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# Requirements for European Soil monitoring system: context and challenges

Soil Monitoring Task Force  
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# Challenges for soil monitoring

## **What do we want to do?**

Understand the condition of soil and assess progress towards healthy soil targets

## **How shall we do this?**

Develop an operational monitoring system that establishes baselines and captures trends in indicators

## **Problem**

Soil monitoring in Europe is largely 'fragmented' and under resourced

# How to monitor?

- Earth Observation (proximal – satellite)
  - pros & cons
    - EEA Imperviousness, ESA WORLDSOILS
    - Cover crops, proxy – radiance to mimic lab techniques
- Field observations (also in-situ for above – crop type)
- Extraction of physical – chemical – biological parameters

# Challenges for soil monitoring

## Soil data reflect:

- Different drivers
- Different baselines
- Different sampling densities
- Different sampling protocols
- Different analytical procedures
- Inter-laboratory variance
- Temporal aspects
- Data harmonisation

## Active v Inactive

Landmark H2020

# Scope of Task Force

## Vision

- Develop a harmonized soil observing system, that populates soil indicators that fulfil the needs of EU, national and international soil-related policies in Europe, involving EEA-39

## Task

- a roadmap towards a harmonized soil observing system involving EEA-39

## Deliverable

- Technical document for discussion (EIONET-SOIL, Expert Group on Soil Protection)

# Objectives & Methods

- Support formal agreement with MS and EU (and model for non-EU)
- Facilitate the exchange of harmonized national data, via INSPIRE
- Explain and improve assessments based on LUCAS SOIL
- Investigate how LUCAS SOIL can support needs of MS
  
- Task Force + EEA + representative Member States organisations responsible for national soil data collection (Denmark, France, Germany, Ireland, Portugal, Romania, Slovenia) + related activities (e.g. ICP Forest).

Review existing knowledge-base & draft concept note

# What has happened

2019

Meeting to agree on ToR and ToC of Report

2020

Launch of EJP Soil (+ COVID!)

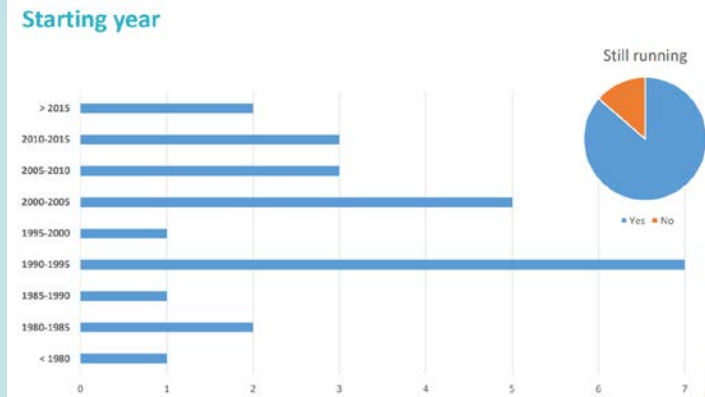
Bilateral contacts on LUCAS SOIL between JRC and EJP SOIL WP6 partners and Alpine Convention Soil Working Group to understand what elements need to be elaborated to design a European soil monitoring system.

# EJP Soil Questionnaire

## Google questionnaire

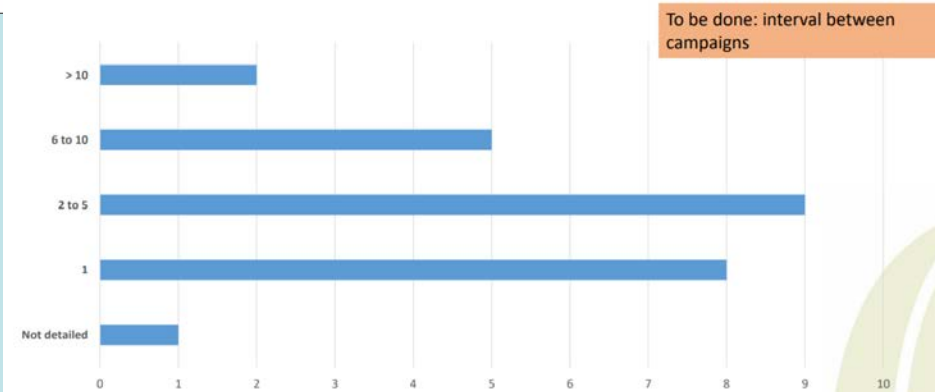
The questionnaire consists of the following 11 parts :

- 1) Institution identification
- 2) SMS short description
- 3) Site information
- 4) Sampling protocol
- 5) Sampling for bulk density
- 6) Soil description
- 7) Soil sample preparation and conservation
- 8) Litter sample
- 9) Analyses and methods (optional)
- 10) Harmonization options
- 11) Collaborations and/or synergies between Member States and LUCAS.



EJP SOIL  
European Union Programme

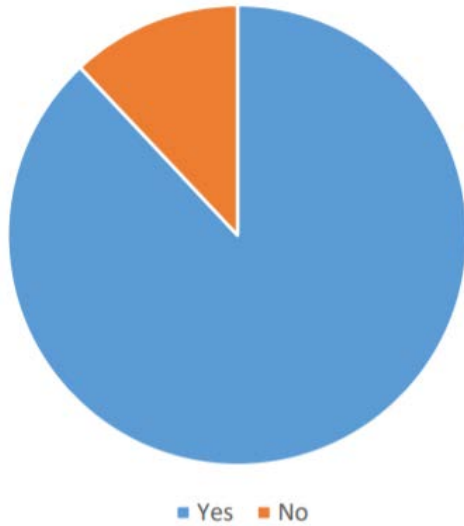
## # campaigns





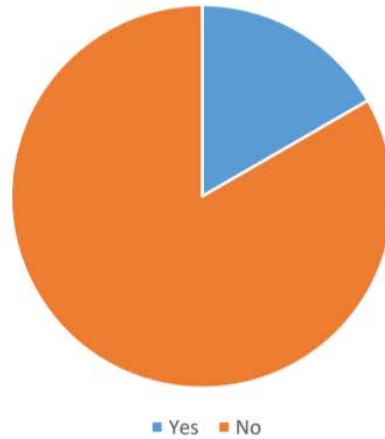
# EJP Soil Questionnaire

New information collected?

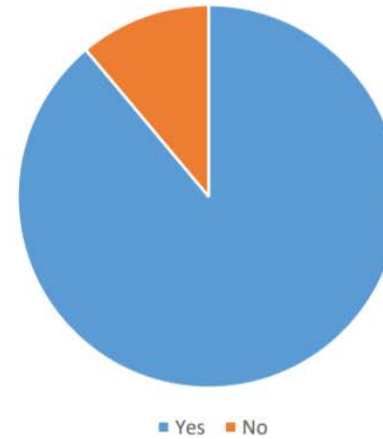


## Collaboration with LUCAS

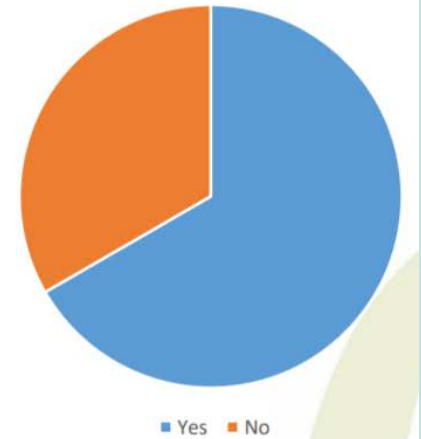
Already collaborate ?



Ready to collaborate ?



Use of LUCAS data ?



Proposal to extend to EEA-39

# What has happened?

## Monitoring needs articulated for several EU policies

- Soil Strategy
- Biodiversity Strategy
- Zero Pollution Action Plan
- Common Agricultural Policy
- Farm to Fork Strategy
- *Circular Economy Action Plan - Sewage*
- LULUCF, Carbon Farming, MRV
- SDG

❖ EEA Integrated Assessments

❖ **Indicator report (thresholds)**

National Perspectives?

EJP SOIL +

# What has happened?

## **EUSO / LUCAS SOIL**

Methodical report for 2022 published (ESDAC)

2022 survey a stepping stone – gain understanding of approach

- Site locations with MS
- Sampling protocol
- Data management

Pollution module

# Proposal

Common Governance Roles – [One Soil Monitoring](#)

Inclusive ownership of processes: EC/JRC, EEA, country (EU/non-EU)

**EUSO WG = Task Force + EJP Soil, SOIL-BON, SMS, ESP 5/INSII....**

## Issues

Better integration of LUCAS and National approaches

Methodical challenges

Indicator development and agreement (soil condition/health targets) – EU/MS

Data flows

Implementation in LUCAS 2025/2026?

# Reflections from TF

# Next steps

Stimulate ideas and solicit feedback from participants  
(today but also by email to Arwyn/Rainer)

Encourage engagement

Version 0 of concept note: end August (including findings of EJP Q)

Meeting of Task Force: end of September/beginning October

Draft to 'NRC' by the end of year