



EUROPEAN UNION

EUROPEAN MISSION SOIL WEEK

Welcome and opening

21-23 November 2023



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#MissionSoilWeek #MissionSoil #EUMissions

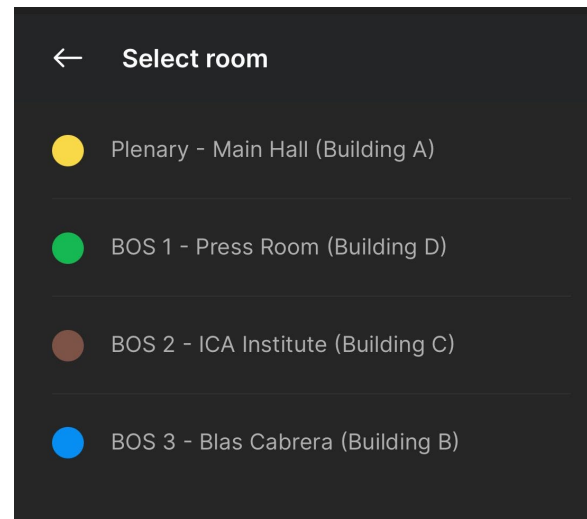


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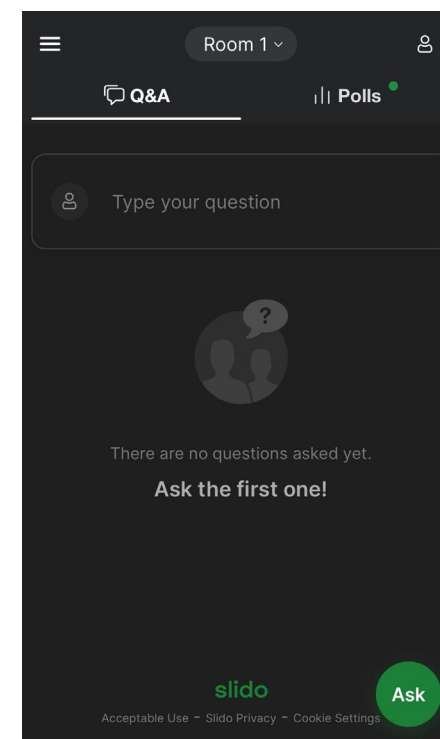


Housekeeping rules

- **WIFI**
 - Network : EMSW
 - Password : Mission.Soilw3ek2023
- **Questions**
 - Go to www.sli.do and enter event code **#ESMW2023** (or scan the QR code)
 - Select the 'room' of the session
 - Submit your questions



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Moderator



Sasha Twining

Host and facilitator

TheCorporateFacilitator.com

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Speakers

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Maciej Golubiewski

Head of Cabinet

*European Commission,
Commissioner Wojciechowski for
Agriculture*



Jose Antonio Sobrino

Deputy Director General of
Agricultural Means of Production
and Spanish Office of Plant
Varieties

Spanish Ministry of Agriculture



Raquel Yotti

Secretary General for Research

*Ministry of Science
and Innovation of Spain*



Francisco Javier Moreno Fuentes

Vice-President for International
Affairs

*Spanish National Research
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Plenary Session

Setting the scene for the Mission Soil

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The status of soils in Europe

Prof Bridget Emmett

Member of the EU 'Soil Deal' Mission Board 2019-22 &
Head of Soil and Land Use

UK Centre for Ecology and Hydrology

21/11/2023



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What is a healthy soil?

The EU mission for A Soil Deal for Europe defines this as:

”the continued capacity of soils to support ecosystem services”

This definition recognizes soils deliver a range of **vital, interconnected ecosystem functions** related to water regulation, biodiversity, nutrient cycling, climate mitigation and adaptation, landscape features and cultural services.

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<https://op.europa.eu/en/publication-detail/-/publication/4ebd2586-fc85-11ea-b44f-01aa75ed71a1/language-en/format-PDF/source-159637857>



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What is the problem?

Healthy people?

2.8 million potentially contaminated sites, but only 24% are inventoried and 65,500 remediated



Climate regulation?

Cropland soils losing carbon at a rate of 0.5% per year and 50% of peatlands drained and losing carbon



Safe food?

83% of EU soils with residual pesticides; 21% of agricultural soils with cadmium concentrations above the limit for drinking water; and 6% with heavy metal content potentially unsafe for food production;

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Continued biological production?

24% of land with **unsustainable water erosion rates**;
25% of land at high or very high risk of **desertification** in Southern, Central and Eastern Europe



Sustainable living

Soil is the **largest source of waste** (520 million tonnes) in the EU despite the majority not being contaminated

Supporting biodiversity?

65-75% of agricultural soils with nutrient inputs at levels risking **eutrophication of soils and water** and affecting biodiversity;
+ pesticides, compaction.....



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ANNEXES

Annex 1 Review of the evidence base: status of soil health across Europe in 2020

The document represents a review of the latest literature by the Soil Health and Food Mission Board (MH) and the European Commission's Joint Research Centre (JRC) to help define the main goal of the mission: namely, that 75% of the soils of the European Union (EU) should be healthy or improving by 2030. The review concludes:

A review of the current evidence of the state of EU soils by the MH and JRC is that current management practices result in, approximately, 60-70% of EU soils being unhealthy, with a further, as yet, uncertain percentage of soils unhealthy due to poorly quantified pollution issues. A 75% goal of healthy or improving soil by 2030 through a radical change in current land management practices is both feasible and necessary. Soils will also benefit from improvement to indirect drivers of change such as reductions in air pollution and carbon emissions.

The following sections provide the evidence base for this statement.

Some basic assumptions:

- EU land area: 4,233,255 km²
- Agricultural area of EU is 39% of land area: 1,730,000 km²
- Croplands occupies 70% of the EU: 1,060,000 km²
- Artificial areas occupy 9% of the EU: 222,502 km²
- 'Natural' soils (i.e. without intensive management regimes): 92% of the EU

1. Nutrients

The Gross Nutrient Balance Indicator (EUROSTAT 2020) shows that there is currently an excess of fertilizer applications in the EU: data show that for agricultural land there is a surplus of 50 kg N/ha and 2 kg P/ha.

The European Commission (EC 2018) reports that Nitrate Vulnerable Zones (NVZ) cover 2,179,861 km² of the EU (latest figures for 2015 and includes MS that apply a whole-territory approach). NVZ represent approximately 61% of agricultural land. This means that there are obligations to reach a balanced fertilisation for 61% of agricultural soils (arable and grasslands).

SOER 2020 (EEA) reports that for 66-75% of agricultural soils, nitrogen values exceed critical values beyond which eutrophication can be expected (De Vries et al., in prep).

There are also issues from atmospheric deposition of nutrient nitrogen in non-agricultural systems. CSANQ/IASA (2018) reported that critical loads for

The mission analysed this evidence in 2020 and concluded 60-70% of EU soils were unhealthy.

Problems were identified for all land use types - farmland, forestry, urban and nature land

Emmett and Jones in Veerman et al. 2020

Specific proposed targets for each objective which can be measured and reported



1. **Halt desertification** and start restoration (-25% in specific areas)
2. **Reverse soil carbon** losses to an increase of 0.1 to 0.4% pa on cultivated land and increase the natural sink of peatlands
3. **Stop soil sealing (-2.4%)** and increase re-use of urban soils
4. **Reduce soil pollution and enhance restoration** (-50% pesticides; -50% nutrients; -20% fertilizer; -30% microplastics; achieve 25% organic)
5. **Prevent and stop erosion** to sustainable levels (-25%)
6. **Reduce compaction of soils (-23 to 33%);**
7. **Reduce the global footprint** of EU's food and timber imports on land degradation
8. Improve **soil literacy** in all Members States

... to be achieved via actions across all types of land use

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What have we learnt since 2020?

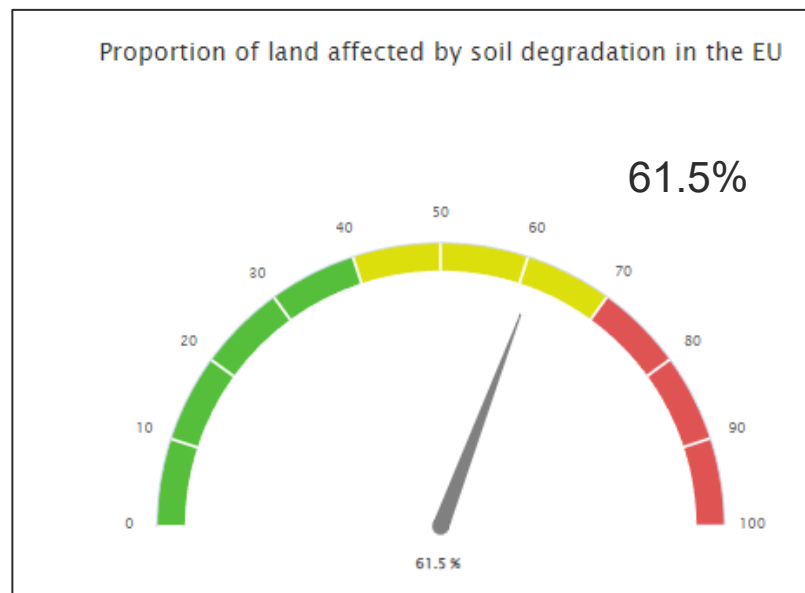
New evidence is emphasising this is urgent and we should have started decades ago...

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EU Soil Observatory

Convergence of scientific evidence

- 61.5 % of unhealthy soils
- Dashboard shows location and different types of soil degradation in the EU

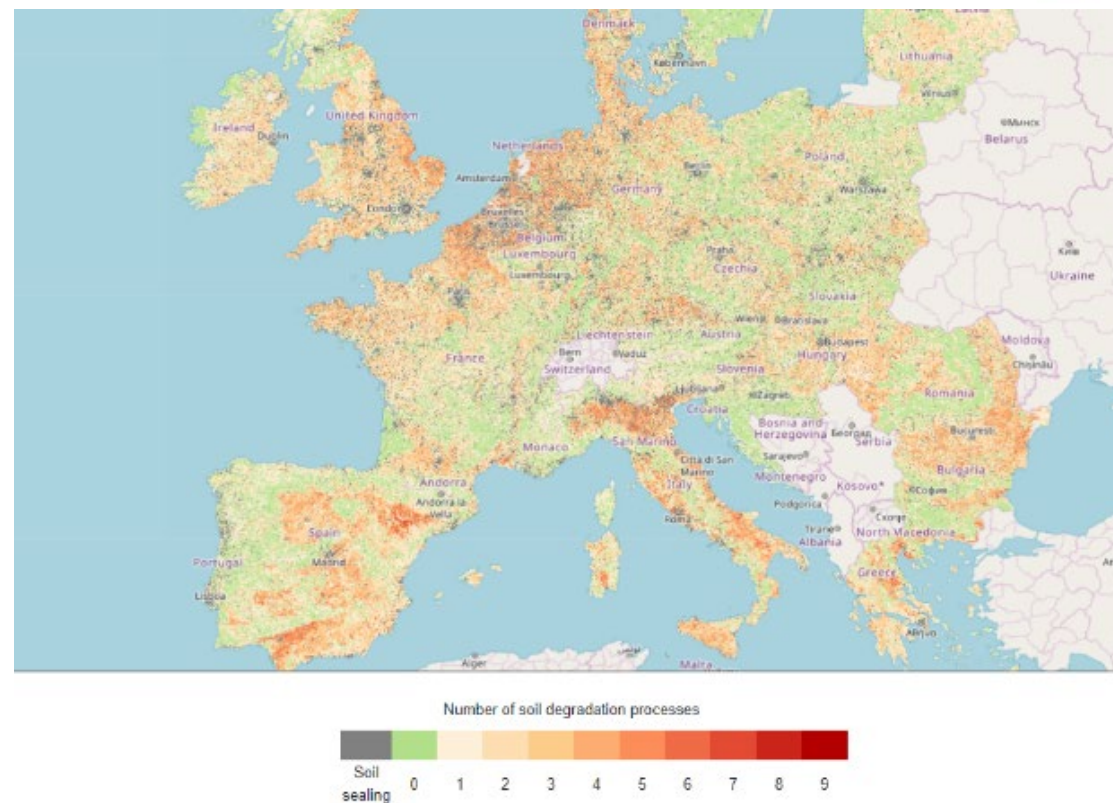


<https://esdac.jrc.ec.europa.eu/esdacviewer/euso-dashboard/>



Monitoring soil health
and policies

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Threats vary by region...

Peatland degradation risk

Hotspots of cropland
Areas not under hotspots
Areas under hotspots

Water erosion

≤2 t ha⁻¹ yr⁻¹
≥2 t ha⁻¹ yr⁻¹

Susceptibility to soil compaction

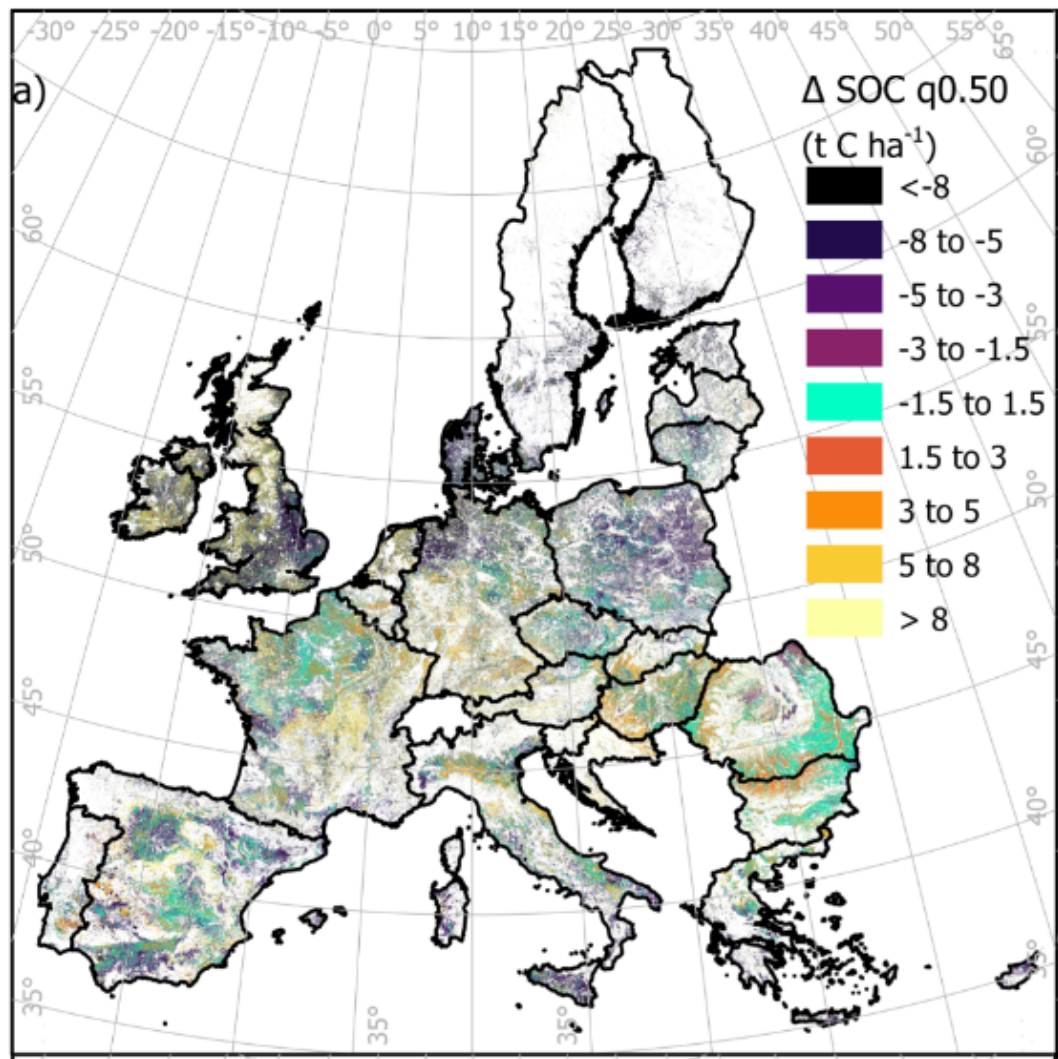
< high level of risk
≥ high level of risk

Soil Sealing

Non built-up
Built-up



Loss of soil organic carbon (SOC)



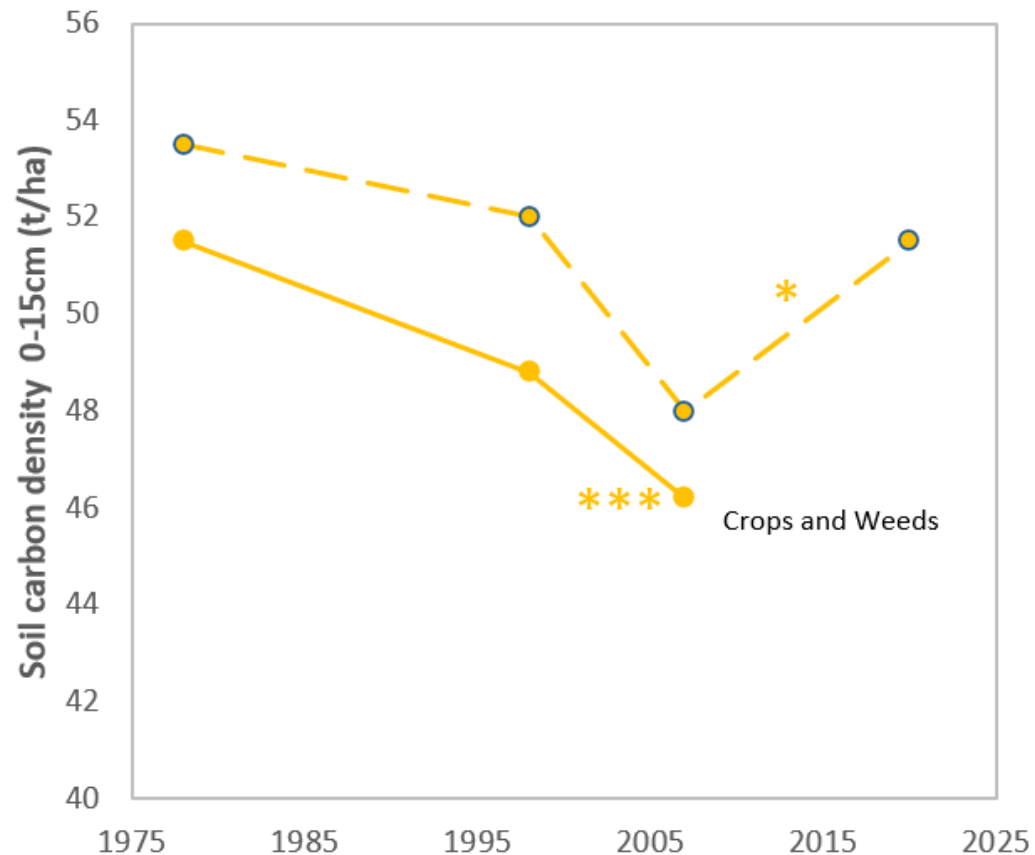
-0.75% between 2009 and 2018
~ 70 Mt C (0-0.2m depth) =
28 MtCO₂e per year



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Can we stop and even reverse this SOC loss? Evidence from the 40 year record in the UK



Yes!

... but more work needed to unpick exact agricultural practices which have contributed to this trend.

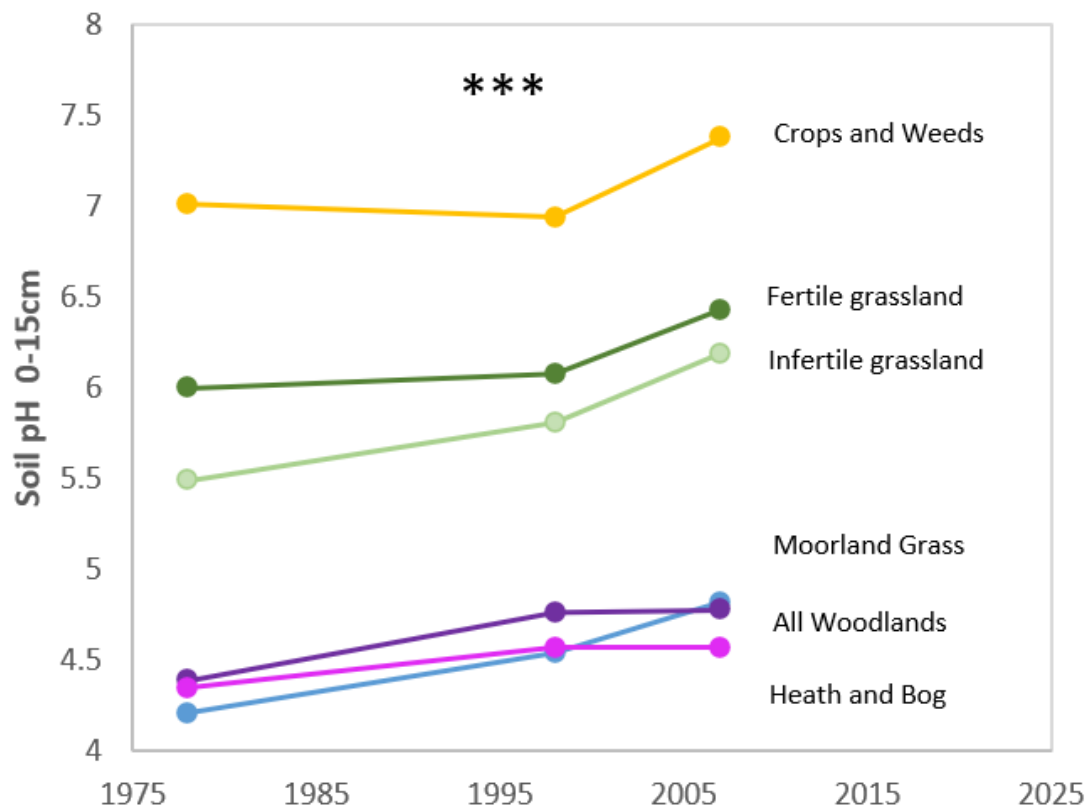
Reduced tillage (25% to 40% of farmers)
Reduced use of inorganic fertiliser
..... etc

National soil monitoring programme in Great Britain (Countryside Survey)
Emmett et al. 2010.

Bentley et al. Submitted PNAS.

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Another policy success story for soils driven by improvement in air quality



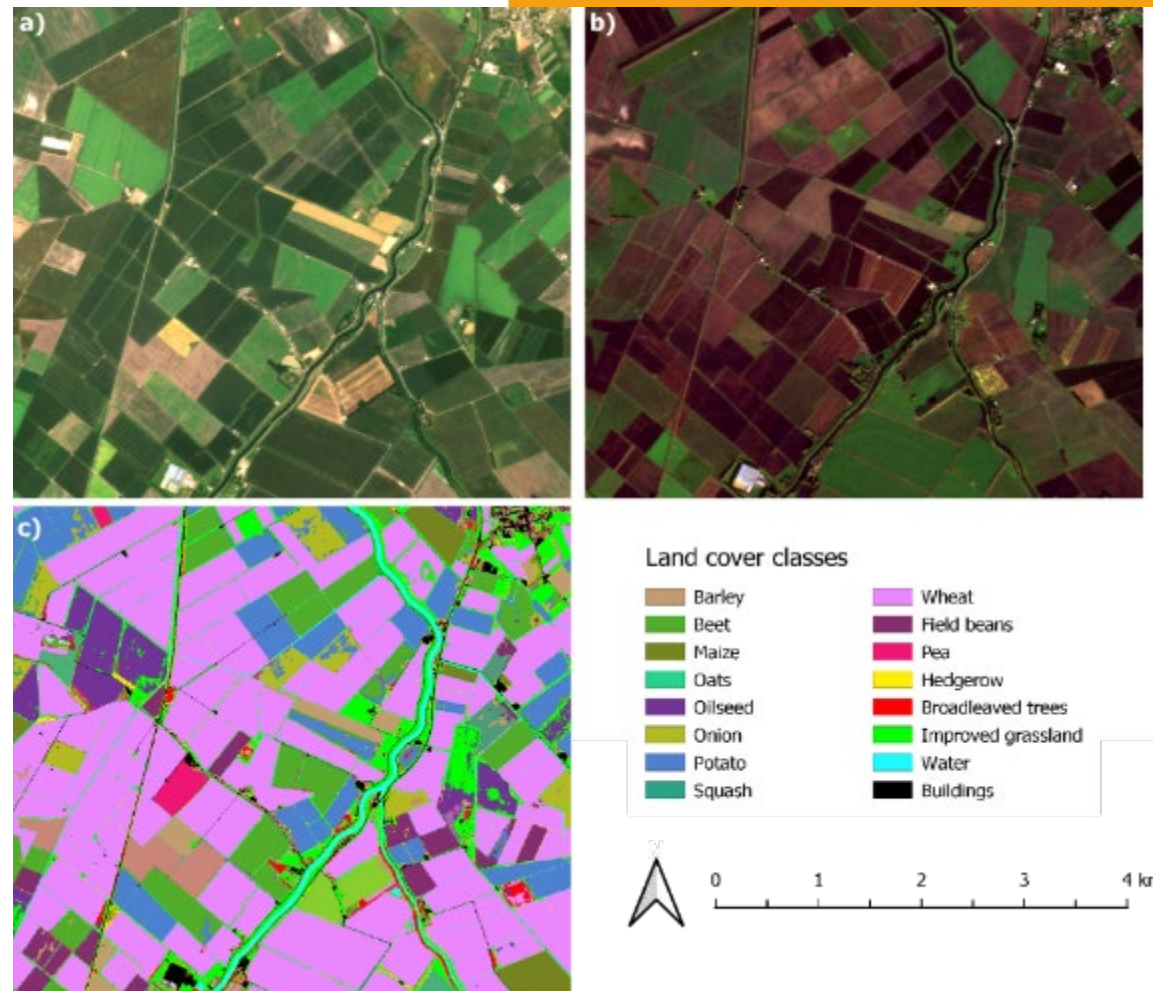
National soil monitoring programme in Great Britain (Countryside Survey)
Emmett et al. 2010.

ca. 80% reductions in emissions of acid rain resulted in a remarkable recovery of our soils...

Benefits for water quality, plant and water based wildlife.

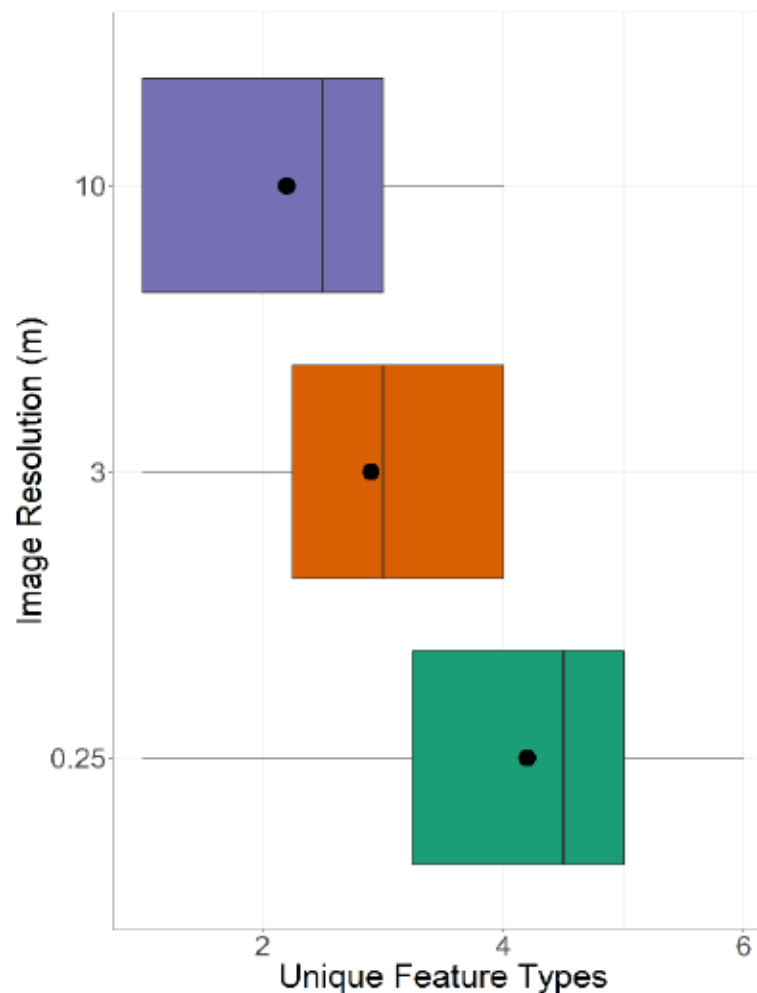
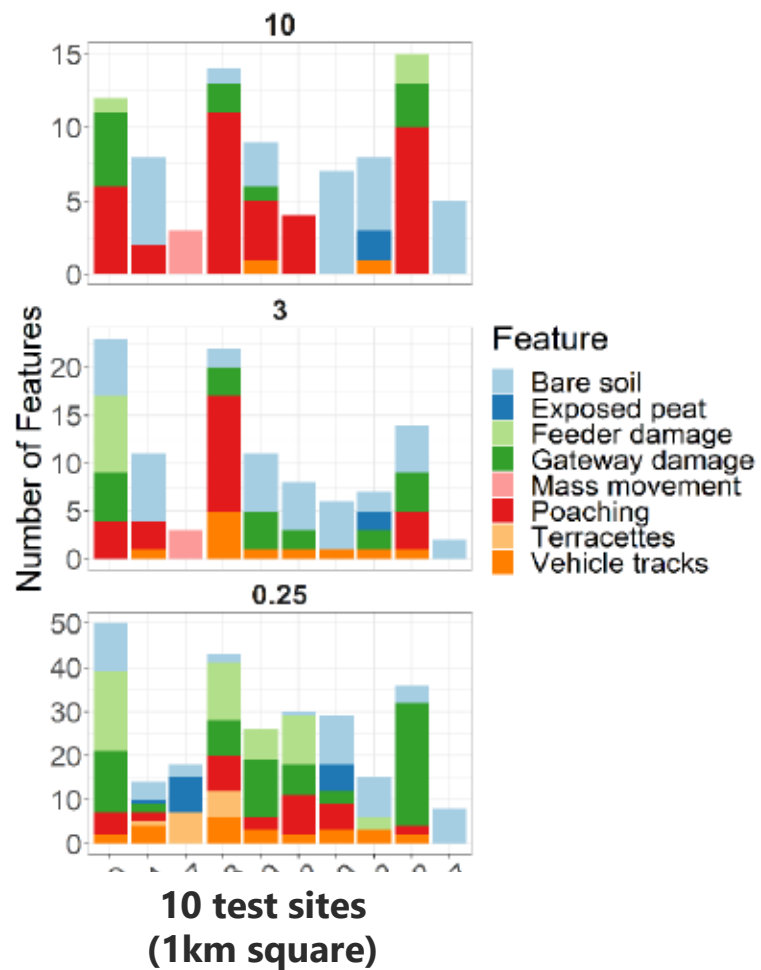
Greater exploitation of technologies going forward to help track drivers of change e.g.

- Remote sensing for risk of erosion using EO satellite data, drones (and even old fashioned) aerial photography



3m resolution Planet satellite imagery from:
a) June 2023; b) November 2022; c) crop type and landcover
(C. Marston, UKCEH)

But soil erosion features actually identified increases at different scales moving from 10m to 3m and 0.25m.



David Robinson,
Andy Tye, Clare
Rowland (2022)
Welsh Government
ERAMMP.

Use of technologies for novel indicators and management solutions

- eDNA
- Sensors
- New laboratory analytics e.g. microplastics
- Robotics
- Phytoremediation
- AI
- Next generation soil process models....
- etc



Synthesis of current knowledge for a CAP replacement scheme working across soil **and** other ecosystem services



46 experts from 11 organisations

- Reviewed 741 land management actions citing 2,400 sources of evidence
- For their impact on stacked benefits (and trade-offs) for 33 ecosystem services and 53 ecosystem service indicators
- All set against government targets and climate commitments

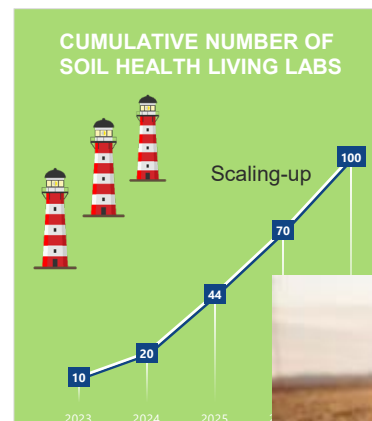
Also coded spreadsheet with 40,000 entries

- Does it work (red; amber or green)
- Magnitude of change (*, ** or ***)
- State of evidence base
- Contextual dependencies

What do we have to do differently?

1. Identify problems and create solutions together
2. Set specific and time-bound targets and monitor outcomes
3. Encourage everyone to learn more about soil
4. Develop new research and innovation including nature-based solutions

The Mission is actively progressing all of these needs through the roll out of its funded Work Programmes... see next talk.



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And 5th July 2023 – EU proposed a Soil Monitoring Law to help achieve healthy soils by 2050

- Builds on EU Soil Strategy for 2030
- Coherent monitoring framework
- Member state to define practices to encourage and ban
- Identify potentially contaminated sites so ‘toxic free’ environment by 2050





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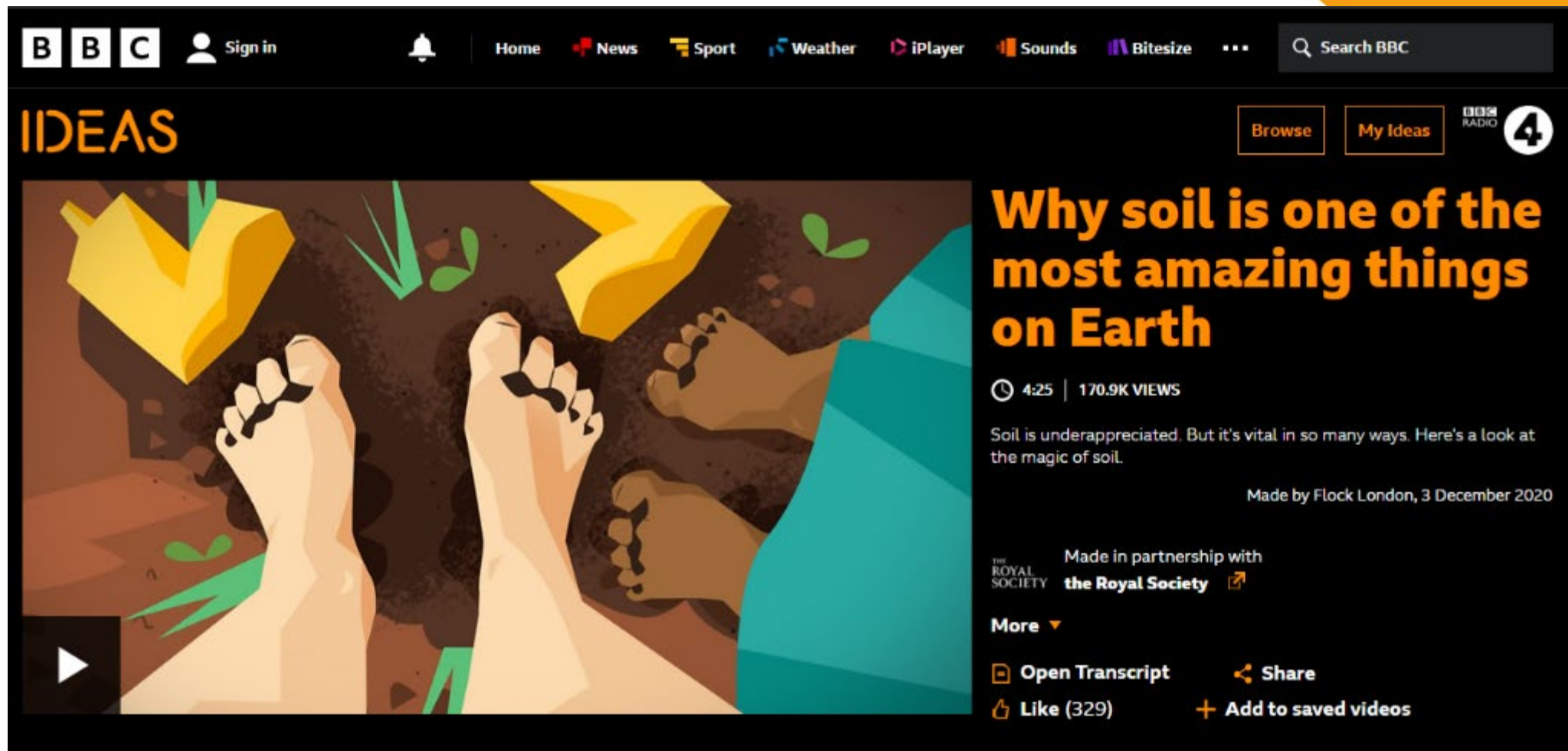
A woman with her back to the camera, wearing a red, white, and blue plaid shirt, stands in a vast, dark field under a cloudy sky. Her right hand is raised to her forehead, shielding her eyes from the sun. The scene is captured in a cinematic style with soft lighting.

And looking forward... we all need to act...

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Animation film (with the BBC and Royal Society)

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The screenshot shows the BBC Ideas website interface. At the top, there's a navigation bar with the BBC logo, a sign-in button, and various menu items like Home, News, Sport, Weather, iPlayer, Sounds, and Bitesize. A search bar is on the right. Below the navigation, the word "IDEAS" is prominently displayed in orange. To the right of "IDEAS" are buttons for "Browse" and "My Ideas", and a "BBC RADIO 4" logo. The main content area features a video player with a play button in the bottom left corner. The video thumbnail shows a stylized illustration of hands of different skin tones planting seeds in soil. To the right of the video player, the title "Why soil is one of the most amazing things on Earth" is written in large orange letters. Below the title, it says "4:25 | 170.9K VIEWS". A short description follows: "Soil is underappreciated. But it's vital in so many ways. Here's a look at the magic of soil." Below that, it says "Made by Flock London, 3 December 2020". Further down, it mentions "Made in partnership with the ROYAL SOCIETY the Royal Society" with a logo and an external link icon. At the bottom of the video player area, there are options for "More" (with a dropdown arrow), "Open Transcript", "Share", "Like (329)", and "Add to saved videos".

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and a new online UK community hub for 'curated' soil information

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<https://uksoils.org/>



The community hub for all things soil

Life on earth depends on healthy soil and yet it is often forgotten about and taken for granted. We're here to help change that. *uksoils* will bring together information to inspire us all to learn more about soil and help build communities to take action to improve soil health.

We launched on the 4th December 2020 in support of World Soil Day. Please contact us to find out more, offer suggestions or to become a partner.



UK Soils Awareness Week 2023

Join us for a week of action and advocacy as we aim to put soils at the heart of the environment agenda.

Together, we can ensure a sustainable future for our soils.



Soil health pioneers

Discover dozens of regional good practice in soil management across the UK. Are you a soil health pioneer? Let us add you to our map.



Soil in the media

Articles, podcast and TV discusses how the media cover soil challenges in a discussion moderated by The Guardian's Madeline Priday.



Follow us on Twitter

We are @uksoils



Surveying worms: Activity and video

Find out more about earthworms and how to record them in your soils.



SoilTalks: Join the conversation

Discover our SoilTalks series of online debates, then continue the conversation online via our SoilTalks forum.

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slido



Audience Q&A Session

① Start presenting to display the audience questions on this slide.

Side activities – DAY 1

Meet the Projects



CREDIBLE

Building momentum and trust to achieve credible soil carbon farming in the EU

Photo exhibition

Knud Bay Smidt

Jacek Cislo

Božidar Grgošič

Diana Joca

Eniko Kelemen-Zobor

Dominika Koszowska

Eric Lucot

Cristina Mancini

Mariya Maslova

Sergio Ibáñez Pascual

Félix González Peñaloza

Marcin Switoniak





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Break
11:00 – 11:30

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Programme Day 1 - Tuesday, 21 November

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Time	Session Name	Building name
9:30 – 10:15	Welcome and opening session	<i>Main hall – Building A</i>
10:15 – 11:00	Setting the scene for the Mission Soil	
11:00 – 11:30	Coffee Break	
11:30 – 13:00	The Mission Soil in a nutshell	
13:00 – 14:00	Lunch Break	
14:00 – 16:00	Breakout session 1 - Soil health for climate	<i>ICA Institute - Building C</i>
	Breakout session 2 - Soil health for food	<i>Press Room - Building D</i>
	Breakout session 3 - Farming practices for soil health	<i>Blas Cabrera Institute - Building B</i>
16:00 – 16:30	Coffee break	<i>Main hall - Building A</i>
16:30 – 16:45	Reporting from breakout sessions	
16:45 – 17:45	Launch of the international research consortium on soil carbon	
17:45 – 18:15	Mission Soil photo competition award ceremony	
18:15 – 19:00	Cocktail & Networking	

Organised by



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Plenary Session

The Mission Soil in a nutshell

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Policy context and Mission Soil achievements

Kerstin Rosenow

Head of Unit Research and Innovation

DG Agriculture and rural development

European Commission



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Horizon Europe
R&I Missions

Linking EU's research and innovation to major societal needs; with strong visibility and impact

A mission is a portfolio of actions across disciplines intended to achieve a **bold and inspirational and measurable goal** within a set timeframe, with **impact** for society and policy making as well as relevance for a significant part of the European population and wide range of European citizens.

Horizon Europe defines **5 missions areas**:

Adaptation to Climate Change



Cancer



Climate-neutral and Smart Cities



Restore our Ocean and Waters



Soil Deal for Europe



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Policy framework

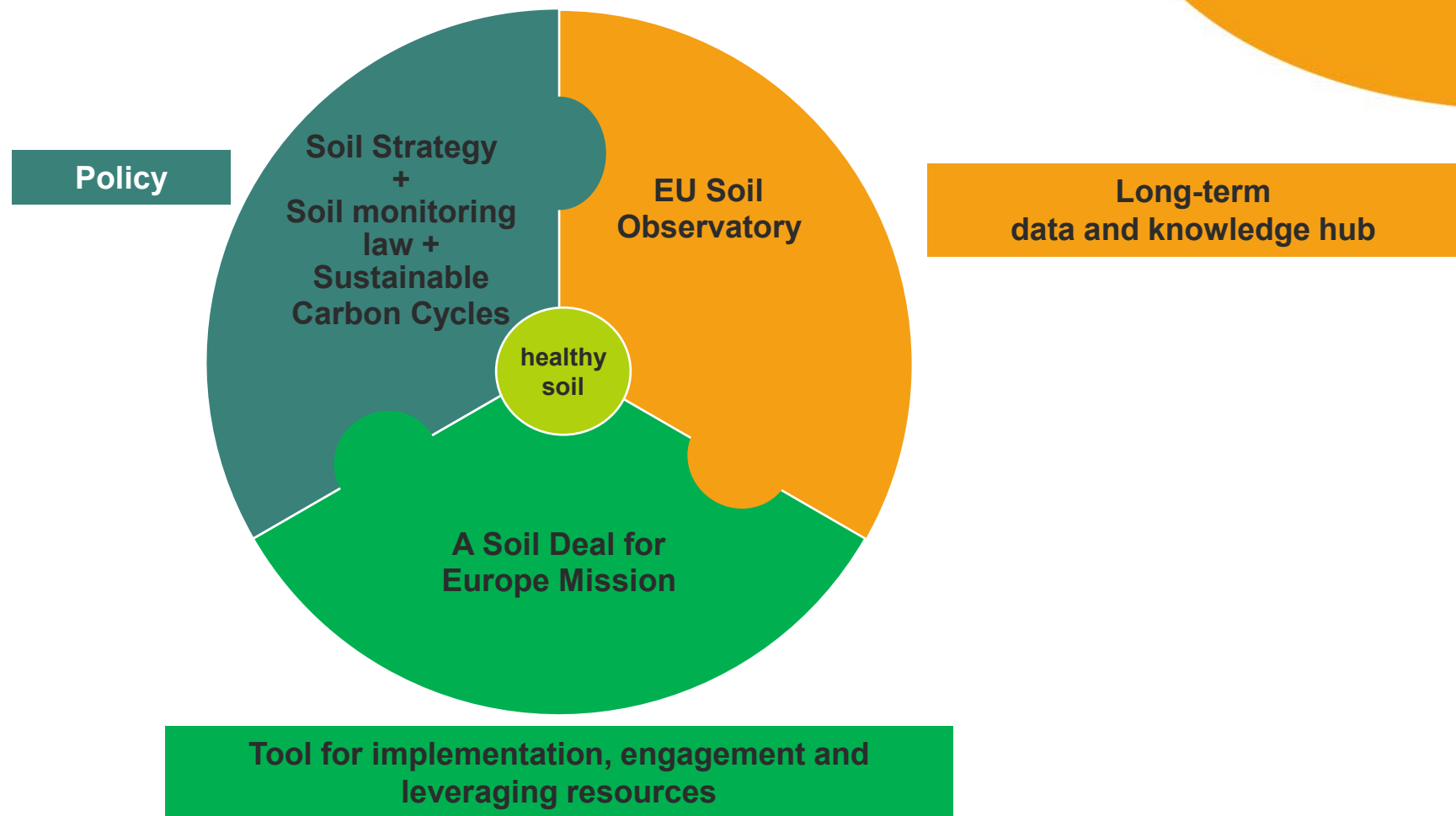
- Farm to Fork Strategy
- **EU Biodiversity Strategy for 2030**
- Climate Adaptation Strategy
- Forest Strategy
- Zero Pollution Action Plan for air, water and soil
- Organic Action Plan
- Long term vision for rural areas
- **EU Soil Strategy for 2030**
- Proposal for a **Soil Monitoring Law (5/7/23)**
- Communication on sustainable carbon cycles
- Communication on food security Communication on fertilisers
- Communication on the European Citizens' Initiative (ECI) to save bees

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The **Mission Soil** is embedded in

12 Green Deal strategies, communications or action plans which identify its contribution to meeting targets and objectives.

The Mission Soil is the right instrument at the right time



Directive on Soil Monitoring and Resilience (Soil Monitoring Law)

This proposal for the first-ever EU legislation on soils provides a harmonised definition of soil health, puts in place a comprehensive and coherent monitoring framework and fosters sustainable soil management and remediation of contaminated sites.



Where are we now

First reading of Council and European Parliament questions from Member States and upcoming draft opinion from European Parliament rapporteur

The Mission Soil: a key instrument for the implementation of this Directive

As they have common/complementary objectives:

- to lead the transition to healthy soils
 - to advance the development of a harmonized soil monitoring framework
 - to increase the awareness of the importance of soil
- The Mission will provide additional funding for a network of real-life sites for testing, demonstrating and upscaling of solutions (living labs and lighthouses)
 - Member States will take into account latest existing scientific knowledge and results coming out of the Mission

Examples of policy needs for the implementation of the SML:

- Harmonization of monitoring framework
 - Transfer functions and interlaboratory calibration
 - Increased knowledge on soil health indicators (when soil's capacity of delivering Ecosystem Services is lost) for SML evaluation (6 years after entry into force)

SSM

- Knowledge on which practices in specific soil types, climatic conditions and land uses translate SML SSM principles and regenerate soil to healthy conditions
- most cost-effective remediation techniques
- practical tools for advisors to best inform soil managers on how to move to SSM practices

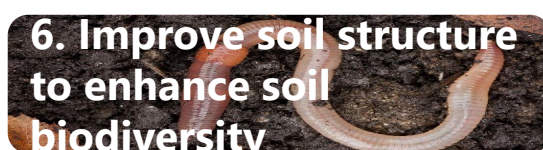
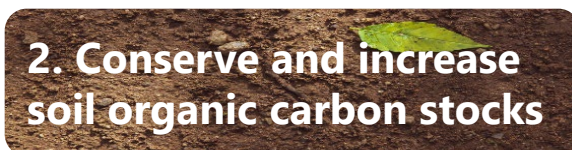
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“
Today, we are filling a major legal gap to bring soil under our legal acquis. This will become the first EU law on soil. Our ultimate objective is to achieve healthy soils by 2050. “

Mission Soil Goal: 100 living labs and lighthouses to lead the transition towards healthy soils by 2030

Specific objectives



Objectives apply to **all types of land use and all territories** and are relevant for a **range of sectors**.

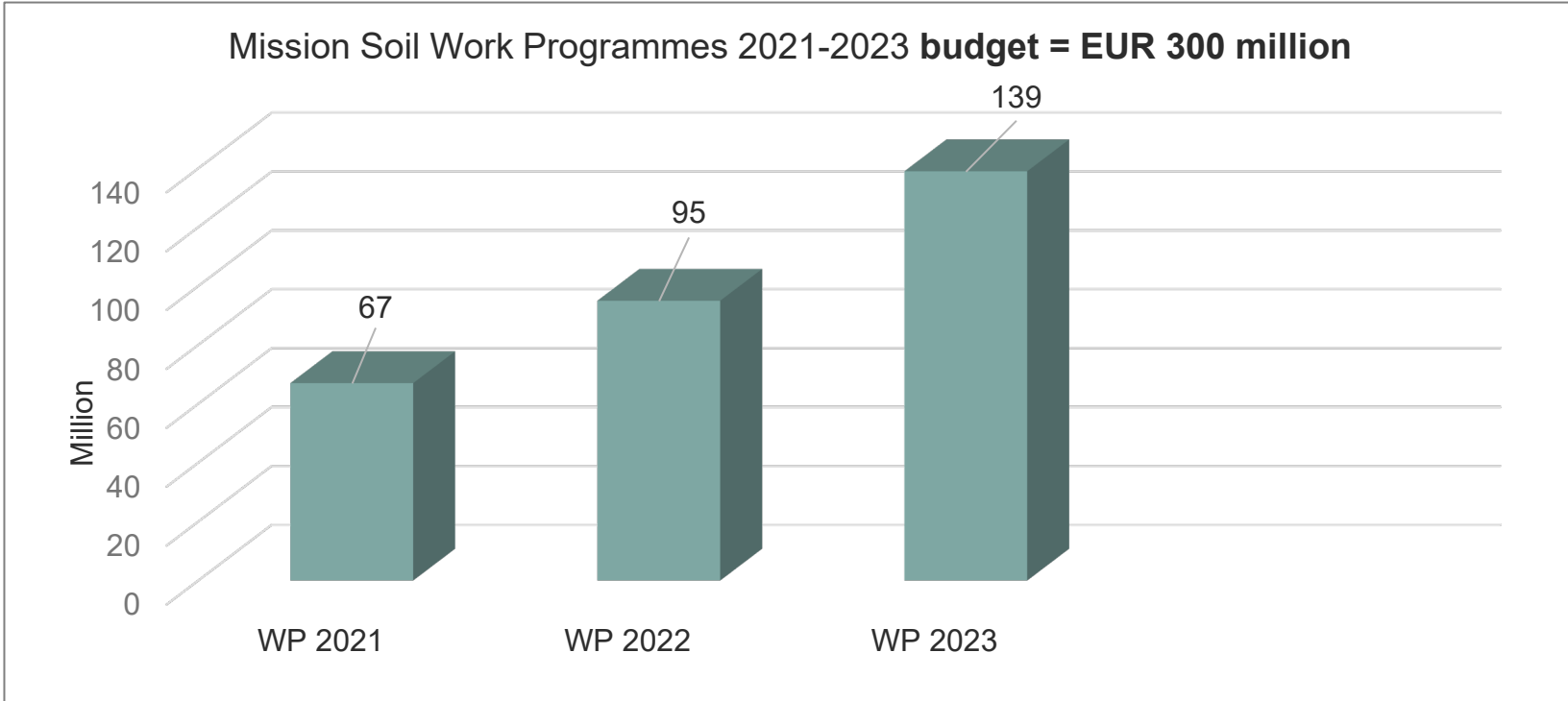
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Main vehicle for addressing the diversity of conditions and generating locally adapted solutions

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Mission Soil: state of implementation



WP 2021 – 2022

27 signed grants
 EU contribution EUR 154.2 million
 Average per project: € 5.7 m / 18 partners

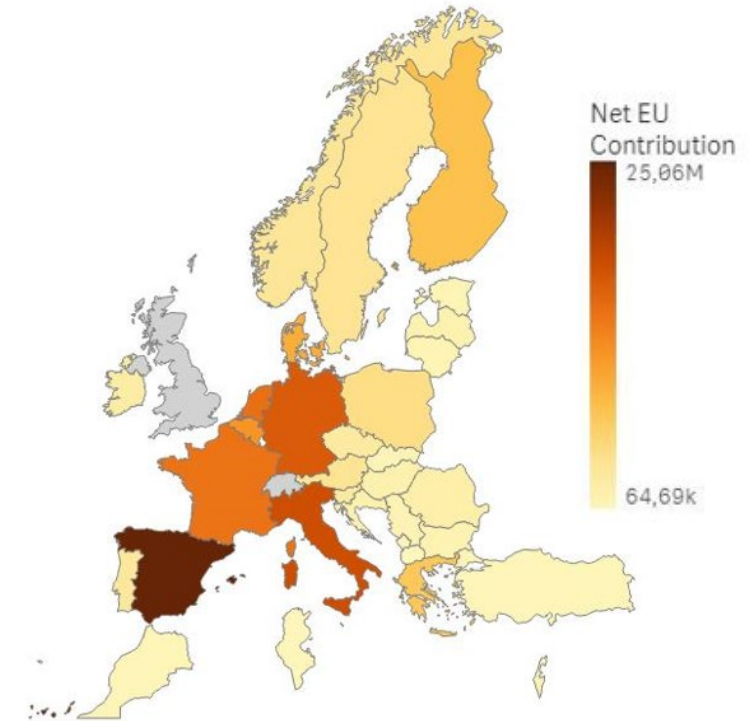
WP 2023

Proposals under evaluation

WP 2024

Under preparation

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2021 Work Programme projects

- The project [PREPSOIL](#) is identifying “**soil needs**” in 21 regions providing direction and capacities for the future national soil health **monitoring mechanisms**, as well as mapping and preparing the implementation of regional LLs.
- [SOLO](#) identifies knowledge gaps, drivers, bottlenecks, and novel R&I approaches to be considered in the European Soil Mission research and innovation **roadmap**.
- [SOIL O-LIVE](#) develops a holistic analysis of the **influence of land management** on olive oil quality and safety.
- Projects [InBestSoil](#), [Novasoil](#) and [SoilValues](#) are developing new **business models** for soil health
- [HuMUS](#) project is developing more than **30 Territorial Management Agreements** for soil health
- The Project [Nati00ns](#) is holding **engagement sessions** (in a “roadshow” format) in all Member States and Associated Countries to promote the calls for **Living Labs** as well as inform and inspire potential applicants.
- Project [NBSoil](#) provides technical support for the training of **specialised soil advisors**

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2022 Work Programme projects

Structures for Mission implementation

- Living lab support structure – **SOILL**

Mission Building Blocks

R&I supporting mission objectives and Knowledge management

- Mission's knowledge repository – **SoilWISE**

Monitoring

- Soil carbon and GHG balance monitoring – **MaRVIC / MRV4SOC**
- Citizen science for soil health – **ECHO**

Citizen engagement

- Soil education across society - **LOESS**

Mission Hotspots and cross- cutting dimensions

Carbon farming

- Network on carbon farming – **Credible**

Soil pollution and restoration

- Decontamination and reuse of land – **ARAGORN / EDAPHOS / ISLANDR**

Soil biodiversity

- Soil biodiversity and ecosystem services – **BIOSERVICES / SOB4ES**

Circular economy solutions

- Food processing residues for soil health Innovations for soil improvement – **DeliSoil / WASTE4SOIL & BIN2BEAN / FELIX / SOILUTIONS**

2023 Work Programme topics

first call for Living Labs

- Co-creating solutions for soil health in Living Labs
- Carbon farming in living labs

Mission Building Blocks & hotspots

- Discovering the **subsoil**
- **Soil pollution** processes modelling
- **Digital** tools for soil and plants monitoring
- Innovations to prevent and combat **desertification**
- Soil-friendly practices in **horticulture**
- Soils in **spatial planning**
- communities and **citizens engagement**

Synergies between EU Missions

- Joint topic with **Mission Ocean** (on **reduction of nutrient flows**)
- Joint topic with **Missions Ocean & Climate Adaptation** (on increasing landscape **water retention** capacity)

High number of proposals received (currently under evaluation).

19 new projects to be funded >>> **46 total n. of Mission Soil projects running by 2024**

Mission Soil Living Labs and Lighthouses

Work Programme 2023 launched the 1st call for a gradual establishment of a transnational network of 100 Living labs (LL)

Living labs – sites for experimentation

- **Real-life sites** in rural or urban areas in which **people from various sectors and backgrounds** experiment and test solutions in a **co-creative** manner
- Each living lab is composed of a group of sites (e.g., farms, forest stands, urban green areas) working together at regional or sub-regional level

Lighthouses – sites for demonstration of solutions

- **Individual sites**, such as a single farm, to showcase good practices
- Places for **demonstrations**, training and communication



WP 2023 calls (Closed on 20/09/2023)	Budget (EUR m)	Projects
Co-creating solutions for soil health in Living Labs	36	3
Carbon farming in living labs (CF LL)	12	1

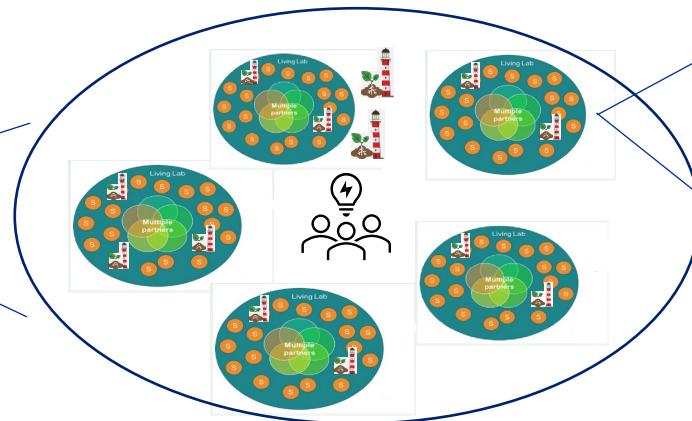
Core elements of the Mission Soil: living labs and lighthouses

- To empower a **rapid green transition**
 - Living labs have the potential to accelerate and scale up uptake of solutions
- No 'one-side-fits-all'**: diversity of pedo-climatic conditions, cropping/production systems, cultural-socio-economic contexts
 - Solutions need to be co-created, tested, adapted and showcased on the ground
- Sustainable farming management practices **fit well with living labs principles**:
 - Adapted to local ecosystems → « Real-life testing»
 - Closing the knowledge-practice divide
 - End-users centric: involving actors at territorial level to achieve large scale impact (multi-actor approach)
 - Social and behavioural dimensions
 - Systems approach

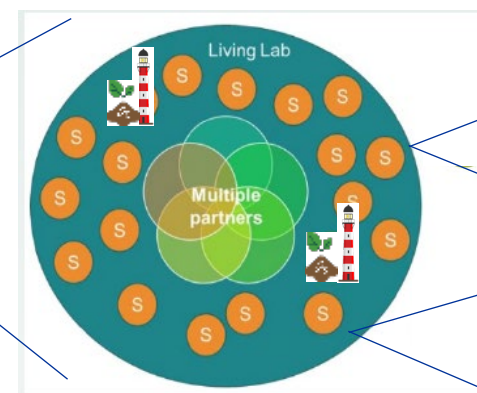


1 project covering
ES, PT and IT

Example



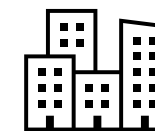
1 project with 5 LL (& several LH)



1 LL with several sites and partners



1 site= 1 farm



1 site= 1 city green area

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Soil literacy, communication citizen engagement

Over the past 3 years, the Mission has:

- participated in **over 350 national and international events**
- disseminated **informative materials** (articles, press releases, newsletter (2nd issue published this month), videos, factsheets, podcasts, publications, reports)
- been consistently covered on **social media**
- launched of the **Mission Soil Manifesto** in April 2023
- created a **Mission Soil Platform** operational in 2023
- organised a **Mission Soil Photo** competition

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Soil literacy, communication and citizen engagement

Over the past 3 years, the Mission has:

- invested in projects focusing on
 - **engaging with and activating municipalities and regions to protect and restore soil health**
 - **fostering soil education across society**
 - **citizen science for soil health**
 - **next generation of soil advisors**



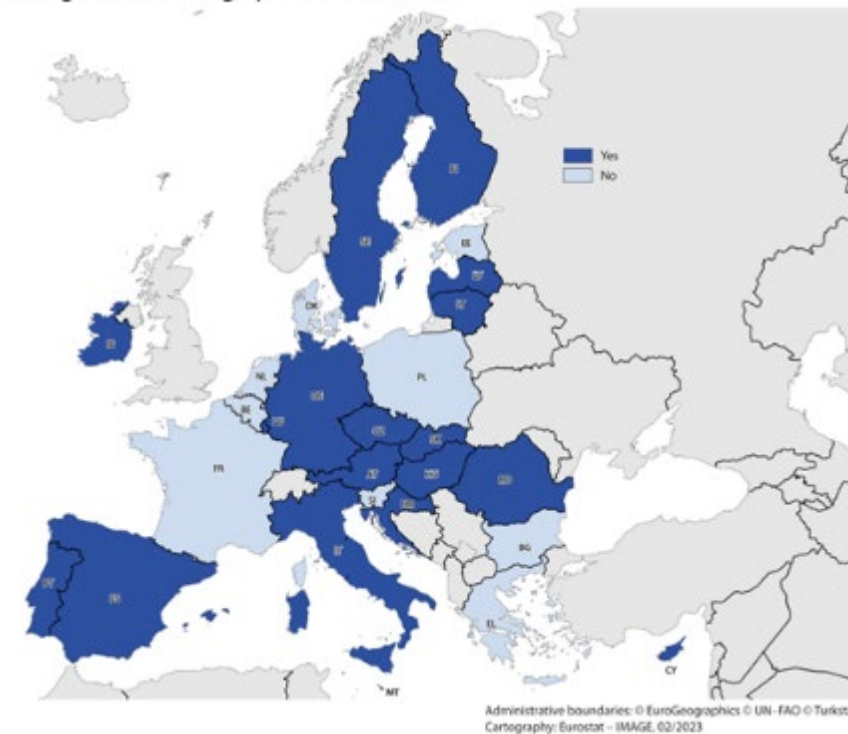
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Mission Soil assessment: achievements after 2 years

- **The first Living Labs under the Mission will start in 2024**, leading to more than 200 test sites for local experimentation in urban and rural areas
- **The Mission is integrated in 18 out of 28 Member State CAP Strategic Plans**. CAP allocating about EUR 50 billion for sustainable soil management
- **Around 1,000 CAP Network Operational Groups** (EUR 350m) will contribute to the Mission objectives. EIP AGRI upscaling Mission results
- **The Mission receives support from other EU sources** such as the LIFE programme, the Circular Bioeconomy Europe JU, PRIMA and the EIC
- **Member States** have reported **more than 200 complementary activities** in support of the Mission's objectives
- **The EIB is developing a large-scale soil investment pipeline** to mobilise additional financial resources
- The Mission has become **an important flagship for international cooperation** with the Global Soil Partnership, the Agriculture Innovation Mission for Climate initiative and with international R&I partners such as Japan, the USA, Canada and African countries

EU Mission: 'A Soil Deal for Europe' in the CAP Strategic Plans
Strategic Plans linking up with the Mission



Missions' Assessment main conclusions

- Existing Missions are **on track** to achieve 2030 goals; implementation will **continue**
- Five Mission **areas** – incl. "soil health and food" – remain **relevant**
- Proposed **budget increase** from 10% to 11% Mission share in Horizon Europe Pillar 2
- Proposed **additional Mission** "New European Bauhaus"

The way forward

Among the stated challenges and opportunities, all Missions have taken steps to :

- strengthen and have a better coordinated administrative governance
- secure more and better co-investment beyond Horizon Europe, including from the private sector
- Enhance synergies with other EU instruments
- Improve the communication efforts and outreach to stakeholders and citizens.

In particular, the Mission Soil will mobilise additional effort to boost its level of investment and involvement of **private** sector and **philanthropic organisations**



The Mission Soil Manifesto

Objective:

non-legally binding document to formalize stakeholder and citizen participation in and support to Mission activities

Protecting soils is a societal undertaking

Who can sign it?

Regional and local public authorities, private and public organisations, NGOs, philanthropic organisations, schools, universities, research institutes, associations, individuals

Why to sign it?

become part of a community, gain visibility, access to Mission-led knowledge, involvement in Mission activities beyond Horizon Europe calls

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+1,700 signatories
15% organisations

of which
25% local and regional
authorities,
associations and NGOs

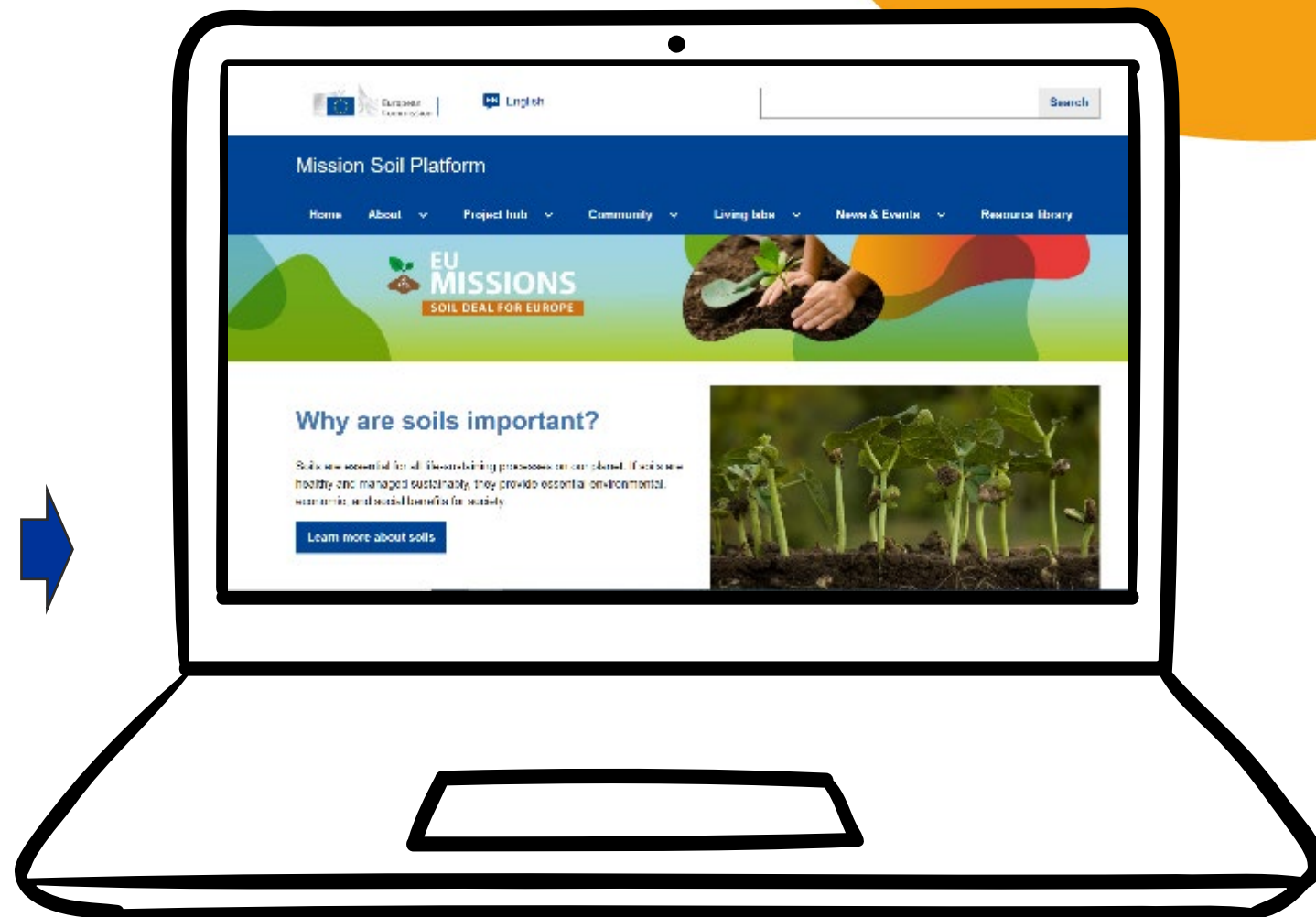
Sign it!



Visit the Mission Soil Platform

- **discover** Mission Soil projects
- **check** who is taking action for soil health
- **add** your events related to soil

<https://mission-soil-platform.ec.europa.eu/>



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For questions about research and Horizon Europe, you can contact the **Research Enquiry Service** via the webform: [Research Enquiry Service \(europa.eu\)](https://research-enquiry-service.europa.eu/)

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Thank you!

Email Mission Soil Secretariat: EU-HORIZON-MISSION-SOIL@ec.europa.eu

Website: mission-soil-platform.ec.europa.eu



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Testimonies from land managers

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**Yanniek
Schoonhoven**

Farmer and founder of the
Regeneration Academy

La Junquera



Theresa Lubber

Senior Project
Manager & Consultant
for EU projects

blue!



Jamila Bentrar

Coordinator of fertile urban
areas

*Métropole européenne de
Lille*

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La Junquera

Regenerative organic farm and village

Yanniek Schoonhoven

Farmer and founder of the Regeneration Academy

Date: 21-11-2023



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La Junquera is an 1100 ha organic and regenerative farm, but it is also a meeting point. Here regenerative and sustainable projects are developed with regards to education, research, entrepreneurship, and ecosystem restoration. This all happens in a semi arid depopulated region in the South of Spain.



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Through the Regeneration Academy we work with students, agro-food professionals and researchers to regenerate the agrifood sector and the degraded landscape around us.



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**We improve soil health by implementing
many regenerative practices**

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Improved water uptake by ponds
(big pond captures 12 Million liters of water)...



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30% more biodiversity through hedges and borders and ground covers



Improved soil functions without harming the yield through cover crops and vegetation strips



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La Junquera as lighthouse farm and education HUB for regenerative agriculture in the South of Spain Restoring the landscape of the Quipar valley



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Thank you!

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EUROPEAN MISSION SOIL WEEK

LIFE Future Forest

Theresa Luber

blue! advancing European projects GbR

Date: 21.11.2023



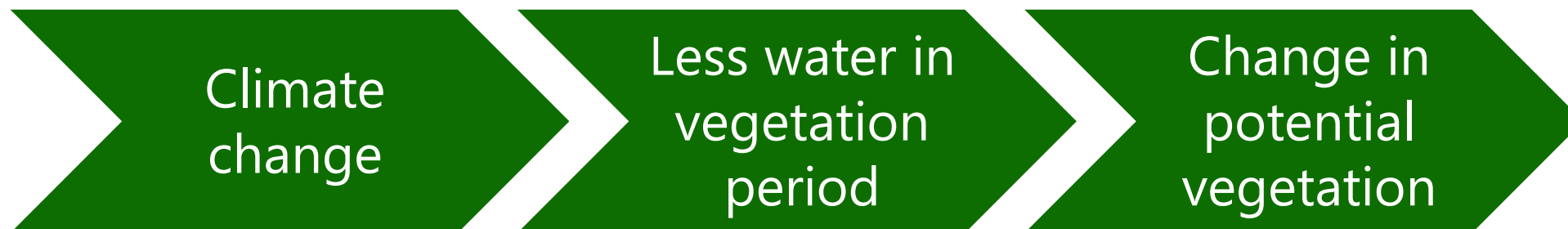
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LIFE Future Forest – Sustainabilisation of forests & soils & valorisation of the achieved ecosystem services in the county of Landsberg



→ Healthy, living soils as the most important lever for adapting and maintaining ecosystem services (in forests) towards climate change.

Parameters for healthy, living soil in LIFE Future Forest

- **Humus forms**

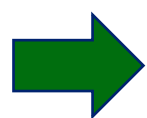
- Raw humus like mold (to be found within coniferous stands)
- Mold
- Mull like mold
- Mull humus (to be found within deciduous stands)

- **Fine roots**

- High amount of deep-growing fine roots for better availability of water and nutrients

- **Earth worms**

- Supporting humification and water storage capacity
- Prefer leaves of certain deciduous trees (with little tannic acid)



Plant “earth worm friendly” trees that provide many and deep fine roots

(e.g. sycamore maple, lime, common hornbeam)

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Soil / Humus



Earth worms



Trees / fine
roots

The LIFE Future Forest project

What do we do?

Adaptation and
afforestation of
forests

Self Assessment
Tool

Valorisation for
ecosystem services
Future Forest
Funds

Future Forest
Handbook

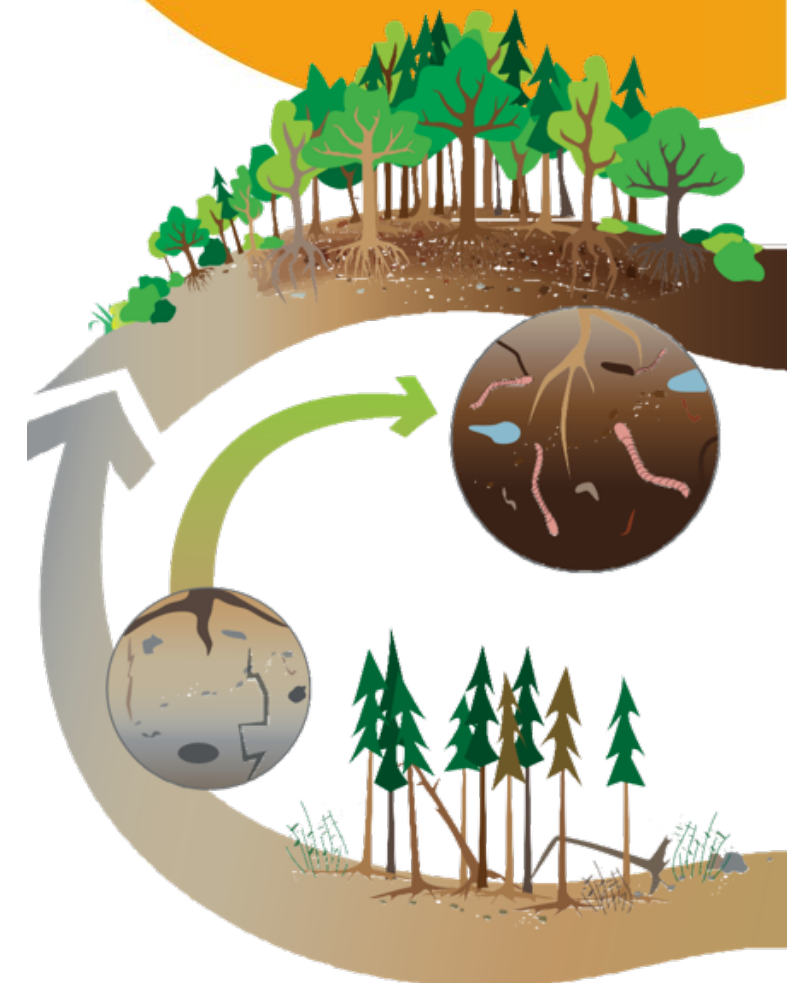
Contribution to EU
wide acceptance &
implementation of
sustainable forest
management
focusing on soil

For more info:



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Future Forest Self Assessment Tool

Easy-to-use self assessment for forest owners







→ Evaluation of different categories to **assess the overall level of the forest**

→ Tree species (coniferous trees / deciduous trees)

→ Type of humus

→ Type of cultivation

→ Natural regeneration, browsing

Tree species <i>Weighting 4-fold</i>	> 80 % Coniferous wood (except fir) 1	> 20% hardwood and fir share 2	> 50 % hardwood + fir share (thereof > 50 % earthworm-promoting species) 3	> 80 % hardwood + fir share (thereof > 50 % earthworm-promoting species) 4
Humus form <i>Weighting 3-fold</i>	Raw humus-like mold 1	Mold 2	Mull like mold 3	Mull humus 4
Vertical structure / Management type <i>Weighting 2-fold</i>	Monoculture / Age class forest 1	Age class forest under reconstruction 2	Structured mixed forest with at least one serving tree species 3	Permanent mixed forest/ plenter forest-like Structures 4
Natural regeneration/ Browsing <i>Weighting 1-fold</i>	No or only coniferous rejuvenation 1	Trees under the canopy secured (over 2m), no more risk of browsing 2	Trees under the canopy over 5 m, present over a wide area 3	Completely rebuilt, natural rejuvenation present over a wide area 4
 	Overall evaluation of the stock    			

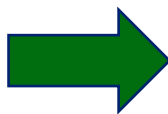


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Level 1

Level 4



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Valorisation System of LIFE Future Forest (Future Forest Funds)

Just another CO₂ certificate?

Future Forest Funds to **honour**

- **Ecosystem services of forests**
(focus on CO₂ of other incentive schemes too short-sighted)
- **Long-term added value** of the sustainable managed forests
(focus on long-term management instead of current adaptation)

- ✓ 100 € / 200 € / 400 € per ha per year (depending on the level of the forest)
- ✓ To be paid by companies and municipalities

Objective: Local establishment of Future Forest Funds by municipalities and forest associations to...

- Generate **motivation and rewards** for forest owners
- **Push sustainable forest management**
- **Generate an appreciation of society** for the providing services of forests

Handbook for sustainable adaptation of forests

- For municipalities and forest owners
- **Hand-on-guidance** why and how to manage your forest in a sustainable way focusing on living soil
- To be published beginning of 2024



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Thank you!

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Telephone: +49 89 277 8124 05

Website LIFE Future Forest: <https://www.klimaschutz-landkreis-landsberg.de/eu-life-future-forest/>

Website: mission-soil-platform.ec.europa.eu

For more info on
LIFE Future Forest:



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EUROPEAN MISSION SOIL WEEK

**Healthy soil: How to transform a
situation of scarcity into abundance ?**

Jamila BENTRAR

Urban agriculture project Manager

Lille Métropole _ FRANCE

November 21, 2023



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CSIC
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

INIA
Instituto Nacional de Investigación
y Tecnología Agraria y Alimentaria



Agenda

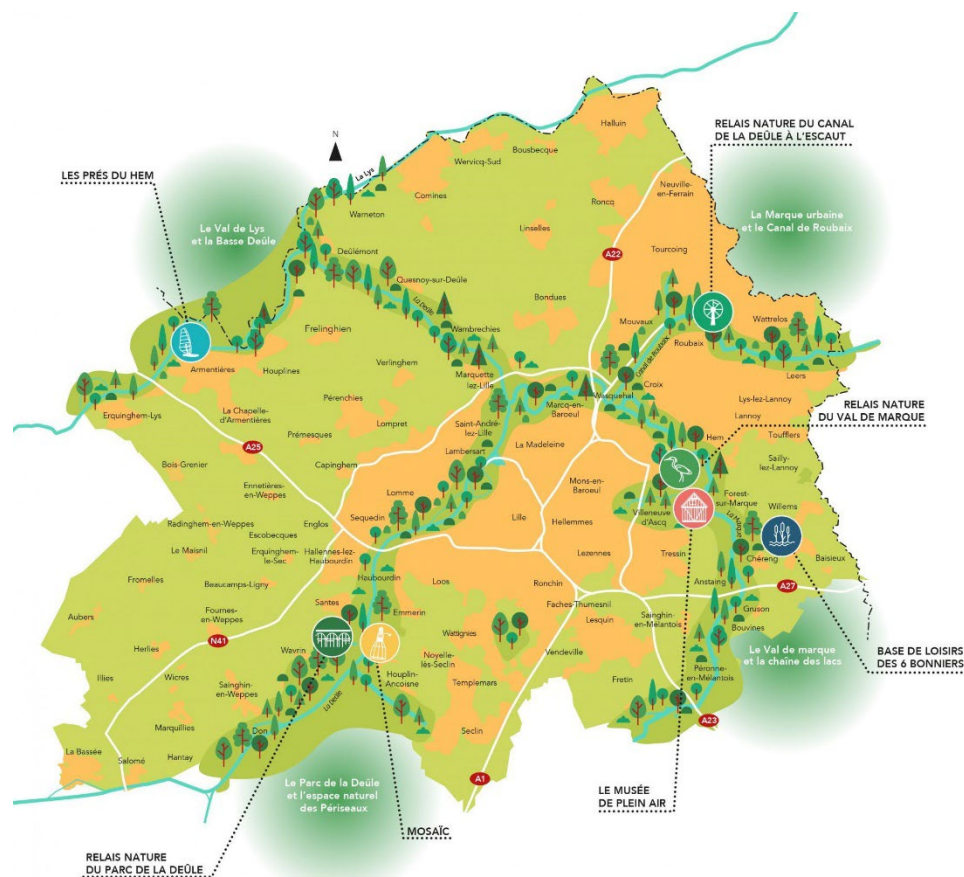
- A few words about Lille Metropole (France)
- Context and issues :
 - An implementation of urban agriculture projects which reveals difficulties in sourcing healthy and fertile soils
 - A strong political will to find solutions
- Opportunity
 - An opportunity to share knowledge with other communities
 - An opportunity to rethink legal frameworks at European and national level
- Lille Metropole's ambition
 - Join a European consortium to become a living lab as part of the “a soil deal for Europe” mission

Lille Métropole : location and information



- Lille Metropole is located in the North of France
- 1 hour from Paris and London by train and 30 minutes from Brussels
- 1.2 millions inhabitants
- 2 billion euros annual budget

Lille Métropole : an urban and agricultural territory



- The European Metropole of Lille is one of the most agricultural metropolises in France: nearly 45% of its surface area is agricultural land, with more than 750 farms.

Context and issues :

Challenge : Today, Lille Metropole supports 3 urban agriculture projects in different cities.

- For each project, the quality of the soil was analysed.
- Due to our industrial past (textile activities), our urban soils are polluted.
- They are not compatible with an agriculture for food.
- Soil experts proposed removing polluted topsoils and replacing them with healthy soils, but difficulties arise in finding healthy soils: stocks of healthy soils from agricultural fields have been overexploited, and it is increasingly expensive to buy healthy soils even when available...



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Context and issues :

Solution :

- In order to keep in line with our main goal of developing our urban agricultural projects (political will), we have decided to build a research action program.
- This program brings together several stakeholders such as laboratories, private companies, start ups, NGOs and public authorities.
- The main ambition is to **identify available resources** on the scale of our territory (mineral, chemical and organic materials) to **test different “recipes”** of soils.
- We have a budget for **two years of monitoring of restoration of function of soils** (fertile function, storage of water, carbon sequestration, soils as a support of biodiversity). Because we will reuse **only healthy materials**, we hope to start and test agricultural projects for food without delay.



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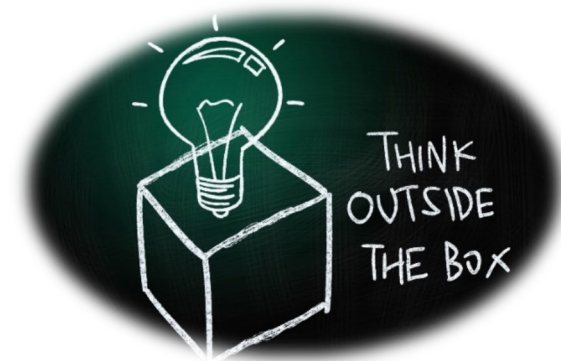


Opportunity :

Solution :

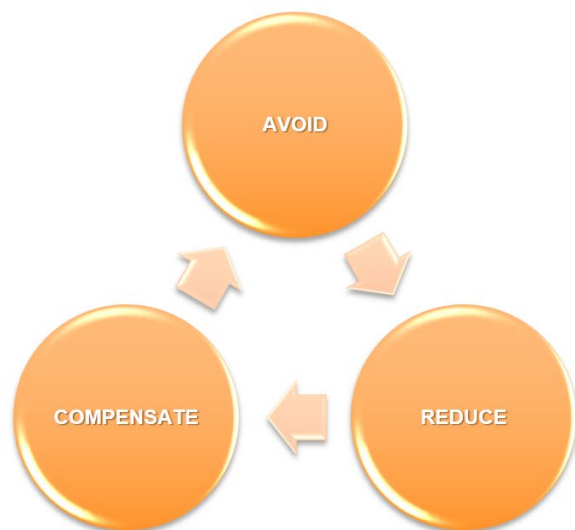
- To go further, we want to take advantage of the opportunity that our research program represents to offer inspiring solutions to other communities.
- Beyond knowledge-sharing, these inspiring solutions are an opportunity to question the legal framework that aims to reduce, avoid and compensate the negative impacts of urban projects or urban plans on the environment.
- Indeed, in the context of the existing legal framework, when you develop a new urban project or urban plan, you must define your needs (housing, public facilities, etc.) and the negative impact of your project on the environment in order to **avoid, reduce and compensate for it** *. But the problem is that this approach and framework guarantees **negative impacts on the environment**. We want to change that!

** This doctrine finds its basis through the European directive 85/337/EEC of the Council of June 27, 1985*



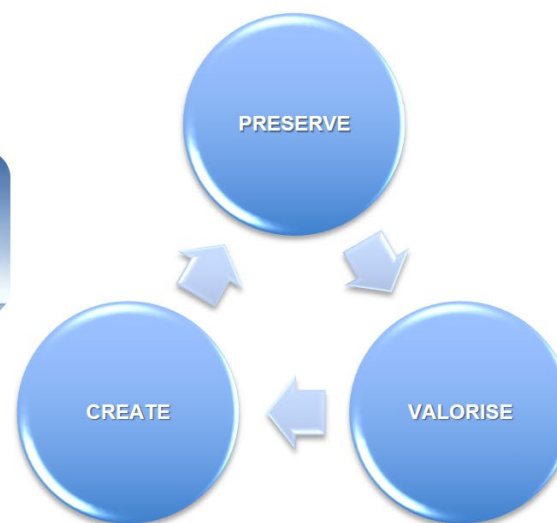
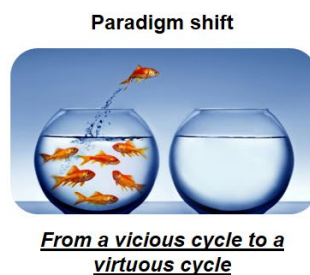
Opportunity : A RESEACH PROGRAM TO CHANGE THE PARADIGM

From an impact management approach to a resource management approach



From a negative impacts
management with **NEGATIVES**
externalities

Here, we exploit the resources and we generate the SCARCITY



To a ressources management with
POSITIVES externalities

Here, we create resources and we generate ABUNDANCE



Lille Metropole's ambition :

- We are looking for Europeans partners to join a consortium and become living labs with this new paradigm approach. We aim to create new resources for economic development, rather than exploiting existing ones.
- If you are interested, please do not hesitate to come and chat with us!





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Thank you!

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Website: mission-soil-platform.ec.europa.eu



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Panel discussion

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**Yanniek
Schoonhoven**

Farmer and founder of the
Regeneration Academy

La Junquera



Theresa Lubber

Senior Project
Manager & Consultant
for EU projects

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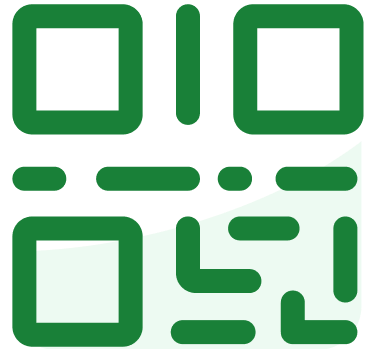
Jamila Bentrar

Coordinator of fertile urban
areas

*Métropole européenne de
Lille*

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#ESMW2023**

ⓘ Start presenting to display the joining instructions on this slide.

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Audience Q&A Session

① Start presenting to display the audience questions on this slide.

Breakout sessions

Breakout session 1 – Press Room (Building D)

Soil health for climate

Breakout session 2 – ICA Institute (Building C)

Soil health for food

Breakout session 3 – Blas Cabrera Institute (Building B)

Farming practices for soil health

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Plenary Session

Reporting from breakout sessions

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Session 1 – Welcome and Opening



Session 2 – Setting the scene for Mission Soil





Session 3 – The Mission Soils in a nutshell



Breakout sessions

Breakout session 1

Soil health for climate

Breakout session 2

Soil health for food

Breakout session 3

Farming practices for soil health



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Thank you!

Website: mission-soil-platform.ec.europa.eu



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Plenary Session

**Launch of the Soil
Carbon International
Research
Consortium (IRC)**

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Speakers

EUROPEAN MISSION SOIL WEEK



Kerstin Rosenow

Head of Unit
Research & Innovation
DG AGRI



Christian Holzleitner

Head of Unit
Land Economy and Carbon Removals
DG CLIMA



**Jean-François
Soussana**

Vice-President International
INRAE



Suzanne Reynders

Head of Unit
International priority
program Soil and climate
INRAE



Fenny Van Egmond

Soil sensing and soil
information specialist
ISRIC

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Launch of the Soil Carbon International Research Consortium (IRC) : Agenda

- 10' Mission's international activities and links with the Soil Carbon International Research Consortium (Kerstin Rosenow - DG AGRI)
- 10' Roadmap towards the Soil Carbon IRC (Jean-François Soussana - INRAE)
- 5' Governance of the Soil Carbon IRC (Suzanne Reynders - INRAE)
- 15' Services provided by the Soil Carbon IRC
 - 5' Research collaboration and alignment (Jean-François Soussana - INRAE)
 - 5' Knowledge sharing and capacity building (Video Impact4Soil – CIRAD & Vizzuality)
 - 5' MRV harmonisation of soil carbon storage (Fenny Van Egmond - ISRIC)
- 10' Getting involved in the Soil Carbon IRC (Suzanne Reynders - INRAE)
- 5' IRC contribution to European initiatives (Christian Holzleitner - DG CLIMA)
- 5' Wrap-up (Jean-François Soussana - INRAE)



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**The Mission's international
dimension**

Kerstin Rosenow

Head of Unit Research and Innovation

DG Agriculture and rural development

European Commission



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Mission Soil: the rationale for an international dimension

- **Soil health** is (also) a global issue
 - Locally specific challenges are shared among countries and regions
 - Lack of soil health in any place can have global consequences – esp. greenhouse gas emissions and carbon sequestration (soils as the largest carbon sink globally)
- Contribution to achieving existing EU **international commitments** – incl. UNCCD, SDG targets
- Mission Implementation Plan – Specific objective 7: Reduce the **EU global footprint** on soils
 - Recognising impact of EU production and consumption elsewhere (agricultural trade)
 - JRC to work on potential methodology, data sources and uncertainties for an EU soil footprint calculator (by 2025)

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A graphic showing a brown soil surface with a black footprint impression. The text '7. Reduce the EU global footprint on soils' is overlaid in white.

7. Reduce the EU
global footprint on
soils

Mission Soil in multilateral fora and initiatives (1/2)

- Exploiting and enlarging the potential for international **R&I cooperation**, (mainly) by capitalising on existing initiatives and partnerships
- **Global Soil Partnership (FAO)**
 - Joint events for World Soil Day (2021, 2022)
 - UN General Assembly Science Summit (2022)
- **UNFCCC & Paris Agreement**
 - COP 27 (2022): High-level plenary session (Coalition of Action for Soil Health)
 - COP 28 (2023): Side event on stakeholder knowledge for climate-smart soil management (with EJP SOIL)
 - "Emirates Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action" proposed for adoption at COP 28



Mission Soil in multilateral fora and initiatives (2/2)

- European Commission is a Government Partner in the **Agriculture Innovation Mission for Climate (AIM for Climate)**
 - Mission Soil work programmes (and other parts of Horizon Europe) deliver on the Commission's commitment to increase investment in R&I on climate-smart agriculture (350M → 400M → 470M € between 2021 and 2023)
 - Dedicated session on Mission Soil at May 2023 summit meeting in Washington, D.C. (with ministers and experts from Denmark, Ireland, the Netherlands and Canada)
- Commission is also a Partner of the **Global Research Alliance on Agriculture Greenhouse Gases (GRA)**
 - Mission Soil featured at 2023 GRA Council meeting (Madrid)
- Mission represented at various **other international governmental conferences**, incl. Global Forum for Food and Agriculture (GFFA, Berlin, 2022 and 2023)

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Non-EU countries participating in Mission projects

- 17 neighbouring countries **associated to Horizon Europe** (+ 2 under negotiation*)
 - Associated Countries participating in current Mission projects: Israel, Kosovo, North Macedonia, Norway, Serbia, Tunisia, Turkey
- Horizon Europe is open for participation also from **all other countries**
 - Participating in current Mission projects: *Morocco, Switzerland, *United Kingdom, United States
 - Further participating countries in other HE projects linked to the Mission portfolio
- Looking forward to participation of **additional countries** in Mission WP 2023 projects (proposals under evaluation)

Inter-regional cooperation

- **Africa** and African Union
 - EU-AU partnership on Food and Nutrition Security and Sustainable Agriculture (FNSSA)
 - 5th EU-AU Agriculture Ministerial Conference, Rome, 2023: Chair's conclusions include further cooperation on R&I for sustainable soil management
- Co-funded Partnership on Research and Innovation in the **Mediterranean** Area (PRIMA)
 - Coordination of calls with Mission Soil (e.g., on desertification – Mission WP 2023)
- **Latin America** & the Caribbean
 - Continuous participation in EU-LAC Dialogues (several times per year)

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Bilateral cooperation

- **Canada**
 - Well established cooperation on agricultural R&I, incl. soil
 - Frequent exchanges of experience on living labs (e.g. at 2023 AIM for Climate summit)
- **China**
 - E.g. EU-China Sustainable Agriculture seminar on Soil Health, April 2023
- **Japan**
 - Mission-oriented R&I ("Moonshot" programmes) in related areas
 - Active interest in development of Mission Soil from the start

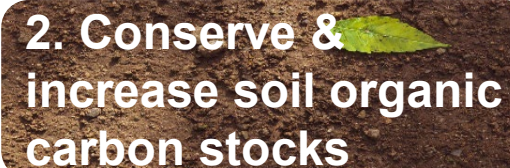
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The case for constructing an international research consortium (IRC) on soil carbon (1/2)

- Mission Soil Operational objective 1 – **R&I programme**
 - Promote and connect European soil-carbon research internationally
 - Involve a wide range of stakeholders also beyond the scientific community
- Specific objective 2: Conserve and increase **soil organic carbon** stocks
 - Increased reliability and lower costs of monitoring, reporting and verification (MRV) through international cooperation and harmonisation
 - Larger-scale testing of MRV technologies/protocols in different places
- Examples of **successful IRCs** in other areas of EU R&I policy
 - IRC on animal health (STAR-IDAZ): validated roadmaps, regional workshops & networks, issue-specific gap analyses

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**2. Conserve &
increase soil organic
carbon stocks**

The case for constructing an international research consortium (IRC) on soil carbon (2/2)

- Broadening the R&I **resource base** beyond Horizon Europe, through contributions from IRC members
- Enhanced opportunities for **division of labour** to use resources efficiently
- A single, effective **governance structure** to minimise coordination costs
- Extending the time horizon beyond the current framework programme, to achieve **longer-term sustainability** of scientific cooperation and stakeholder access to knowledge

Horizon projects preparing the IRC

- Horizon 2020 (WP 2017): **Supporting international cooperation activities on agriculture soil contribution to climate change mitigation and adaptation** (→ CIRCASA)
 - Provide an improved understanding of agricultural soil carbon sequestration
 - Synthesize stakeholder's views and knowledge needs
 - Strengthen the international research community and prepare an IRC
- Horizon Europe (WP 2021): **International Research Consortium on (agricultural) soil carbon** (→ ORCaSa)
 - Build on CIRCASA community and outputs (incl. Strategic Research and Innovation Agenda), to fully operationalise IRC
 - Broaden the scope beyond agricultural soils, to include also urban areas, forests, wetlands: maximising opportunities for carbon capture and storage

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Official launch of the IRC today

- **Spreading the word** and highlighting the **benefits** to potential members of the consortium
 - Multiplier effect from Mission Soil Week participants on the spot and online
- Learning about **services** provided by the IRC
 - Research collaboration and alignment
 - Knowledge-sharing and capacity-building
 - MRV harmonisation
- Explaining IRC **governance**, process and options for **getting involved**
- Taking stock of **organisations** already having expressed their **interest**
- Connecting to latest developments in EU **climate policy**
- **Celebrating** the achievement of an important **milestone!**



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Speakers

EUROPEAN MISSION SOIL WEEK



Kerstin Rosenow

Head of Unit
Research & Innovation
*European Commission - DG
AGRI*



Christian Holzleitner

Head of Unit
Land Economy and Carbon Removals
*European Commission - DG
CLIMA*



Jean-François Soussana

Vice-President International
INRAE



Suzanne Reynders

Head of Unit
International priority
program Soil and climate
INRAE



Fenny Van Egmond

Soil sensing and soil
information specialist
ISRIC

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Roadmap towards the Soil Carbon IRC

Jean-François Soussana - INRAE

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Roadmap towards the Soil Carbon IRC

2017- 2021



2022- 2025



ORCaSa



Launch today
21/11/2023



Soil Carbon
International Research Consortium



CIRCASA

(Coordination of International Research Cooperation on soil Carbon Sequestration in Agriculture)

NOV 2017- FEB 2021

22 scientific partners (17 countries) including the research secretariats of 4p1000, GRA, FACCE-JPI, GSP

Aimed at developing international synergies concerning research and knowledge exchange in the field of carbon sequestration in agricultural soils at European Union and global levels, with the active engagement of all relevant stakeholders.



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CIRCASA Outcomes

Knowledge gaps identification with the international community

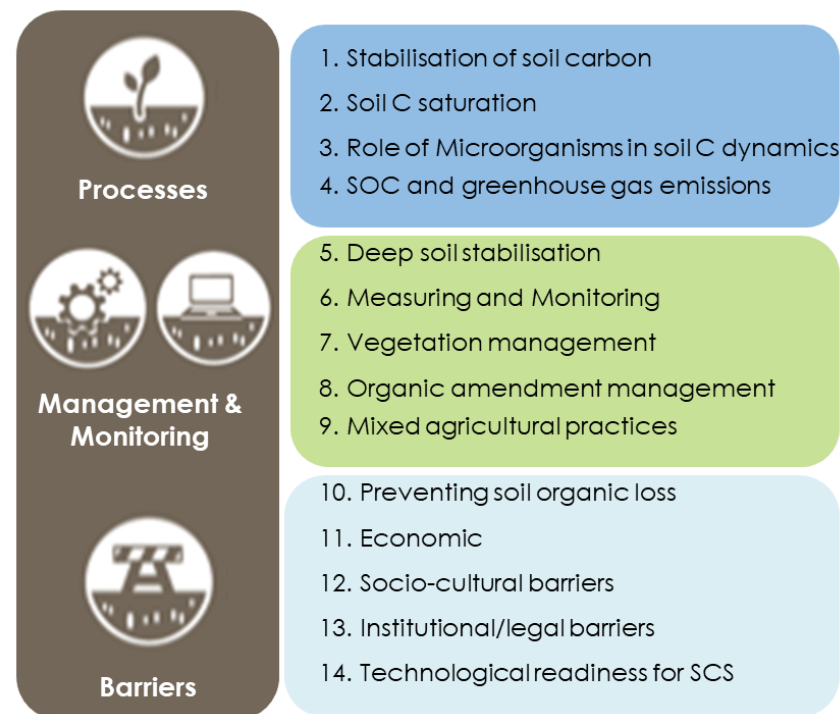
Online Survey

- 7 languages
- 1369 respondents

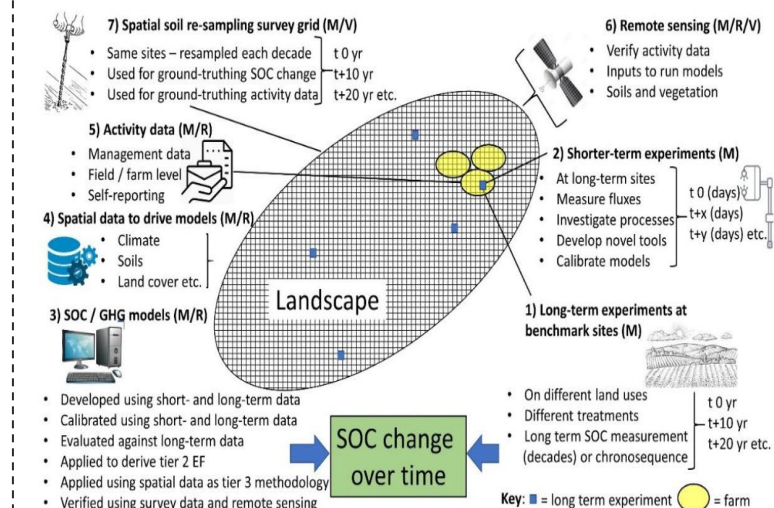
10 Regional Workshops



Strategic Research and Innovation Agenda on agricultural soils



A conceptual methodological MRV framework (Smith et al., 2019)





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About ORCaSa



Operationalising the International Research Cooperation on Soil Carbon



A Horizon Europe project



36 months
(September 2022 until August 2025)



Main objective: establishing the first International Research Consortium (IRC) on soil carbon



ORCaSa consortium : Partners and regional nodes

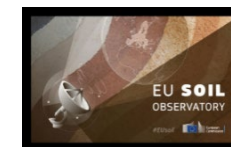
 **anr**[©]
agence nationale
de la recherche **ISRIC**
World Soil Information**COLORADO STATE
UNIVERSITY****VIỆN THỔ NHƯỠNG NÔNG HÓA**
Soils and Fertilizers Research Institute **Arctik**[®]
Communication for sustainability **FARA**
Forum for Agricultural Research in Africa

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The Soil Carbon IRC objectives

- Support the **Paris Agreement** on Climate Change and the Sustainable Development Goals and **collaborate with other initiatives**
- Raise both **awareness and science-based knowledge** on soil carbon
- Benefit **international research cooperation** and **worldwide stakeholders**
- Gather the international community on Monitoring Reporting and Verification and **co-construct harmonization of MRV methodologies**

We want engage in collaboration agreements with various initiatives in order not to duplicate but to foster synergies, alignment and co-construction of research



The Soil Carbon IRC co-constructed roadmap

10.02
2021

IRC governance structure being proposed and presented to stakeholders at two dedicated workshops

15.02
2023



2 ONLINE WORLD CAFES
Governance, SC IRC services

21.11
2023



...
Co-construction with IRC Parties

By August
2025

Soil Carbon IRC Roadmap

CIRCASA final event

- > 370 registered stakeholders
- > Commitments of stakeholders (Nestlé, Verra, ACIAR, GRA, 4/1000, GSP, ...) on February 10th 2021

01 & 03.09
2021

Soil Carbon IRC Mission and Vision discussed with stakeholders at World café

07 & 08.11
2023

Launch of Soil Carbon IRC during the Soil Mission Week (Madrid, Spain)



- ## Soil Carbon IRC
- > Governance and business model
 - > Open Knowledge Platform
 - > Community Building
 - > SRIA with all land use types
 - > Synergies and funding for research and innovation activities
 - > Monitoring Reporting and Verification MRV harmonization

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Governance of the Soil Carbon IRC

Suzanne Reynders - INRAE

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Members of the Soil Carbon IRC

• Research

- Scientists working on soil carbon, agriculture, and climate change issues*
- Research organizations
- Universities
- National or international initiative or programme
- Living labs

• Funders

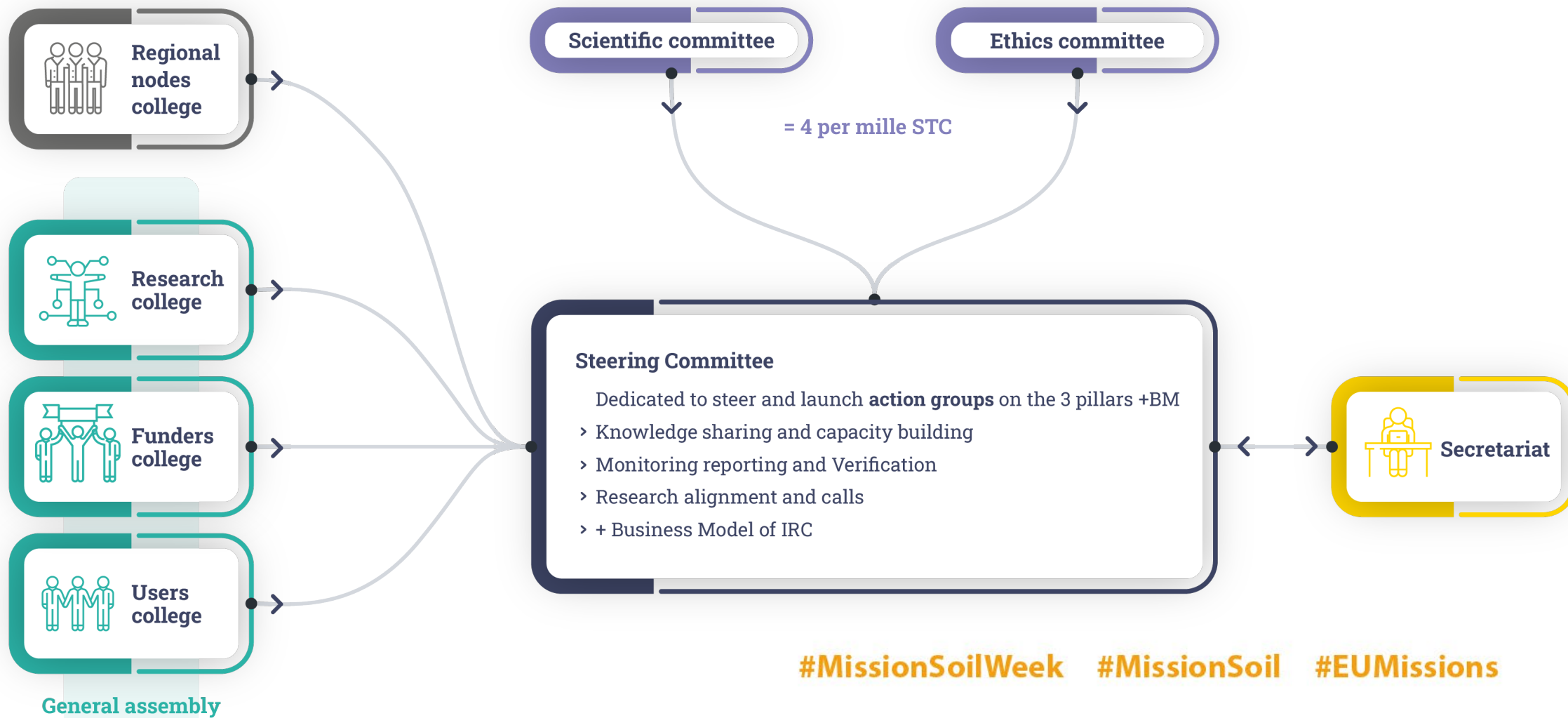
- Public funders (National and international R&D agencies including space agencies, Development agencies...)
- Private funders (foundations, banks, Business association (WBCSD or SAI)...))

• Users

- Policymakers on agriculture, food, climate, and environmental issues (national, regional, and international)
- Farmers, landowners, cooperatives and farm advisors, foresters...
- Private sector including start up (Agri-food, forest, retail, ...)
- Environmental agencies and NGOs
- Other

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Governance: Soil Carbon IRC



Governance: Soil Carbon IRC

The General Assembly (GA) is the body in charge of reviewing and adopting the orientations and delivery of services prepared by the Steering Committee.

Regional nodes may cover a full region (e.g. Africa, Europe, etc.) or a large geographical area (e.g. China, USA). They will be composed of the IRC community members of the General Assembly in the given area.

The Steering Committee will be the decision-making body for all decisions related to the (political, strategic and legal) orientations of the IRC. An interim steering committee is under construction and shall meet first quarter 2024. It's composition will be validated by the General Assembly (signatories of the letter of intent).

Scientific committee will advise the Steering Committee on research priorities. The interim scientific committee will meet on December 8th as of 4 per 1000 STC. After the end of ORCaSa the Scientific committee will be appointed by the General Assembly.

The Ethics committee identifies and monitors ethical issues at stake in the overall Soil Carbon IRC governance (composition of the steering committee and scientific committee task forces) and activities.

The Secretariat administrates the operations of the IRC and support all IRC governance bodies

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Status and Funding of the IRC

Status:

The status of the Soil Carbon IRC is not yet defined and requires more research and understanding of how other consortium models work.

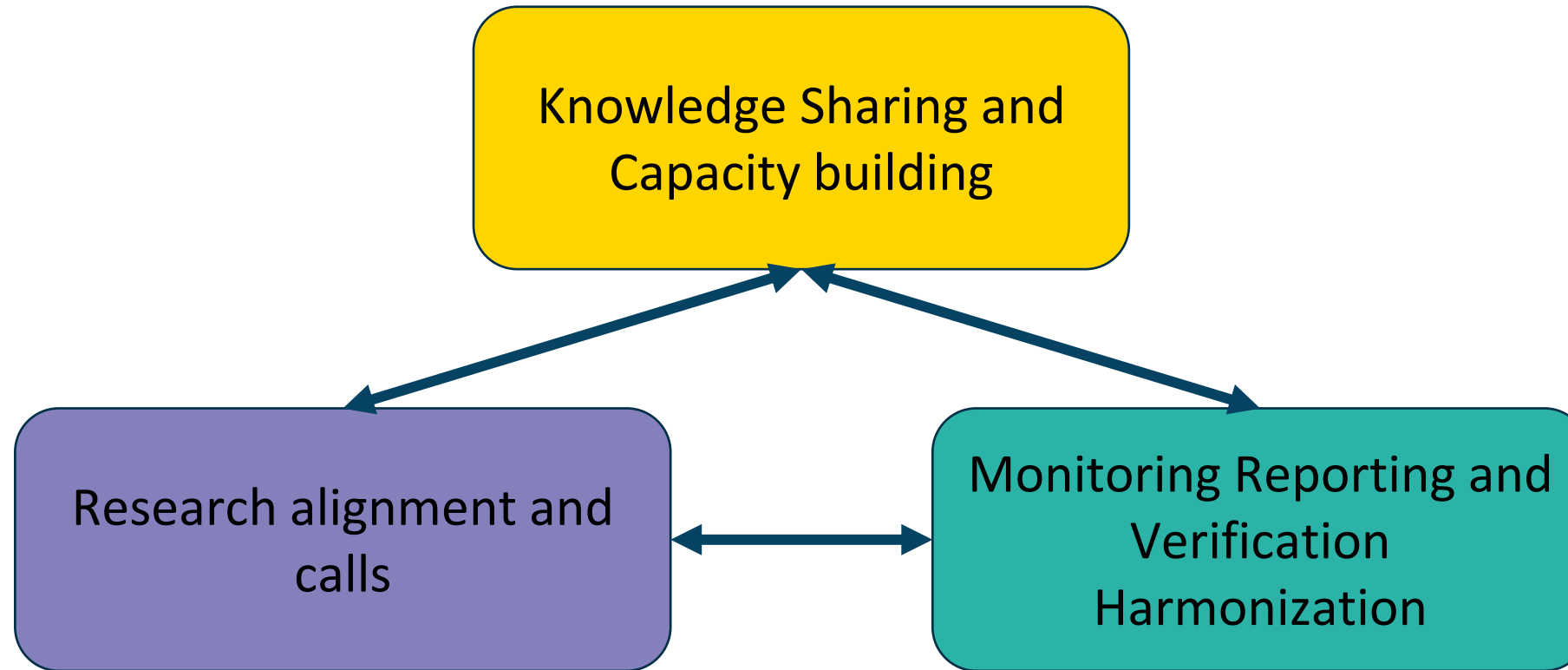
The Interim SC will decide on the choice of legal status for the IRC proposed by the ORCaSa executive board.

Funding:

The Funding mechanisms of the Soil Carbon IRC is not yet defined and requires more research and understanding of how other consortium work and finance their activities.

The Interim SC will decide on the business model for the IRC proposed by the ORCaSa executive board.

Value proposition of (services developed by) Soil Carbon IRC





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Services provided by the Soil Carbon IRC : 1 - Research collaboration and alignment

Jean-François Soussana - INRAE

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Research and innovation alignment

Thematic Annual
Programming (TAP)



Topic identification

Evolving SRIA
Strategic Research and
Innovation Agenda



Knowledge gaps identification

Knowledge HUB
Sharing knowledge and data
between research projects
Policy briefs

 **ORCaSa**

- provides a **SRIA** Strategic Research and Innovation Agenda encompassing all land use types
- launches a **Knowledge Hub** in which a set of existing research projects from all around the world will share knowledge and possibly data and draft policy papers
- launches a **Thematic Annual Programming** where various national research funding agencies agree to launch nationally similar research calls and to add 10% dedicated funds in order to facilitate international collaboration between projects

 **Soil Carbon**
International Research Consortium

- will **facilitate** these international collaboration between projects
- will propose and negotiate with funders the launch of an international specific call dedicated to the implementation of the SRIA

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Composition of the Knowledge Hub

The Knowledge Hub will be composed of international experts with proven scientific excellence record, they will be nominated by the funders to cover all research areas significant to reach common soil research objectives.

A variety of profiles are selected:

- **Scientific expertise:** Soil sciences, agroecology, socio-economic, international governance, etc ...
- **Topic of interest:** Carbon sequestration, soil biodiversity, mapping, remote sensing, etc...
- **Ecosystem studied:** Forest, agroecosystem, urban soil, peatlands, natural soils, artificial soils, etc ...
- Several soils type,
- Public/private research,
- Fundamental/applied research,
- Junior/experienced scientists,
- Female/Male,

Forty experts have been proposed by 8 funding agencies **(to date)** .

16 Countries represented in the Hub : South Africa, Germany, Argentina, Australia, Brazil, Canada, Cameroon, Chile, South Korea, Ivory Coast, Spain, France, Finland, Kenya, Tunisia, Turkey

Next steps

Knowledge HUB:

- The ORCaSa knowledge HUB is unique in that it engages funders from the outset to identify experts. This is a key point in establishing links between the two communities: the finance community and the expert community.
- The final composition of the HUB will be discussed during the next ORCaSa annual meeting.
- Links will be developed between the Knowledge HUB and the ORCaSa updated Strategic Research and Innovation Agenda and the interactive global review of practices for increasing soil carbon developed by CIRAD
- The first HUB meeting will be held in January 2024. Two more meetings to follow in 2024.

TAP:

- The first TAP meeting will be held in 2024.
- The french National Research Agency (ANR) mobilises its international financial partners to join the TAP programme.
- The ANR is building on its experience of past TAPs and HUBs set up under the FACCE JPI.



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Services provided by the Soil Carbon IRC : 2 - Knowledge sharing and capacity building

CIRAD - Vizzuality

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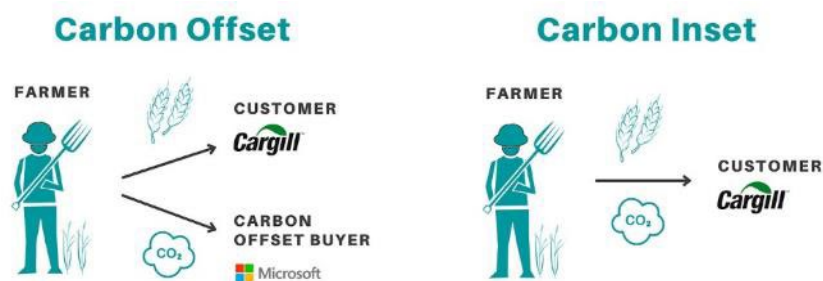
Services provided by the Soil Carbon IRC : 3 - MRV harmonisation of soil carbon storage

Fenny Van Egmond - ISRIC

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Different context of application of Monitoring, Reporting & Verification of soil organic C stock changes

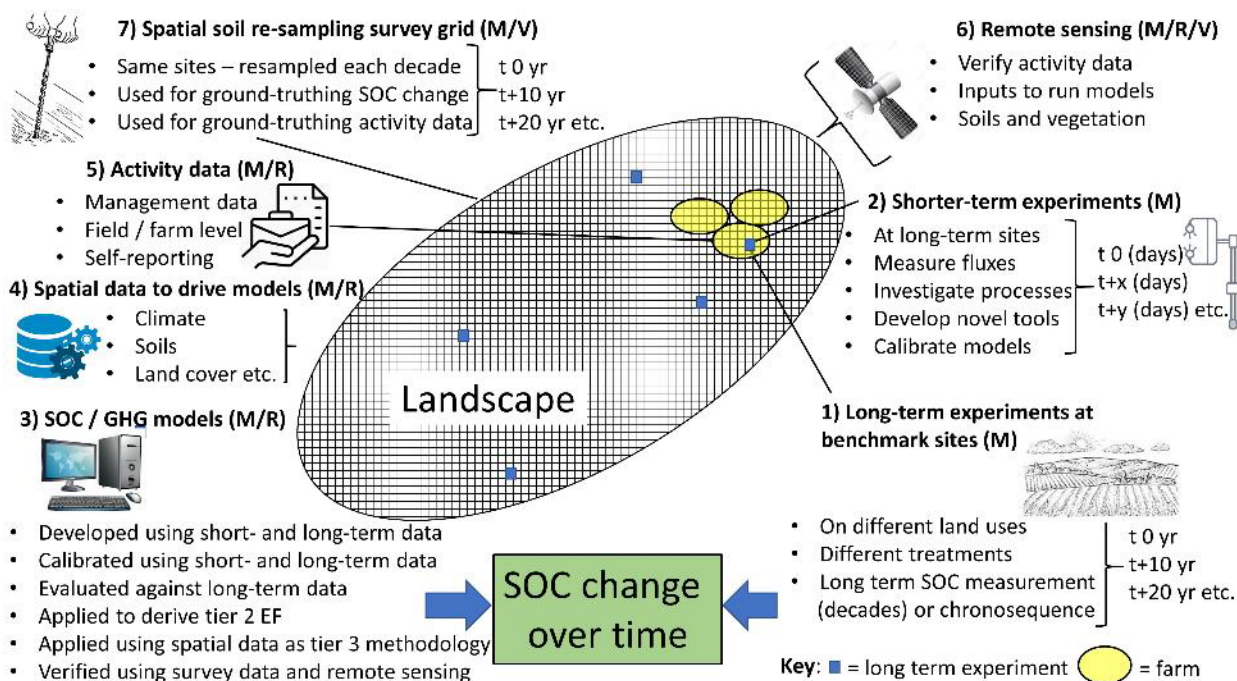
- National inventories = Nationally Determined Contributions (NDCs) under the Paris agreement.
- Carbon offset programs (including voluntary Carbon market/emission trading) mainly for forest up to now, starting for cropland
- Carbon farming programs inside the supply chain (insetting)



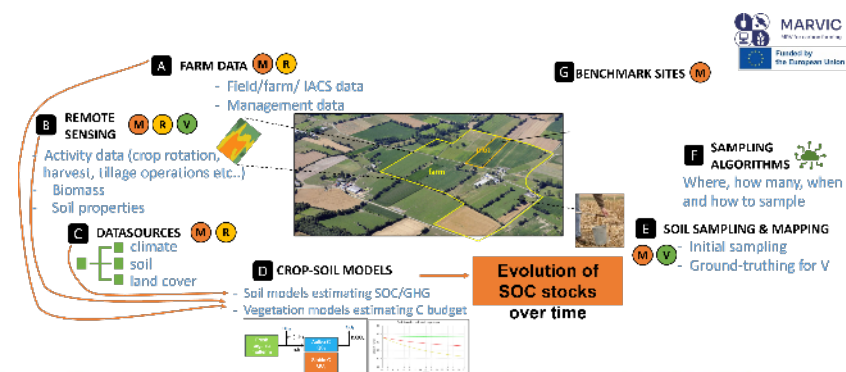
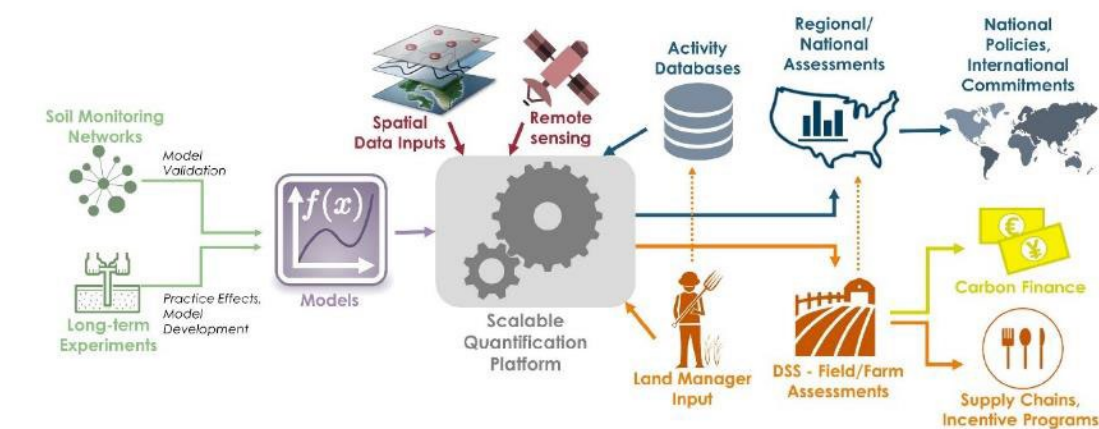
- Common Agricultural Policy: maybe for the current one (e.g. Spain, Netherlands) but operational methods for systematic/national level monitoring C stock changes/GHG emissions are still missing

Starting from existing conceptual Monitoring Reporting Verification frameworks: harmonisation

Some examples for cropland

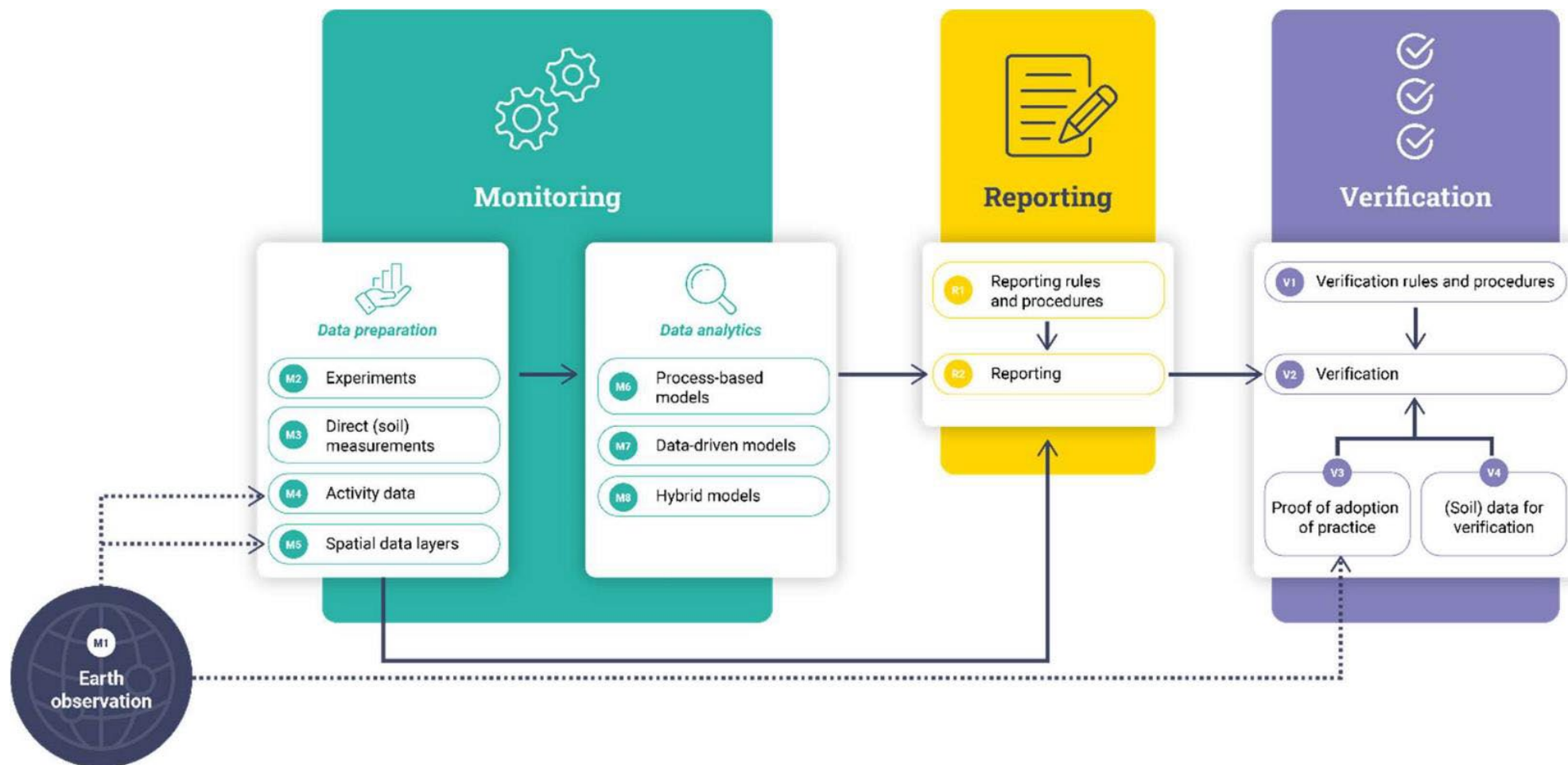


GLOBAL SOIL INFORMATION SYSTEM



Components of a soil measurement/monitoring, reporting and verification frameworks. On the left framework proposed by Smith et al. (2020) indicating which components contribute to measurement/monitoring (M), reporting (R) or verification (V) (CIRCaSa project). On the top-right, framework proposed by Paustian et al. (2019), bottom-right MARVIC project

Proposition of a harmonised MRV framework



Schematic representation of components, building blocks, and information flow for a generic, scalable MRV system. International review of current MRV initiatives for soil carbon stock change assessment and associated methodologies, Niels H. Batjes, Eric Ceschia, Gerard B.M. Heuvelink, Julien Demenois, Guéric Le Maire, Rémi Cardinael, Cristina Arias Navarro, and Fenny van Egmond

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Towards a harmonisation of the MRV Frameworks & methods

 **ORCaSa**
(Pre-)Work

 **Soil Carbon**
International Research Consortium
Service

**Monitoring Reporting
and Verification
Harmonization**

**Monitoring Reporting
and Verification
Harmonization**

Review of current MRV frameworks and proposition for a harmonized one



Scoping an internationally agreed multi-ecosystem MRV framework

Developing a MRV cookbook for cropland and a prototype of processing chain

Scoping an internationally agreed MRV framework

Developing multi-ecosystem MRV building blocks and processing chains

Assessing and labelling MRV methodologies

Our goal is to develop as a community a harmonized MRV system, which will be used in the IRC

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MRV Collaborative workshops

Workshop 1 : overview of the current and proposed MRV scheme, the building blocks or components, and the international review of current MRV initiatives for SOC stock changes assessment and associated methodologies carried out by the ORCaSa partners

February 2023

Workshop : preparation of the cookbook for an integrated Soil Carbon MRV

February 2024

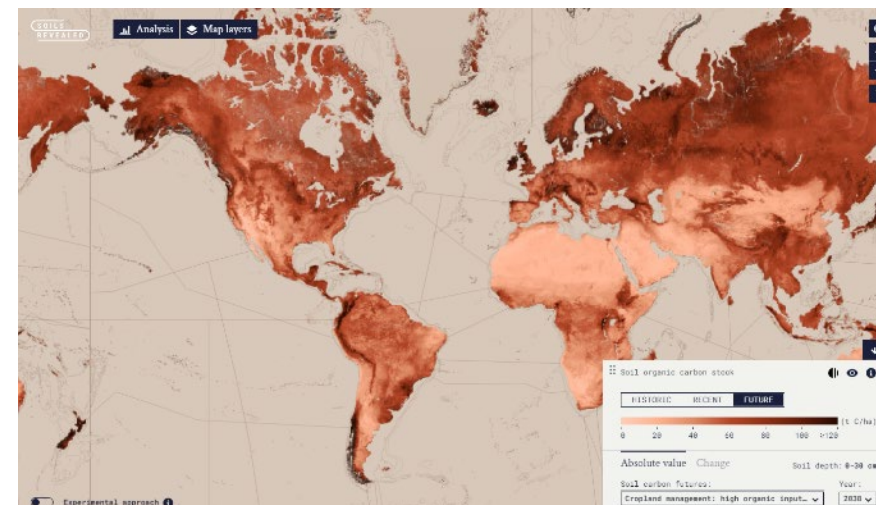
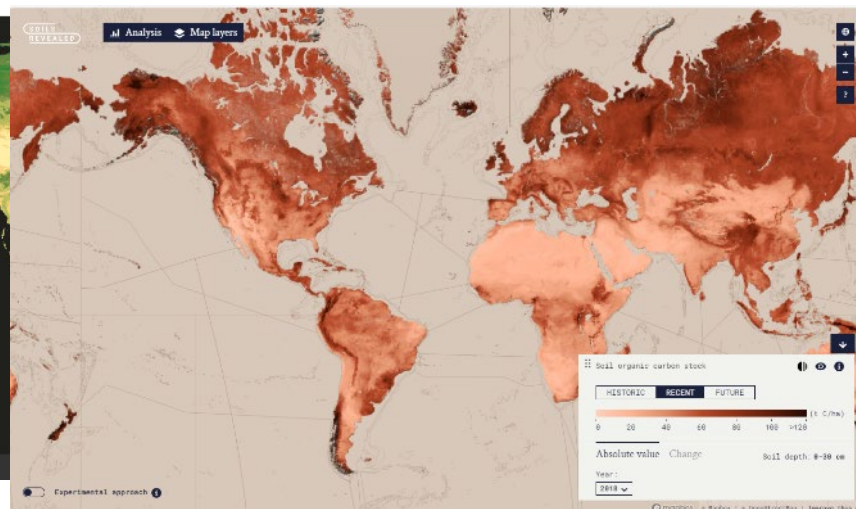
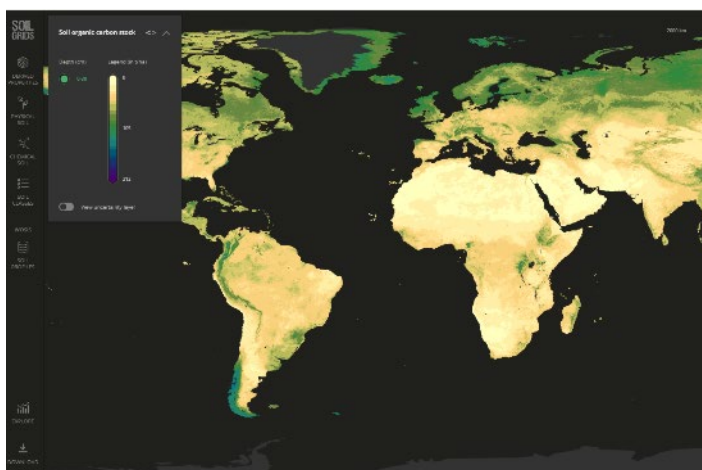
Workshop 2 : overview of the current and proposed MRV scheme, the building blocks or components, and the international review of current MRV initiatives for SOC stock changes assessment and associated methodologies carried out by the ORCaSa partners

July 2023

Workshops within the Soil Carbon IRC

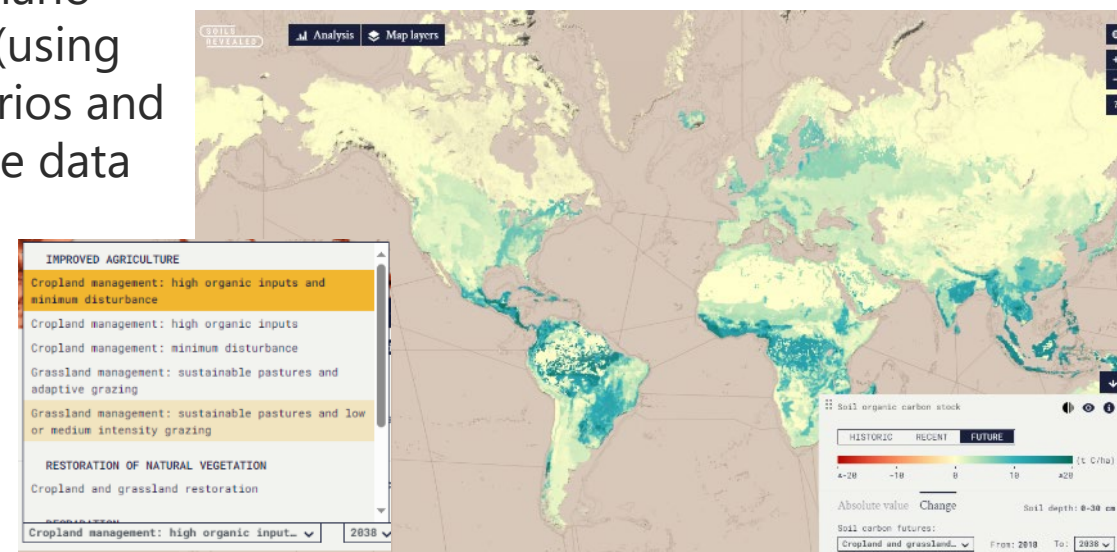
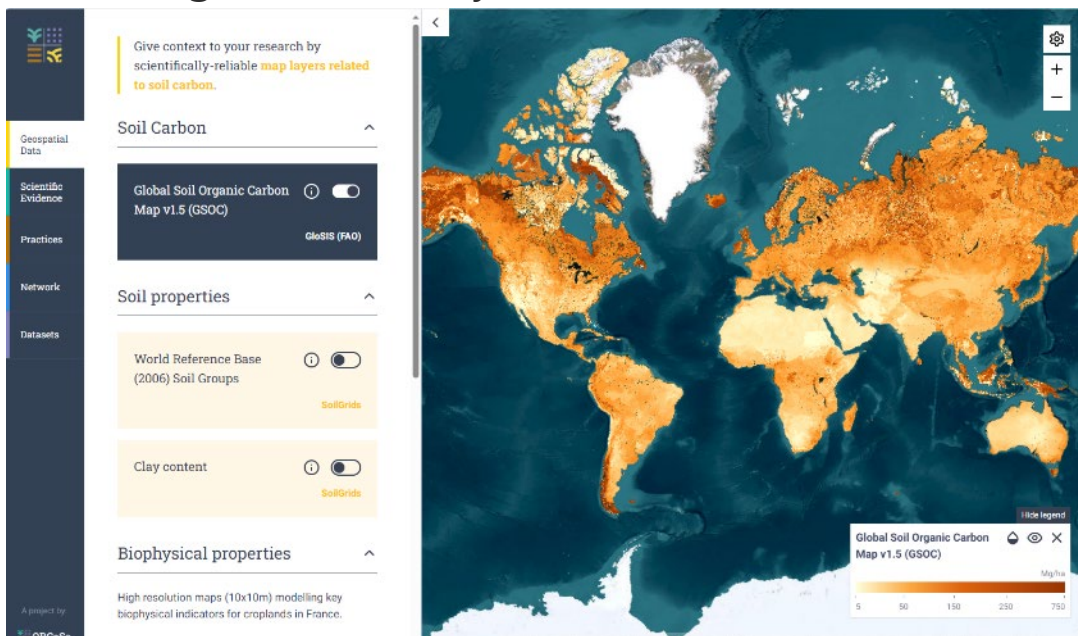
SOC layers and options

<https://soilsrevealed.org/>



Various global SOC layers

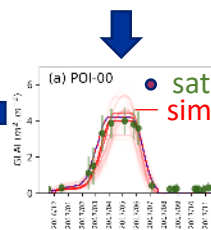
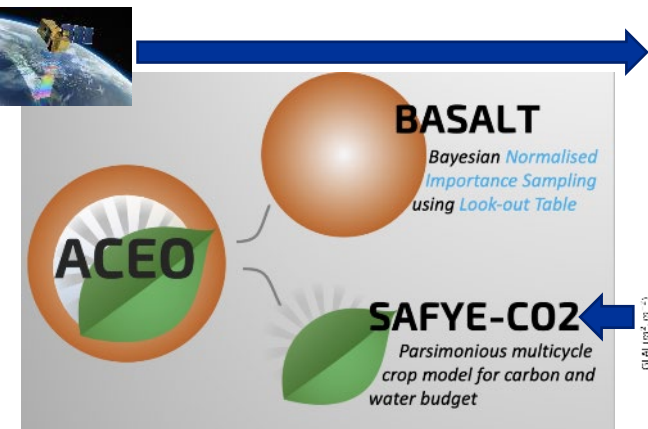
Allows scenario modelling (using IPCC scenarios and SOC change data)



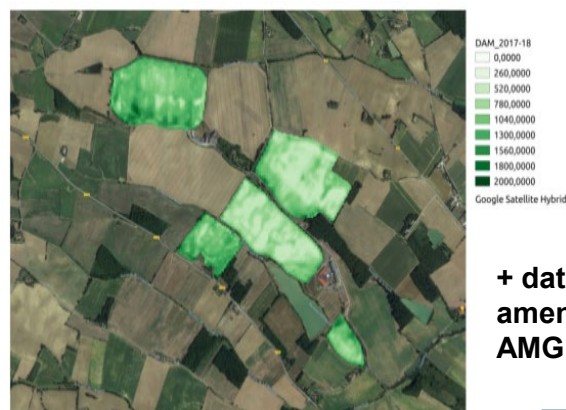
Mapping CO₂ flux, biomass and C budget components at high resolution by assimilating remote sensing data in a crop model dedicated to upscaling



Developed for multiple context of SOC MRV: CAP, national inventories, voluntary C market, insetting

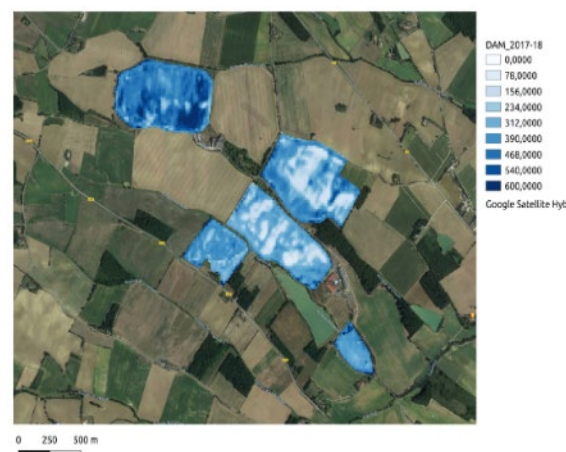


Crop biomass + uncertainties



+ data on organic amendments + AMG soil model

Cover crop biomass + uncertainties



10m resolution annual SOC stock change map in 2019 for winter wheat (orange) and cover crop/maize plots (greenish)



Net annual CO₂ fluxes for straw cereals in 2019 near Toulouse: 110 x 110 km at 10m de resolution



See: <https://www.cesbio.cnrs.fr/agricarboneo/agricarbon-eo/>

Naturellement popcorn project in collab. with Nataï's **bpi**france

Note: EO data can be used to map SOC superficial content, not SOC stocks nor SOC stock changes at farm/plot level



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Getting involved in the Soil Carbon IRC

Suzanne Reynders - INRAE

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Engaging the international community

**Two dedicated workshops:
September 1st and 3rd
2021**

IRC governance structure
discussed with the
international community
coming from CIRCASA
(28 countries)

**World Cafés :
November 7 and 8 2023**

Governance and three
services discussed with
the international
community and invitation
to join the IRC
(25 countries)

**Interim
Steering
committee:
first quarter
2024**

**World Café : February
15 2023**

IRC Mission and Vision
statement (IRC
mission, vision, values,
goals by 2025) shared
and reviewed with key
stakeholders
(11 countries)

**Interim
Scientific
committee:
December 8th
2023 during
COP28**

**General
Assembly**

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35 Countries participated in the workshops

- 
1. Argentina
 2. Australia
 3. Austria
 4. Belgium
 5. Bolivia
 6. Brazil
 7. Canada
 8. Chile
 9. China
 10. Colombia
 11. Denmark
 12. Estonia
 13. France
 14. Germany
 15. Ghana
 16. Ireland
 17. Italy
 18. Ivory Coast
 19. Kenya
 20. Lithuania
 21. Madagascar
 22. Morocco
 23. New Zealand
 24. Norway
 25. Pakistan
 26. Scotland
 27. Senegal
 28. South Africa
 29. Spain
 30. Switzerland
 31. The Netherlands
 32. United Kingdom
 33. Uruguay
 34. United States of America
 35. Vietnam

- Modification based on feedbacks on the IRC governance model and IRC mission and vision statement
- Identification of international knowledge gaps and funding opportunities
- Volunteers to test the platform and to share data on Impact4Soil
- Volunteers in participating to the further development of the MRV framework and building blocks



VIỆN THỔ NHƯỠNG NÔNG HÓA
Soils and Fertilizers Research Institute



Regional node workshops

Organisation of joint seminar - IHSS-NOM and ORCaSa (4th August 2023) Florianópolis - Brazil)

- Share scientific information on the role of soil organic carbon (SOC) in mitigating climate change
- Presentation of ORCaSa and Soil Carbon IRC; the review of practices (CIRAD); MRV tool AgriCarbon-EO (INRAE)
- 164 participants

Participation in the PSF SUMO training and IRN COMPACSOL (March 20th - 24th 2023 – Cambodia)

- ORCaSa presentation to partners from Cambodia, Thailand, Laos, France and Vietnam
- Exchange of knowledge on MRV, agricultural practices to restore soil fertility and Carbon sequestration
- Preparation of the next meetings in Cambodia and Vietnam on MRV technics

Participation in the International Seminar on the preservation and restoration of forest soils in West Africa (May 16th - 17th 2023, Abidjan)

- Promotion of a science-policy-agriculture dialogue around the issue of the vulnerability of forest soils
- 100 experts from research, financial institutions, NGOs, civil society and the political sphere

Participation in the Workshop: Multiscale Quantification Through Remote Sensing, AI and Biogeochemical Models (August 28 - September 1, 2023, Pasadena)

- Discussion of the methods and issues involved in monitoring soil organic carbon
- Preparing a paper for a high-impact journal
- Second workshop to be held in February /March 2024

How to join the Soil Carbon IRC

To join the Soil Carbon IRC, **your organisation will have to sign the letter of interest** (*non legally binding document with no financial commitment*) and to appoint a representative.

Organisations wishing to be part of the steering committee will have to make a stronger commitment by contributing either in kind or in cash to the funding of the Soil carbon IRC.



Join now!

In a few weeks' time, **the International Research Consortium (IRC) on soil carbon** will be launched.

No need to wait until this event to join the movement! **You can already show your interest** and open the door for a stronger commitment soon.



<https://irc-orcasa.eu/join-the-soil-carbon-irc/>

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First signatories of the letter of interest



ILVO
Flanders Research Institute for
Agriculture, Fisheries and Food



KALRO
Kenya Agricultural & Livestock Research Organization



And more to come !

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EUROPEAN MISSION SOIL WEEK

**Soil Carbon IRC contribution to
European initiatives**

Christian Holzleitner

Head of Unit Land Economy and Carbon Removals

DG for Climate Action

European Commission



#MissionSoilWeek #MissionSoil #EUMissions



MINISTERIO
DE CIENCIA
E INNOVACIÓN



EU Carbon removal certification framework

This proposal sets out a voluntary EU-wide framework to certify carbon removals generated in Europe

There are several ways to remove and store carbon. All can be certified under the EU's framework:

- **Nature-based solutions, such as restoring forests, soils, and innovative farming practices**
- Technology, such as bioenergy with carbon capture and storage, or direct air carbon capture and storage
- Long-lasting products and materials, such as wood-based construction.

Four Q.U.A.L.I.T.Y criteria:

- **Quantification**
- **Additionality**
- **Long-term storage**
- **Sustainability**



The DG CLIMA Expert Group on Carbon Removals assists the Commission's work:

- Online consultations are ongoing on Basecamp
- Draft recommendations are under negotiation with Parliament and Council.
- The next meeting of the expert group will be on 16 April to start working on concrete methodologies.

European Carbon Farming Summit 5-6-7 March 2024 in Valencia, Spain, organised by the CREDIBLE project, will allow to coordinate efforts to move methodologies forward.

ORCaSa report and Work Package 4 on MRV may contribute to the methodologies



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Thank you!

Email: Suzanne.reynders@inrae.fr

Website: <https://irc-orcasa.eu/join-the-soil-carbon-irc/>



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@EUgreenresearch



@euagrifood



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Programme Day 2 - Wednesday, 22 November

Time	Session Name	Building name
9:30 – 10:00	Social, economic, and cultural transformations for soil health	<i>Main hall – Building A</i>
10:00 – 11:00	PREPSOIL project: supporting the Mission Soil	
11:00 – 11:30	Coffee Break	
11:30 – 13:00	Breakout session 4 - Soil needs in PREPSOIL regions: engaging with multiple actors	<i>ICA Institute - Building C</i>
	Breakout session 5 – Knowledge transfer to farm advisors	
13:00 – 14:00	Lunch Break	<i>Main hall – Building A</i>
14:00 – 16:00	Breakout session 6 - Living Labs and other experiences from placed-based innovation	<i>Blas Cabrera Institute - Building B</i>
	Breakout session 7 - Soil biodiversity	<i>ICA Institute - Building C</i>
	Breakout session 8 - Business models for soil health	<i>Press Room - Building D</i>
16:00 – 16:30	Coffee break	<i>Main hall - Building A</i>
16:30 – 16:45	Reporting from breakout sessions	
16:45 – 17:30	The Mission's regional and local dimension	
17:30 – 18:15	Mission Manifesto and Mission Ambassadors	
18:15 – 19:00	Cocktail & Networking	



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Plenary Session

Mission Soil photo competition award ceremony

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Mission Soil photo competition
award ceremony

Moderator: Sasha Twining

21 November 2023



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MINISTERIO
DE CIENCIA
E INNOVACIÓN





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Award ceremony

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Diego Canga Fano

Director of Quality policy,
Research&Innovation, Outreach

*European Commission,
Directorate General for Agriculture
and rural development*



Carmen Olmo Vela

Director of Collaborative Projects,
former member of the Mission
Soil Board

Gold Standard Diagnostics

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Award ceremony

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Dominika Koszowska

Treasure under our feet (2021)

For me, soil is life, it is home to many microorganisms and enables plant life. We must take care of it so that life does not cease to exist on Earth. I photographed this treasure under my feet.

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Sergio Ibáñez Pascual

Flowering vineyard soil (2022)

The vineyards of Spain are usually tilled. This causes the soil to become impoverished and lose biodiversity. Through a cover crop, the vineyard and the soil generate life and increase their quality.

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Božidar Grgošić

Desperate for life (2023)

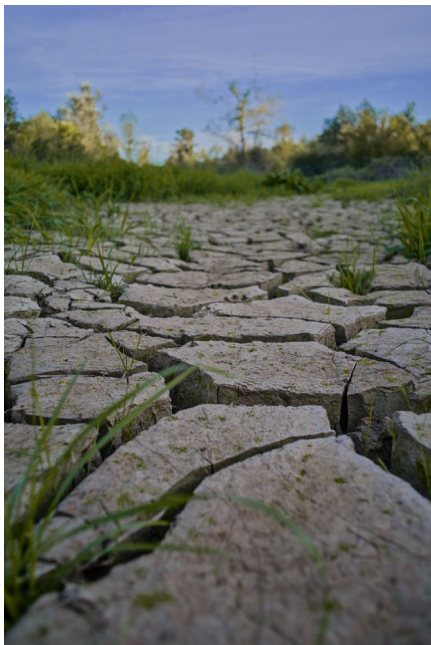
A dry land yearning to host a new life.

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Božidar Grgošić

*Desperate for
life (2023)*



Sergio Ibáñez Pascual

Flowering vineyard soil (2022)



Dominika Koszowska

*Treasure under our
feet (2021)*

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EUROPEAN MISSION SOIL WEEK

Mission Soil Photo Exhibition

You will find them in the calendars!

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Thank you!

Website: mission-soil-platform.ec.europa.eu



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