Pre Announcement

Towards Healthy, Resilient and Sustainable Agricultural Soils

1 Table of Content

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862695.

2 Background and Objectives

2.1 About EJP SOIL

The European Joint Programme (EJP) SOIL started in February 2020, to create an integrated framework for agricultural soil research in Europe to enhance capacity, capability and knowledge in the area of soil research (https://projects.au.dk/ejpsoil/). Thus allowing all Member States equal opportunities to contribute to policy and societal targets for soil. It aims to overcome current fragmentation in research and to unleash the potential of agricultural soils to contribute to climate change adaptation and mitigation of GHG emission released by agriculture to contribute to have a carbon neutral production. In parallel, it will be researched to preserve or even enhance their performance in relation to these and other agricultural (plant productivity and health) and environmental functions (potable water, air, biodiversity). Furthermore, EJP SOIL works towards a sustainable European integrated research system on agricultural soils to develop and deploy a reference framework on climate smart sustainable agricultural soil management.

One task in the EJP SOIL programme is the development of a roadmap, which functions as a strategic research agenda and describes the targeted vision of EJP SOIL. Six main objectives have been identified in order to address the targeted vision of EJP Soil: i) Sustainable agricultural production, ii) Carbon sequestration, iii) Healthy Soils, iv) Land and Soil restoration, v) Biodiversity and vi) Ecosystem services including to enhance understanding of their linkages. With the help of the roadmap, an implementation plan has been created which engages and commits Member States and stakeholders across Europe to join forces in the relevant research areas.

Within the roadmap, research activities have been identified and outlined which would benefit and enhance the impact of EJP Soil activities by widening the research and hence participation to funder organisations outside the EJP SOIL consortium. This will be realized by opening external calls to European and international participation.

2.2 Expected impacts of the 1st external call of EJP SOIL

In the long term, the work and research done in EJP SOIL will contribute to guidance helping farmers to become better stewards of the land and soil resources. Additionally, farmers will actively contribute to the adaptation of agro-ecosystems to climate change and the mitigation of climate change.

The call refers to the first two main impacts of EJP Soil namely:

1) Fostering understanding of soil management and its influence on climate mitigation and adaption – sustainable agricultural production and healthy environment

2) Understanding how soil carbon sequestration can contribute to climate change mitigation at regional level, including accounting for carbon

Both impacts will be addressed by the three topics that are outlined below. Projects shall have a clear added value to one on the above mentioned impacts – in their mid as well as long term perspective.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862695.

2.3 Scope of the 1st external call of EJP SOIL

The objective of this call is to foster holistic agricultural (forestry soil are not excluded) soil management practices which will assist making a shift to diversify farming to include a variety of sustainable and environmental practices. To achieve this aim, knowledge about SOC sequestration and biodiversity is essential. Thus, the call addresses three major topics: SOC sequestration, biodiversity and sustainable production and environment.

Hence the call will address the first two expected impacts outlined in chapter 2.2 and will contribute to this area in a substantial way.

Knowledge gaps in the area of SOC sequestration need to be closed, e.g. by developing soil management options which help to protect existing stocks of soil carbon and store additional C through sequestering CO_2 from the atmosphere. Effective CO_2 sequestration can help reduce GHG emissions thereby helping to fulfil the objectives of the European Green Deal.

Another objective is to make shift from those agricultural practices that contributes to soil degradation, towards, more sustainable practices and methods.

This not only addresses sustainable production but also healthy environment, which can be achieved by, enhancing knowledge about biodiversity, and understanding functionalities and interactions in soils. Strong population growth combined with climate change challenges have placed food security high on the global agenda and therefore it is one of the key elements of the EU's farm to fork strategy. Sustainable production refers to not only healthy soil management but also addresses research in respect of water storage, soil salinization and biodiversity, while considering climate change.

Drastic changes are required to some of our current farming systems to modify agriculture's practises as a provider of adequate, safe and healthy food that is produced in a manner that is sustainable and environmentally friendly.

Three topics have been identified which will help solve the challenges mentioned above and are described in detail in next chapter.

3 Topics

Interested project consortia should apply to one of the three topics:

a) Understanding SOC sequestration (stabilization, storage and persistence)

- Saturation of C sequestration in organic matter of different soil forms (including C sequestration potential, quantification of stable C, how to increase the amount of C in different soils, influence of organo-mineral interactions on saturation and stabilization of C)
- Understanding the mechanism of SOC persistence in soil and subsoil (influence of minerals, microorganism and organic matter, stoichiometry of C-N-P)
- Dynamic interactions of SOC and greenhouse gasses (primarily CO2, N2O and CH4) emissions
- Management practices on different agriculture and forest soil types in order to minimize greenhouse gas emission

b) Soil biodiversity: status, and role in ecosystem services provided by soils

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862695.

- Development of holistic indicators and target values to define healthy soils for agricultural productivity, for example soil fertility, biodiversity, resilience, nutrient levels and soil-microbe-plant interactions.
- Understanding the functional role of soils in the provision of ecosystem services, e.g. the provision of food and non-food crops, nutrient cycling, water storage and filtration
- Understanding the role of fauna, microbiome, plants and their interactions on maintaining, enhancing and restoring healthy and resilient soils for agricultural productivity.
- Impact of novel soil amendment (e.g. fiber sludges from the paper and pulp industry) materials to soil biota

c) Site-specific or landscape-scale approaches to improve sustainability, resilience, health, and productivity of soils, including:

- Innovative practices and/or technologies* that maximise the storage of organic carbon in soils (protecting existing stocks or sequestration).
- Management strategies and agronomic management, including precision farming, that help reduce net emission of greenhouse gases (GHGs) from soils.
- Integrated management of farming systems, farm-networks, and agroecosystems, including for example, diversification of production, agroecological approaches, smart fertility/fertiliser management.
- Technologies, practices and management approaches to increase farming systems' sustainability and resilience to climate change.
- Technologies, practices, and management approaches that contribute to the restoration of landscapes and the maintenance of natural capital.
- Evaluation of the applicability of site-specific technologies or practices for different pedo-climatic zones and farming systems, and taking into account socio-economic issues.

*Technologies include but are not limited to, digital tools, drones and sensors, autonomous robots, tillage and traffic management, precision fertilization, weed and pest control, irrigation, amongst others

Research topics must have a clear added value to the EJP SOIL programme and to its targets and objectives (https://projects.au.dk/about-ejp-soil/targets-objectives/) as well as to the two impacts mentioned above.

Forest soils are not the main focus for this call, but for topic a) and b) forest soils are not excluded as long as the proposal has a clear added value to the targets and objectives of EJP SOIL programme and to this call.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862695.

4 Funding modalities and who can apply

The following partner countries and organisations will provide funds for the Call: Belgium, Finland, France, Germany, Hungary, Ireland, Italy, New Zealand, Norway, Poland, Portugal Russia and the Global Research Alliance. A list with the partners including the available funds per country can be found in table 2.

The funding for transnational projects will be based on a virtual common pot instrument. This means that applicants of projects that have been selected for funding will receive the grant directly from their national funding bodies according to their terms and conditions.

Universities and other higher education institutions, public research institutions, private non-profit organisations, and private companies can apply subject to the national regulations and eligibility criteria. Research consortia should consist of a minimum of three partners seeking funding from at least three participating countries. Research partners from not participating countries can be part of research consortia if they bring in their own funding. Funding of the participating research organisations will be provided by their respective national funding organisation according to their legal terms and conditions for project funding. A provisional list of partner countries and organisations is given below in table 2 – the national regulations as well as contact data will be published with the call announcement in April.

The call is conducted as one-step-procedures but proposals are only eligible if a project summary is submitted and coordinator and corresponding partners of the projects are registered within the given deadline (see table 1 for timeline).

All proposals must fulfil the general criteria as well as the applicable national eligibility criteria. General eligibility criteria are:

- Proposals must be written in English
- Proposals must be complete and in accordance to the procedure
- Consortia must consist if at least 3 partners from 3 different participating countries
- The involvement of applicants from countries not seeking funding from funding partners listed below is additional to the 3 minimum entities
- Project summary must be submitted and coordinator and partners must registered via online submission tool until June 25th 2021
- Proposals must be submitted until Sept 07th 2021 via submission tool
- The same person cannot apply to more than one proposal as coordinator (also more restrictive requirements by national funders may apply)
- Applicants should avoid redundancy with projects funded or submitted in other calls from the H2020 programme or ERA-NETs
- Each applying consortium must be led by a project coordinator, who must be from an organisation that is eligible for funding from its Funding Party in the call. Applicants seeking funding from the GRA are eligible as project partners, but cannot apply as project coordinator
- Applicants must complete an ethics self assessment as part of the application
- Minimum project duration is 24 months and maximum 36 months

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862695.

5 Webinar

A **webinar will be organised in May** for all interested applicants. Content of the webinar will be an overview about all relevant aspects for the Call and will give a short introduction for the submission tool.

6 Indicative Timeline

The timeline is indicative only.

Table 1: Indicative timeline of the 1st external call of EJP SOIL.

Step	Date / Timeline
Pre-Announcement	March 2021
Launch of the Call	April 2021
Webinar	May 2021
Deadline submission project summary and registration of coordinator and partners	June 25th 2021
Submission deadline	Sep 07th 2021
Evaluation and selection	Sep-Nov 2021
Aimed start of research projects	Dec 2021 – Jan 2022

7 Call office contacts

The call secretariat will be situated by Jülich.

Name	**Ulrike Ziegler**	**Christian Breuer**
Organisation	Jülich	Jülich
Phone	+49 2429 90 88 055	+49 2465 30 58 847
e-mail	u.ziegler@fz-juelich.de	b.breuer@fz-juelich.de

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862695.

8 Participating Countries and Corresponding Funding Parties

Table 2: Participating Countries and Funding parties (status 23th March 2021).

Country	Organisation
/	Ministry for Primary Industries, Blobal research alliance
BE	Fonds voor Wetenschappelijk Onderzoek – Vlaanderen
DE	Bundesministerium für Bildung und Forschung
FI	Maa- ja metsätalousministeriö
FR	Agence nationale de la recherche
HU	National Research, Development and Innovation Office
IE	Department of Agriculture, Food and the Marine
IT	Ministero delle politiche agricole alimentari e forestali
NO	Norwegian Research Council
NZ	Ministry for Primary Industries
PT	Fundação para a Ciência e a Tecnologia
PT	Ministry of Agriculture, for 'Research Performing Organization'
RU	Department of State scientific and technological policy in the Ministry of Science and Higher Education of the Russian Federation (MSHE)
UK	Biotechnology and Biological Sciences Research Council

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862695.