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BOOK OF ABSTRACTS

Block A

A2 Leveraging different approaches in the development of
farmer friendly tools for sustainable soil practices and
schemes

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Block A

A2 Leveraging different approaches in the development of farmer friendly tools for sustainable soil practices and schemes

Session Description

Involved projects: ROAD4SCHEMES, IntoDIALOGUE, PRAC2LIV

Conveners: Morten Graversgaard, Meriem Jouini, Francesco Galioto and Monika Vilkiene

EJP SOIL is committed to advocate for the utilization of regionally tailored methodologies for furnishing multispectral insights into agricultural soil-based ecosystem services, particularly in the context of climate change. The prevailing trajectory underscores the need to investigate how to further encourage sustainable soil practices and schemes. The degree of practice implementation and adherence to guidelines for sustainable soil management in Europe exhibits considerable heterogeneity among farmers and across regions. Numerous studies have identified a wide range of barriers to the adoption of these sustainable practices, with special reference to soil management, encompassing disparities in advisory frameworks, country-specific data, knowledge creation and dissemination, type of incentive instruments and governance mechanisms.

We invite abstract submissions to elucidate experiences from projects concerning end-users' engagement, development and adoption of new tools and methods or implementation of new agroecological strategies.

Abstracts of Oral Presentations

More than a Dialogue between actors, seeking the integration of soil-based principles in agroecological systems

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Into-DIALOGUE focus on investigating contingent soil-related issues and to explore potential solutions. Particular attention is paid to those soil functions that can contribute dealing with environmental issues, including climate change, exploring both adaptation and mitigation actions from the field level to the landscape. Building on the results of previous EU and Turkish projects, Into-DIALOGUE aims to determine:

farmers' knowledge, behaviour and risk perception associated with the progressive loss of functions of their agricultural soils. Assessment of this knowledge according to the different characteristics of the farms (size, crop specialization, soil type, etc.).

drivers and barriers for farmers' acceptability of soil-based agroecological management practices, and whether this depends on their ecological identity.

the complexity of applying integrated policies in soil-based agroecological systems; and options for developing EU strategies, opinions, and actions into national sectoral policies.

the bundles among farms characteristics, farmers ecological identity, barriers to adopt sustainable management practices and policy measures (following the methodology of EJP-Soil SERENA project).

the role of farmers, decision-makers, stakeholders and end users, and the benefits that the postulates of citizen science can bring to the visibility of the soil resource in the management practices recommended by Agroecology.

The study area covers a broad range of agricultural realities of the EU and Turkiye, including various climatic regions and social contexts (that's why the project gives a special emphasis to the ecological identity of farmers). In the different contexts, it is first explored the objective dimension of the problem that makes it possible to identify solutions but not to explore their practicability. The practicability of the required solutions is then investigated through the analysis of farms' structural characteristics, farmers' conditions, the existence of facilitating policies that can contribute legitimating farmers roles and attitudes and finally, farmers perceptions of soil-related challenges and responsibility. All these elements justify the multidisciplinary nature of the research team, made up

of scientists from various disciplines: agronomists, foresters, biologists, geographers, economists, life sciences and political sciences.

Currently, the project is about to end, almost all deliverables are completed. Thus, an overview of main methodologies and key messages from project results are provided with the main purpose to set the general framework from where other contributions from this project are expected to be discussed during the breakout session.

Keywords: Participatory methods; Soil health, Driving forces, Policy solutions, Multi-actor approaches

Living Labs to support sustainable soil management practices and the implementation of decision-support Tools in Europe

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Keywords: Living Labs; decision-support tools, implementation, multi-stakeholder, soil management.

Individual decisions taken by farmers determine the change towards more sustainable agriculture and resource management. Sustainable local and regional development may be accelerated by improving farmers' knowledge and capacity to define and decide on sustainable systems. To achieve this, an entity at local level is needed that is legitimate for all stakeholders to support the process of transferring knowledge and innovations, and that ensures the participation of all the legitimate parties concerned by resources management. In this context, the EU has identified Living Labs as a key and legitimate actor in local development, to involve farmers in sustainable resource management, to enable the sharing of knowledge about local resources and decision-support systems, to make it possible to consider the relevant scales of stakeholders: i) the decision-making scale of farmers (plot and farm scale), and ii) the decision-making scale of decision-makers (regional scale) and to ensure the bridge between the different levels. The implementation level of decision-support tools (DSTs) for sustainable soil management in Europe varies among farmers and regions. The aim of this study is to explore, within the EJP SOIL project PRAC2LIV, the main factors that explain why the use of the available tools to improve resource use efficiency and management is still insufficient in Europe, while the necessary tools in many cases are freely available. This study also focused on a case study in Sweden conducted within a Swedish regional project (VGR-project). Within the EJP SOIL project PRAC2LIV, a wide range of DSTs has been identified in Europe: 38 DSTs were reported for soil water availability and retention, 46 DSTs for soil organic carbon and 72 DSTs for soil nutrient use efficiency. Making these tools operational and relevant for farmers is a challenge, let alone for stakeholders in

general. In order to have reliable and accurate input and output data for farmers, the scope and implementation of DSTs must take into account local specificities. Based on farmers' interviews in the Swedish case study conducted as part of the Swedish VGR-project, there is a knowledge gap between farmers and tool developers related to the proposed use and interpretation of tools. Farmers indicated that they receive too little or too much information which effect their capacity to decide whether to use DSTs or not. Instead, many farmers perform on-farm experiments as a method to enhance their decision-making capacity. This underlines the importance of identifying the drivers for sustainability in a real-life context, in order to produce scientific knowledge and make the most of this knowledge at the intervention level. Indeed, experimentation practices might support farmers' transition towards more sustainable practices. The analysis of the interview-results showed that acceleration of sustainable soil management requires efforts by multiple stakeholders, at different organization levels. Living Labs can be key to connect stakeholders in the articulation of tailored interventions for sustainability at the regional level. Furthermore, they can support innovation processes around experimentation to foster sustainable soil management practices and the implementation of DSTs for sustainable development from local to national and European levels.

Advancing carbon farming in Europe: Insights and challenges from research and policy perspectives

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Carbon farming, a key strategy for mitigating climate change and enhancing soil ecosystem services, holds immense promise in Europe. This presentation synthesizes findings from multiple research papers and deliverables within the EJP SOIL - Road4Schemes project to provide comprehensive insights into the landscape of carbon farming schemes in Europe.

Drawing from the inventory and analysis conducted in Work Package 2 (WP2), we evaluate the diversity of carbon farming schemes across Europe, examining their organizational structures, payment models, and adherence to critical principles such as additionality and long-term carbon storage. Additionally, we explore the implications of private versus public schemes and the challenges in standardization and monitoring.

Furthermore, insights from Thorsøe et al. 2024 shed light on the design and implementation of carbon farming schemes, emphasizing the need for credible schemes that ensure quantifiable carbon removal, additionality, and sustainability. While result-based schemes hold promise, the predominant use of activity-based incentives presents a notable observation.

Hönle et al. 2024 delves into the integration of carbon farming into national policies, highlighting the evolving role of carbon farming in achieving national climate targets. Disparities among European countries in policy emphasis, assessment of carbon farming options, and strategies for monitoring and verification underscore the need for harmonization and coherent strategies.

Additionally, insights from farmers' perspectives, as explored in WP3, provide valuable considerations for scheme design and implementation. Farmers' varying levels of interest, adoptability, and opinions on result-based schemes underscore the importance of tailoring schemes to meet their needs while addressing measurement challenges and providing adequate support.



Finally, the roadmap outlined in WP4 offers a decision-making tool for the further introduction of carbon farming, considering local characteristics and environments. This holistic approach integrates natural, economic, technical, and regulatory factors to facilitate informed choices in implementing carbon farming schemes. By synthesizing these insights, our presentation contributes to the ongoing discourse on advancing carbon farming in Europe, addressing challenges, and informing policy and decision-making processes for a sustainable future.

References

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Graversgaard, M., et al. 2024. Carbon Farming in Europe: A qualitative study of farmers' perspectives on Result-Based Schemes. Under review with Carbon Management

Hönle et al. 2024. Integration of carbon farming into national policies - comparison and analysis from different European countries. Under review with Journal of Environmental Management.

Keywords: carbon management; scheme design; decision making tools; MRV

Policy gaps and inconsistencies in addressing agricultural soil health challenges in the EU and Türkiye

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This study focuses on the analysis of policies addressing soil health challenges which have been recently designed and implemented in six EU countries and in Türkiye. To this end, researchers involved in the Into-DIALOGUE project have developed a common research framework consisting of five key policy areas: Incentivising the adoption of sustainable practices, with special reference to voluntary measures supported by agricultural policies (i.e., the CAP for EU countries and IPARD for Türkiye); Enabling participatory processes, with particular reference to regulations empowering collective actions (e.g. Bio-districts, Land associations, Rural districts); Regulating the protection of the environment and the landscape, which includes both nitrate, water, and biodiversity directives, as well as regulations and rules aimed at protecting landscape features; Co-creating and sharing innovation and knowledge, with special reference to EIP-Agri Operational Groups, lighthouses and living labs and advisory services; Triggering new market opportunities, which encompasses rules on geographical indications of origin, short food chain initiatives and voluntary certification schemes.

A comparative analysis based on descriptive statistics and qualitative information was performed in order to: highlight convergences and divergences of the policy interventions adopted in different countries, assess the relevance of the policies compared to current soil health challenges, and identify policy gaps and inconsistencies in the design of policy interventions.

The results show that, in general, policy decisions and the agro-ecological practices promoted by these policies are not supported by robust evidence regarding the extent of soil-related issues at the

territorial level. Moreover, they frequently lack rigorous conditionality requirements, posing a risk to their effectiveness, particularly in certain types of farming systems. In addition, the different national soil health strategies are generally still characterised by a number of weaknesses, partly due to the flexibility with which EU regulations and directives can be implemented, which has often led to weaker commitments, and partly due to deliberate infringements, which have a direct impact on the ability of governments to monitor and control compliance. Conclusions summarise the main findings, discuss the limitations of the policies examined and provide some policy recommendations to address the existing gaps due to the lack or poor design of relevant policy instruments.

Keywords: Policy instruments; soil degradation indicators; agroecology; CAP; conditionality.

Enhancing Soil health through values-based business models

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Keywords: soil health, business models, payment for ecosystem services

Soil is a key asset for farmers and land managers and requires continuous investments to prevent land degradation and increase farm resilience¹. In addition, soils are important for society as a whole, generating key ecosystem services such as clean water, carbon sequestration and biodiversity². However, the importance of well-functioning 'healthy' soils is often not recognised, neither in business decisions nor by the general public, resulting in a lack of incentives for private and public land managers to adopt practices supporting soil health³. Thus the question rises: *What conditions need to be met in order to develop succesful business models which include soil health and get them adopted by land managers?*

the Horizon Europe project SoilValues comprises six case studies across Europe (Belgium, The Netherlands, Denmark, Germany, Poland and Portugal), in which researchers identify the relationships between farming practices, income, soil health and the ecosystem services provided by land managers.

Land managers then work together with their stakeholders in each case study to formulate implementation plans detailing how they will explore or test options for adaptation of their current business model. The goal is to recognise and capture value from (improvements in) soil health and the delivery of ecosystem services and collaborate with stakeholders on how to distribute this value. This is done in a co-creative setting, involving a wide range of stakeholders through interviews, workshops, focus groups and field visits.

The preliminary results highlight the necessity and added value of including a diverse group of stakeholders to identify new business opportunities and tackle the various accompanying financial, legal and practical obstacles. Besides the possibilities for adapted business models, the various stakeholder interactions are increasing awareness on soil health and related concepts through regional networking. At the same time, the many perspectives represented by these stakeholders demonstrate the subjective nature of attributing (economic) value to concepts such as soil health, of which the benefits in the short- and long-term can be complex and challenging to quantify.

In conclusion, a co-creational approach to developing business models for soil health is promising due to the need for a consensus on the (economic) valuation of soil health and ecosystem services within a specific value chain. This approach recognises the involved nature of business models which have land

management decisions at its core. At the same time, involving many stakeholders is not without challenges and possible pitfalls.

¹ Cong, R.G. et al., 2014. *Managing soil natural capital: an effective strategy for mitigating future agricultural risks?* *Agric. Syst.* 129, 30–39.

² Brevik et al., 2018. *Soil ecosystem services and human health*, *Current Opinion in Environmental Science & Health*, Vol. 5, Pages 87-92

³ Davies, J., 2017. *The business case for soil*. *Nature* 543, 309-311.

Identifying farmers' priorities in soil management for climate adaptation to develop attractive support measures

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Climate change and the associated increase of extreme weather events pose serious challenges for crop farmers across Europe. Climate-smart soil management practices can mitigate these challenges at the farm level. However, adopting such practices requires farmers to change their production system, acquire new equipment, deal with new challenges in pest management, and more, which might result in farmers being reluctant. A widespread uptake of climate-smart soil management practices thus requires supporting the on-farm transformation process. However, farmers, like society, are not a uniform group and their decisions are driven by factors such as social and cultural norms, values, and attitudes. As a result, farmers have different priorities in their soil management. To identify suitable support instruments, it is therefore necessary to identify the soil management priorities of different farmers.

We used a mixed-method approach to answer the following research question: “What priorities do different farmer types have in their soil management?”. We conducted a total of 130 Q-methodological interviews with farmers (operators of crop or mixed farms) in five European countries (Austria, Denmark, Spain, Sweden, Switzerland). Q Methodology centres around on a set of statements on a topic (here: soil management priorities), derived from literature, pre-tests and stakeholder interviews. Respondents sort these statements according to their level of agreement with each statement. In the analysis, we then statistically identify typical ways how the statements have been sorted and qualitatively interpret these typical sortings.

We identified five different farmer types or viewpoints, with differing priorities in soil management: Farmers that share viewpoint 1, “sustainability of soil and environment”, prioritize soil health and environmental aspects to preserve their farm for future generations. Viewpoint 2, “efficient farm management” is shared by farmers who strive to optimize their farm business for economic sustainability. Accordingly, they focus on soil water retention and an efficient organization of the farm work in their soil management. Farmers aligned with Viewpoint 3, “farming the triple bottom line”,

prioritize the long-term economic viability of their farms, while also considering social and environmental impacts. They are open to novel practices and, above all, want to enjoy their work as farmers. Farmers sharing viewpoint 4, “traditional farm work”, strongly believe in providing food for the world through hard and accurate farm work and enabling their successors to continue farming. Moreover, viewpoint 5, “striving for financial stability”, gives top priority to the avoidance of risks that could endanger the farm’s continuation.

Based on these priorities, each viewpoint will also respond differently to different support measures for adapting their soil management. To identify which types of support will be attractive to different viewpoints, we also conducted country-specific workshops with farmers. These show that some farmers will likely respond to financial support, while others might need information campaigns, field days, or societal recognition for their work with the soil. These results can inform policy makers, farm advisors, and other stakeholders to provide tailored information and support measures.

Keywords: Farmer typology, policy recommendations, sustainable soil management, climate adaptation, farmer priorities

Assessing Agri-Environmental Footprints and Pathways to Net-Zero: Insights from Process-Based and Whole-Farm Models

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Agriculture, with its significant environmental footprint, notably in greenhouse gas (GHG) emissions, presents a crucial arena for achieving climate action goals primarily carbon-neutral farms by 2050. Achieving a sustainable future requires strategies aimed at mitigation and offsetting of GHGs through increased carbon sequestration. The labour-intensive measurements of all inputs and outputs at a farm-to-country level trigger to find tools for accounting, and evaluation, and thereby find alternative options for decision making.

Process-based models (PBMs) and whole-farm models (WFMs) emerge as potential solutions to this challenge, offering unique strengths to tackle this complexity. PBMs, like DNDC, excel at dissecting specific agricultural practices like fertilization. By simulating underlying biophysical processes, they shed light on the "why" behind emissions, generating crop-specific and management-specific emission factors (EFs). However, their reliance on site-specific calibration and potential lack of transparency in source code can limit their wider application. WFMs, in contrast, offer a holistic view of the farm ecosystem, encompassing crops, livestock, agroforestry, and management practices. This comprehensive approach allows the assessment of mitigation strategies and explores pathways towards carbon-neutral farms. While WFMs offer a powerful tool for solutions, their data-driven nature and potential complexity can be daunting, particularly for smaller farms with limited resources. Bridging this gap lies in leveraging the synergies and trade-offs of both approaches. PBMs can provide research-grade insights and refined EFs tailored to specific farm contexts. These insights can then be seamlessly integrated into WFMs, enhancing the accuracy and realism of farm-level assessments. This paves the way for targeted intervention strategies and more precise estimations of a farm's environmental impact.

Digital platforms like HOLOS-IE (www.ucd.ie/holos-ie) could play a crucial role in facilitating this synergy. This digital platform, under development, offers a user-friendly interface, transforming the complex modelling process into an accessible tool for farmers and other stakeholders. By streamlining data input and offering intuitive visualisations, HOLOS-IE empowers stakeholders to gain a deeper understanding of their agri-environmental footprint and choices for its reduction. Automation of soil and climate parameters through mapping, along with the integration of default inputs/EFs from PBMs,

could significantly reduce input requirements. This empowers actively track and manage carbon footprint, paving the way for more sustainable agricultural practices.

This paper presents a preliminary version of HOLOS-IE, leading to HOLOS-EU for wider application across Europe, showcasing its potential to be an invaluable tool in the pursuit of net-zero emissions in agriculture. By providing accessible and user-friendly environmental assessment tools, we can empower farmers and other stakeholders to become active participants in the fight against climate change, fostering a more sustainable future for agriculture.

This ongoing research is funded by the Science Foundation Ireland via GOV.IE, and ECRRF (HOLOS-IE)

Keywords: Sustainable Agriculture, Greenhouse Gas Emissions, Modelling, Net-Zero Emissions, Decision Support Systems

Developing a Carbon farming framework supporting Ireland to meet its climate targets.

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The European Commission defines carbon farming as “a green business model that rewards land managers for taking up improved land management practices, resulting in the increase of carbon sequestration in living biomass, dead organic matter, and soils by enhancing carbon capture and/or reducing the release of carbon into the atmosphere, in respect of ecological principles. Carbon farming can enable the facilitation of certified climate action which has the potential to be rewarded through result-based contracts/approach with other actors in the value chain or through public support.” In its role of helping Ireland meet its Climate targets, a fit for purpose National Carbon Farming Framework will provide opportunities for Irish farmers/land managers to derive a new and diversified income stream for their farm. It is essential that this Framework provides confidence, trust, fairness, verification and certification to support rewarding Irish farmers/foresters for the actions they take to remove and store carbon in our soils, forests, grasslands, croplands, peatlands and hedgerows.

The Framework will create the structures needed to leverage appropriate financial incentives to scale up adoption of measures by land managers that will result in Ireland achieving its ambitious targets on emissions reductions, biodiversity and water quality improvements. The Core Carbon Principles (CCPs), have been adopted to set out fundamental principles for high-quality credits that create real, verifiable climate impact, based on the latest science and best practice. Following input through public consultation, the CCPs have been adapted to include biodiversity/water quality improvements in the Irish context. Two additional overarching principles have also guided the development of this Framework; Just Transition & Learning By Doing.

This research presents the outcomes of a public consultation, elements of policy lab and describes the process to develop the national framework and outlines the framework that will be submitted for approval by the government. Elements of the new policy identified as key by various stakeholder groups will be described, as well as areas of concern and implementation conditions that should be ensured. Analyzing qualitative data from the entire policy creation process as well as quantitative data from the public consultation stage itself, we use the Transformative Innovation Policy approach, trying to understand what forms of creating climate policies have the greatest potential to activate various resources. **Keywords: Carbon farming, ecosystem, public consultation, climate policy, governance.**

Abstracts of Poster Presentations

Soil health challenges and farmers adaptation strategies: transition pathways in Türkiye and the European Union

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The degradation of agricultural soils in the European Union (EU) and Türkiye poses a significant threat to both human well-being and ecosystems, with around 60-70% of agricultural soils found being unhealthy due to one or diverse soil threats. While agriculture has the potential to mitigate soil degradation through adequate practices, relevant stakeholders are not enough motivated to drive meaningful change, even in the presence of facilitating policies. This underscores the need for a coherent soil strategy that integrates agricultural and environmental policies, tailored to regional realities and equipped with effective instruments to address contingent problems and drive the transition of agricultural systems towards more resilient agroecological states. In this regard, a survey involving 70 farmers from 5 regions around Europe and Türkiye with agricultural soils under threat, is carried out to investigate farmers adaptation strategies. A Data Envelopment Analysis followed by a regression analysis, complemented with qualitative information, is carried out to investigate inefficiencies, barriers, and driving forces. Results reveal the existence of different factors that contribute influencing farmers adaptation strategies. From a preliminary analysis (data analysis is still ongoing), Implementation cost barriers appear particularly strong for small farms, while market barriers for large farms with high income share from agriculture and with leased land. Inefficiencies are also strongly influenced by the territory where farmers operate for both small and large farms. Discussions follow arguing around the driving forces, with special reference to the influence of the territory on a social and biophysical perspective. This is because the different reference territories of the selected farms reflect different forms of social constructions farmers are embedded in and

influenced by, such as markets and governments. The interplay of such forces is thought to influence farmers adaption more than their structural characteristics. The paper is expected to conclude with some policy implications addressing the influence of local governments in recognizing the role of farmers in contributing protecting the environment through appropriate incentive policies followed by facilitating policies to accompanying the transition towards more resilient agroecological systems, such as the provision of advisory services, demonstration fields and better rules to protect the environment and favour the collaboration between farmers, the absence of which can compromise the efficacy of facilitating policies when present.

Keywords: Soil health; Data Envelopment Analysis, Farmers' survey

Knowing and needs on soil quality indicators for agroecological practices: results from a systematic review of long-term experiments in Countries participating in “Into Dialogue” EJP Soil project

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The study insight into the assessments of the relationships between agroecological practices and soil quality through a literature review of studies carried out within the countries involved in the INTO-DIALOGUE project (Italy, Poland, Spain, Czech Republic, Latvia, Lithuania, Turkey). The focus was on the soil quality properties and related soil ecosystem services in relation to agroecological practices in each country.

The results showed how conservation practices are useful for improving soil quality in general and supporting soil ecosystem services, particularly in terms of regulatory and support functions influenced by organic amendment.

Moreover, the results showed the need for a comprehensive dataset including physical, chemical, and biological properties to assess soil quality and to address current needs regarding soil functions and ecosystem services. Biological data should be used more in soil quality assessment due to their completeness of information and faster response compared to physical and chemical aspects of the soil. For this reason, it would be necessary to invest in the harmonization and clarification of methodological aspects required for proper soil quality monitoring. In conclusion, the review sustained that agroecological practices have a strongly positive effect on soil quality and emphasized

the importance of increasing long-term experiments focusing on conservation practices, especially in environmentally sensitive European and Turkish agricultural landscapes.



A novel method to support the discussion of soil management PRACTices and development of decision support TOols through LIVing labs in EU (PRAC2LIV)

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The project PRAC2LIV explores how Decision Support Tools (DSTs) for soil management could support soil health in living labs. The DSTs in this case were constrained to those addressing soil organic matter, water retention, and nutrient use efficiency. Assessing the potential of DSTs to support soil health in living labs is a complex issue, given that all the various aspects of context will play a key role. Therefore, there is a need to not only collect information on DSTs but to inspire conversations to understand the needs and expectations of different stakeholders within the different contexts of living labs across Europe. To address that need, we used the novel participatory pictorial approach which include the visualization and short justification text. This method consists of (1) extracting a visualisation out of a team discussion, (2) presenting these visualised key points in expert groups and (3) using the visualisation as a source for discussion. Throughout the process, the visualisation goes through several iterations, all with the end goal of igniting fruitful discussions. Shown here is a pictorial highlighting a set of key topics around DSTs for soil health in living labs within the EJP Soil PRAC2LIV project. We presented the visualization to several expert groups at various scale levels both national and international. In the discussions, the visualization bridged communication gaps between living lab stakeholders with different values and needs. For instance the suggestion to include a digital twin for living labs and to consider financial aspects of soil health. The visualisation approach was found to be useful to generate new directions for programmes such as EJP Soil including important topics that could be (re)evaluated.

Keywords: Decision Support Tool, sustainable soil management, Living Lab, visualisation, pictorial, novel participatory method

Identification of drivers and barriers to the acceptability of agroecological land management practices for farmers in the EU and Turkey

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With the new 2023-2027 Common Agricultural Policy (CAP), Member States were called to prepare their own Strategic Plans providing support to the agricultural sector and rural areas with specific common objectives and especially greater environmental ambition. The aims involve conditions for sustainable farming in the European Union (EU), targeted support to farms, and increased flexibility for EU countries to adapt measures to local contexts. Into-DIALOGUE project, funded by the European Joint Programme on SOIL, is focused on exploring eco-schemes' potential impact on climate- and environment-friendly farming practices and biodiversity improvements. Targeted agri-environmental measures strongly support conserving managed areas of significant natural value, natural resources, biodiversity, and landscape maintenance. Similar supporting measures focused on sustainable agriculture and farming practices are realised in Turkey.

In the Into-DIALOGUE project, a questionnaire survey was carried out in the seven participating countries (Czech Republic, Spain, Italy, Lithuania, Latvia, Poland, and Turkey) to identify the drivers and barriers farmers face in adopting sustainable farming practices. The results of the questionnaire survey on a sample of farms provide valuable information on farmers' attitudes towards different agri-

environmental measures. The status of farms (individual farmers or legal entities), type of management (conventional; organic), area of cultivated land, the age structure of management, the labour force (family labour; non-family labour), and other indicators were assessed as classification criteria.

Farmers' attitudes regarding the current status and estimation of the short and medium-term outlook of their farming in relation to the introduction of agroecological practices and possible barriers were surveyed. Details on risk assessment of biodiversity loss, soil erosion, soil compaction, or loss of organic matter were investigated. The evaluation of the data concerning each agri-environmental measure provides results in terms of assessing the financial benefits to the farm, the improvement of soil conditions, the improvement of agroecological parameters, including biodiversity, the assessment of the time and workload on the field, and the administrative burden associated with the implementation of the measures.

Keywords: CAP eco-schemes; agroecology; farmers' survey; financial benefits; participatory approach

