





CONVEGNO FINALE EJP SOIL

Coltivare il Futuro: Scienza, Politica e Innovazione per la Salute e la
Fertilità dei Suoli Italiani

Introduce: Maria Fantappiè, Coordinatore Nazionale EJP SOIL

Programma di Ricerca Europeo Congiunto per il SUOLO

- **Azione cofinanziata:**  un programma di ricerca e innovazione coordinato fra EU & nazioni europee
- **Mass Critica:**  24 paesi, 26 partners (+ 19 terze parti), > 1000 scienziati
- (150 scienziati e tecnici del partenariato italiano)
- **Co-finanziamento pubblico:** 50% EC – 50% istituzioni nazionali europee
- **Programmazione Annuale:** 2020-2025
- **Una vasta gamma di attività:** ricerca ma non solo.

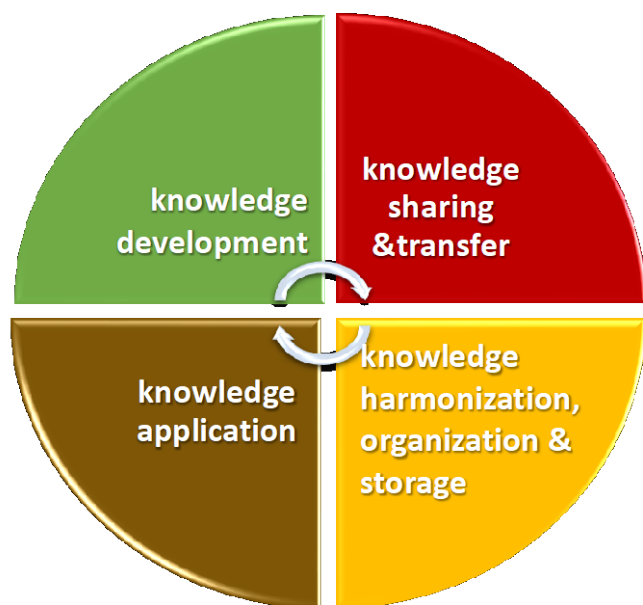


Convegno Finale EJPSOIL, 4 e 5 dicembre 2024, Roma



Verso una gestione sostenibile dei suoli e intelligente in relazione al clima

Ciclo della Conoscenza



Impatti attesi

Sistemi di gestione del suolo per la mitigazione e l'adattamento ai cambiamenti climatici e la produzione sostenibile.

Il sequestro del carbonio nel suolo e il suo contributo alla mitigazione dei cambiamenti climatici.

Rafforzare la ricerca e la cooperazione internazionale.

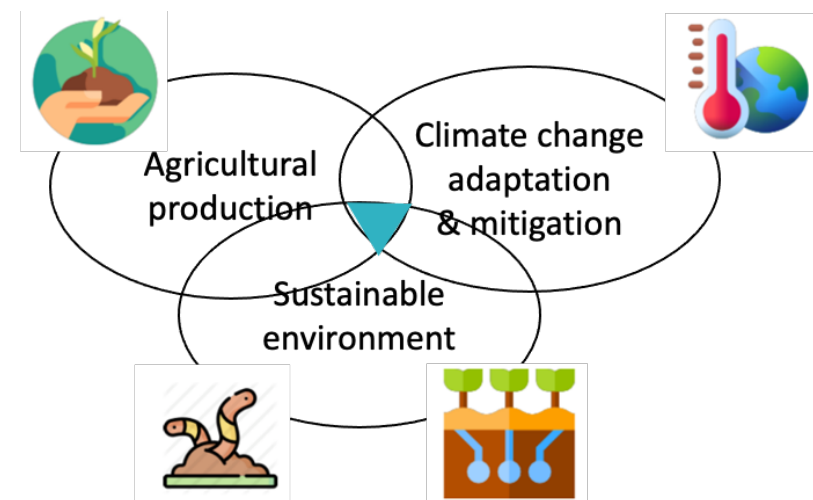
Supportare l'armonizzazione delle banche dati del suolo Europee.

Promuovere l'adozione di pratiche di gestione del suolo climate-smart.

Sviluppare pratiche di fertilizzazione specifiche per ogni regione Europea.

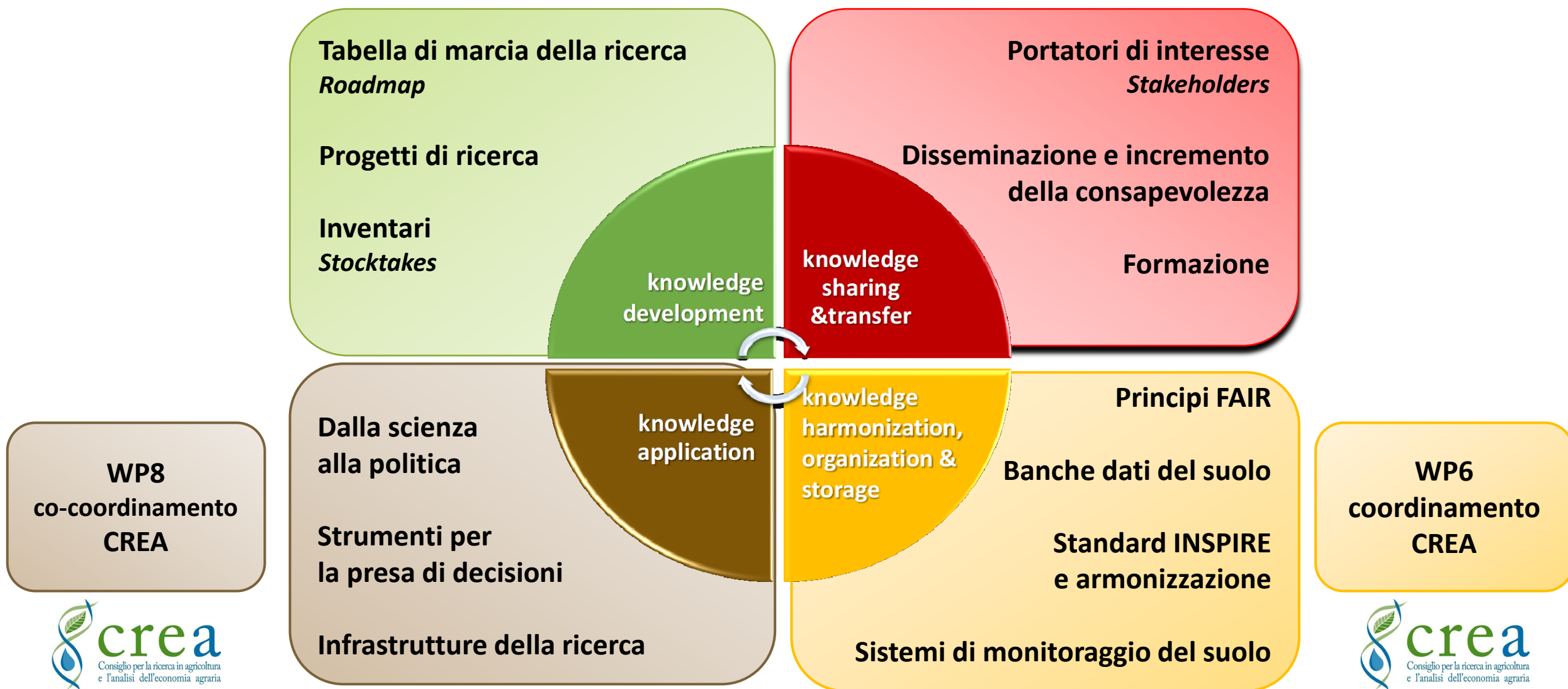
Approccio

Allineamento della ricerca sul suolo nel lungo periodo.



Gli agricoltori sono i tutori del suolo!

IL CICLO DELLA CONOSCENZA

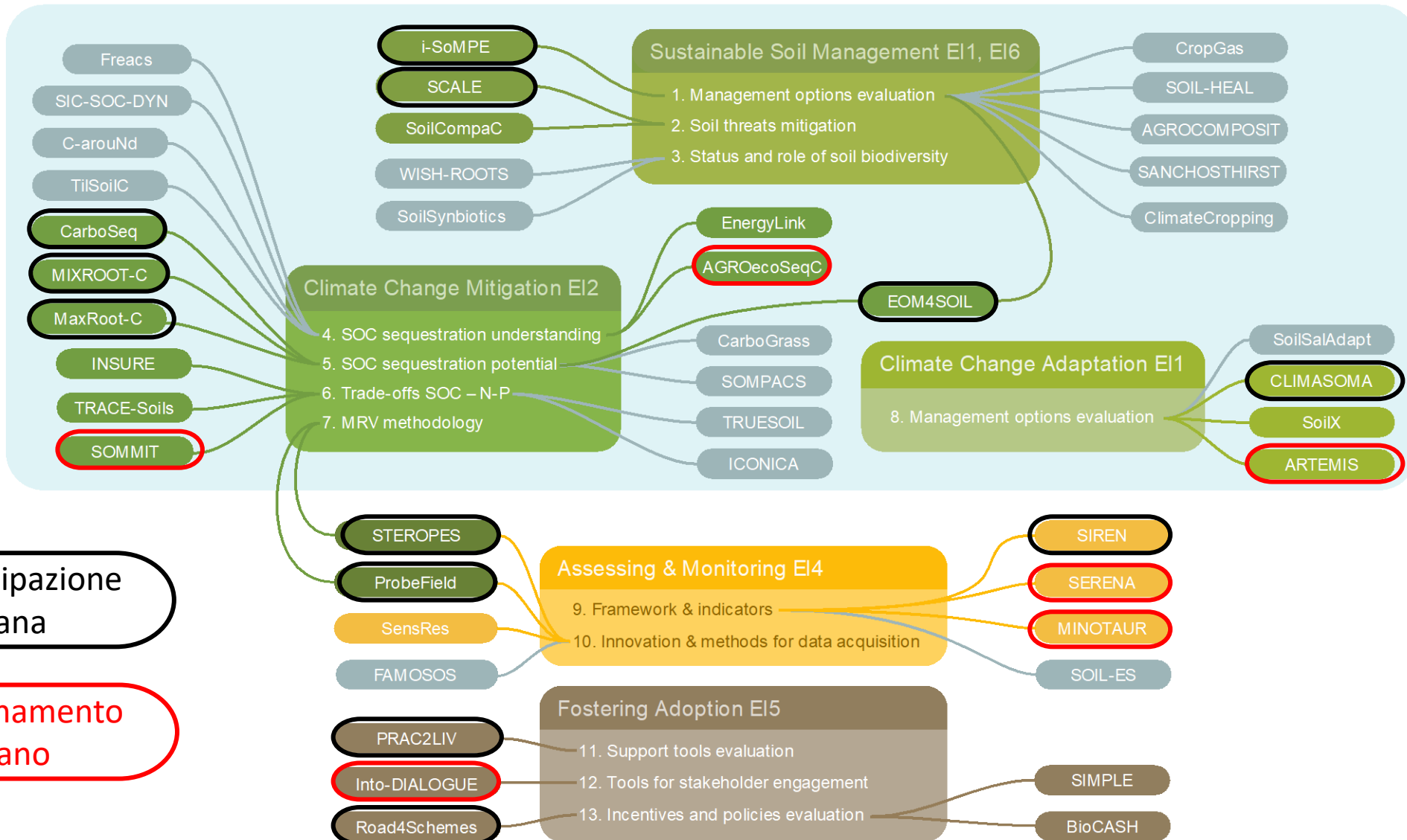


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I PROGETTI DI RICERCA

knowledge
development



18 Partecipazione
Italiana

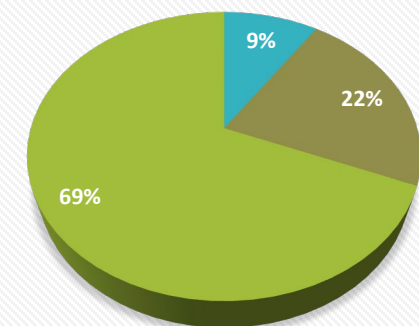
6 Coordinamento
italiano

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PUBBLICAZIONI SCIENTIFICHE

Quartiles	Publications ?	Italy	Publication share (%)	Italy
Q1 (top 25%)	110	27	85.9	84.4
Q2 (26% - 50%)	16	5	12.5	15.6
Q3 (51% - 75%)	2	0	1.6	0
Q4 (76% - 100%)	0	0	0.0	0

Tipo di collaborazione



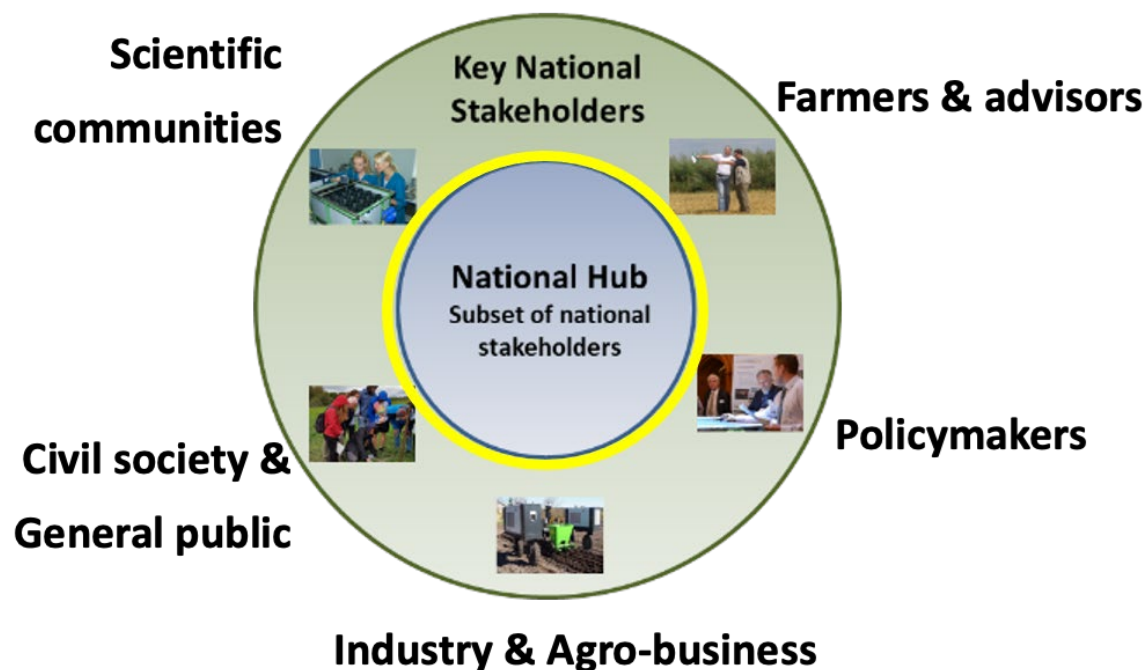
■ sola collaborazione nazionale
■ sola collaborazione istituzionale
■ collaborazione internazionale

1 su 4 delle pubblicazioni con alto **Impact Factor** con contributo dalla partnership Italiana.

Centinaia di reports tecnici pubblicati su Zenodo.

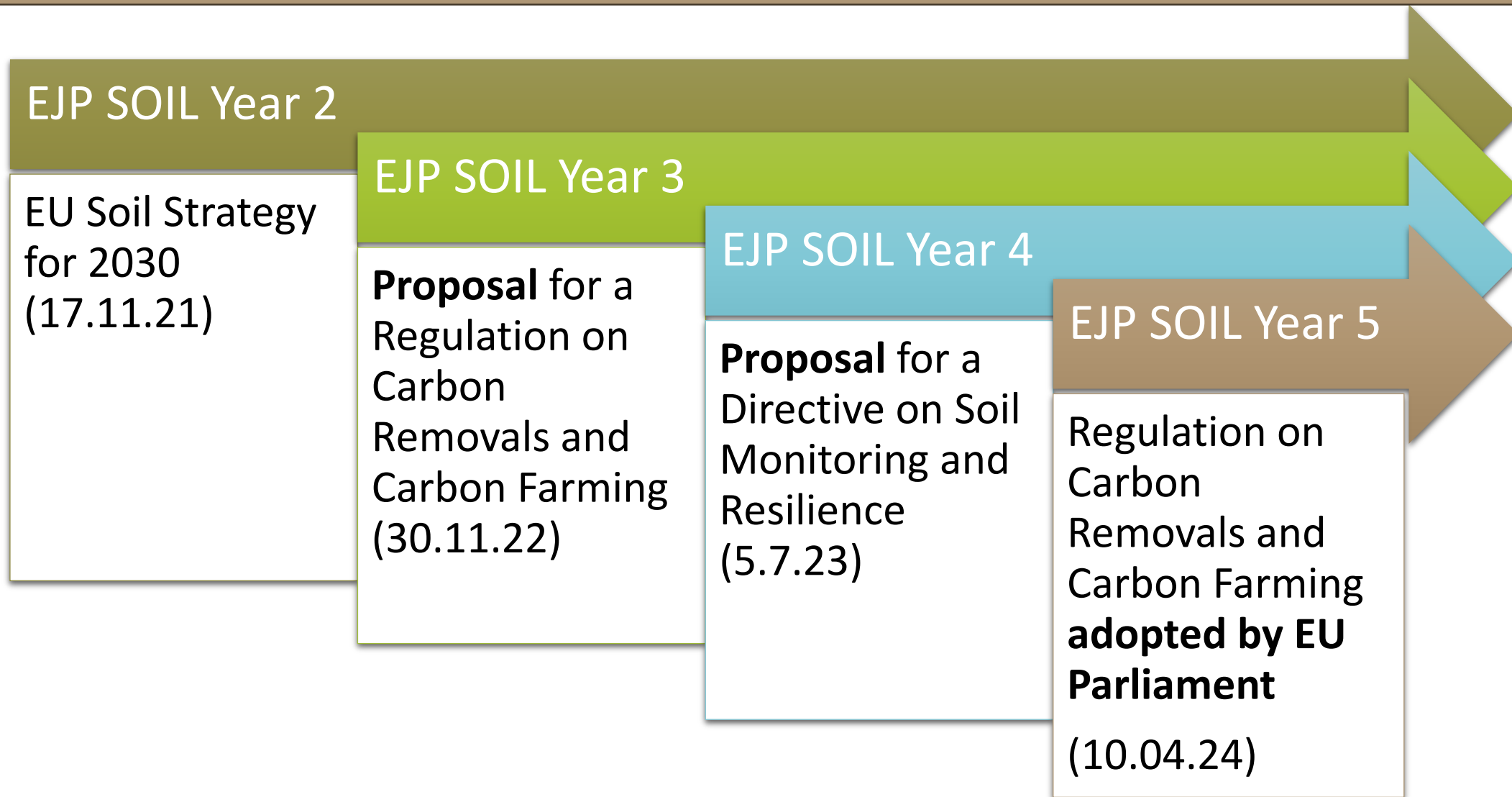
zenodo

LE RETI NAZIONALI DEI PORTATORI DI INTERESSE



The brochure cover features a photograph of a hand planting a seedling into the soil. At the top, there are logos for "mipaaf" (ministero delle politiche agricole alimentari e forestali), "EJP SOIL" (European Joint Programme), "SOIL HUB", and "crea" (Consiglio per la ricerca in agricoltura e l'analisi dell'economia agraria). The main title is "Hub Nazionale Suolo" followed by "Esperienze a confronto per una Rete nazionale di monitoraggio del suolo". Below this, it says "Evento di coordinamento con gli Stakeholder del Programma EJP-SOIL e Progetto SOIL-HUB". The date and location are "Roma, 15 novembre 2022, ore 09:30" and "Ministero delle politiche agricole alimentari e forestali, Sala Cavour".

EVOLUZIONE DEL CONTESTO POLITICO



INVENTARI SITUAZIONE INIZIALE

Inventario dati suolo in EU

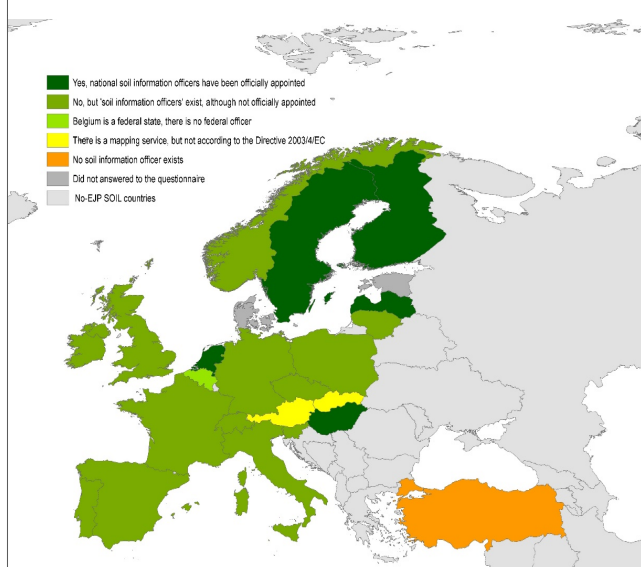
Van Egmond et al., 2021

<https://zenodo.org/records/12704083>

Cornu et al. 2023

<https://doi.org/10.1111/ejss.13398>

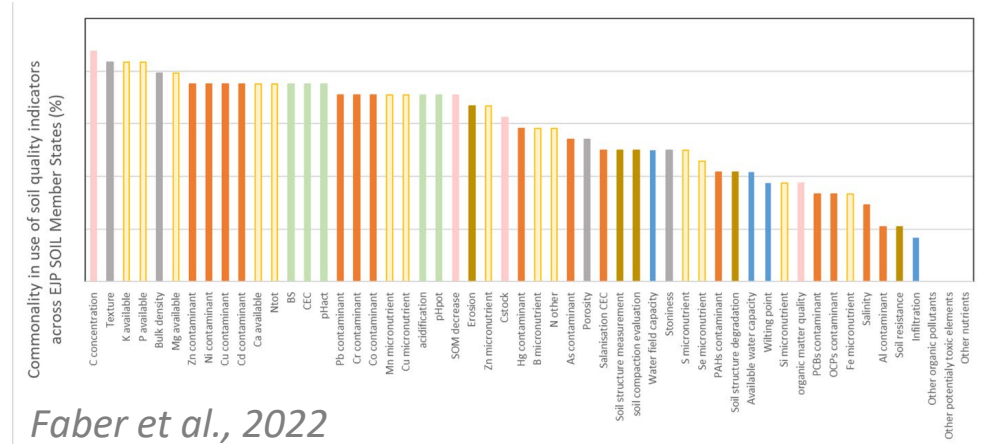
Istituzioni che detengono le banche dati



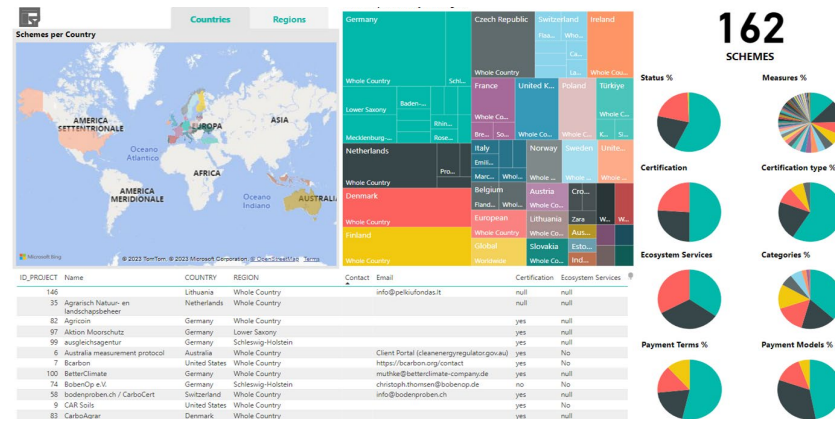
Fantappiè et al., 2021

<https://doi.org/10.5281/zenodo.10014912>

Indicatori di qualità del suolo usati da Stati Membri



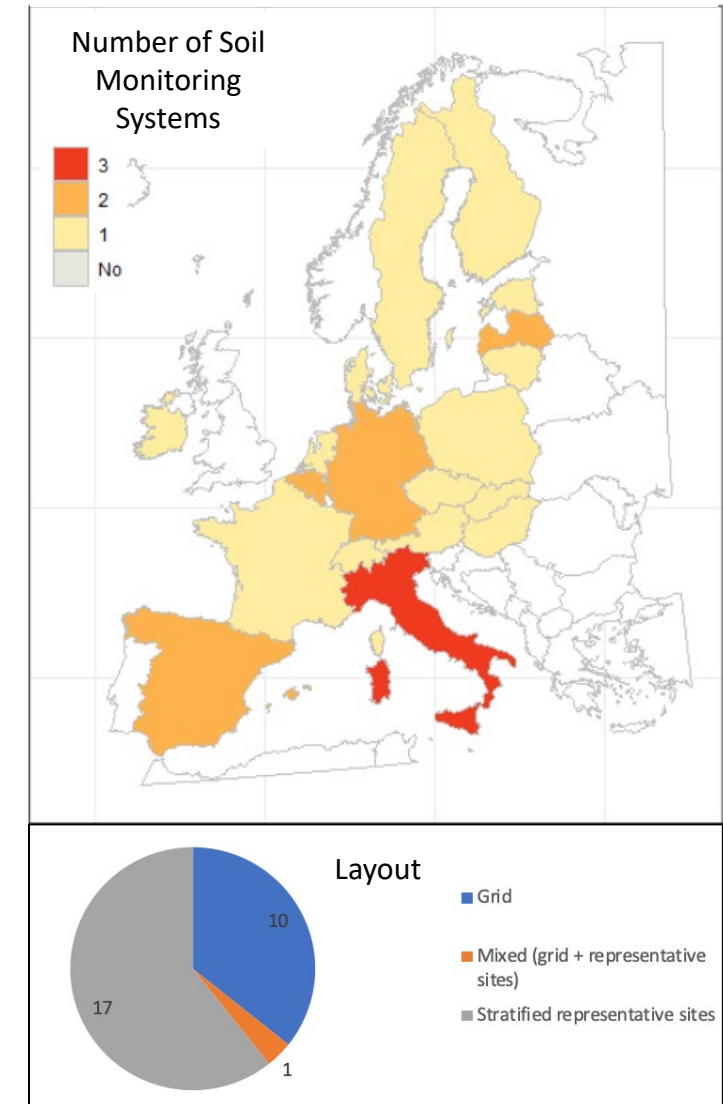
Existing C farming schemes



<https://reports.crea.gov.it/powerbi/CarbonSchemesInventory.html>

10.5281/zenodo.13970636

Sistemi di monitoraggio del suolo nazionali



Bispo et al., 2012.

<https://zenodo.org/records/12705644>

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DIRETTI FEEDBACKS FORNITI ALLA COMMISSIONE

EJPSOIL Comments on the 'proposal for a regulation of the European Parliament and of the Council establishing a Union certification framework for carbon removals' COM(2022) 672 final

Irene Criscuoli, Francesco Galioto, Francesca Varia, Giovanni Dara Guccione on behalf of CREA-PB Team

In principle, the EJPSOIL consortium welcomes the proposal for a European regulation to promote carbon removals to counterbalance hard-to-abate residual emissions by creating a unique certification framework guaranteeing comparability and trust across European countries.

Please note that the following comments are 'informed' opinions based on information from existing public and private initiatives in and out of Europe. Any proposal for change is aimed at reducing the risk that financial support goes to carbon removal activities that cannot be relied upon as effective mitigation actions and that carbon removal activities will not be largely applied because of complexity of application and high costs of the monitoring, reporting and verification system described in the regulation.

CHAPTER 1 – CHAPTER 1 GENERAL PROVISION

Article 1 - Subject matter and scope

Article 1 (2) – "This voluntary Union framework for the certification of carbon removals does not apply to emissions falling within the scope of Directive 2003/87/EC, with the exception of the storage of carbon dioxide emissions from sustainable biomass that are zero-rated in accordance with Annex IV thereto".

First of all, we find this clarification to be very positive and beneficial to the European climate policy.

CHAPTER 2 – QUALITY CRITERIA

The European Commission is kindly requested to reconsider content of this chapter, due to the fact that the current vagueness of articles would never allow for a proper implementation of the certification system, even with subsequent delegated acts. Below we provide additional explanations.

Article 4 – Quantification

Article 4 (1) – "A carbon removal activity shall provide a net carbon removal benefit, which shall be quantified using the following formula:

Net carbon removal benefit = $C_{baseline} - C_{total} - GHG_{increase} > 0$

In light of this formula, and without further explanation in the Impact Assessment Report accompanying the document, the carbon removal methodology appears inconsistent and enigmatic. Moreover, The most controversial point concerns the exclusion of reduction of greenhouse gas emissions from the count as stated in the concluding part of the recital 8 which reads as follows: "A reduction in greenhouse gas emissions resulting from the implementation of the carbon removal activity should not be taken into account to quantify the net carbon removal benefit, but should be considered as a co-benefit towards the sustainability objective of climate change mitigation; by being reported on the certificates, decreases in greenhouse gas emissions (like the other sustainability co-benefits) can increase the value of the certified carbon removals."

FEEDBACK TO THE SOIL MONITORING LAW FROM THE EJP SOIL INTERNAL "MINOTAUR" ON SOIL BIOLOGICAL INDICATORS

As a premise to this feedback, we would like to underline that we fully support a Directive on soils, which has as its objective soil protection and tries to count



Contribution of the EJP SOIL programme to the Soil Health call for evidence

2022-03-15

Soils have a fundamental role in the functioning of terrestrial ecosystems and they provide invaluable ecosystem services and well-being to human societies. The European Joint Programme SOIL (EJP SOIL) is a research programme fostering knowledge development, knowledge sharing and transfer, knowledge organization and harmonization, and knowledge implementation towards climate-smart and sustainable management of agricultural soils in line with the Farm to Fork Strategy (www.ejpsoil.eu). As such, the EJP SOIL acknowledges and supports the vision of the new European Soil Strategy to have all soils in healthy conditions by 2050 and to make protection, sustainable use and restoration of soils the new normal. To reach healthy soils by 2050 it is crucial that the EU and Member States develop coherent legal frameworks to protect, restore and sustainably manage soils.

As a contribution to this call for evidence, the EJP SOIL Coordination and Executive Committee identified selected points on which the programme already provides evidence in relation to the objectives and policy options of a Soil Health Law perspective.

1) Soil health definition

Soil Health has been defined by the Mission "A soil deal for Europe" as the continued capacity of soils to support ecosystem services (Bonfante et al. 2020, Veerman et al. 2020). We do support this definition, where soil health refers to the actual capacity of soil to supply ecosystem services for human well-being and societies. This differentiates soil health from the widely used concept of soil quality that rather refers to the capability, i.e. the potential of soils to provide the desired ecosystem services. Both concepts are complementary.

The capacity of soils to deliver ecosystem services across an array of seven soil functions has been emphasized and these functions are critical. However, for a formal definition in legal terms (the Soil Health Law in preparation), we support this definition in an expanded manner, that 'soil health' would not be limited to these soil functions and associated ecosystem services, but we widened, e.g., including cultural ecosystem services. It is also important to consider potential trade-offs between ecosystem services (people, planet, profit). More research is required to disentangle which ecosystem services of soils are manageable and influenced by agricultural management and which ecosystem services are rather determined by soil and environmental factors that are independent of management. Soil health indicators should focus on the manageable and human affected part of soil ecosystem services.

See Annex 1. Executive summary of the SIREN project - Stocktaking for Agricultural Soil Quality and Ecosystem Services Indicators and their Reference Values

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 652615.



10.5281/zenodo.14067758



European Joint Programme SOIL. Feedback and survey of information supporting/ enabling discussion on the Soil Monitoring Law proposal

EJP SOIL coordination: Claire Chenu, coordinator, Anna Besse, co-coordinator, Work Package 6 team on Soil data and information and contributors to the deliverables referred to in this document 2023-11-03

EJP SOIL is a European research programme, co-funded between the EU commission and 24 European countries, that aims to develop knowledge, share it and harmonize it towards climate-smart and sustainable management of agricultural soils. Work performed by the EJP SOIL is highly relevant for several of the chapters of the proposed Directive on Soil Monitoring and Resilience. EJP SOIL welcomes progress towards a better soil monitoring and thereby towards a better protection and sustainable management of soils. We develop here a series of points, not commenting in a comprehensive way the different chapters of the Directive proposal, but identifying the supporting information from the EJP SOIL that is publicly available as Deliverables, policy briefs, webinars or scientific publications.

Chapter 1- General provisions.

Definitions. Soil health: the EJP SOIL endorsed the definition proposed by the Soil Mission Board, that soil health is the actual capacity of soils to provide ecosystem services. This definition is more precise than that in the current law proposal as it differentiates it from soil quality, which is the potential to provide ecosystem services. This has the merit to support a context-dependent evaluation of soil health as, intrinsically, different soils do not have the same ability to provide ecosystem services. Definitions can be found in: [EJP SOIL policy brief](#).

Competent authorities: EJP SOIL inventoried whether competent authorities have been appointed at the national or regional scale for soil data, in 24 European countries. Mobilizing the existing competent authorities whenever possible should foster implementation of the directive ([EJP SOIL deliverable 6.2](#)).

Chapter 2. Monitoring and assessment of soil health

Article 6- Soil health and land take monitoring framework. The comma 6 of the article states the establishment by the Commission and the EEA of a digital soil health data portal that shall provide access in georeferenced spatial format to at least the available soil health data resulting from measurement carried out by the Commission itself and by Member States as foreseen in article 8(2). The EJP SOIL inventoried national regulations relative to soil data

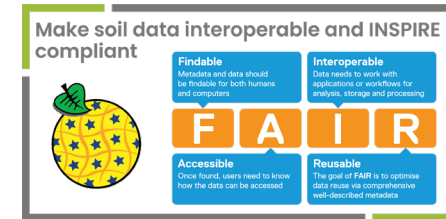
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 652615.



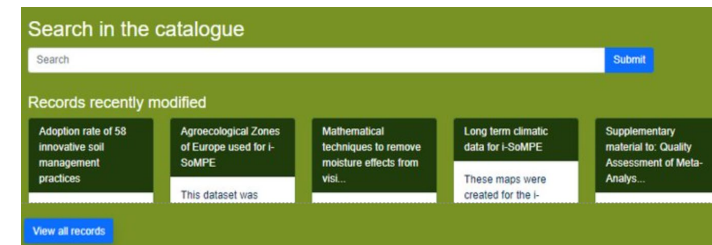
Using EC channels for consultation

Convegno Finale EJPSOIL, 4 e 5 dicembre 2024, Roma

STRUMENTI A SUPPORTO DELLA CONDIVISIONE DATI DI SUOLO



- [Wiki](#) guida opzioni di fornitura dei dati di suolo
- [EJP SOIL catalogo di metadati](#) una finestra sui dati di disponibili in EU
- [OWL SOIL template](#) per banche dati del suolo basato su ISO 28258
- [Codelists](#) : definizioni e vocabolari standard per il suolo
- [Geopackage SOIL template](#) conforme INSPIRE ISO 28258, ISO 19123, ISO 19156:2011



Il formato Geopackage è supportato dalla EEA per il monitoraggio ambientale



INTERAZIONI DIRETTE



**A POLICY WORKSHOP ON
RE-WETTING PEAT SOILS**
Why and How?

With unique country perspectives from:

Sweden	Ireland
Lithuania	Finland
Switzerland	Denmark
Germany	The Netherlands
	Norway

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 862095

EJP SOIL WORK PACKAGE 8
European Joint Programme SCIENCE TO POLICY

Save the Date
POLICY FORUM
SEQUESTERING CARBON IN SOILS AND THE ASSOCIATED TRADE-OFFS
Wednesday 11th October 2023
09:30 - 11:30 CEST
Online Event

Focus: To present scientific information in support of the policy needs related to the new regulation on carbon accounting based on the research findings of the EJP SOIL. This forum will develop discussion on relevant management options to sequester carbon and the potential trade-offs associated with them in an effort to support policy makers' understanding of these findings to better inform future decision making.

EJP SOIL SCIENCE TO POLICY
European Joint Programme

**A POLICY WORKSHOP ON
CARBON FARMING**
From Scientific Knowledge to Policy Making & Business Models

A full day workshop including:

- Policy perspectives on C farming by DG Clima
- Potential for Carbon Sequestration by Carboseq EJP SOIL
- C Farming Integration into business models
- The relationship between C farming and the CAP by DG Agri
- Case studies of C Farming schemes at EU and Global level

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 862095

2nd meeting of the Carbon Removals Expert Group
Carbon Farming: mapping of certification methodologies
21-22 June 2023 Brussels

Design of a high-resolution and dynamic soil organic carbon monitoring system for agricultural land

Claire Chenu¹, Greet Ruyschaert², Eric Ceschia³, Axel Don³, Fenny van Egmond⁴, Antonio Bispo⁵, Martin Thorpe⁶, Suzanne Reynders⁵, Maria Fantappiè⁶

1- INRAE, France
2- IMVO, Belgium
3- Thünen Institute, Germany
4- Wageningen Research, The Netherlands
5- Aarhus University, Denmark
6- CREA, Italy

EJP SOIL European Joint Programme

3rd meeting of the Commission Expert Group on the implementation of the EU Soil Strategy - DG ENV, October 4th, 2024

EJP SOIL results in the perspective of the EU Soil Strategy and EU Soil Monitoring and Resilience Law

Claire Chenu, Maria Fantappiè, Fenny van Egmond, Antonio Bispo, Rudi Hessel, Zsófi Bakacsi, Rudi Hessel, Johanna Wetterling

EJP SOIL European Joint Programme

EJP SOIL SCIENCE TO POLICY
European Joint Programme

**A WEBINAR ON
LAND DEGRADATION AND HEALTHY SOILS**
Towards a glossary and monitoring system

With speakers from:

- DG Environment
- Joint Research Centre
- OpenGeoHub
- INRAE
- National Research Council of Italy
- United Nations Convention to Combat Desertification
- DG Agriculture and Rural Development
- University of Sassari

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 862095

EJP SOIL WORK PACKAGE 8
European Joint Programme SCIENCE TO POLICY

Save the Date
**4TH POLICY FORUM
SUSTAINABLE SOIL MANAGEMENT OPTIONS**
Thursday 11th April 2024
09:30 - 11:30 CEST
Online Event

Focus:

- Presenting scientific information on sustainable soil management options based on research findings of the EJP SOIL
- Developing discussion on the process of selecting management options to meet EU policy objectives
- Soil Strategy, Soil Monitoring and Resilience Law
- certification removals framework
- Providing information on links between various soil options and the ecosystem services delivered by options
- Supporting policymakers' understanding of the enhance future decision making

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 862095

EJP SOIL SCIENCE TO POLICY
European Joint Programme

**A POLICY WORKSHOP ON
EJP SOIL SCIENTIFIC SUPPORT FOR THE EU SOIL HEALTH LAW**

With presentations from the EJP SOIL Projects

EJP SOIL SERENA
EJP SOIL MINOTAUR
EJP SOIL SIREN

WP6 SOIL DATA & REPORTING

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 862095

EJP SOIL WORK PACKAGE 8
European Joint Programme SCIENCE TO POLICY

Save the Date
AN OPEN WEBINAR ON
THE EU PROPOSAL FOR A LAW ON SOIL
Tuesday 11th July 2023
10:00 - 11:00 CEST
Online Event

With key note speaker:

Mirco Barbero
Team Leader
Soil protection and Sustainable Land Use
ENV.D1 Land Use & Management
DG Environment

Followed by a Q & A Session

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 862095

- Organizzazione o interazione durante eventi di policy e webinars
- Presenza come esperti nei gruppi esperti (DG experts groups)
- Riunioni regolari con la DG ENV e JRC
- Riunioni con policy makers nazionali

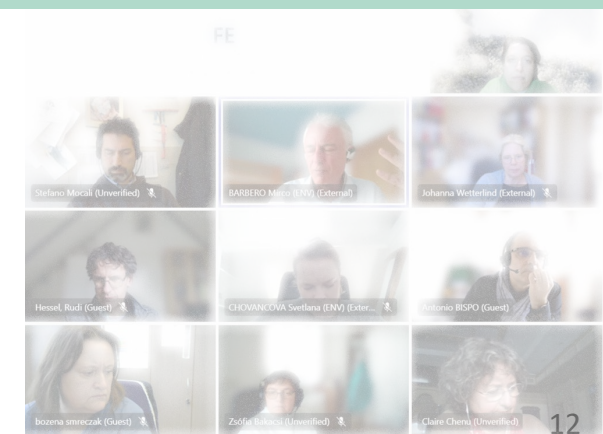
EJP SOIL WORK PACKAGE 8
European Joint Programme SCIENCE TO POLICY

Save the Date
AN OPEN WEBINAR ON
SOIL HEALTH INDICATORS
Friday 12th May 2023
10:00 - 12:00 CEST
Online Event

The webinar will present scientific information in support of the needs for the development of the EU Soil Health Law based on some of the research findings of the EJP SOIL.

What is soil health?
What are the different approaches to setting targets and thresholds?
How can indicators be categorized and prioritized?
Why is a holistic approach to indicators important?

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 862095



POLICY BRIEFS

From Risk to Resilience: Policy challenges for Soil Erosion Control

Elmar M. Schmitz, Lisbeth L. Johannsen

- Water-induced soil erosion is a growing concern in the EU, with climate change projections indicating a potential 13-23 % rise in erosion rates.
- The variability of soil erosion modelling techniques highlights the need for standardization of data sets and harmonization of model parameterisation to allow valid comparisons of policy measures.
- The Common Agricultural Policy (CAP) has a limited effect in decreasing erosion risk, as the voluntary measures are often not well targeted to the identified erosion-prone areas.
- Policymakers should advocate for targeted erosion mitigation measures and elaborate more appropriate assessment protocols including sediment connectivity modelling to improve accuracy in erosion risk assessments.

When does soil carbon contribute to climate change mitigation?

Axel Don, Felix Seidel, Jens J. Infeldt, Thomas Kätterer, Manuel Martin, Sylvain Pellerin, David Emde, Daria Seitz, Claire Ch

- EIP SOIL clarifies definitions of soil carbon sequestration in soils.
- In many European crop production systems, soil carbon sequestration is low.
- Leakage may easily offset soil carbon sequestration.
- Soil C stocks need to be unchanged C stocks (SCS).

SOIL MONITORING SYSTEMS Challenges / recommendations towards harmonization

Mason E., Fréger C., Bispo A., Fantappiè M., Huesel R., van Emden F., Wetterlind J., Bošna S., Bakacsi Z., & Chenu C.

- Differences in sampling strategies, designs and protocols make soil data difficult to compare across countries and with LUCAS Soil.
- Countries do not want to change their protocols but could add new monitoring sites.
- Harmonization options of soil monitoring systems and LUCAS Soil exist, such as developing transfer functions.
- Major differences between a national soil monitoring system and LUCAS both on sampling strategy and measured soil properties can impact soil quality and soil health assessment.

INTRODUCTION

Soils are constantly evolving due to external processes driven by factors such as climate and soil organisms, but also due to internal pressures linked mainly to human activities. The evolution of soils makes it necessary to set up monitoring programs. Since 20 years, several projects and initiatives (e.g. ENVASO, Landmark, SOIL4EU) underlined the existing difficulties to compare and share data between national Soil Monitoring Systems (SMS), either due to technical issues (e.g. different sampling designs and protocols, analytical methods, data format, standards) but also due to lack of motivation (e.g. why share the data?, costs) and legal requirements. These difficulties pushed EU-JRC to develop its own monitoring system (LUCAS Soil) to report on the status of soils in Europe.

How to combine the efforts of Member States in monitoring soils with the one developed by EU-JRC within the LUCAS Soil program?

A questionnaire was designed and circulated to EJP SOIL partners to identify main differences between SMS and possible ways of harmonization.

DIFFERENT SAMPLING STRATEGIES, DESIGNS AND PROTOCOLS BETWEEN SMS

A transversal analysis was made to identify similarities and differences between the 27 reported SMS (collected from 18 countries). Most SMS were developed and started in the nineties to monitor soil quality. Agriculture is the main land use investigated in our survey; forestry regularly has its own national SMS. The majority of SMS have at least 2 sampling campaigns (done or currently running) or more. The number of sites per country is highly variable but most have at least 1 site representing 300 km². In the majority of SMS, the monitoring sites were selected according to several criteria such as land use, soil type, main crop, climatic zone, but regular grids are also used. On monitored sites, 50 to 60% of the countries also collect information on soil management and on the surroundings. The sampling protocol is quite variable as the sampling area ranges from less than 5 m² to 1 ha. The depths of sampling are also quite different as samples are taken according to soil horizons or just at one depth (0-20 or 0-30 cm) or at multiple depths (2 to 5).



Towards a regulation on carbon removals in the EU: lessons learned from existing experiences

Criscuolo L., Galloiti F., Martelli A., Falconi L., Dara Guccione G., - CREA, Hvargaard Thorsen M., - AU

- A common Monitoring Reporting and Verification (MRV) methodology is needed in Europe to guarantee comparability of carbon farming (CF) removals.
- Market mechanisms can potentially incentivize CF more effectively than existing schemes.
- Existing Information Administrative and Control Systems (IACS) can minimize MRV costs.

A framework for setting soil health targets and thresholds in agricultural soils

Amanda Matson, Maria Fantappiè, Grant A. Campbell, Jorge F. Miranda-Vélez, Jack H. Faber, Lucas Carvalho Gomes, Rudi Heisel, Marlene Linn, Stefano Mocali, Pete Smith, David Robinson, Antonio Bripe, Fenny van Emden, Saskia Keesstra, Nicolas P.A. Saby, Soeana Smrecek, Claire Froger, Azamat Suleymanov, and Claire Chenu

INTRODUCTION

In climate change mitigation, technical terms are not correctly leading to consequences and expectations of the climate change mitigation.

Carbon stock, carbon is same thing? And does it for example by building automatically lead to mitigation? In public climate protection, it often get mixed up.

A recent study shows that publications on the terms are not always result is illustrated recent, international majority of which surrounding C and C₂ just a matter of qu imprecise wording expectations of measures.



including relative change (Fig. 3), we developed a framework (Fig. 4) that facilitates both choosing the most appropriate target/threshold method for a given context, and using targets and thresholds to promote soil health.



Figure 2. Descriptions of four different approaches to setting targets and thresholds for soil health indicators.

COMPARISON OF APPROACHES

The four approaches were presented during two EJP SOIL Policy Forums (EJP SOIL 2023). In participant polls, the reference approach was identified as desirable, but relative change was considered the most feasible approach.

Using a fixed value would be the simplest approach, but these values are simply not available for many cases. The most significant drawback to the reference and distribution approaches is that assigning percentages or percentiles is arbitrary.

Figure 1. The difference between thresholds and targets for assessing soil health indicators.

We explored four approaches to setting targets and thresholds (Fig. 2). Based on stakeholder feedback of the approaches, collected in two webinars (EJP SOIL 2023) and case studies of three approaches (not



- Elaborazione di policy briefs
- Preparazione di policy events

Provide guidance where needed to refine policy messages

Bring together relevant experts to collaborate on a cohesive message

Identify projects, WP's that can contribute with relevant findings

Demand driven from policy stakeholder needs

Sinergie con iniziative/istituzioni, EU Mission Soil & progetti



Soil Health
BENCHMARKS



EJP SOIL
European Joint Programme



GLOBAL SOIL
PARTNERSHIP



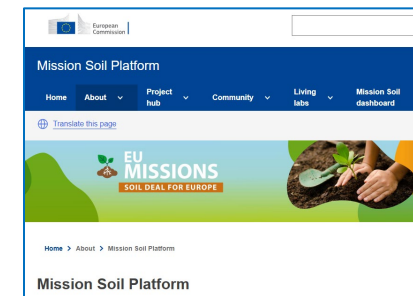
EUROPEAN SOIL
PARTNERSHIP



BONARES



European
Environment
Agency



MARVIC
MRV for carbon farming



NBSOIL
Nature-based Solutions
for Soil Management



GREEN ERA-HUB
on Agri-Food and Biotechnology



national projects

