

# Bringing Science to Society through Co-Innovation and Co-Creation – The Soil-Health and Food Mission

EURAGRI conference, 27-28<sup>th</sup> September 2021

Évora (Portugal)

***“Mission in area of Soil health and food:  
Towards healthy soils in the EU by 2030”***

*Cees Veerman*

*Chair of Mission Board for Soil Health and Food*

# Life on Earth depends on healthy soils



- 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

# We need 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!

# The Mission Board's proposal for a mission

**Caring for soil is caring for life\***

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



- Baseline: currently only 30-40% of soils in the EU are healthy.
- The mission's goal corresponds to an improvement of soils on an area equivalent to the one currently eligible for payments under the Common Agricultural Policy.
- Call for evidence confirmed that a range of practices exist that can significantly improve soil health if applied at a larger scale.
- Mission foresees to apply a differentiated approach according to Member States' situation. This will include establishing national baselines and thresholds for soil health indicators.

\* Please note: final title, goal and content to be decided by the European Commission

# What do we want to achieve with this mission?

## Specific objectives:

1. **Reduce land degradation**, relating to desertification
2. **Conserve and increase soil organic carbon stocks** (e.g. in forests, permanent pastures, wetlands)
3. **No net soil sealing** and increase re-use 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 soil**
8. Increase **soil literacy** in society across Members States

Each objective is backed by:

- one or more quantified targets
- one or more measurable indicators

Objectives apply to all type of land uses

**Mission to address soil health AND the drivers of soil health including all processes along (food) value chains**

# Innovative ways to connect people with soils



28th Conference of the Working Group Sustainability / Soil Protection



Digital wall on the Mission and soils at the upcoming Farm to Fork Conference (14-15 October) Sessions on Carbon Farming and Soil Health and Research and Innovation

# Synergies with other missions

**Healthy Oceans, Seas, coastal and inland waters:** by **reducing pollution from fertilisers, pesticides and other contaminants** and through reduced sediment inputs due to erosion, **reduced flooding** due to natural flood mitigation and changes in soil sealing;

**Climate Adaptation and Societal Transformation:** by **enhancing carbon and biodiverse rich soils as the basis for climate resilient landscapes** or by raising citizens and land managers **awareness to the need for a transformative change in land use practices**;

**Climate Neutral and Smart Cities:** by **reducing and progressively stopping soil sealing and enhancing soil health of city soils**, contributing to the **greening of European towns and cities** and a better urban environment;

**Cancer:** by promoting **safe food from non-polluted soils** as an important element of **cancer prevention**.

# CENTRAL QUESTION

- How to implement the recommendations with regard to make soils in the EU healthy for at least 70% across the board in 2030
- How to engage users of the soil to participate
- How to implement scientific contributions
- How to stimulate research in the necessary direction for concrete and practical solutions
- How to convey the information and convince f.i. farmers to participate



# SCHEMATICALLY ILLUSTRATED:

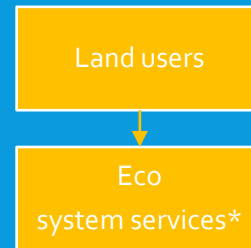
Improving Soil  
Health and Food  
(Central Goal of the Mission)

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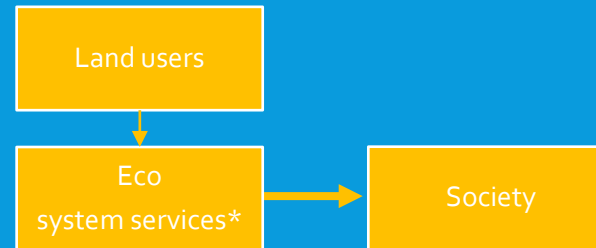


Land users

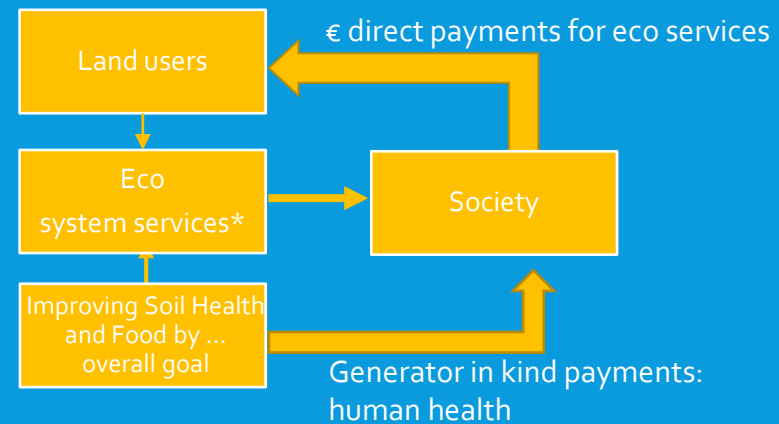
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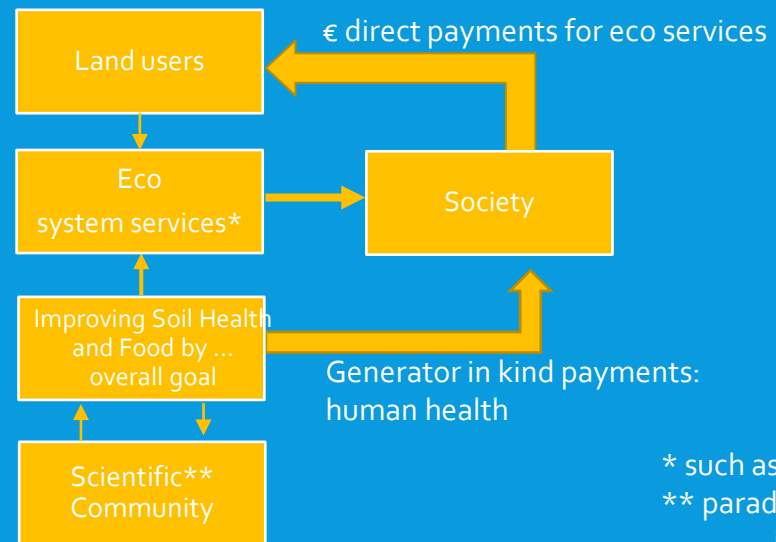


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\* such as: nature, biodiversity, water purification

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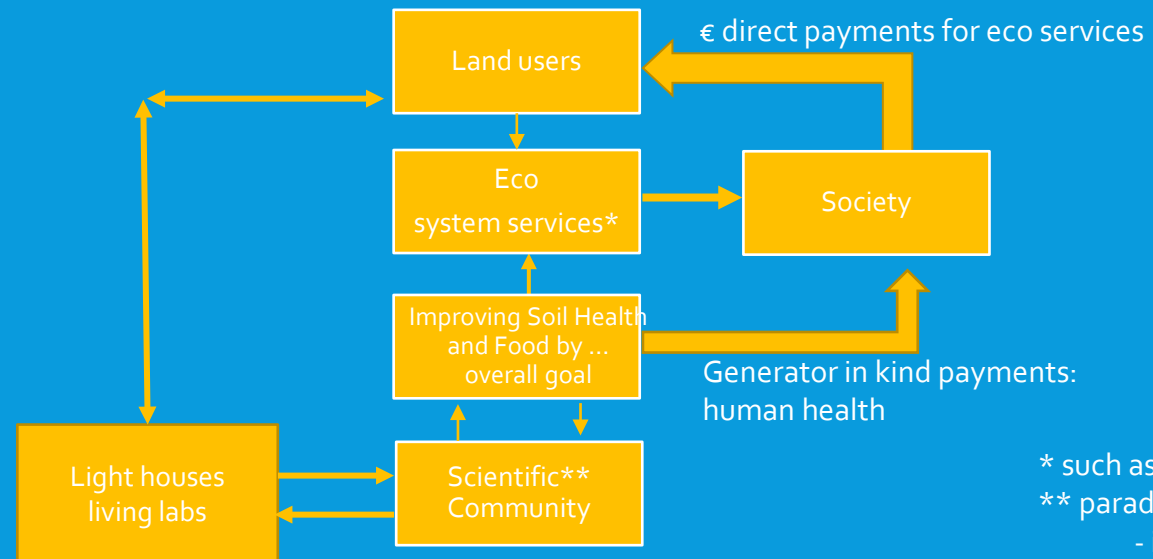


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\*\* paradigm switch:

- interdisciplinarity
- systems approach
- practice orientation

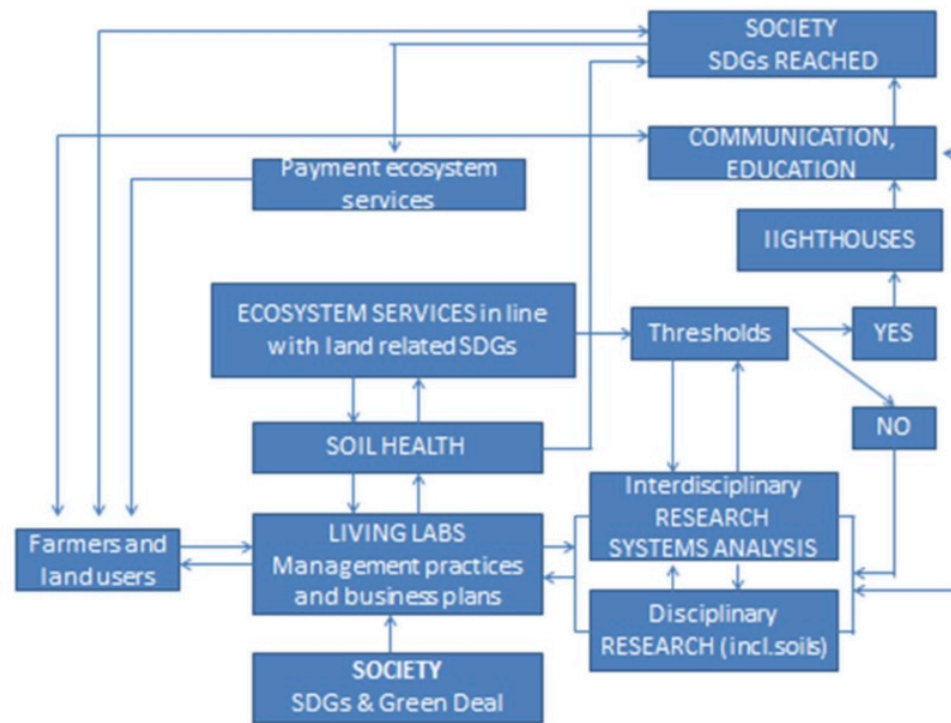
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**Figure 1.** Schematic representation of procedures discussed in this paper, linking experience with research in living labs focused on achieving ecosystem services in line with SDGs and the Green Deal (see text).



# ASSESSING THE ROLE OF SOILS

<https://www.mdpi.com/2571-8789/5/3/56>

The screenshot shows the MDPI journal article page. At the top, there is a navigation bar with the MDPI logo, a 25th Anniversary banner, and links for Journals, Information, Author Services, Initiatives, and About. There are also buttons for 'Sign In / Sign Up' and 'Submit'. Below the navigation bar is a search bar with the text 'Search for Articles:' and four input fields: 'Title / Keyword', 'Author / Affiliation', 'Soil Systems' (a dropdown menu), and 'All Article Types' (a dropdown menu). There are 'Search' and 'Advanced' buttons. Below the search bar is a breadcrumb trail: 'Journals / Soil Systems / Volume 5 / Issue 3 / 10.3390/soilsystems5030056'. The main content area is divided into three columns. The left column contains the 'soil systems' journal logo, three buttons: 'Submit to this Journal', 'Review for this Journal', and 'Edit a Special Issue', and an 'Article Menu' section with a list of links: 'Article Overview', 'Abstract', 'Open Access and Permissions', 'Share and Cite', 'Article Metrics', 'Related Articles', 'Author Biographies', and 'Order Article Reprints'. The middle column contains the article title 'Assessing the Role of Soils When Developing Sustainable Agricultural Production Systems Focused on Achieving the UN-SDGs and the EU Green Deal', the authors 'Johan Bouma', 'Teresa Pinto-Correia', and 'Cees Veerman', and their affiliations. There are also buttons for 'Open Access' and 'Review'. The right column contains social media sharing icons (Facebook, Twitter, LinkedIn, etc.) and a vertical list of icons for 'Alerts', 'Like', 'Comments', and 'Downloads'. At the bottom of the article, there are buttons for 'View Full-Text', 'Download PDF', 'Browse Figure', and 'Citation Export'. The footer contains the journal name 'Soil Syst.', volume and issue information, and the publication date.

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## Assessing the Role of Soils When Developing Sustainable Agricultural Production Systems Focused on Achieving the UN-SDGs and the EU Green Deal

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# Useful links

## **EU mission Caring for soil is caring for life (Mission Board 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=53bbzE2IpKc&feature=emb\\_logo](https://www.youtube.com/watch?v=53bbzE2IpKc&feature=emb_logo)

## **Mission report handover to the European Commission (EU R&I Days 2020)**

<https://youtu.be/oAG5-CQIOoc>

## **Soil mission session (EU R&I Days 2020)**

<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>

## **Agri Research factsheet on soil funding:**

[https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/documents/factsheet-agri-soils\\_en.pdf](https://ec.europa.eu/info/sites/default/files/food-farming-fisheries/farming/documents/factsheet-agri-soils_en.pdf)

**Call for preparatory mission topic in first Horizon Europe Work Programme:** [https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-12-missions\\_horizon-2021-2022\\_en.pdf](https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/horizon/wp-call/2021-2022/wp-12-missions_horizon-2021-2022_en.pdf)



# Thank you!

#MissionSoil  
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