Knowledge availability and barriers for knowledge use - Guidelines for national analysis

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Indhold

1. Introduction

The following document contain guidelines for the activities of EJP SOIL task 2.2 and 2.3. The objective of the task is to provide an overview of the state of knowledge and knowledge use with respect to sustainable soil management across the partner countries of the EJP SOIL consortium based on input from stakeholders in the 5th year of the EJP SOIL programme. Although soil knowledge and data is available at European scale, there are also substantial gaps in European soil knowledge. Further, often these findings are neither directly applicable to practitioners nor are the underlying data or models. Regarding knowledge use in farming, further implementation barriers are complex and involve fragmentation of advisory services as well as lacking end users' capacities. Identifying these gaps is essential for effective future policy initiatives as well as prioritization of research activities. Therefore, the collected information will be used for an elaborated Research and Innovation Agenda that will be reported as a roadmap for the 10 years after the EJP SOIL.

In the first year of the EJP SOIL programme we consulted a total of >300 stakeholders in total across the EJP SOIL partners. We followed a three-step approach to identify the knowledge needs from across Europe:

1. the stakeholders were asked for their *aspirational targets* that identified future soil ecosystem services aspirations at regional, national and European level. This included the identification of the future needs for soil functions and ecosystem services and of the main drivers affecting them.
2. *the knowledge availability and use* were investigated (i) in a review and stocktaking of current agricultural soil related research activities, soil-based policies and scientific literature and (ii) an assessment of the availability and use of the knowledge, via a consultation of the National Hubs stakeholders.
3. the *barriers and opportunities* to reach the aspirational targets were identified, again via stakeholder consultation.

For this inventory questionnaires were sent out in each country and interviews were held with key representatives of the National Hubs. The findings of these surveys were reported in three reports of EJP SOIL: D2.5, D2.6, D2.7 and D2.8, accessible on www.ejpsoil.eu and published as: D2.6 (*Set of reports on State of knowledge in agricultural soil management*, see: Munkholm et al. (2021) for further details), D2.7 (*Report on the current availability and use of soil knowledge*, see: Thorsøe (2021) for further details) and D2.8 (*Report on barriers and opportunities (knowledge and policy) at regional, national and EU levels for further harmonization and collaboration concerning research, data, training, and education*, see: Farina, Claudia Di Bene, Marchetti, Piccini, and Vanino (2021) for further details). Through this consultation the existing knowledge needs were identified according to the EJP SOIL Knowledge framework (reported in a deliverable 2.4 of the EJP SOIL (Keesstra et al., 2021), hence needs for knowledge development (new research, knowledge synthesis), for knowledge sharing and transfer, knowledge harmonization and knowledge application across partner organizations and member states.

Whereas the initial stocktake included two elements, an inquiry with the scientific community (D2.6) and an inquiry with the EJP SOIL national Hubs (D2.7 and D2.8), in year 5 for which these guidelines are giving direction, we only focus on the EJP SOIL national hubs.

We recommend that the guidelines should be used as an input to a discussion that should be organized in conjunction with the Y5 meeting in the EJP SOIL national hubs. Since there are quite diverging ways of assembling the EJP SOIL national hubs and different times the meetings are held, we have developed the guidelines to reflect this diversity and to allow partners sufficient time and

flexibility to complete the task. However, should you have any questions, or concerns, please do not hesitate to contact task coordinators. Please note that we are entering the final year of the project and it is now more difficult to postpone deliverables, hence, it will be difficult for us to include your national data in the joint synthesis if reporting deadlines are not met.

Deadlines:
Partners national reports: End of May 2024, for reporting please complete the "reporting template" at the end of these guidelines and send to Mansonia Pulido Moncada (mansonia.pm@agro.au.dk)
Internal review synthesis report: End September 2024
Final report: End November 2024

2. Methodology

Each EJP SOIL partner engage their national hub with a short survey combined with a discussion at a national stakeholder workshop (for instance organized in connection to a national hub meeting). We have designed guidelines so the exercise can be completed during the annual meetings in the national hubs over the winter 2023-2024 (or you can organize a workshop in which the initial part includes the survey to acquire participants individual perception of key challenges as specified below in section 2, Qualitative inquiry). The two activities are designed to be complementary in the sense that the survey will take stock of stakeholders' perceptions of the challenges and barriers, while the workshop discussions will engage stakeholders in the underlying mechanisms and mitigation options of the most relevant soil knowledge gaps and challenges.

To complete this task:

1. Translate the survey template below in your national language and circulate to the members of your EJP SOIL National Hub, and/or participants to the national workshop that you will organize, guidelines for this exercise is provided in section 2.
2. At the workshop, please organize a discussion with stakeholder regarding their perceptions of the most important research gaps and barriers for knowledge transfer as well as presenting and discussing the main conclusions from the survey (for verification/discussion, guidelines for this exercise is provided in section 3.
3. Section 4 outlines a reporting template, which should be completed. The reporting template 1) contains a section in which a national team member summarizes the main conclusions of the workshop and 2) a part that summarizes respondents individual replies to the survey questions. PLEASE FOLLOW THE REPORTING TEMPLATE CLOSELY, as this will be the basis of the synthesis.

When reports are final, AU, CREA, BIOS, WR and INRAe will synthesize the reports and gather in a joint synthesis, which is circulated for comments with each of the national teams who have contributed with data to the exercise.

3. Survey

The following chapter contains the template for a survey among members of the EJP SOIL National Hubs and additional relevant stakeholders. Please note that the reporting template contain a few additional questions regarding the context of the data acquisition that we ask a national representative to complete, while we need an entry for each of the questions outlined for the survey for the comparative analysis.

Introduction

The text in yellow highlight should be seen as guidance to partners.

The text below provides some background to the survey for participants describing the context of the survey and some general instructions for participants. Please feel free to use and modify as you see fit in your interaction with local stakeholders.

Dear "Name" (if you have), alternatively just "Stakeholder"

A sustainable use of agricultural soils is proposed as a way to improve yields, mitigate climate change and minimize the environmental footprint of farming, but changing practice is also challenging for farmers, advisors, input providers and policymakers. To provide a sound knowledge basis for future priorities of research funding and policy initiatives, we kindly invite you to take part in this survey. It seeks to clarify your perspectives on the most pressing soil challenges in relation to knowledge gaps, research needs, and barriers for the implementation of sustainable soil management. Your answers will assist us in proposing relevant interventions to improve the availability and use of knowledge on sustainable soil management in support of the green transition.

You can also include a short statement regarding your national workshop, for instance here.

The survey was developed in the EJP SOIL program. EJP SOIL is a research programme on agricultural soil management (2020-2025) co-funded by the EC and the participating European countries (24 in total). EJP SOIL contributes to develop knowledge, tools and an integrated research community to foster climate-smart sustainable agricultural soil management, you find more information about the EJP SOIL program here.

Please note, your reply will be treated with strict confidentiality. Your reply will only be used for research purposes and your identity will not be disclosed in any form. All data acquisition, processing and storage is carried out according to the General Data Protection Regulation (GDPR) of the European Commission, see further details here "please add other national or institutional regulation, if relevant". During and after your completion of the survey, you can always withdraw from the survey. If you do so, your data will be erased. By completing the survey consent to our use of the data for research purposes.

This survey is carried out by "Name of National partner" and it is divided into four sections, you can expect that it will take approximately 10-15 minutes to complete. For further information, please contact "Name of national contact person".

Your participation is greatly appreciated.

Sign here

Section #1 Background information (for stakeholder survey)

1. Which category of stakeholder do you belong to? (please tick the box that match your stakeholder category)

Policy-makers	
Research communities	
Research funders	
Educational institutions and agricultural colleges	
Farmers & demonstration farms	
Advisors	
Farmers' organisations	
Agro-industry, supply & retail	
Laboratories	
National science testing and verification centers etc.	
NGOs	
Others	

2. On a scale from 1-5 to which extent do you agree with the following statements regarding your own knowledge of agricultural soils?

	1 Highly agree	2 Agree	3 Neutral	4 Somewhat agree	5 Disagree	X I don't know
I have a very good overview of agricultural soils in my entire country						
I have a very good overview of agricultural soils in the region where I am based						

Section #2 Status on knowledge of sustainable soil management in relevant environmental zones (for stakeholder survey)

In this section we ask for your assessment of the knowledge needs in the country. The soil and climatic conditions differ quite a lot across countries and the knowledge gaps therefore may differ accordingly, here we ask you to reflect on your country as a whole even though some challenges are not found throughout the country.

3. What is in your perspective the three most important challenges to sustainable soil management in your country? (select and rank the three most important soil challenges)

	Most important	Second most important	Third most important	I don't know
Maintain/increase SOC				
Avoid N2O/CH4 emissions				
Avoid peat degradation				
Avoid soil erosion (e.g water/wind/tillage erosion)				
Avoid soil sealing				
Avoid salinization				
Avoid contamination				
Optimal soil structure				
Enhance soil biodiversity				
Enhance soil nutrient retention/use efficiency				
Other (please specify):___				

4. On a scale from 1-5, how important are the following tasks to improve the general state of soil knowledge in your country?

	1 Highly important	2 Important	3 Neutral	4 Somewhat important	5 Not important at all	X I don't know
Producing new scientific knowledge on the prevalence of key soil challenges						
Develop new strategies for sustainable soil management						
Improve soil monitoring						
Increasing availability of existing research for practitioners (farmers)						
Improving the relevance of future research activities for practitioners						

Increase availability of existing research for policy makers						
Improving the coordination of knowledge production between stakeholders						
Improve the research infrastructures						
Other (please specify):___						

5. On a scale from 1-5, in your perspective how important are the knowledge needs for the following soil challenges within your country?

	1 Highly important	2 Important	3 Neutral	4 Somewhat important	5 Not important at all	X I don't know
Maintain/increase SOC						
Avoid N2O/CH4 emissions						
Avoid peat degradation						
Avoid soil erosion (e.g water/wind/tillage erosion)						
Avoid soil sealing						
Avoid salinization						
Avoid contamination						
Optimal soil structure						
Enhance soil biodiversity						
Enhance soil nutrient retention/use efficiency						
Other (please specify):___						

6. On a scale from 1-5 to which extent do you agree with the following statements regarding the changes to the conditions for sustainable soil management in the last 5 years?

	1 Highly agree	2 Agree	3 Neutral	4 Somewhat agree	5 Disagree	X I don't know

European soil policies have been strengthened						
National soil policies have been strengthened						
Economic support for practitioners to adopt sustainable soil management has improved						
The availability of soil research for practitioners has improved						
Soil monitoring has improved						
The coordination of knowledge production between stakeholders has improved						
The soil research infrastructures has been improved						
Other (please specify):___						

Section #3: Barriers for knowledge development, availability, and transfer.

7. Please indicate the importance of removing various barriers in relation to the three main soil challenges you have identified. For each soil challenge please rate the importance of removing the following specific barriers on a scale from 1-5

	Most important soil challenge					
	1 Highly important	2 Important	3 Neutral	4 Somewhat important	5 Not important at all	X I don't know
Lacking capacity						
Lacking knowledge communication						
Limited financial resources						
Underdeveloped soil network						
Inadequate policies						
Lack of relevant technology						
Other (please specify):___						

	Second most important soil challenge					
	1 Highly important	2 Important	3 Neutral	4 Somewhat important	5 Not important at all	X I don't know
Lacking capacity						
Lacking knowledge communication						
Limited financial resources						

Underdeveloped soil network						
Inadequate policies						
Lack of relevant technology						
Other (please specify):___						

	Third most important soil challenge					
	1 Highly important	2 Important	3 Neutral	4 Somewhat important	5 Not important at all	X I don't know
Lacking capacity						
Lacking knowledge communication						
Limited financial resources						
Underdeveloped soil network						
Inadequate policies						
Lack of relevant technology						
Other (please specify):___						

Section #4: Ending

This is the final section of the survey, if you have additional reflections regarding knowledge on and use of knowledge on sustainable soil management, or knowledge needs in your country please provide these in the box below.

8. Other reflections? (Open)

When the survey is complete, results will continuously be published on the webpage of the EJP SOIL programme, which is available here.

"You can add another section with specific questions that are relevant in your national context if relevant."

4. Workshop and discussion- guidelines

The following chapter describes the guidelines for national workshops. The survey outlined in section 2 serves as the backdrop for the workshop and initially we ask that you present the results of the survey for verification and discussion with the members of the national hubs.

Please also note, the discussion that we have outlined below are designed to last for about 90 minutes. This should allow partners to outline an attractive program for the stakeholders that for instance also presents results from internal EJP SOIL projects or other relevant research projects that make the event attractive for participants. The workshop discussion should fall in two parts, initially 1) a presentation and discussion of the results of the survey and 2) a SWOT exercise to identify the most important barriers to the adoption of sustainable soil management.

Presentation and discussion of survey results

Initially present the outcomes of the survey in the forum (5-10 minutes). This presentation can be done either on the fly if you complete the survey at the venue or you can circulate beforehand and prepare a presentation of results. Please discuss the following two questions with the stakeholder group (5-10 minutes):

1. Do they agree with the survey results or do they see other significant soil challenges in the country?
2. How is the regional distribution of soil challenges?

For this questions please prepare a short summary of the discussions of about 500 words.

Using a SWOT analysis to identify opportunities and barriers

Subsequently we ask you to divide the workshop into smaller groups of 6-8 participants and for discussion of the Strengths, Weaknesses, Opportunities and Threats (SWOT) of transitioning to sustainable soil management.

We often work with a SWOT methodology in interactions with stakeholders because it is simple and great for discussions, and because it draws some clear distinctions between different elements that are central for decision-makers.

The SWOT analysis distinguishes between four different components that provide an overview of the strategic response to particular challenges (see the illustration below). In the context of the current exercise, it is relevant to use the agri-food system as the boundary of the organization.

	Helpful	**Harmful**
Internal	**S** (Strengths)	**W** (Weaknesses)
External	**O** (Opportunities)	**T** (Threats)

- Strengths and weaknesses : Includes internal aspects that are within influence of the stakeholder and thus may be modified, such as level of collaborations, farming skills and technology, etc.
- Opportunities and threats: Includes external aspects that are beyond the control of the stakeholder and thus cannot be influenced by decision-making. It includes wider structural aspects like soil type, climate, market tends, legislation, etc.

There are various ways to collaborate about a SWOT analysis in a group setting, so feel free to adjust according to your local needs and opportunities bearing in mind that the discussion should result in a short report on a set of predefined themes. This is what we recommend to do, but please note that the schedule is indicative:

Introduktion
A moderator presents the purpose of the exercise and the structure of the discussion. It is great to work in groups of 6-8 people, so that participants have a good opportunity to share their reflections. Therefore, if more participants are attending the session please divide into two or more groups, and allow time towards the end for joint discussion of the findings. When dividing the group it can be useful to divide according to stakeholder category (that is farmers discuss with farmers, consultants etc.) and if you have several groups of farmers then it might be helpful for organic farmers and conventional farmers be put in separate groups, and also arable/mixed farmers.

Step #1: Identifying barriers (40 minutes)

- Frame the discussion around the question: "in your perspective which strengths and weaknesses do you see with respect to addressing the most important soil challenges in your region?" and introduce the exercise.
- Allow participants 3-5 minute reflection time initially, for participants to gather their thoughts and write reflections on a note or a post-it. One reflection pr. post it.
- Always have a facilitator present in the groups to moderate discussions, keep the time, to ensure that participants stay on the right track and understand the exercise.
- Go through the SWOT one quadrant at a time, and allow individual participants time to share their reflections. Bring a whiteboard, a printout or a sheet from a flip-over with the four quadrants of the SWOT and ask participants to post their reflections when going through the quadrant.
- Towards the end of the first session, moderator and/or participants should group statements that are similar producing a consolidated set of categories and rank their 3 most important statements in each quadrant.

Step #2: Strategies to move forward
After completing the SWOT, please gather the groups again in plenum (if you have worked with several subgroups) and allow the facilitator of each group to present the outcome of the discussions.

1. What are the most pressing knowledge need for practitioners to address the most important soil challenges in a 10 year perspective?
2. Aside from filling knowledge gaps, what are the most important initiatives to address the barriers for sustainable soil management?

Your roles: We suggest that for each group, two persons will facilitate discussion, a moderator and a note taker. 1) The role of the moderator is to ensure that the discussion stays on track, keep time and facilitate the dialogue among partners. 2) The role of the note taker is to keep record of the discussion and to summarize key conclusions from the day. If you are short of staff or have many groups one person may fulfil both roles, but it is good to be two people there as it can be difficult to remember discussions when also facilitating.

Outputs

We need to synthesize experiences from the national engagement events. Therefore, it is important that you keep a record of the activities and outputs of the workshops, taking notes, photos of the whiteboard/flip-over, etc.

A short national report based on a joint template will be developed that synthesize your experiences gathered. If you plan that farmers should be more involved in the project in later stages it may be useful to provide some sort of summary of discussions as feedback to your stakeholders or present in newsletter articles, but we have not specified any general format for this.

With a basis in this workshop we ask that you write a short summary of the discussions, about 500 words for each of the questions outlined above, which will feed into a comparison across the countries. Themes are rather broad and should be relevant for each national hub and the initial discussions with the stakeholders in the project.

5. Reporting template

Please find below the reporting template for the exercise. Please add more rows if necessary, if you have many respondents, it may be easier to manage by copy/pasting the template onto an excel spreadsheet.

	General questions for the reporter	
Introduction	Which country do you report from?	
	Who completed the national report?	(Name for contributor list and e-mail for internal communication)
	Survey type (how was input gathered?)	(Select between: Phone, face-to-face, email survey, other specify)
	Reflections regarding the selection and representativeness of stakeholders?	Open question, max 500 words. Did you manage to include all relevant stakeholders in this analysis or is someone not involved, and which perspective is lacking?

	Reporting template for survey				
		Stakeholder 1	Stakeholder 2	....	Stakeholder X
Survey question 1	**Guidance:** Mark the relevant box with an (x)				
	Policy-makers				
	Research communities				
	Research funders				
	Educational institutions and agricultural colleges				
	Farmers & demonstration farms				
	Advisors				
	Farmers' organisations				
	Agro-industry, supply & retail				
	Laboratories				
	National science testing and verification centers etc.				
	NGOs				
	Others				
Survey question	**Guidance:** Indicate the response with a number 1-5 or X “I don’t know”				
	I have a very good overview of agricultural soils in my entire country				

	I have a very good overview of agricultural soils in the region where I am based				
Survey question 3	**Guidance:** Indicate the response with a number 1-5 or X "I don't know", for other indicate the weight followed by the specific aspect mentioned				
	Maintain/increase SOC				
	Avoid N2O/CH4 emissions				
	Avoid peat degradation				
	Avoid soil erosion (e.g water/wind/tillage erosion)				
	Avoid soil sealing				
	Avoid salinization				
	Avoid contamination				
	Optimal soil structure				
	Enhance soil biodiversity				
	Enhance soil nutrient retention/use efficiency				
	Other (please specify):___				
Survey question 4	**Guidance:** Indicate the response with a number 1-5 or X "I don't know", for other indicate the weight followed by the specific aspect mentioned				
	Develop new management strategies for sustainable soil management				
	Improve soil monitoring				
	Increasing availability of existing research for practitioners (farmers)				
	Improving the relevance of future research activities for practitioners				
	Increase availability of existing research for policy makers				
	Improving the coordination of knowledge production between stakeholders				
	Improve the research infrastructures				
	Other (please specify):___				
Survey question 5	**Guidance:** Indicate the response with a number 1-5 or X "I don't know", for other indicate the weight followed by the specific aspect mentioned				
	Maintain/increase SOC				
	Avoid N2O/CH4 emissions				
	Avoid peat degradation				
	Avoid soil erosion (e.g water/wind/tillage erosion)				
	Avoid soil sealing				
	Avoid salinization				
	Avoid contamination				
	Optimal soil structure				

	Enhance soil biodiversity				
	Enhance soil nutrient retention/use efficiency				
	Other (please specify):___				
Survey question 6	**Guidance:** Indicate the response with a number 1-5 or X "I don't know", for other indicate the weight followed by the specific aspect mentioned				
	European soil policies have been strengthened				
	National soil policies have been strengthened				
	Economic support for practitioners to adopt sustainable soil management has improved				
	The availability of soil research for practitioners has improved				
	Soil monitoring has improved				
	The coordination of knowledge production between stakeholders has improved				
	The soil research infrastructures has been improved				
	Other (please specify):___				
Survey question 7	**Guidance:** Indicate the response with a number 1-5 or X "I don't know", for other indicate the weight followed by the specific aspect mentioned				
	Lacking capacity				
	Lacking knowledge communication				
	Limited financial resources				
	Underdeveloped soil network				
	Inadequate policies				
	Lack of relevant technology				
	Other (please specify):___				
Survey question 8	**Guidance:** Indicate the response with a number 1-5 or X "I don't know", for other indicate the weight followed by the specific aspect mentioned				
	Lacking capacity				
	Lacking knowledge communication				
	Limited financial resources				
	Underdeveloped soil network				
	Inadequate policies				
	Lack of relevant technology				
	Other (please specify):___				
Sur ve	**Guidance:** Indicate the response with a number 1-5 or X "I don't know", for other indicate the weight followed by the specific aspect mentioned				

	Lacking capacity				
	Lacking knowledge communication				
	Limited financial resources				
	Underdeveloped soil network				
	Inadequate policies				
	Lack of relevant technology				
	Other (please specify):___				

Survey question 10	Other reflections? (Open)	(Please provide a short summary of input ~500 words)

Reporting template for workshop

Step #1 SWOT analysis	Most important strengths	(Please note the most important categories)
	Most important weaknesses	(Please note and rank the most important categories)
	Most important threats	(Please note and rank the most important categories)
	Most important opportunities	(Please note and rank the most important categories)
	Please summarize the discussions regarding the content of the four SWOT elements	(Please provide a short summary of discussions ~500 words)
Step #2: Strategies	What are the most pressing knowledge need for practitioners to address the most important soil challenges in a 10 year perspective?	(Please provide a short summary of discussions ~500 words)
	Aside from filling knowledge gaps, what are the most important initiatives to address the barriers for sustainable soil management?	(Please provide a short summary of discussions ~500 words)

6. References

Farina, R., Claudia Di Bene, Marchetti, A., Piccini, C., & Vanino, S. (2021). *D2.8 : Report on barriers and opportunities (knowledge and policy) at regional, national and EU levels for further harmonization and collaboration concerning research, data, training, and education*. Retrieved from https://ejpsoil.eu/fileadmin/projects/ejpsoil/WP2/Deliverable_2.8_Report_on_barriers_and_opportunities.pdf

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