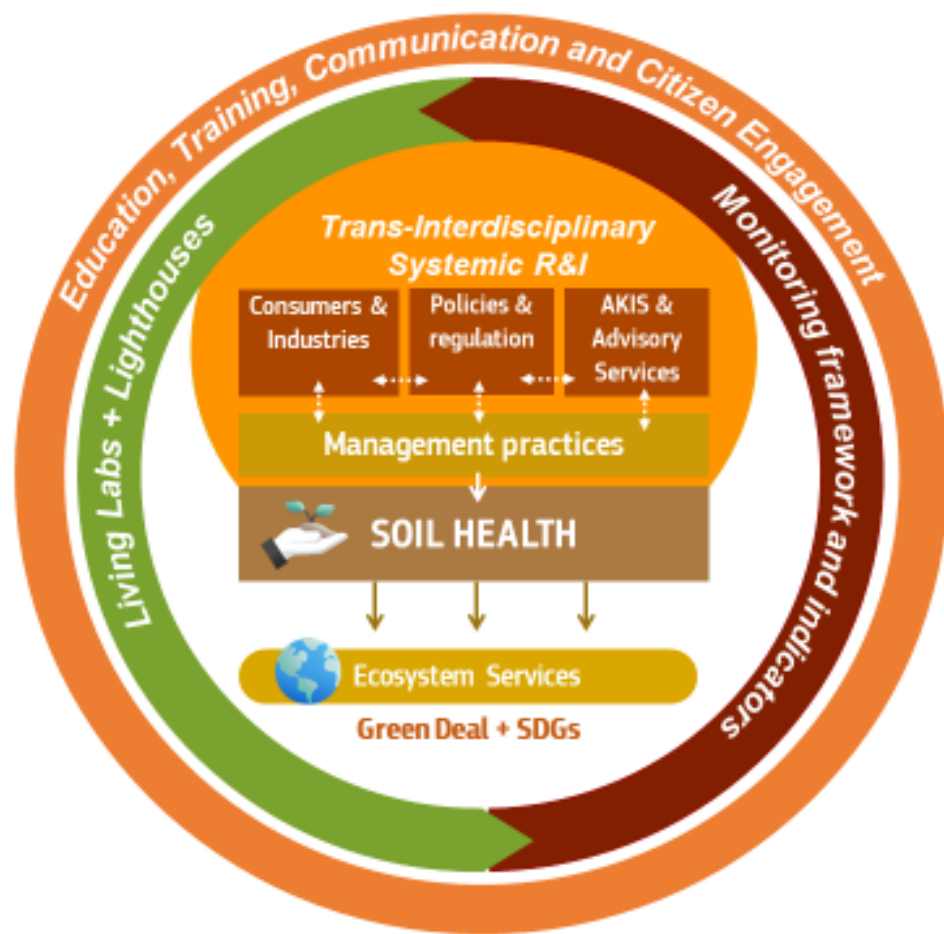
Timeline of activities

Activity	Year	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30
CO-DESIGN PHASE											
1. Identifying and mapping in each EU region: (1) “soil needs”, objectives and priorities for action; (2) structures for implementing mission activities, (3) funding & other mechanisms for setting up living labs (LLs) and lighthouses (LHs)											
2. Building communities at different spatial scales and levels											
CO-IMPLEMENTATION PHASE											
Setting up and running regional LLs and LHs across regions in Europe; building clusters and networks											
Carry out R&I activities to support objectives of the mission											
Training and access to independent, advisory services for all land managers											
MONITORING AND CO-ASSESSMENT											
Support development of monitoring systems in Member States according to agreed, validated protocols and identified benchmarks											
Mid-term evaluation of activities											
Monitor mission activities and outcomes for soil health											
CROSS-CUTTING, ENABLING ACTIONS											
Communication and citizen engagement											
Science-policy dialogue and other activities to address drivers of soil health: e.g. policies, soil legislation, regulation and taxes for food, global foot-printing tools											
Support to (Agricultural) Knowledge and Innovation Systems											
Data (e.g. freely available data products), information and support to an EU Soil Observatory											

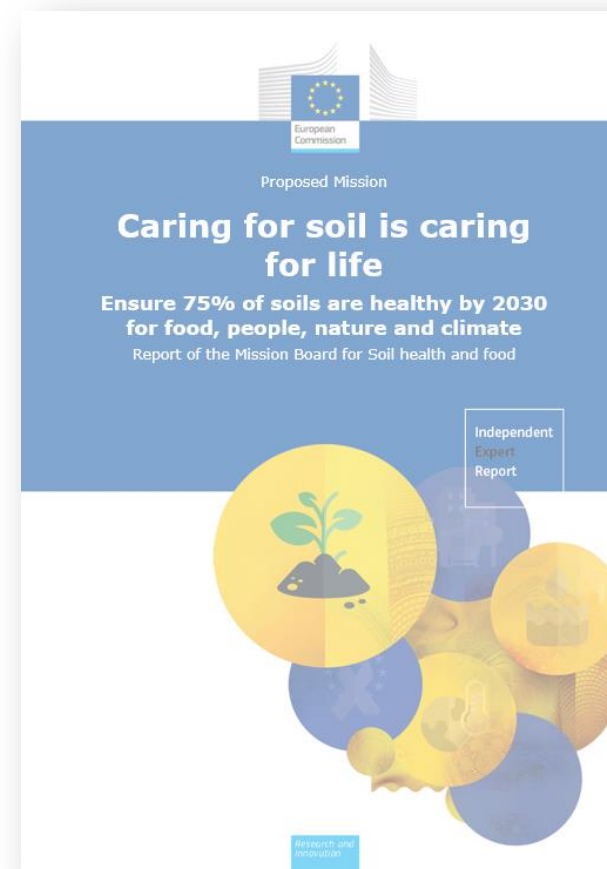
Next steps in mission development and implementation



Caring for soil is caring for life - report



Soil Health drivers and impacts (centre of the figure), and the mission building blocks (in italics)



Living labs and research infrastructures

<https://ec.europa.eu/eusurvey/runner/FirstScreeningAELLRI2020>



Survey is open until 15 December 2020

Life on earth depends on healthy soil for healthy people and healthy planet

- https://www.youtube.com/watch?v=oJF_GTmrJGI&feature=youtu.be



Useful links on ec.europa

- ✓ Horizon Europe: https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme_en
- ✓ Mission board creation : https://ec.europa.eu/info/news/commission-announces-top-experts-shape-horizon-europe-missions-2019-jul-30_en
- ✓ Mission-oriented policy for Horizon Europe: https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/mission-oriented-policy-horizon-europe_en
- ✓ Mission area: Soil health and food: https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/mission-area-soil-health-and-food_en
- ✓ Preserving our soil to protect our food: https://ec.europa.eu/info/news/preserving-our-soil-protect-our-food-2018-dec-05_en
- ✓ Soil matters for our future (article): https://ec.europa.eu/info/news/soil-matters-our-future-2019-dec-05_en
- ✓ Life on hearth depends on soil (video): https://youtu.be/oJF_GTmrJGI
- ✓ Survey: <https://ec.europa.eu/eusurvey/runner/mission-soil-health-and-food>
- ✓ EU mission Caring for soil is caring for life (mission report) <https://op.europa.eu/en/publication-detail/-/publication/4ebd2586-fc85-11ea-b44f-01aa75ed71a1/language-en/format-PDF/source-159637857>
- ✓ Video on the Mission on Soil health and food https://www.youtube.com/watch?v=53bbzE2lpKc&feature=emb_logo
- ✓ Mission report handover to the European Commission (EU R&I Days) <https://youtu.be/oAG5-CQIOoc>
- ✓ Soil mission session (EU R&I Days) <https://research-innovation-days-conference.online/hubs/mission>
- ✓ On a mission to save our soils - the EU's plan to rebuild the land (Futuris episode, euronews) <https://www.euronews.com/2020/09/21/on-a-mission-to-save-our-soils-the-eu-s-plan-to-rebuild-the-land>



Thank you!

#Mission Soil
#EUmissions # HorizonEU

<http://ec.europa.eu/mission-soil>

Photo credits

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Discussion

1. What research and innovation are most needed to accomplish the Mission “Caring for Soil is caring for life” objectives and goals?

Discussion

2. What support and activities are needed to achieve the Mission objectives?

Discussion

3. What strategies could strengthening the connections between science, policy and society?

4. What could be the barriers to their achievement?

Discussion

5. What is the chance to popularize the use of living lab and lighthouse?

Discussion

6. What are new trends and challenges for an agro-ecological transition?