



# Soil at the JRC

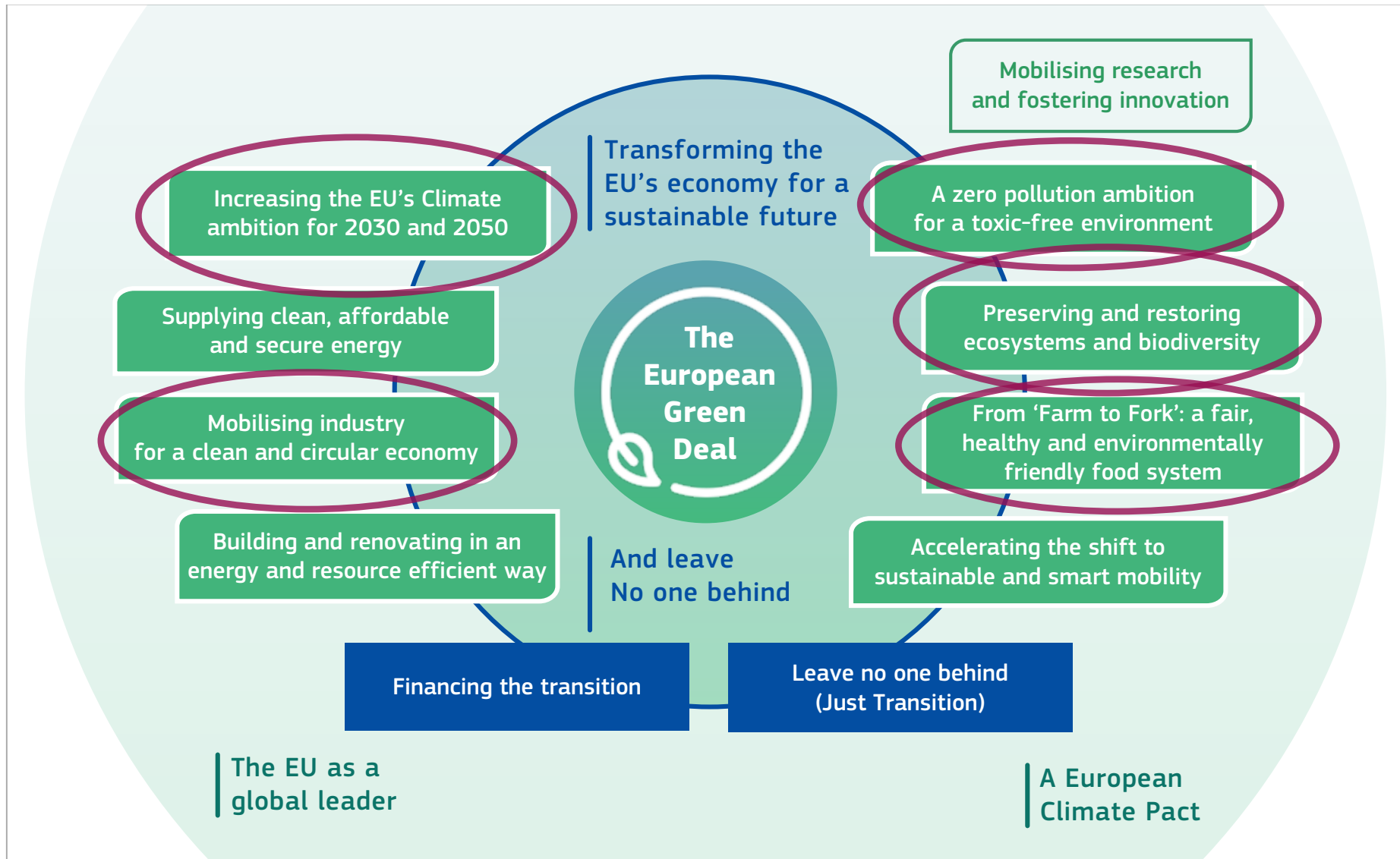
Healthy soils for healthy food, people, nature and climate  
within the European Green Deal

*Arwyn Jones, EC Joint Research Centre*

*EIONET-SOIL 18<sup>th</sup> June 2021*



# Soils are a cross-cutting theme within the **European Green Deal**



# Soils in Horizon Europe and Missions



# Soil at the JRC: 2021-2022




- Green Deal in WB
- SOLACE Exploratory Research (Cancer & Soil Pollution)

EJP SOIL, GSP/ESP, LEX4BIO, Alpine Convention, SOIL-BON, ESA WORLDSOILS, SMS.....

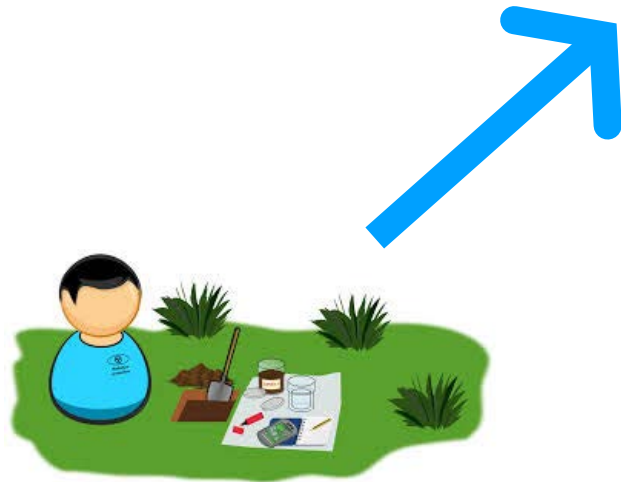
# Launch event to celebrate World Soil Day 2020



**EU SOIL**  
OBSERVATORY

 @EU\_ScienceHub #EUsoil

# EU Soil Observatory Goal 1: An EU-Wide Soil Monitoring System

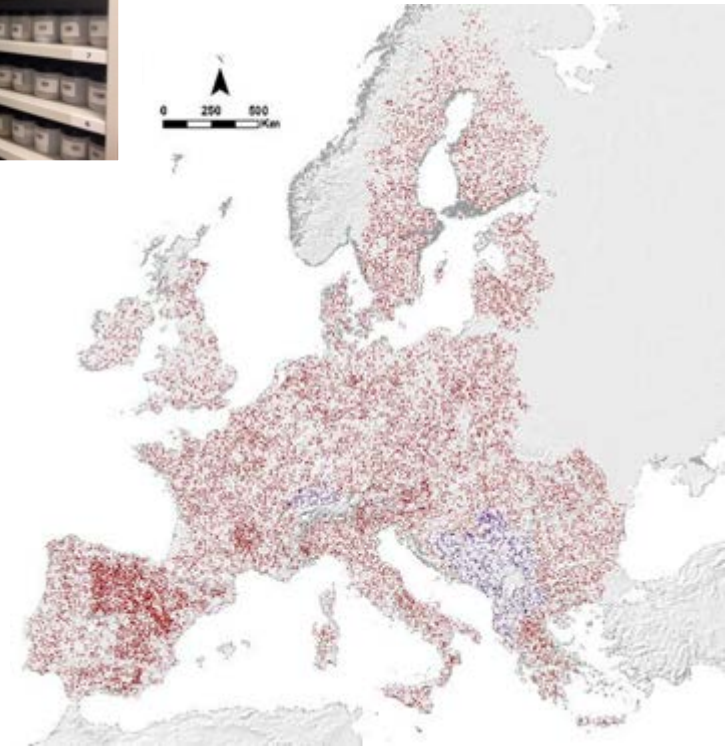


Goal 1: EU-Wide Soil Monitoring

# Goal 1: EU-Wide Soil Monitoring



From LUCAS (40,000 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

- Full integration of National soil monitoring systems
- LUCAS SOIL Pollution & Biodiversity Modules

## IACS – two-way data sharing

# LUCAS SOIL - update

**2009/2012**

Most accessed JRC data collection!

**2015**

- Laboratory analysis, spectral dataset, environmental descriptors – publically
- Western Balkan dataset – late 2021

**2018**

- Laboratory analysis completed – data available July-August
- DNA sequenced – genomic metabarcoding ongoing (AMR: end 2021)
- Pesticide residues – 2022

**2022**

- Increase to 41,000 locations (core analysis+, SOC stocks for croplands at NUTS2) – engagement with MS
- Higher elevations (Alpine Convention) > 120 points above 1500m
- Sampling to 30 cm + litter in woodland
- x2 soil biodiversity sites

Data available from ESDAC  
<https://esdac.jrc.ec.europa.eu>

## Future actions

- Zero Pollution Module
- Integration with MS
- Beyond EU





# EU Soil Observatory Goal 2: A stronger European Soil Data Centre



**Goal 1: EU-Wide Soil Monitoring**

Expanding the already existing databases in ESDAC by integrating the data and knowledge available in MS in a fully shared and integrated system: From LUCAS Soil to an Integrated Soil Monitoring System for the EU

# EU Soil Observatory Goal 3: Indicators for monitoring EU Policies



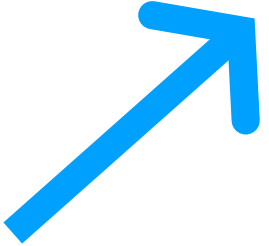
**Goal 3: Monitoring of soil related policies**



Support to policy implementation: Monitoring and indicators for the EU Soil Thematic Strategy



**Goal 1: EU-Wide Soil Monitoring**



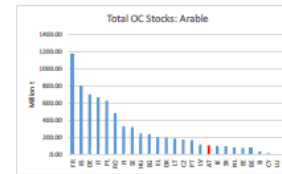
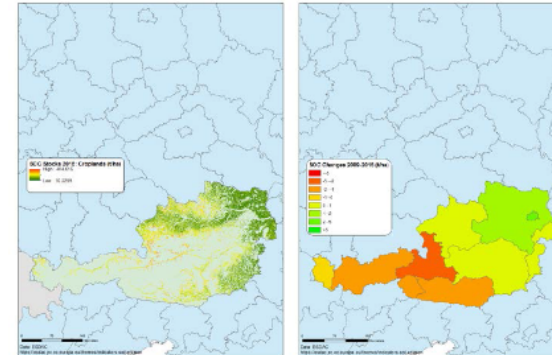
# A EU Soil Indicator Dashboard: Indicators for Policy Options and Reporting



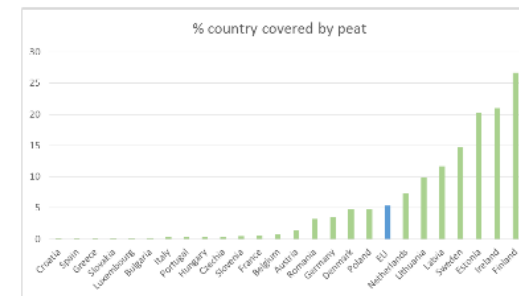
- Soil Strategy
- Biodiversity Strategy
- Zero Pollution Action Plan
- Common Agricultural Policy
- Farm to Fork Strategy
- Circular Economy Action Plan
- Climate Action
- SDG's Goals and Targets
- .....

Conceptual development ongoing

Soil organic carbon stocks<sup>4</sup>



Cumulative soil organic carbon stocks – arable (Mt): **115.4**  
 Cumulative soil organic carbon stocks – grassland (Mt): **64.2**  
 Change in arable stocks 2009-2015 (Mt): **0.280**  
 Change in grassland stocks 2009-2015 (Mt): **-0.054**



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

# EU Soil Observatory Goal 4: Support to Research and Innovation

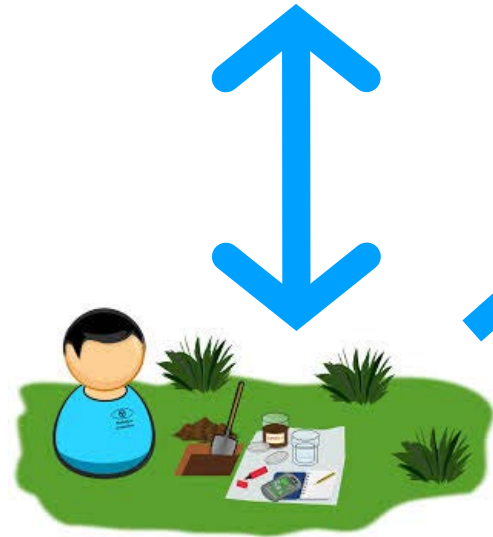


**Goal 4: Support to Research & Innovation**



**Goal 3: Monitoring of soil related policies**

Support to policy implementation: Monitoring and indicators for the EU Soil Thematic Strategy



**Goal 1: EU-Wide Soil Monitoring**



**Goal 2: A stronger European Soil Data Centre**



**Goal 3: Monitoring of soil related policies**

Support to policy implementation: Monitoring and indicators for the EU Soil Thematic Strategy

# Goal 4: Support to Research & Innovation

## SMS Project

- Implementation of Mission LL & LH
- Strategic Research Agenda
- Horizon 2020 & Europe Knowledge Hub



# EU Soil Observatory: An open and inclusive Forum

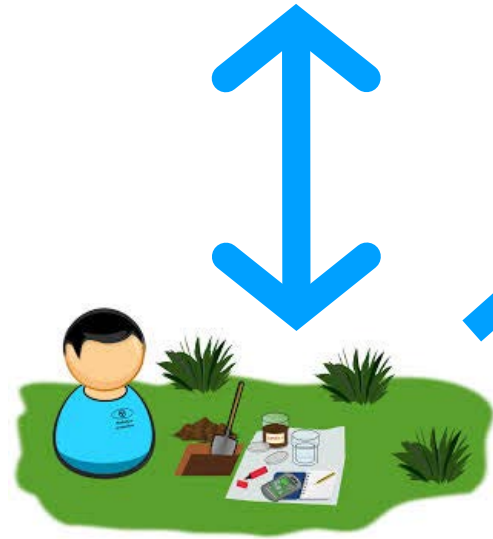


**Goal 4: Support to Research & Innovation**



**Goal 3: Monitoring of soil related policies**

Support to policy implementation: Monitoring and indicators for the EU Soil Thematic Strategy



**Goal 1: EU-Wide Soil Monitoring**

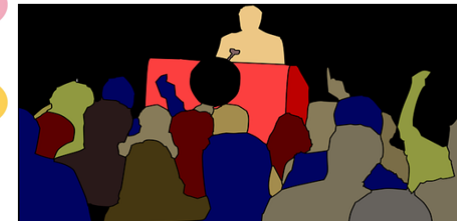
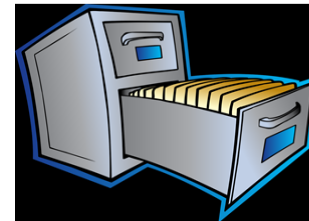


**Goal 5: Provide an European Soil Forum**

# The Forum: Scientific Debate & Citizen Engagement



Main elements of the EUSO FORUM



EU4SOILS

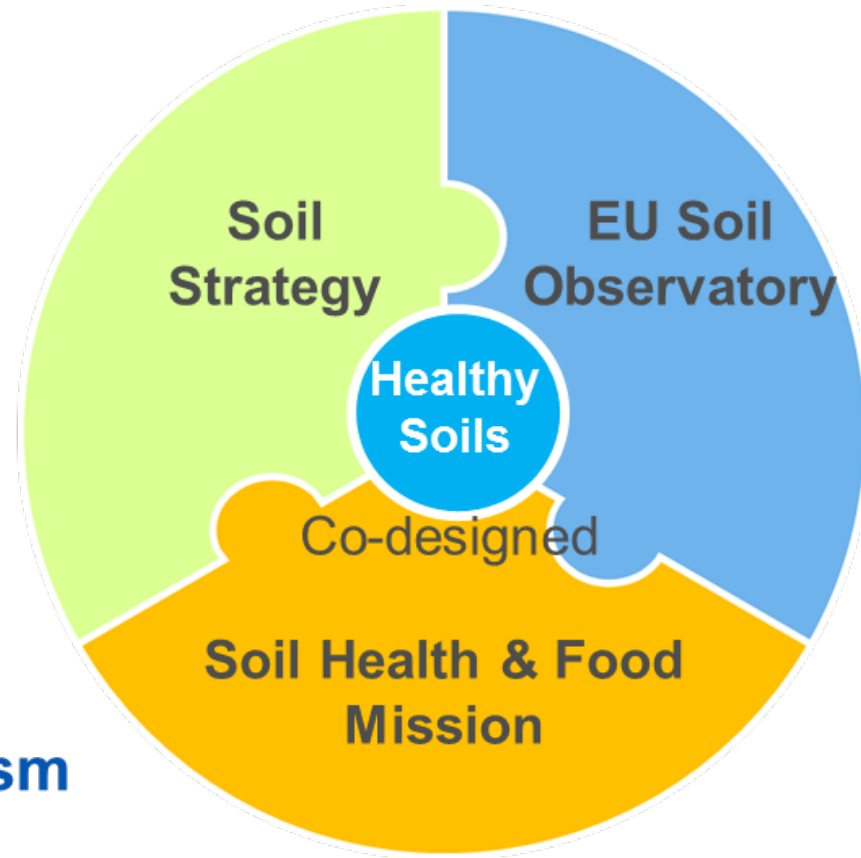
- Inclusive and open to all stakeholders:
  - Relevant Commission Services
  - European Agencies
  - International Organizations
  - Member States representatives
  - Farming Associations
  - Industry representatives
  - NGO's
  - Interested citizens

- Setup of dedicated **Working Groups** on specific scientific and policy questions
- Enhanced soil literacy platform EU4SOIL?
- Implementation and Outcomes of Living Labs & Lighthouses from the Mission
- **Stakeholder Forum: Autumn 2021**



**Policy framework for action**

**Funding and coordination mechanism**



**Long-term reservoir of soil data and information**

# Conclusions

- The **EU Soil Observatory** fills a gap by providing the **policy relevant and harmonized EU-wide soil data and indicators** in support of the new **European Green Deal** and the **Mission on Soil Health and Food**
- Integrate **JRC and National soil monitoring activities** in a coherent and fully shared joint system
- It provides an **open and inclusive Forum** for discussion
- Stay tuned on the next steps on the dedicated web site:  
**<https://ec.europa.eu/jrc/en/eu-soil-observatory>**

Thank you for your attention!

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