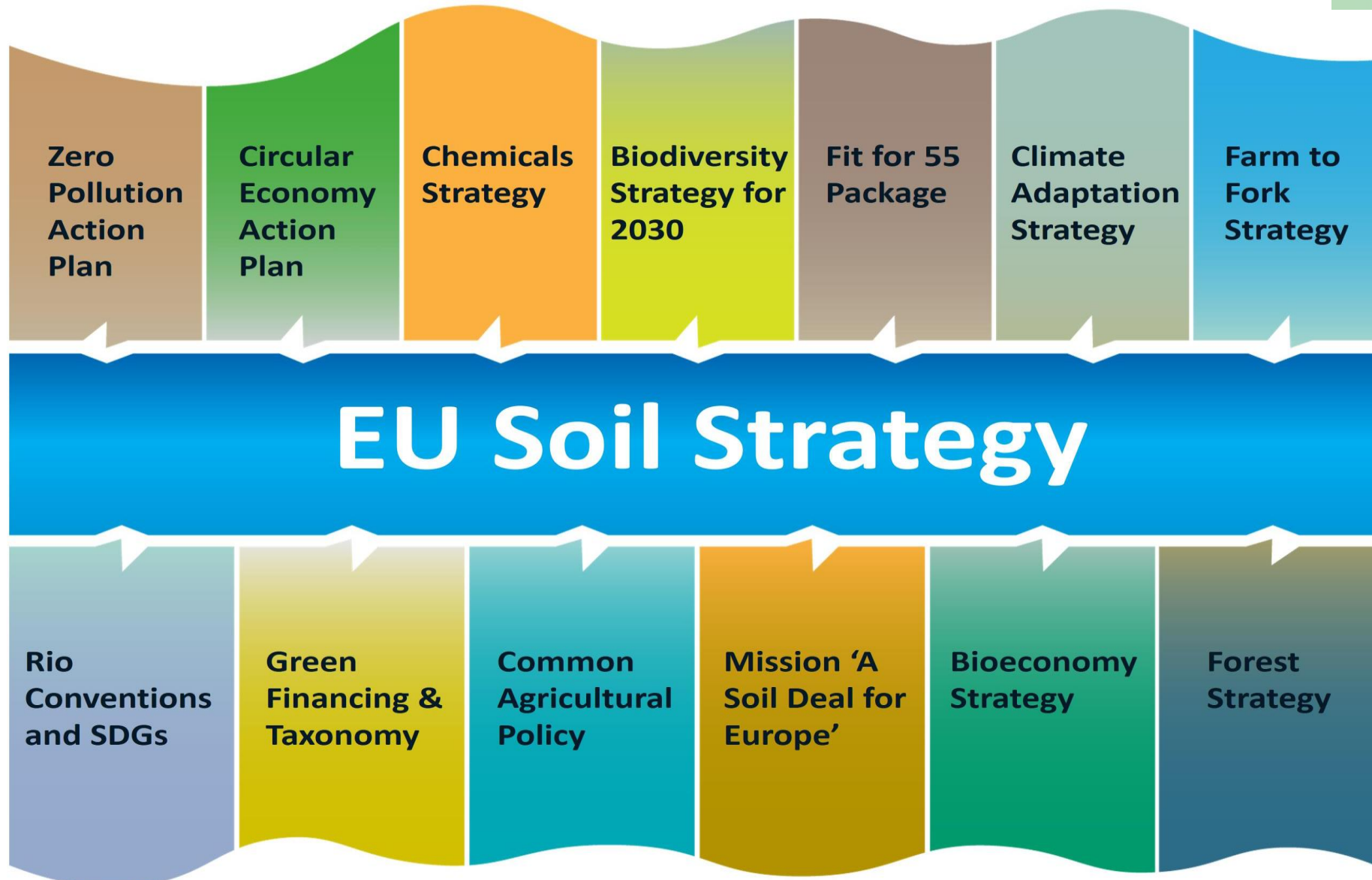


# The European Soil Data Centre (ESDAC) 2.0 evolution in the core of EU agro-environmental policies

*Dr. Panos Panagos*

European Commission  
Joint Research Centre (JRC)  
Directorate D Sustainable Resources

# Soil is cross cutting within many policy initiatives



November 2021

# Proposal for a Directive on Soil Monitoring and Resilience (Soil Monitoring Law, 5 July 2023)

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.



**Monday 21<sup>st</sup> of October 2024**

**09:30 – 12:30: Soil Monitoring Law: Status and prospects**

*Moderator: Panos Panagos (JRC, European Commission)*

*Scope: Soil Monitoring Law: Status and prospects*

start	end	title	presenter
09:30	09:35	Welcome and opening of the EUSO Stakeholders Forum	Panos Panagos (JRC, EC)
09:35	09:45	Soils in the EU Strategic Agenda 2024-2029	Alessandra Zampieri (JRC, EC)
09:45	10:30	SML: Status and prospects	Mirco Barbero (DG ENV, EC)
10:30	11:00	EUSO's support to the implementation of the SML	Arwyn Jones (JRC, EC)
11:00	12:00	Q&A	





# Roll-out of the Soil Mission

## WP 2021

Topics on e.g.  
soil monitoring and  
soil health indicators,  
businesses models  
for soil health, link  
between soil health  
and food quality and  
safety

Budget: 67 M€  
**11 projects**

## WP 2022

Topics on e.g.  
remediation  
strategies for  
contaminated sites,  
soil biodiversity,  
use of biowaste for  
soil improvement,  
carbon farming

Budget: 95 M€  
**17 projects**

## WP 2023

Topics on e.g. **Living Labs**  
(incl. carbon farming), on-site  
digital tech to monitor  
nutrients/chemical/biological  
stressors in soil and plants, soil  
friendly practices in horticulture,  
combat desertification

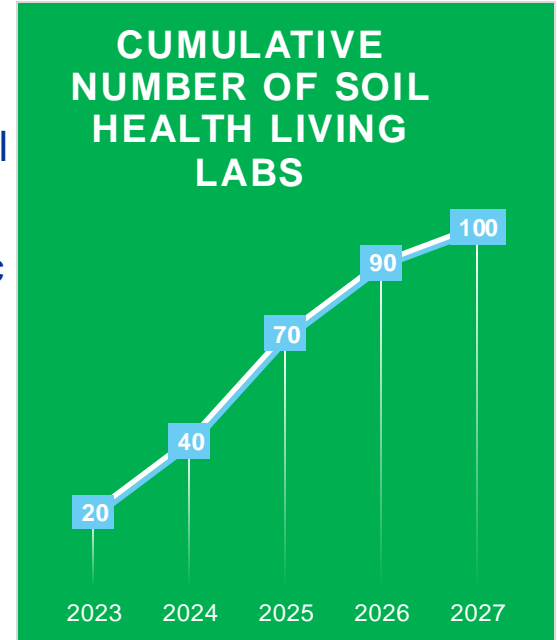
Budget: 139 M€  
**+19 projects expected**

## WP 2024

Topics on e.g.  
**Living Labs** soil  
erosion, nitrogen,  
carbon farming, etc

Deadline 7.10.24

Budget: 135 M€  
**+15 projects  
expected**



Phase 1 (2021-2024)  
Induction and pilot

Phase 2 (2025-2026)  
Gradual expansion

Phase 3 (2027-)  
Scaling-up  
and mainstreaming



# The EU Soil Observatory (EUSO)

KNOWLEDGE FOR SOIL POLICY



EU-wide soil monitoring



Monitoring soil health  
and policies



Research & Innovation



EUSO Stakeholder Forum



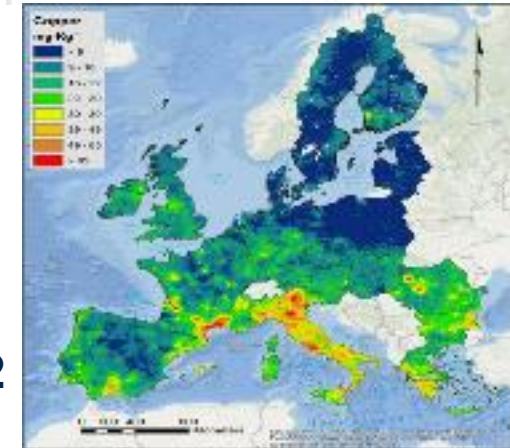
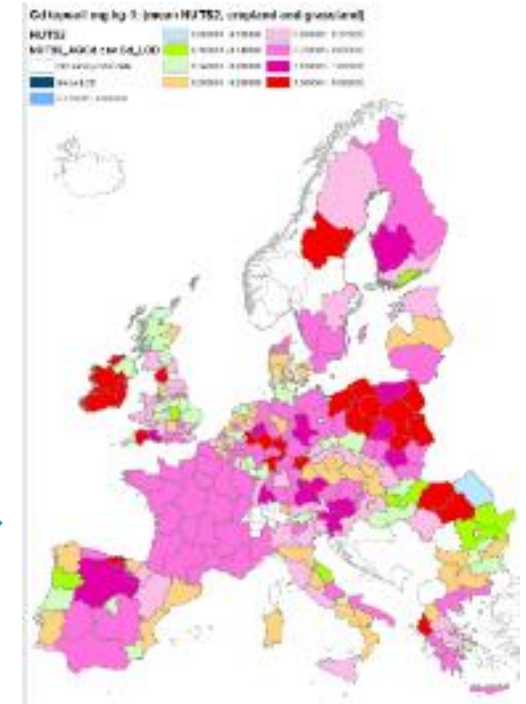
Stronger European Soil Data Centre (ESDAC)



# LUCAS SOIL survey

The JRC manages the LUCAS SOIL survey: sample design, measurement protocols through integrated analysis and monitoring, training of surveyors

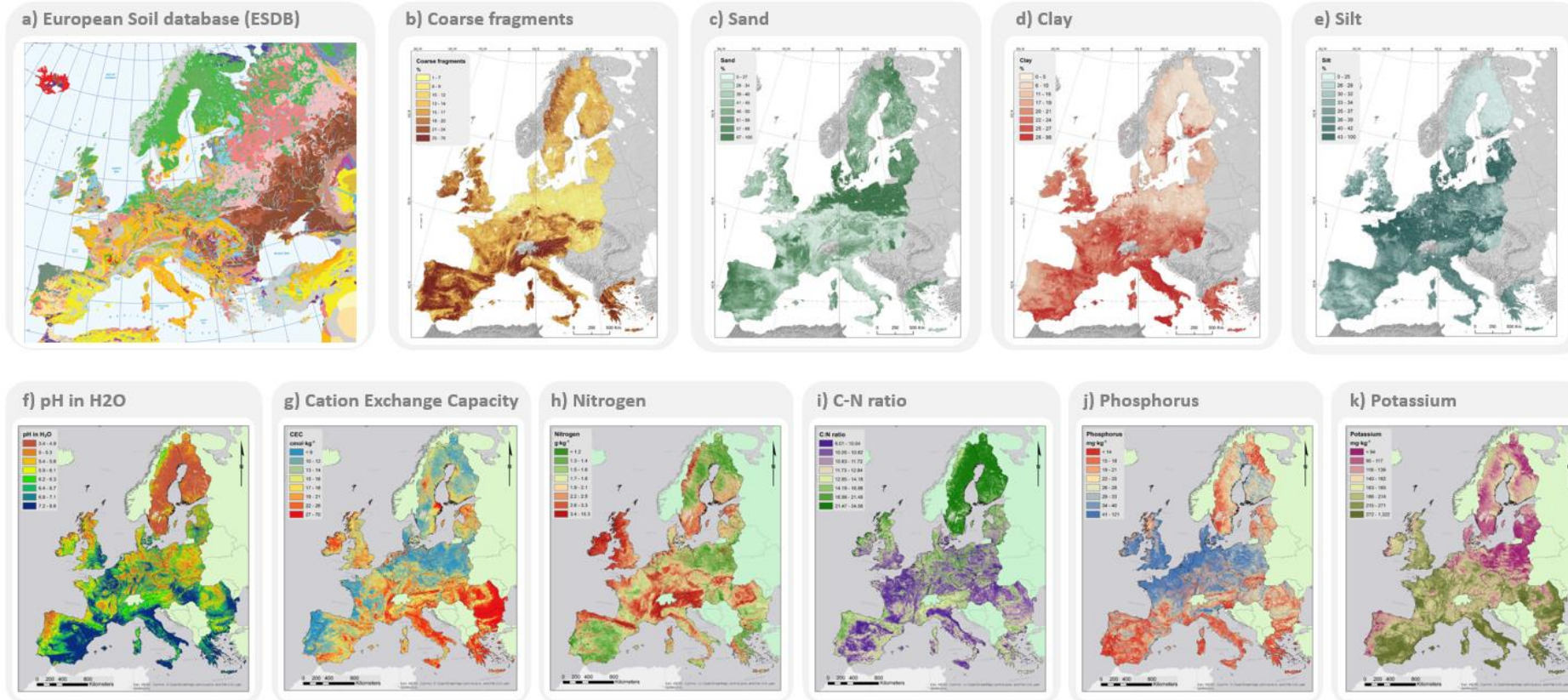
## EU-wide soil monitoring



- Surveys (and the resulting data) span multiple years 2009, 2015, 2018, 2022
- 40,000 observations
- Soil archive at the JRC premises in Ispra (Italy)
- Close cooperation with Member States



# European & Global soil datasets



- *European Soil Database*
- *Soil point data (LUCAS) 2009-2015-2018*
- *Soil Physical properties*
- *Soil Chemical properties*
- *Soil functions*
- *Soil threats*

# From ESDAC to ESDAC 2.0

2012 – 2024

*Immense progress*

*ESDAC at the core of EU soil policies*

*Order of magnitude in data/users*

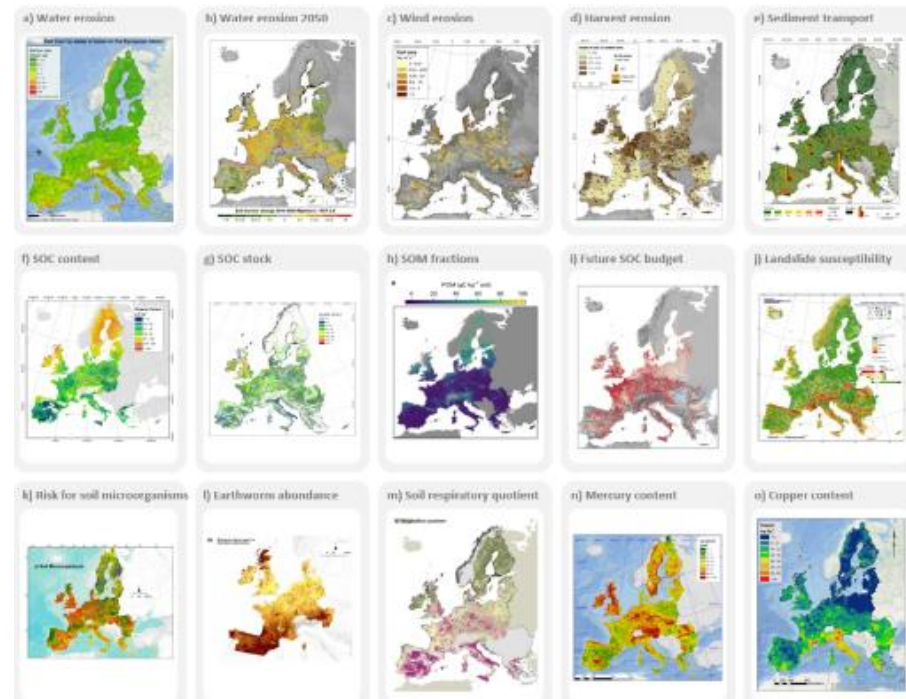


Land Use Policy  
Volume 29, Issue 2, April 2012, Pages 329-338




European Soil Data Centre: Response to European policy support and public data requirements


Panos Panagos  , Marc Van Liedekerke, Arwyn Jones, Luca Montanarella



European Journal of **Soil Science**

DATA ARTICLE |  Full Access

European Soil Data Centre 2.0: Soil data and knowledge in support of the EU policies

Panos Panagos , Marc Van Liedekerke, Pasquale Borrelli, Julia Köninger, Cristiano Ballabio, Alberto Orgiazzi, Emanuele Lugato, Leonidas Liakos, Javier Hervas, Arwyn Jones, Luca Montanarella

First published: 13 October 2022 | <https://doi.org/10.1111/ejss.13315>



# ESDAC within EUSO and European Commission



- ESDAC is **part** of the European Soil Observatory (EUSO)
- First release in 2006
- **Main focal point for soil data**, support to policy making and awareness raising for the European Union.

# ESDAC : What makes the difference?

- A one-stop hub for soil data at EU-scale with a long-term commitment by JRC
- it is providing EU and European-wide datasets, and associated documentation
- Permanent and timely active helpdesk, continuous updates and news (Newsletters)
- wide audience; mailing lists (for ESDAC and EUSO) most visited website in JRC
- Data are FAIR (findable: try Google "European soil data etc"!)

JOINT RESEARCH CENTRE  
EUROPEAN SOIL DATA CENTRE (ESDAC)

EUROPEAN COMMISSION > JRC > ESDAC

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Home Newsletters Atlases

**EU SOIL OBSERVATORY**

EUSO

**RESOURCES TYPE**

DATASETS

MAPS & DOCUMENTS

APPLICATIONS & SERVICES

Welcome to the New European Soil Data Centre Portal


The **European Soil Data Centre (ESDAC)** is the thematic centre for soil related data in Europe. Its ambition is to be the single reference point for and to host all relevant soil data and information at European level. It contains a number of resources that are organized and presented in various ways: datasets, services/applications, maps, documents, events, projects and external links. We hope you can find your way in this site. When in doubt or for any question, you may contact [ec-esdac@ec.europa.eu](mailto:ec-esdac@ec.europa.eu)





# ESDAC: How to access the data?

<https://esdac.jrc.ec.europa.eu/>



JOINT RESEARCH CENTRE  
EUROPEAN SOIL DATA CENTRE (ESDAC)

EUROPEAN COMMISSION > JRC > ESDAC > DATASETS > SOIL THREATS DATA

Search

**EU SOIL OBSERVATORY**

EUSO

**SOIL DATA**

DATASETS

MAPS & DOCUMENTS

APPLICATIONS & SERVICES

**SOIL KNOWLEDGE**

THEMES

NETWORKS & COOPERATIONS

PROJECTS

**UPCOMING EVENTS**

23/May/2022EGU General Assembly 2022  
to  
27/May/2022

**HIGHLIGHTS**

**13 APR 2022** Post-fire soil erosion map for Portugal: contains the results of a study that mapped post-fire soil erosion in Portugal

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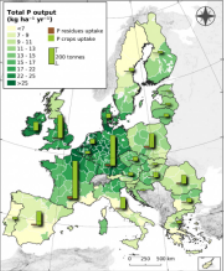
## Phosphorus plant removal

Phosphorus (P) plant removal is the amount of P removed by crop harvesting and plant residues. We provide shape files with assessments at EU, National and regional scale.

**Resource Type:** [Datasets](#)  
[Soil Threats Data](#)

**Year:** 2022

**Registration is requested:** Yes



**Description** **Request Form**

**email \***

**First and Last Name \***

**Organisation \***

**Purpose for which the data will be used (min 30 characters) \***

☐ Subscribe to ESDAC Monthly newsletter

**Type of Organisation \***

☐ Private Company

☐ Research Organization

☐ University

☐ Public Administration (Ministries, Agencies, Municipalities, ...)

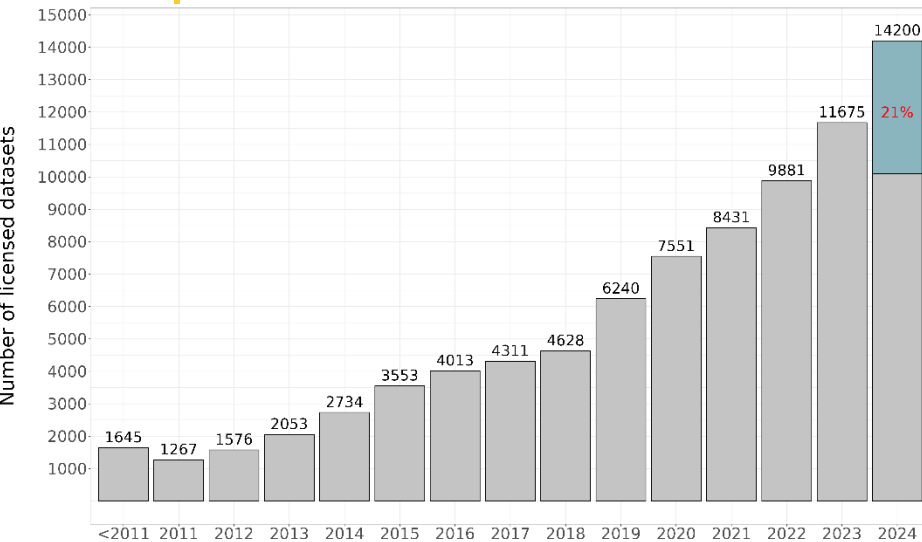
☐ Other (specify)

**Country \***

- Select a value -

- Easy way to get the data
- Helpdesk  
[EC-ESDAC@ec.europa.eu](mailto:EC-ESDAC@ec.europa.eu)
- Metadata
- Documentation & publication
- Dissemination through our networks

# ESDAC in numbers



**JOINT RESEARCH CENTRE**  
**EUROPEAN SOIL DATA CENTRE (ESDAC)**

ESDAC: <http://esdac.jrc.ec.europa.eu> ESDAC Newsletter No 145 (September 2022)

**Phosphorus budget and P stocks**

We estimate the Phosphorus (P) budget from agricultural lands of EU and UK (ca. 173 million ha). This takes into account the P inputs (fertilizers, manure, chemical weathering, atmospheric deposition) and the P outputs (crop production, plant residues removal, losses by erosion) for the period 2011–2019. The P budget and the P inputs/outputs are available at NUTS2 (Regional scale) and country scale. In addition, we estimate the P displacement and losses due to water erosion at catchment scale and aggregate them at sea outlet. We make also the datasets for both Total P and Available P (Olsen) concentration and stocks available. More details of the empirical model is given in the [published study](#). Data available: <https://esdac.jrc.ec.europa.eu/content/phosphorus-budget-and-p-stocks>

**Second EUSO Stakeholders Forum, 24–26 October 2022**

The 2nd EU Soil Observatory (EUSO) forum will be a 3-days event in October. The first day will deal with "Recent EU policy developments in soil". The second day will discuss the concept of Soil Health Districts, and discuss the EUSO engagement with the Mission "A Soil Deal for Europe". The third day will be dedicated to look at the work done in the EUSO Technical Working Groups. The event is virtual and open to the public; it will also be broadcasted. Interested in an account of what EUSO accomplished during its first year since its start? JRC prepared the [EUSO 2021 review report](https://ec.europa.eu/eusurvey/runner/EUSOFORUM2022). You can register your participation here: <https://ec.europa.eu/eusurvey/runner/EUSOFORUM2022>. Find the [draft agenda](#) of the Forum.

**PREPSOIL project**

PREPSOIL stands for Preparing for the 'Soil Deal for Europe' Mission". This EU-funded project will support the implementation of the Soil Mission by creating awareness and knowledge on soil needs among stakeholders in regions across Europe. PREPSOIL will widen the understanding of Living Labs as a vehicle for engaging stakeholders in soil improvements in different land use types (agriculture, forestry, urban, etc.). PREPSOIL will create understanding of how different approaches to soil monitoring may support the transition to sustainable land use; it will engage with soil ambassadors and collect information on soil education by establishing a one-stop-shop for soil literacy, communication and engagement as a state-of-the-art web platform. Project website: <http://www.prepsoil.eu>. JRC will actively participate in all project activities ensuring effective collaboration with EUSO.

<https://esdac.jrc.ec.europa.eu/projects/prepsoil>

**Call for costs of sediments removal**

The EUSO Working group on soil erosion addresses the question on the costs of sediments removal. This WG will develop a study on estimating the off-site costs of soil erosion. Therefore, there is a call for data on the costs of removing sediments from dams, ports, rivers, etc. In case you are aware of studies or reports quantifying the costs of removing sediments (or energy revenue costs due to sedimentation), please contact the WG chair: [panos.panagos@ec.europa.eu](mailto:panos.panagos@ec.europa.eu). The overall objective is to have a pan European estimation of sediments removal. The topic will be also addressed during the WG soil erosion session on 26th October 2022.

Download the ESDAC Newsletter: [PDF Format](#). Feedback: [panos.panagos@ec.europa.eu](mailto:panos.panagos@ec.europa.eu)  
 ESDAC Alerts are e-mailed to 12,400 scientists. Follow us [@EU\\_ScienceHub](#); [@Jultimoalbero](#); [@PanosPanagos33](#)

120 blocks of data  
 80,000 data distributions

Coverage: EU, European or Global  
Format: Point, shape or raster  
Documentation: Metadata, publications, web info

6,000 maps,  
 7 Atlases  
 >600 publications

170 newsletters  
 12,000 followers/subscribers

Top JRC thematic portal with 600,000 unique visitors per year

# Towards ESDAC 2.0

## The European Soil Data Centre (ESDAC)

### Performance



- ✓ 110 datasets
- ✓ over 6,000 maps
- ✓ 600 scientific documents
- ✓ 600,000 visits per year
- ✓ 12,000 data downloads in 2023

### Soil Monitoring Law and the Soil Mission

#### ESDAC 2.0

- ✓ Soil data flows from Member States to EUSO
- ✓ Collect data outputs from the Soil Mission
- ✓ Incorporate products from other technological streams



### Soil digital platform



- ✓ Knowledge, science evidence and EU soil-related policies
- ✓ Update indicators and Soil Health Dashboard
- ✓ Trends on implementation and performance of EU soil policies
- ✓ A first stop shop for all stakeholders in the EU



### Challenges and obstacles

- ✗ Fragmentation of data management in MS
- ✗ Reluctance of data holders to share their data
- ✗ Technical issues

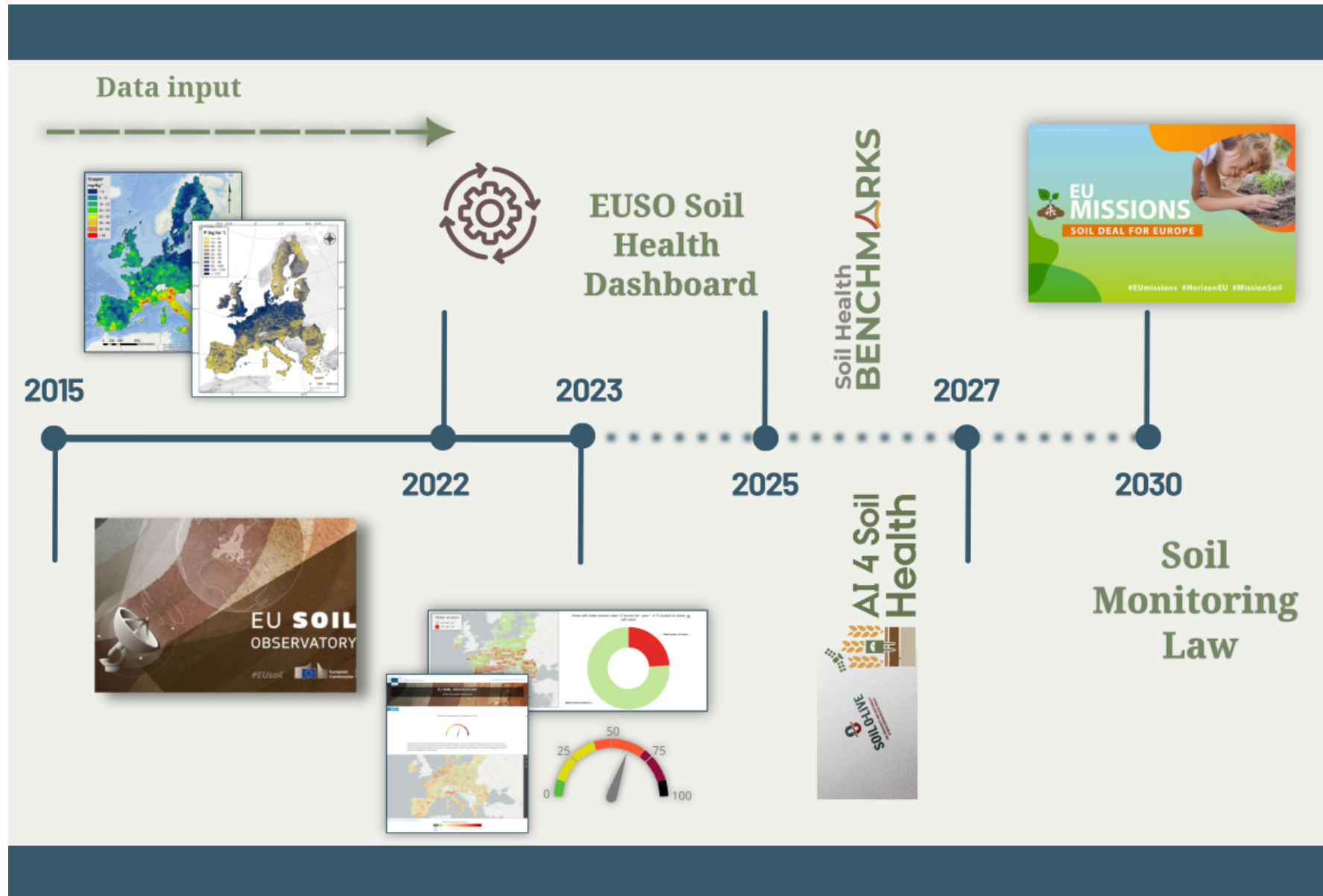




# Framework for Soil Protection in the EU



# ESDAC in 2015 – EUSO in 2030



# Thank you

## Contacts



EU Soil Observatory: <https://esdac.jrc.ec.europa.eu>

[Panos.Panagos@ec.europa.eu](mailto:Panos.Panagos@ec.europa.eu) @PanosPanagos33