Introduction et présentation de la campagne LUCAS Soil 2022

Healthy soils for healthy food, people, nature and climate within the European Green Deal

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European Commission

The strategy is closely linked and will contribute to other policy areas and initiatives

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The EU vision for soil

By **2050**, **all EU soil ecosystems** are in **healthy condition** and are thus more resilient, which will require very decisive changes in this decade.

By then, protection, sustainable use and restoration of soil has become the norm. Healthy soils contribute as key solution to our big challenges to achieve climate neutrality, a clean and circular economy, revert biodiversity loss, safeguard human health, halt desertification and revert land degradation.

EU Soil Observatory: Key Objectives

Goal 3: Support to Research & Innovation

Goal 2: Monitoring of soil related policies

Goal 1: EU-Wide Soil Monitoring

Goal 4: Provide an European Soil Forum

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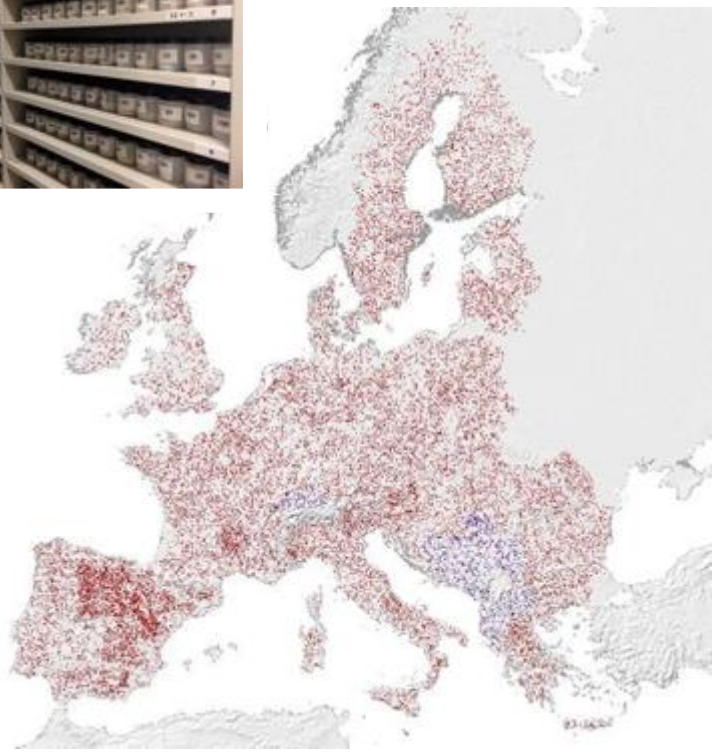
Goal 1:
EU-Wide Soil Monitoring

From LUCAS (ca. 25,000 sites) to the EU Integrated Soil Monitoring (ISM) (ca. 250,000 sites)



LUCAS SOIL

- Systematic approach for 25,000 locations across the EU
- Harmonized sampling protocol
- Standard analytical procedures to measure parameters
- Single laboratory
- Data from 2009, 2015, 2018, 2021/2022...
- EU/Regional statistics, point-based applications

Future expansion within the EUSO

- Systematic approach for ca. 250,000 locations across the EU
- Full integration of National soil monitoring systems

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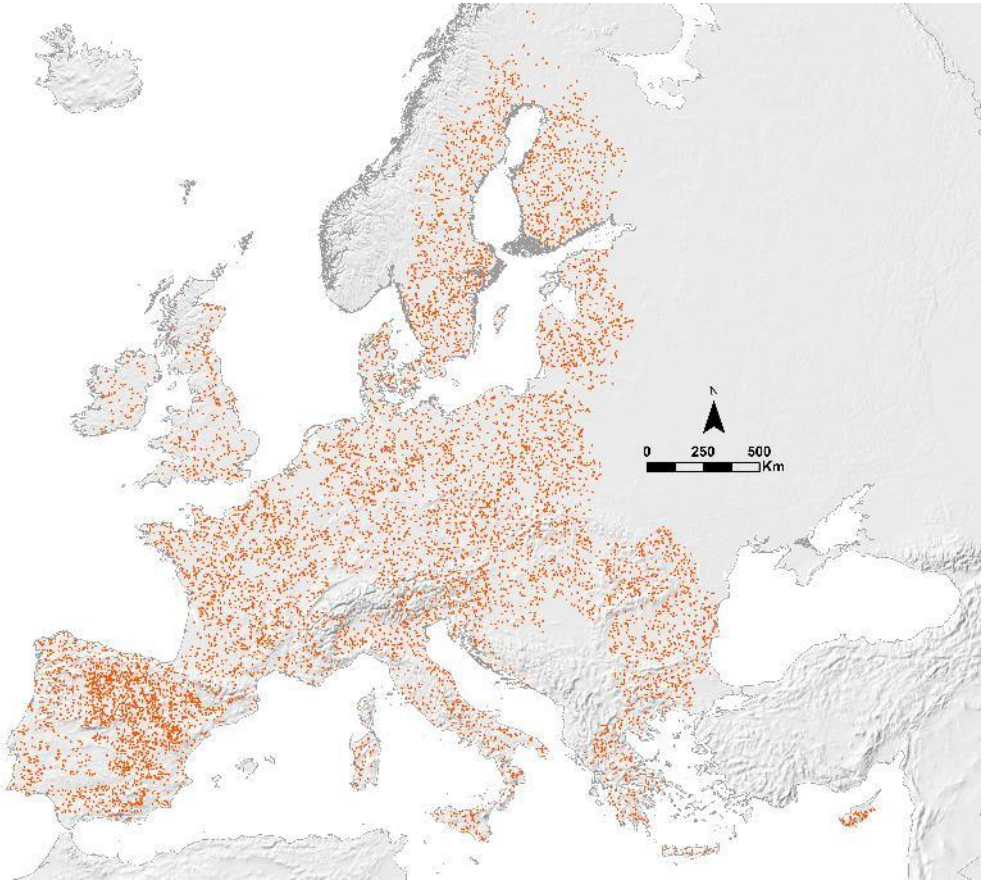
LUCAS Soil Module

- Subset of EUROSTAT LUCAS Land Use/Cover Survey
- Carried out 2009/2012, 2015, 2018
- 22,000 locations across EU
- c. Some data for AC & Switzerland
- Only harmonized soil data collection programme for EU
- Extending in scope



- Survey underway for 2022

- Methodology extended to Africa (Soils4Africa Project)

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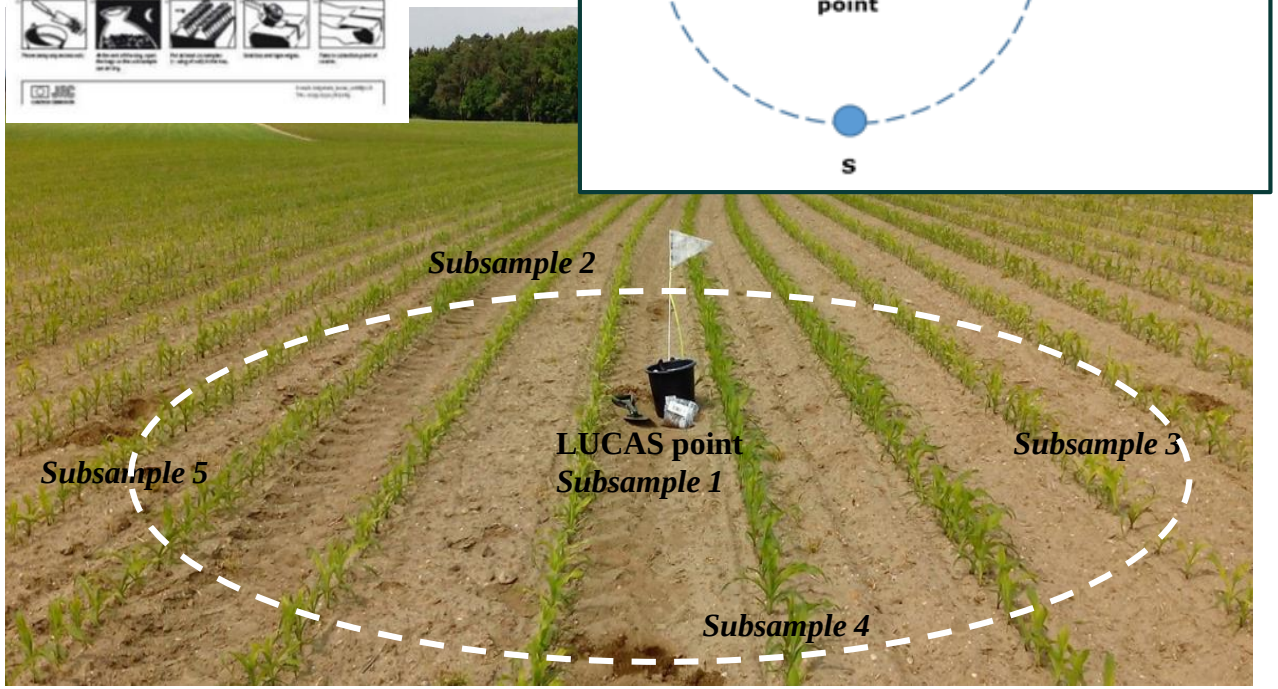
LUCAS Soil Module

- A **topsoil sample** from LUCAS Grid points
- Composite of **5 subsamples**
- **c. 2m from point**
- Mix in bucket
- Take out approx. weight: **500 g** (5 heaped trowels)
- Sampling equipment
  - Spade and trowel
  - Bucket
  - Meter stick
  - Plastic bags and ties
  - Labels
  - Box to store and transport samples



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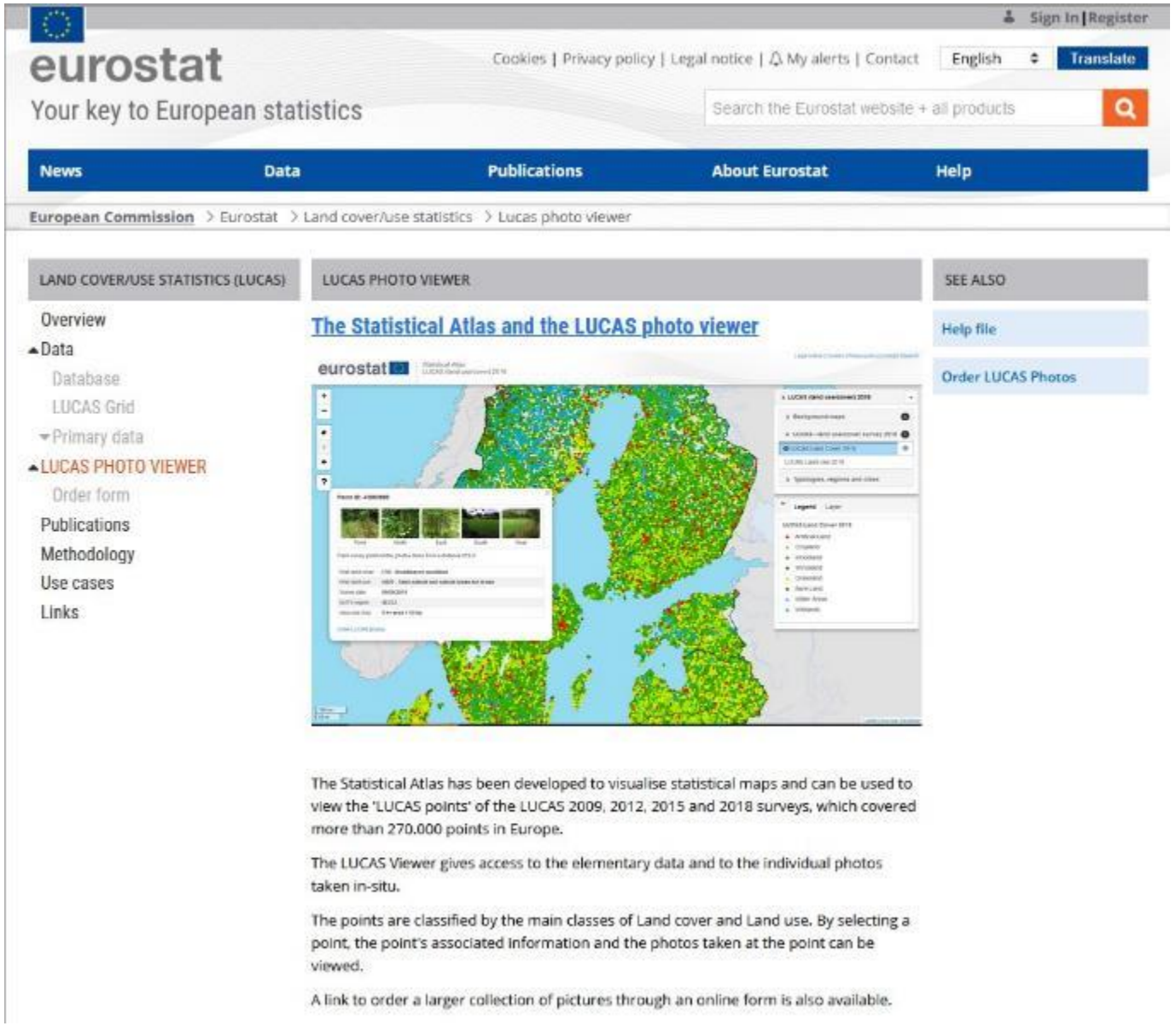
https://ec.europa.eu/eurostat/web/lucas/lucas-photo-viewer



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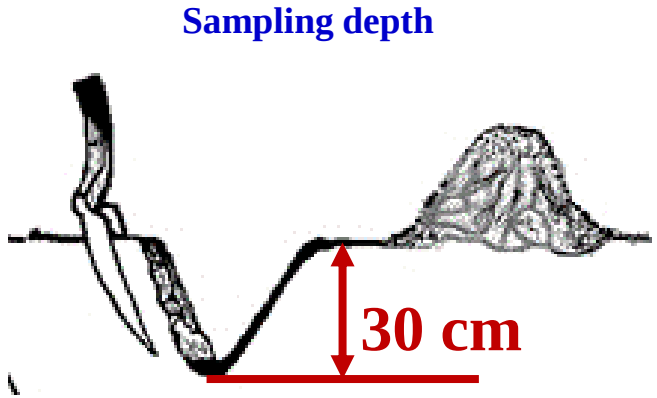
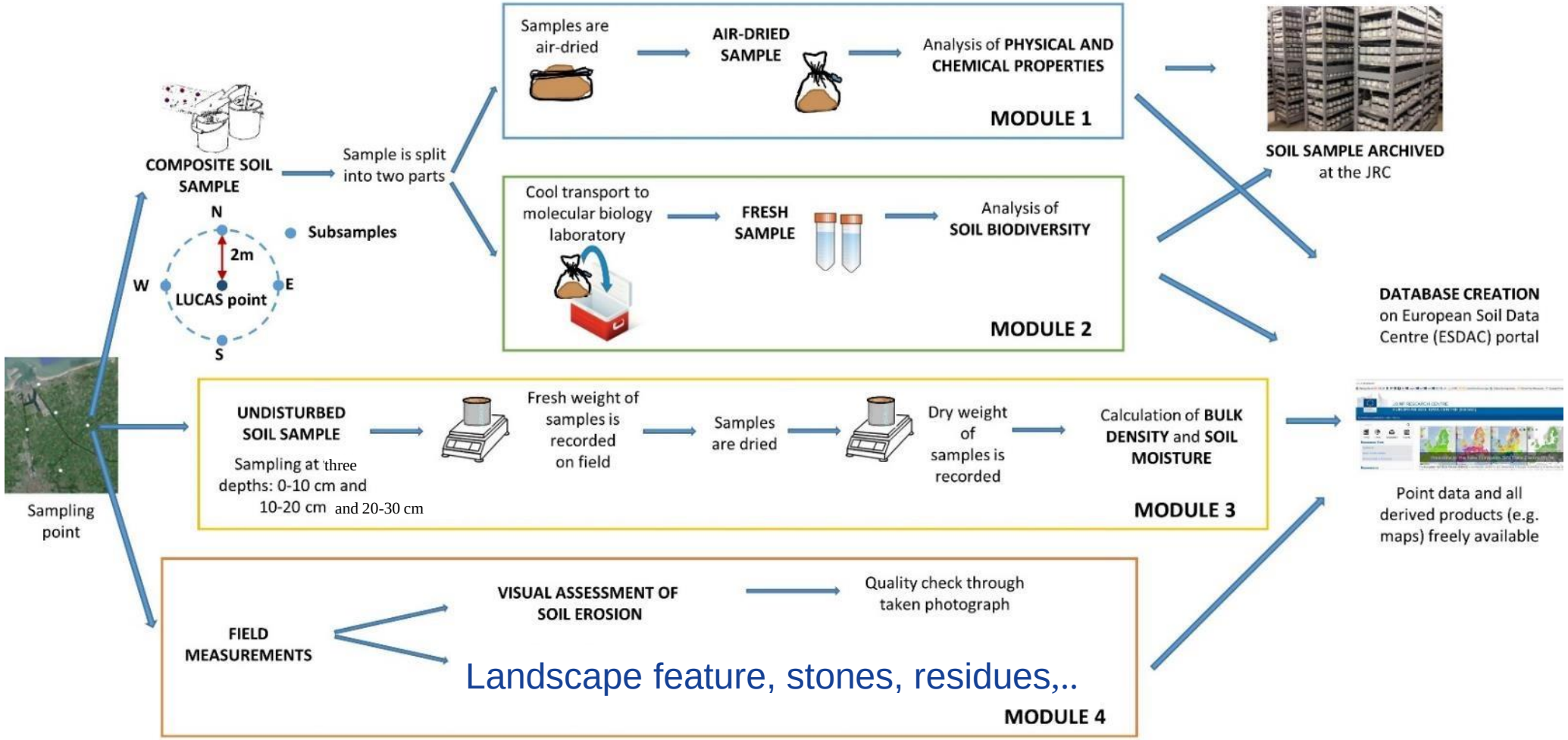
Standard sampling and analysis

Key aspects of the sampling:

- V-shaped hole
- Control of sampling depth: 0-30 cm
- Sub-sample and composite samples
- Parameters measured by single laboratory using ISO/CEN standard methods (when available)



LUCAS-Soil: field sampling



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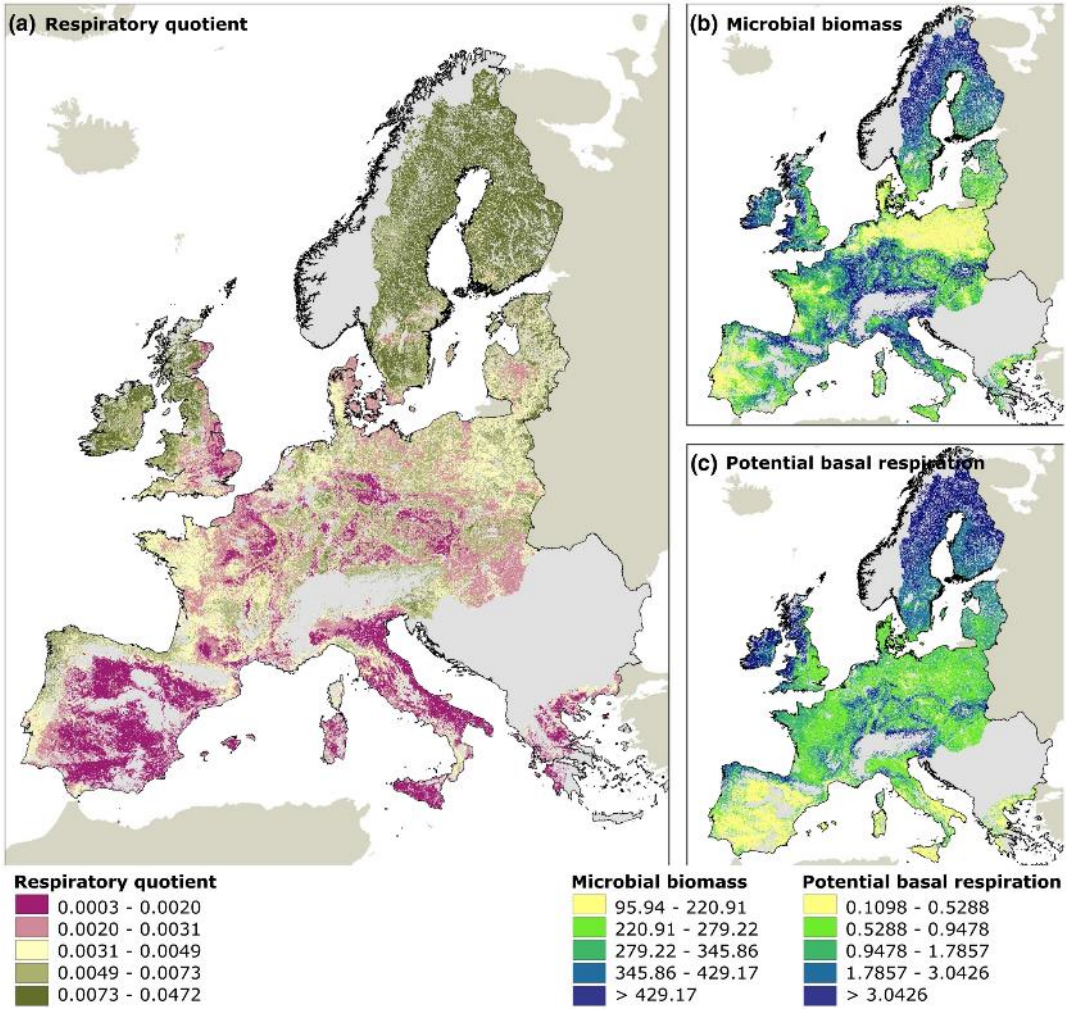
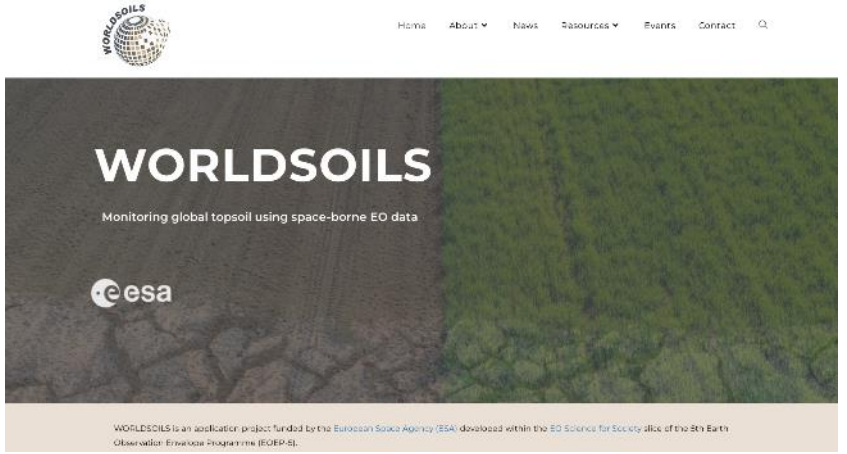
What happens to LUCAS samples

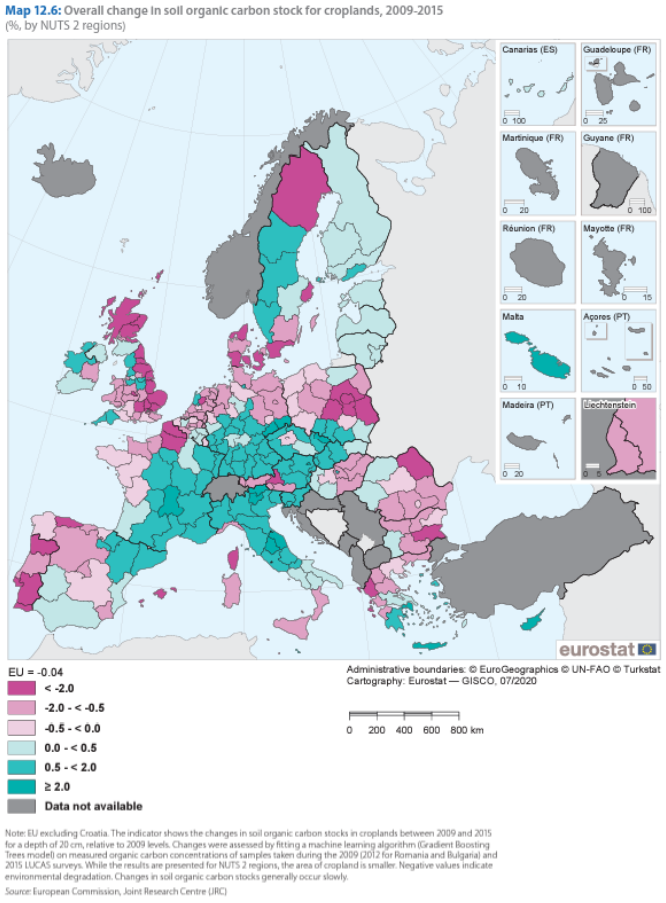
- Residues stored at JRC
  - >60,000 samples
  - 1000 frozen
- Researchers visit JRC to take soil samples for new analysis
- Long-term archive

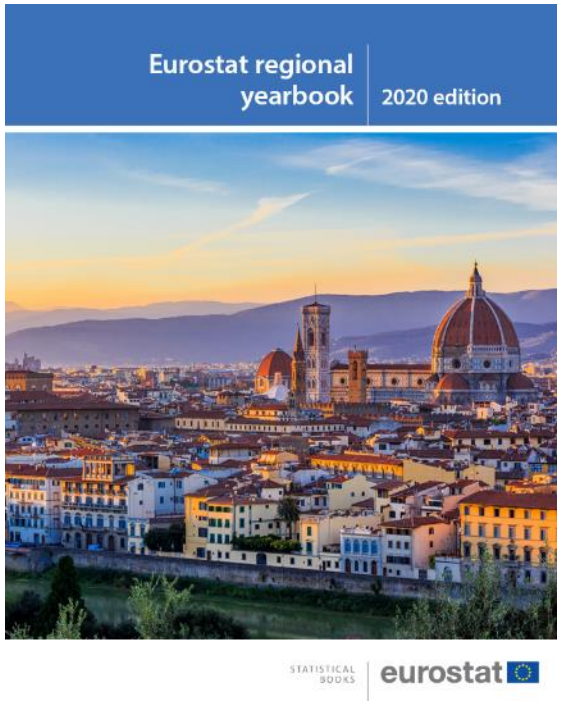
LUCAS soil:2009-2018



Smith et al 2021, Global Ecology and Biogeography. https://doi.org/10.1111/geb.13371







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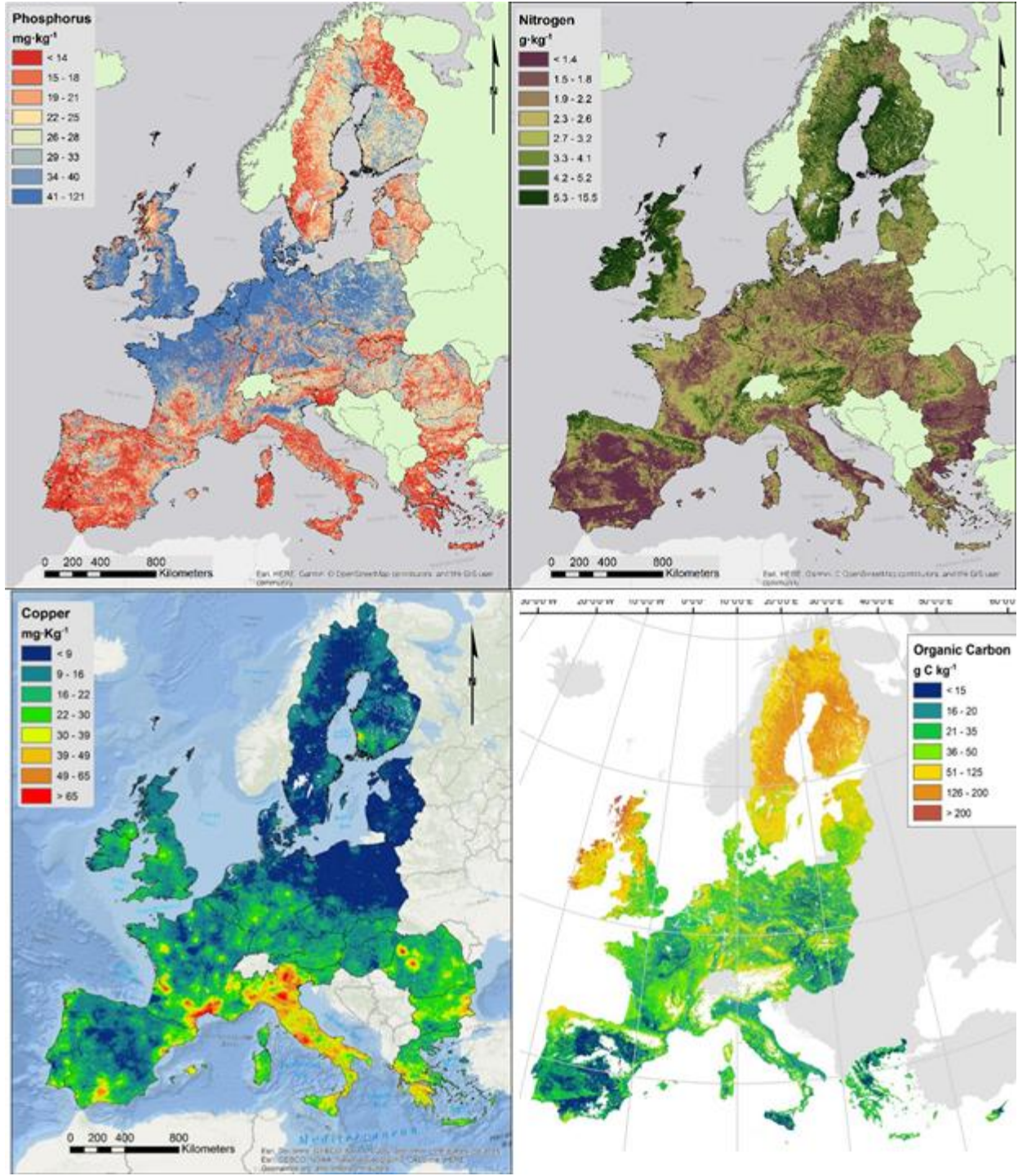
Goal 1: EU-Wide Soil Monitoring

From monitoring chemical, physical and biological soil properties to modelling the spatial distribution of soil properties in the EU

- Coarse fragments
- particle-size distribution (clay, silt, sand)
- pH
- Organic carbon
- Carbonate content
- Total nitrogen content
- Extractable potassium content
- Phosphorous content
- Cation exchange capacity
- Electrical conductivity
- Heavy Metals
- Multispectral properties
- Pesticides (90 substances)
- Neonicotinoid insecticides
- Fungicides (e.g. copper in soils)
- Herbicides
- Antibiotics
- Soil Biodiversity



Soil in LUCAS 2022

Intensive discussion within EC ‘land community’ – during lockdown!

Key developments

- Meet increasing policy needs
- Supporting the needs of external users - Collaboration with Member States
- Questions regarding sampling framework of Soil module
- Updates to field sampling protocol

https://esdac.jrc.ec.europa.eu/public_path/u891/Proposal_paper_for_LUCAS2022_Soil-Final_xPUBSY.pdf

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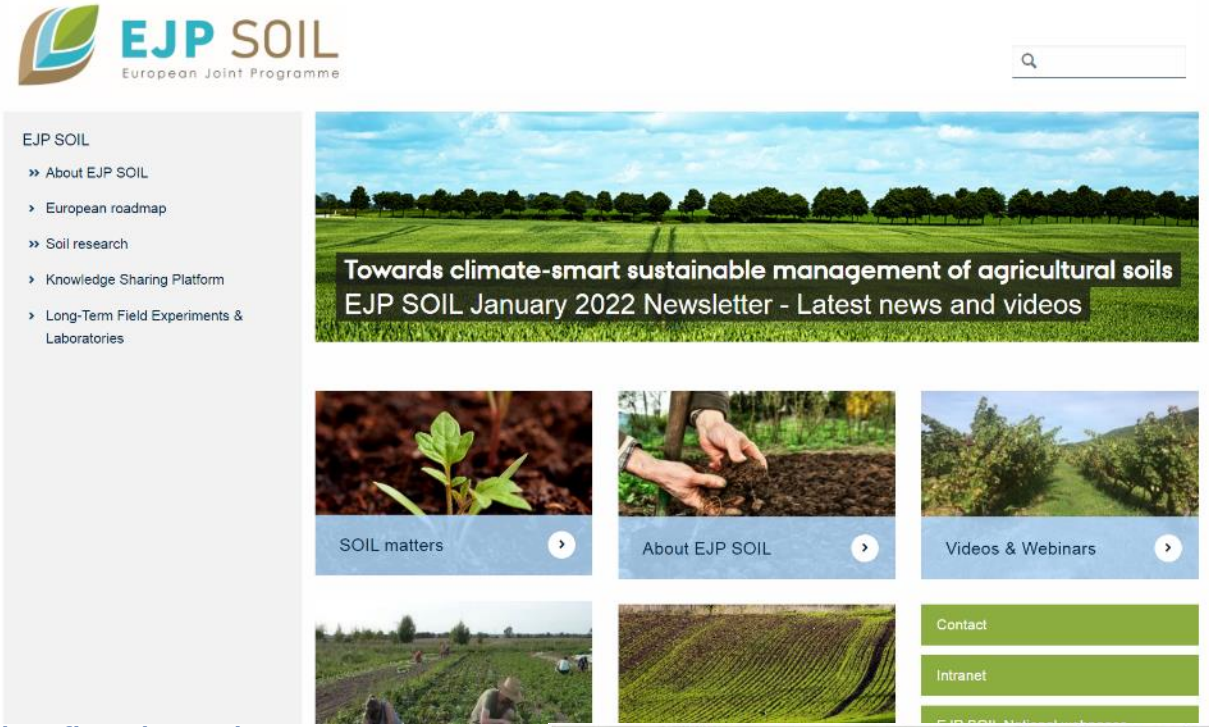
Collaboration with Member States

European Joint Programme on Agricultural Soils (EJP-Soil)

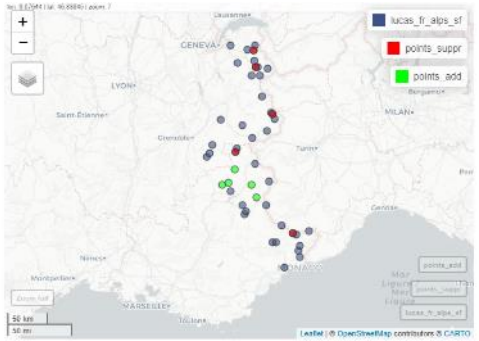
- Formal collaboration between EC and MS (€80 million)
- Harmonise LUCAS with MS monitoring systems

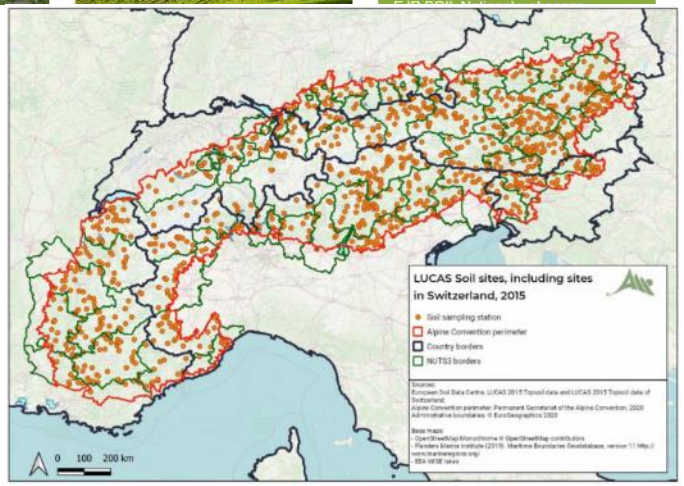
Alpine Convention Soil Information System

- Adopted LUCAS as a model for harmonized monitoring
- Alpine region under represented in LUCAS



- Invitation to propose some LUCAS GRID coordinates as part of the fixed pool
- No restrictions other than accessibility
- c. 550 locations specified for AT, BE, DE, EE, FR, IT, LV & SK



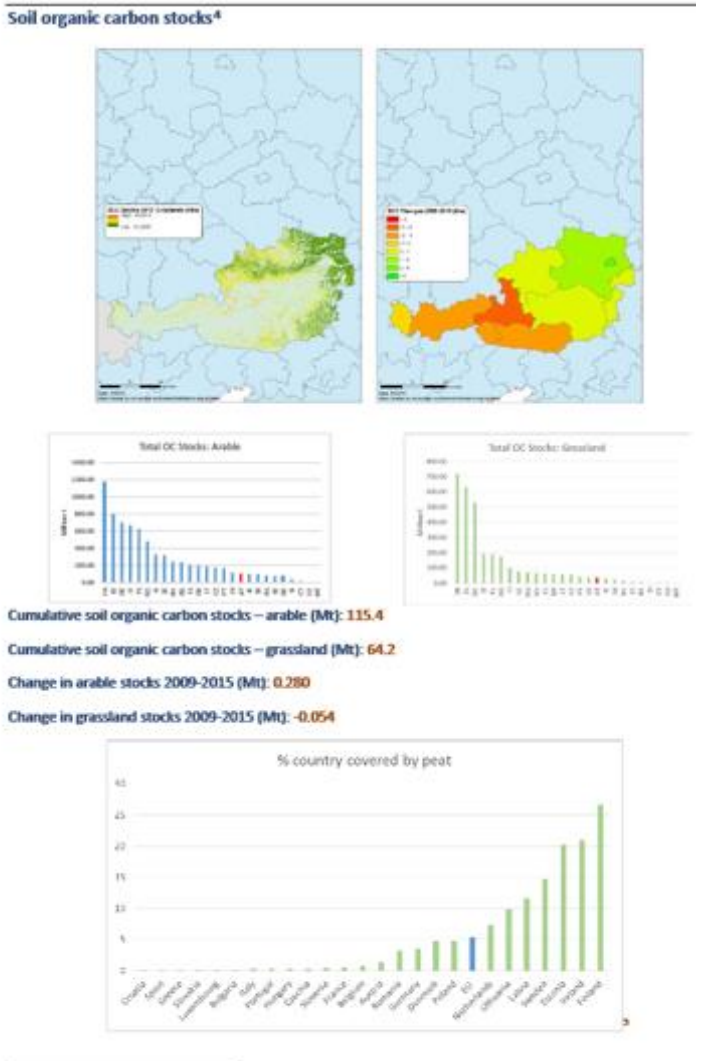


EU Soil Observatory

- Integrated soil monitoring system for EU

A EU Soil Indicator Dashboard: Indicators for Policy Options and Reporting

- EU Soil Thematic Strategy
- Common Agricultural Policy
- Zero Pollution Action Plan
- Circular Economy Action Plan
- Farm to Fork Strategy
- Climate Action
- EU Biodiversity Strategy
- SDG's Goals and Targets
- ……



[4] Panagos et al 2020. Soil-related indicators to support agri-environmental policies
[5] Tanneberger eta al 2017. The peatland map of Europe. DOI: 10.19189/MaP.2016.OMB.264

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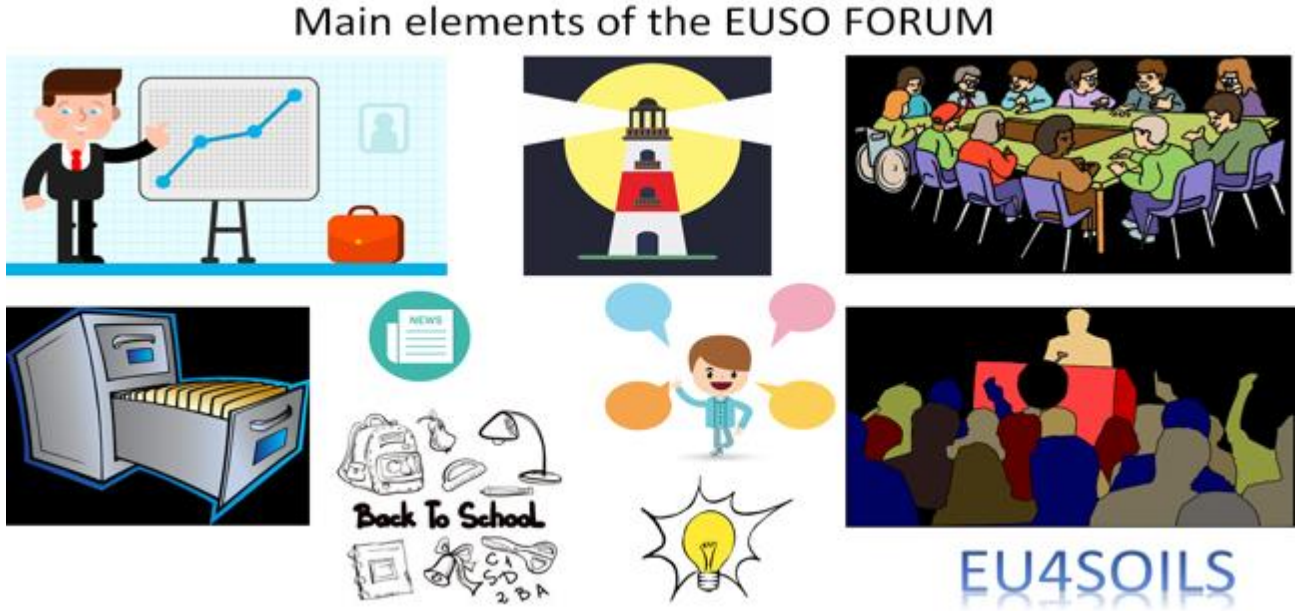
EUSO Goal 5: Scientific Debate & Citizen Engagement

- Inclusive and open to all stakeholders:
  - **Relevant Commission Services**
  - **European Agencies**
  - **International Organizations**
  - **Member States representatives**
  - **Farming Associations**
  - **Industry representatives**
  - **NGO's**
  - **Interested citizens**



- **Stakeholder Forum: 19-21 October 2021**

  https://ec.europa.eu/jrc/en/event/other-event/euso-stakeholders-forum

- Setup of dedicated **Working Groups** on specific scientific and policy questions

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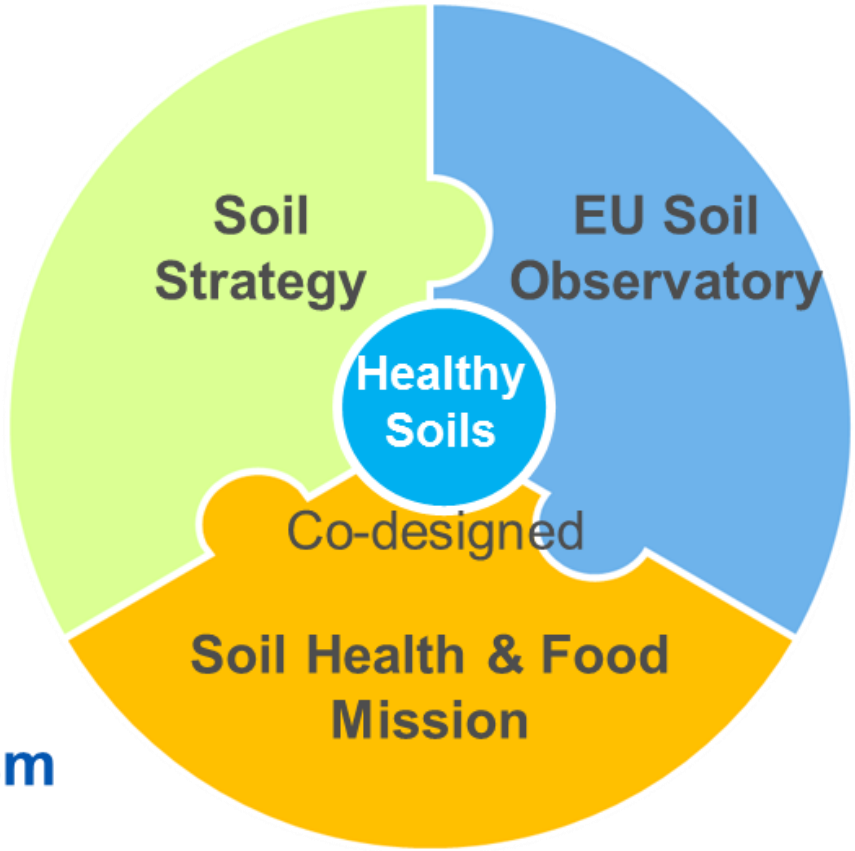
Conclusions

Policy framework for action



Long-term reservoir of soil data and information

Funding and coordination mechanism

https://ec.europa.eu/environment/publications/eu-soil-strategy-2030_en

Thank you for your attention!

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EU SOIL OBSERVATORY

https://ec.europa.eu/jrc/en/eu-soil-observatory