TRAILS 4 SOIL

POLICY BRIEF

Strengthening the policy framework for Regenerative Conservation Agriculture Practices: barriers, enablers, and policy opportunities

Marie-Alizée Kuhn, Elisabet Nadeu &
Melanie Muro (IEEP)

Funded by the European Union

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Education, Research and Innovation SERI

Funded by the European Union. Views and opinions expressed are, however, those of the author(s) only and do not necessarily reflect those of the European Union or the European Research Executive Agency (REA). Neither the European Union nor REA can be held responsible for them.

Executive Summary

Europe's agricultural soils face severe degradation, with over 60% classified as unhealthy due to intensive soil disturbance, insufficient soil cover, simplified crop systems, land use pressures, and climate change. Erosion rates exceed soil formation rates in agricultural land by 1.6 times, threatening the European environment, food security, and resilience. Regenerative and Conservation Agriculture Practices (ReCAP) offer solutions to restore soil health, enhance water retention, boost biodiversity, and sequester carbon while supporting long-term farm resilience. Despite these benefits, uptake of ReCAP across Europe remains limited due to various interconnected barriers.

This brief analyses the results of selected EU-funded projects carried out between 2020 and 2025, stakeholder input gathered during a series of TRAILS4SOIL workshops, along with supplementary literature, to identify these barriers and the factors that can enable change. The identified barriers encompass knowledge gaps, high investment costs, yield uncertainty, regulatory instability, social resistance to change due to ageing demographics and peer influence, and technical barriers such as the lack of technical support and access to adequate machinery. Key enablers include peer-to-peer networks, evidence of positive soil health outcomes, financial incentives, and supportive policies, alongside advisory support.

The brief also acknowledges how existing EU policy frameworks, such as the Common Agricultural Policy (CAP) eco-schemes, the Nature Restoration Law, and emerging tools like transition aid in post-2027 CAP proposals and the Competitiveness Fund, can provide opportunities for ReCAP, although these often lack strong, mandatory integration of the practices or sufficient scale for systemic change.

To facilitate adoption, the brief recommends:

1. Enabling multi-actor collaboration for equipment sharing, peer networks, and effective advisory systems, while ensuring farmer involvement in the design of agri-environmental measures.
2. Enhancing policy coherence by ensuring the stability of EU environmental and climate objectives relevant to agriculture, securing dedicated funding for ReCAP, reinforcing the result-based payment framework under Article 10 of the post-2027 CAP, and integrating ReCAP into the CAP Performance Monitoring and Evaluation Framework (PMEF).
3. Creating private finance opportunities by mobilizing private capital via blended finance and landscape approaches, as well as establishing outcome-based indicators and benchmarks.

Overall, scaling ReCAP requires context-specific strategies that address transition risks, support economic viability, build farmer confidence, and align policy instruments with the realities of system-level change

The value of Regenerative and Conservation Agriculture Practices (ReCAP)

European agricultural systems face severe soil degradation, with over 60% of soils in an unhealthy state due to unsustainable agricultural practices and land use changes (European Commission, 2020). Erosion rates exceed soil formation rates on agricultural land by 1.6 times, threatening agricultural productivity, climate stability, food security, and resilience (Pravalie et al., 2024; European Commission, 2020; Arias-Navarro et al., 2024).

Healthy and functioning soils play a crucial role in food system resilience by supporting stable yields, enhancing the capacity of agroecosystems to withstand and recover from pressures and shocks, thereby contributing to the robustness and transformability of food systems (Sgarbi & Nadeu, 2023). Improving soil health enhances water retention, nutrient cycling, and soil organic matter content, strengthening EU farming's adaptive capacity in the face of climate change and market volatility (Van Dijk et al., 2024).

In this context, **Regenerative and Conservation Agriculture Practices (ReCAP)** represent vital strategies for preventing and reversing soil degradation. While **Conservation Agriculture (CA) follows three main principles**, i.e. 1) Minimum mechanical soil disturbance, 2) Permanent soil organic cover, and 3) Species diversification) (FAO, 2022**), Regenerative Agriculture (RA) is less well defined,** with some definitions emphasising practices and other outcomes (Newton et al., 2020). These can include improvements to soil health, biodiversity, ecosystem services, climate resilience, nutrient cycling, and the long-term viability of farms. **Regenerative systems often use Conservation Agriculture techniques**, but they may also include additional practices. These include bringing livestock into a farming system through practices such as rotational or planned grazing. As a result, the integrated mix of Regenerative Agriculture and Conservation Agriculture techniques provides an effective, sustainable transition of EU farming systems.

Table 1 provides an overview of ReCAP. This classification is based on a typology developed during the initial stages of the project and may evolve as the work progresses. It is not intended to provide a definitive or exhaustive categorisation of regenerative and conservation agriculture, as alternative typologies may exist in the literature. Rather, the terms are used pragmatically to group related practices, without drawing strict boundaries between regenerative and conservation approaches.

Crucially, **these practices are most effective when implemented as an interdependent system, instead of stand-alone measures**. In the context of Conservation Agriculture, in particular, minimal soil disturbance, permanent soil cover, and crop diversification are mutually reinforcing. When reduced or no-tillage is adopted in isolation (e.g., without accompanying soil cover and a diversified rotation), it can amplify agronomic challenges, including surface compaction, weed and pest build-up, or transient yield losses (Musto et al, 2023). Adopting individual practices in isolation, therefore, risks under-delivering on soil health outcomes. Recognising ReCAP as an integrated, locally adapted system, rather than a checklist of discrete actions, is a precondition for both agronomic effectiveness and credible policy support.

TABLE 1. EXAMPLES AND DESCRIPTION OF MAIN RECAP AND THEIR BENEFITS TO SOIL HEALTH

ReCAP	ReCAP description	Benefits [1]
Soil management		
Sown cover crops/groundcovers	Growing crops that cover the soil between two crop cycles	Reduce desertification and salinisation; Increase carbon stocks; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops
Spontaneous groundcovers	Naturally emerging vegetation allowed to develop on the soil surface to maintain continuous cover and protect soil functions.	Reduce desertification and salinisation; Increase carbon stocks; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops
Mulching (woody or herbaceous residues)	Applying a layer of material on top of the soil to protect and improve its condition	Reduce desertification and salinisation; Increase carbon stocks; Increase water infiltration and retention; Reduce evaporation; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops; Increase food sources for soil biota
Minimum soil disturbance/permanent soil cover	Management system minimizing soil mechanical disturbance and ensuring permanent protective ground cover through residues or cover crops	Reduce desertification and salinisation; Increase carbon stocks; Reduce oxidation of carbon stocks; Prevent erosion; Reduce compaction; Improve soil structure to enhance habitat quality for soil biota and crops
Mechanical control of cover crops	Use of specialised equipment to terminate cover crop growth by flattening, crushing, or severing plants without soil inversion	Reduce soil pollution and enhance restoration; Prevent erosion; Reduce compaction; Improve soil structure to enhance habitat quality for soil biota and crops
Minimum tillage/No tillage	Reduction in the intensity of tillage or elimination of tillage altogether	Reduce desertification and salinisation; Increase carbon stocks; Reduce oxidation of carbon stocks; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops
Crop management		
Intercropping, mixed cropping	Growing two or more crops together on the same field to diversify cover and improve soil structure	Reduce desertification and salinisation; Increase carbon stocks; Reduce soil pollution and enhance restoration; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crop; Increase food sources for soil biota
Adapted crop rotation	Planting at least three different crops sequentially on the same plot of land	Reduce desertification and salinisation; Increase stocks; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops;
Weed control		
Alternative weed control techniques	Non-chemical management tactics integrated into farming systems, designed to suppress weed growth while maintaining soil integrity	Reduce soil pollution and enhance restoration; Improve soil structure to enhance habitat quality for soil biota and crops
Adapted plant protection measures	Holistic, prevention-first strategies that minimise reliance on synthetic pesticides while ensuring plant health	Reduce desertification and salinisation; Reduce soil pollution and enhance restoration; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops
Green infrastructure		

[1] It is important to note that the exact nature and magnitude of benefits will depend on the individual practice, and its implementation in the specific location.

ReCAP	ReCAP description	Benefits [1]
Multifunctional field margins/buffer zones	Vegetated areas positioned between cropped fields and adjacent habitats such as waterways, forests, or roads	Improve soil structure to enhance habitat quality for soil biota and crops; Provide habitat for beneficial insects and birds; Reduce erosion
Forest curtains	Linear, continuous belts of trees or shrubs established along field edges to serve as windbreaks, protect crops, and create ecological buffers between agricultural and forest areas	Reduce desertification and salinization; Improve soil structure to enhance habitat quality for soil biota and crops; Provide habitat for beneficial insects and birds; Reduce erosion; Increase soil literacy in society
Biodiversity structure	Deliberate integration of semi-natural habitats into the farm landscape to support functional biodiversity, such as pollinators and pest predators	Improve soil structure to enhance habitat quality for soil biota and crops; Provide habitat for beneficial insects and birds
Livestock and Pasture Management		
Managed grazing and integrated livestock	Livestock integrated into landscapes to mimic natural grazing patterns, allowing soil regeneration, nutrient cycling, and biodiversity function	Reduce desertification and salinisation; Increase carbon stocks; Reduce soil pollution and enhance restoration; Increase water infiltration and retention; Reduce compaction; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops; Reduce GHG emissions associated with animal feed
Adapted crop rotation for enhancing self-sufficiency in animal feed	Strategic sequencing of diverse forage, leguminous, and cereal crops designed to maximise on-farm production of livestock feed, reduce dependency on external inputs, and improve soil fertility	Reduce desertification and salinisation; Increase carbon stocks; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops; Reduce GHG emissions associated with animal feed
Permanent grassland (established in the rules of CA grassland)	Land that has been used to grow grasses or forage plants for five or more consecutive years and is not subject to ploughing or reseeding during this period	Reduce desertification and salinisation; Increase carbon stocks; Prevent erosion; Improve soil structure to enhance habitat quality for soil biota and crops

Sources: Compiled by the author using the following sources with additional input and review from TRAILS4SOIL experts: European Environment Agency, 2019; Newton et al., 2020; FAO & ITPS, 2021; Food and Agriculture Organisation of the United Nations, n.d.; European Economic and Social Committee, 2025.

Despite its well-documented benefits, the **uptake of ReCAP in Europe remains slow** (Miller-Klugesherz et al., 2023; Heller et al., 2024). For instance, according to Kassam et al (2022), CA is practiced on approximately five million hectares, representing about 10% of Europe's total cultivated soils.

The Common Agricultural Policy (CAP)[2] supports the uptake of some ReCAP through mandatory Good Agricultural and Environmental Conditions (GAECs) tied to area-based payments, and voluntary incentives provided through eco-schemes and agri-environment measures. These schemes target the adoption of specific practices but do not comprehensively address the systemic changes needed for an effective and holistic transition (EU CAP Network, 2024; European Commission, 2023). Advancing ReCAP will require a more coordinated approach that goes beyond the individual measures and supports farmers throughout the transition. In this context, **understanding the factors that influence the farmer uptake of ReCAP is a**

[2] European Commission (n.d.) Common agricultural policy overview

critical first step for designing effective policy interventions. This paper aims to identify the key barriers and enabling factors that affect the implementation of ReCAP in Europe, and to assess how these practices can align with the evolving EU policy framework.

Methods

This brief synthesises evidence from several EU-funded projects (see Annex 1) and scientific research papers on the adoption of ReCAP in Europe, covering Mediterranean and temperate zones, and practices such as cover crops, reduced tillage, and mulching. Further details on the methods used are provided in Annex 1.

Relevant projects were identified through systematic searches of the European Commission's CORDIS database and the Mission Soil Platform [3, 4], using search terms including "soil health" and "sustainable soil management", "regenerative agriculture", and "conservation agriculture". This initial screening was complemented by targeted searches of individual project websites to retrieve publicly available deliverables and reports. Where relevant, additional academic sources were consulted to triangulate findings.

To complement this review, stakeholder input and perspectives were gathered through a series of workshops. These workshops engaged farmers and stakeholders from the TRAILS4SOIL Living Labs across Austria, Germany, Slovenia, Switzerland, Moldova, Romania, and Ukraine, thus representing different farming systems and regional contexts. Discussions focused on identifying practical barriers to the uptake of ReCAP, as well as exploring enabling factors and potential policy solutions. The stakeholder input was systematically analysed and integrated into the assessment of barriers and the formulation of policy recommendations presented in this brief.

[3] European Commission. (n.d.). *CORDIS*. https://cordis.europa.eu/

[4] European Commission. (n.d.). *Mission Soil funded projects*. Mission Soil Platform. https://mission-soil-platform.ec.europa.eu/project-hub/funded-projects-under-mission-soil

Key barriers preventing change

The barriers identified through the review of past research projects and stakeholder inputs can be grouped into four main dimensions: 1) knowledge and technical, 2) financial/economic, 3) policy/institutional, and 4) socio-cultural (see Figures 1 and 2). These are further explained in the remainder of this subsection.

FIGURE 1. RECAP BARRIERS ACROSS DIFFERENT DIMENSIONS

KNOWLEDGE AND TECHNICAL BARRIERS

- Farmers are insufficiently informed about these practices or the extent to which these could apply to them.
- Limited regional testing of these practices and the uncertainty regarding the applicability of certain techniques across different contexts.
- Biophysical obstacles, such as climatic factors limiting the adoption of specific practices such as cover cropping.
- Lack of harmonised metrics, monitoring frameworks, and sampling protocols limits comparability and learning across regions at the European level.

FINANCIAL AND ECONOMIC BARRIERS

- Struggle to face higher investment costs associated with a transition towards new agricultural practices. The uptake of these practices requires capital for new equipment, different tools, machinery, and specialized labours.
- Uncertainty concerning yields and productivity under ReCAp represents a large financial risk for farmers.
- Lack of an established market for ReCAP products, unlike conventional agricultural products, limits revenue certainty.

POLICY AND INSTITUTIONAL BARRIERS

- Uncertainty in the regulatory environment, amplified by recurring policy shifts and market uncertainty, which affects farmer trust and reduce the will to engage in potential long term transitions.
- Inadequate subsidies and support programs, current subsidies focus on ongoing costs instead of funding for upfront investments to transitioning.
- High bureaucratic burdens at the local level further complicate access to existing support schemes, making policies difficult for farmers to navigate and implement.

SOCIO-CULTURAL BARRIERS

- Lack of trust in new practices concerning their impacts on yields. There is strong farmer uncertainty over the technical feasibility of a transition to ReCAp, frames doubt the long-term financial stability of these practices.
- Ageing demographics and path dependency, including traditions and customs, may create resistance to change.

Knowledge and technical barriers

Adopting ReCAP often requires a certain level of knowledge, skills, and overall understanding of agroecosystems. The absence of a universal definition of Regenerative Agriculture further complicates this, as it can be defined in various ways, ranging from outcome-based approaches to practice-based frameworks with core principles (Shennan-Farpon et al., 2025; CEFE International, 2021; Newton et al.,

2020)[5]. Key knowledge and technical gaps identified by the reviewed literature include **limited access to relevant information, specifically from regional testing of ReCAP**, which heightens perceived risk, as well as the need for new skills and training (McNeill et al., 2021; Hansda et al., 2021). **Limited access to machinery and soil management technologies** further prevents farmers from implementing these practices (Padel et al., 2025; Heller et al., 2024; Nyssens & Leake, 2021). This boils down to farmers needing affordable access to machinery, digital tools, monitoring systems, and locally relevant technologies if they wish to implement more sustainable soil management practices.

Additionally, **biophysical limitations such as climate variability, water scarcity, soil conditions, and local pedoclimatic constraints can increase uncertainty regarding ReCAP performance** across diverse agroecological contexts (Shennan-Farpon et al., 2025). However, the absence of harmonised monitoring frameworks at the EU level renders it difficult to assess soil performance and thus the long-term economic and environmental benefits of ReCAP (Bravo-Garcia et al., 2025).

BOX 2. STAKEHOLDER WORKSHOP RESULTS: KNOWLEDGE AND TECHNICAL

Knowledge gaps, weak advisory systems, and poor knowledge transfer were common barriers reported by stakeholders across most of the TRAILS4SOIL Living Labs. Workshop participants highlighted gaps in technical knowledge and insufficient translation of research into practice. For instance, stakeholders in Spain indicated a lack of advice and limited access to academic knowledge. Meanwhile, Portugal's Living Lab farmers mentioned fragmented data and weak extension networks. Romania, on the other hand, pointed to underfunded research and insufficient educational resources. Participants from Moldova also highlighted a lack of integration of research into policy, while stakeholders surveyed in Slovenia reported poorly functioning Agricultural Knowledge and Innovation Systems (AKIS) and difficulties in accessing expert information.

Many identified barriers were related to the cost, availability, and suitability of technology, machinery, monitoring systems, and data platforms. For instance, participants from the Spanish, Moldovan, Slovenian, and Ukrainian Living Labs highlighted limited access to machinery and soil management technologies. Portugal and Austria farmers also pointed to a lack of monitoring systems for demonstrating the value of ReCAP adoption.

Moreover, biophysical limits were also frequently mentioned during the workshops. Participants from Portugal, Moldova, Slovenia, and Ukraine underlined climate variability, water scarcity, and territorial diversity. Living Lab stakeholders from Switzerland specifically drew attention to site conditions and climate-related financial risks.

[5] Although there have been previous attempts to define RA, there is currently no adopted European legal definition. RA is less clearly defined than CA, and the term remains the subject of ongoing debate (Newton et al., 2020)

Financial/Economic

Financial and economic factors are among the most frequently cited barriers in studies examining the uptake of new practices. Since many farmers already operate under significant debt burdens, their choices are heavily shaped by financial constraints, making investment costs, risk exposure, and economic incentives decisive factors. For instance, the **high upfront capital required to implement new practices** (e.g., equipment, machinery, specialised labour) represents a significant financial risk (Shennan-Farpon et al., 2024; van den Hoorn et al., 2024; Moret-Bailly and Muro, 2024), especially when faced with **uncertainty around yields and productivity** (Hansda et al., 2021; Nikolov et al., 2024; Shennan-Farpon et al., 2025). Even where evidence shows that ReCAP can deliver long-term economic benefits, including greater resilience and reduced input costs, **short-term financial uncertainty may undermine the effectiveness of incentives** (van den Hoorn et al., 2024; McNeill et al., 2021; Heller et al., 2024).

BOX 3. STAKEHOLDER WORKSHOP RESULTS: FINANCIAL AND ECONOMIC

Another major barrier noted during stakeholder workshops was insufficient financial support and weak economic incentives, particularly during the transition phase, when yields may be reduced, investment is needed in technology and machinery, and profitability is less predictable. Workshop participants from Spain indicated that uncertain and often insufficient short-term returns from ReCAP adoption remain a major obstacle. Similarly, financial constraints and a lack of long-term project financing were strongly highlighted in Living Labs from Slovenia. This perspective was reinforced by farmers from Romania and Ukraine, who highlighted insufficient compensation payments. Multiple participants also confirmed that the current policy support mechanisms do not adequately compensate farmers for taking risks and delivering ecosystem services. In fact, stakeholders from Germany highlighted a lack of market-based remuneration for ecosystem services, while farmers from Portugal pointed to insufficient financial support and poorly targeted incentives.

Institutional/Policy

Policy and institutional barriers can take the form of **complex legislation, excessive administrative burden, and weak alignment between policy design and on-the-ground farmer realities**. While certain political strategies at the EU level emphasise soil protection, biodiversity conservation, and locally adapted farming systems, these objectives are often pursued without explicitly framing or supporting ReCAP. Additional barriers include insufficient and poorly targeted subsidies, limited advisory capacity, and regulatory uncertainty (Shennan-Farpon et al., 2025; van den Hoorn et al., 2024). Existing **support often gives priority to operational costs over upfront investment**, while **incentives remain too weak or misaligned** to drive behavioural change (Deloitte, 2025; Philips et al., 2021). These challenges are only amplified by administrative complexity and **policy instability**, which can erode trust and reduce farmers' willingness to engage in a long-term transition (Philips et al., 2021; Shennan-Farpon et al., 2025; Padel et al., 2025).

BOX 4. STAKEHOLDER WORKSHOP RESULTS: INSTITUTIONAL AND POLICY

Policy complexity and bureaucracy were frequently discussed during the stakeholder workshops in the TRAILS4SOIL Living Labs. For instance, participants from Spain mentioned rigid CAP eco-scheme design, and limited eligible practices as obstacles hindering ReCAP adoption. Similarly, Portuguese stakeholders pointed to complex legislation, high administrative burden, and EU policy rules that were not adapted to national realities. At a Living Lab workshop in Switzerland, participants highlighted a lack of flexibility in the cropping year and constant policy changes. Living Lab participants from Slovenia, Moldova, and Ukraine also highlighted poor coordination between ministries, as well as unstable, misaligned, or incomplete regulatory frameworks.

Socio-Cultural

Socio-cultural factors are central to ReCAP uptake yet analyses of sustainable agricultural practice uptake in the EU tend to emphasise the role of economic outcomes, often overlooking the more nuanced social dynamics that shape farmer decision-making (Shennan-Farpon et al., 2025; Heller et al., 2024). ReCAP adoption is strongly influenced by ageing demographics and path dependency, as entrenched practices, generational divides, and low trust in yield impacts reinforce resistance to change (Shennan-Farpon et al., 2025; Heller et al., 2024; Padel et al., 2025; McNeil et al., 2021). **Peer perceptions, social norms, and knowledge exchange networks in farming communities** also play a crucial role, either enabling or hindering uptake; where advisory services and peer-to-peer structures are weak, the transfer of knowledge on ReCAP is also limited (van den Hoorn et al., 2024; Heller et al., 2024; Shennan-Farpon et al., 2025; McNeill et al., 2021). This implies that **adoption is shaped not only by individual farmer choices but also by broader rural and structural conditions**.

BOX 5. STAKEHOLDER WORKSHOP RESULTS: SOCIAL AND CULTURAL

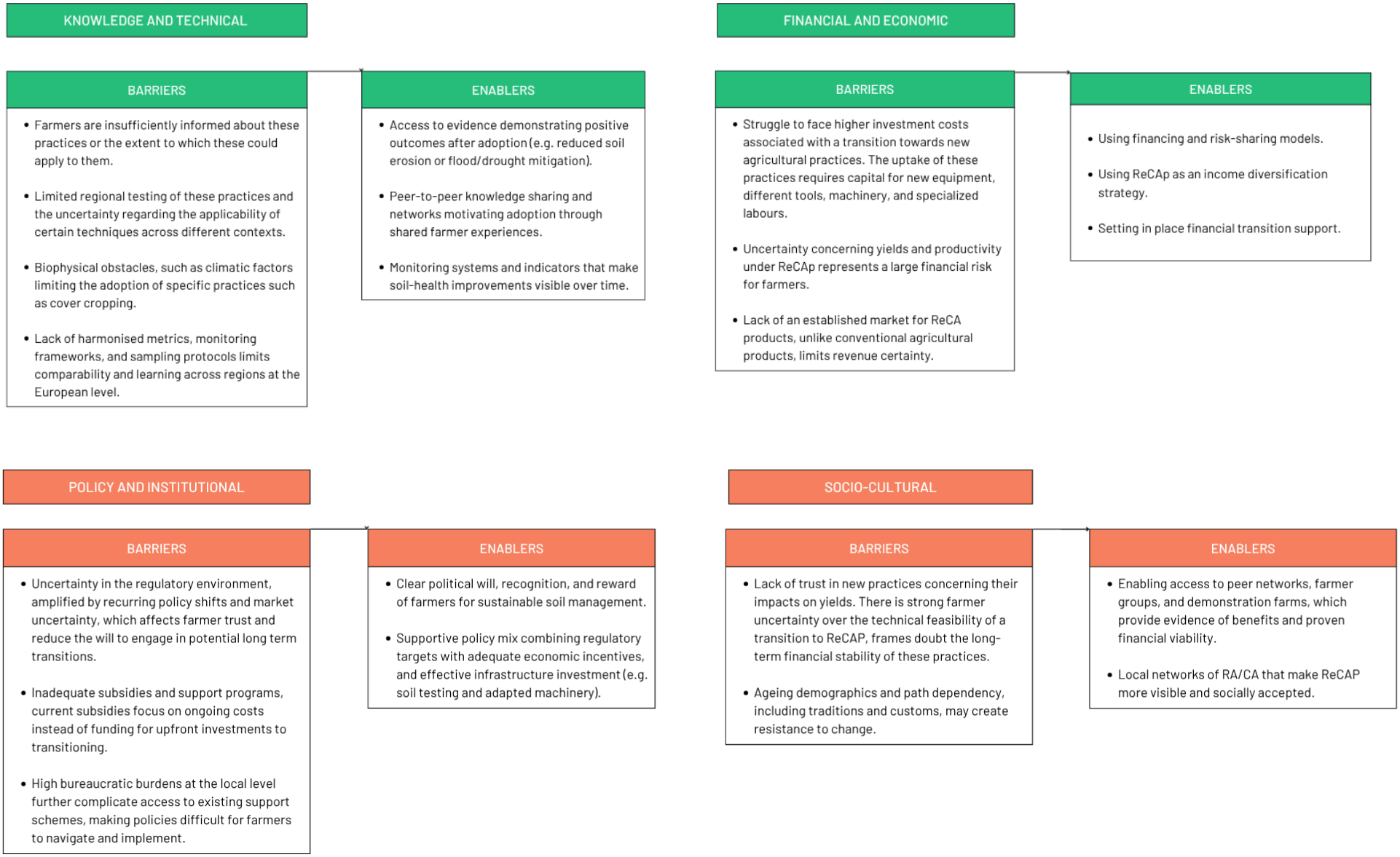
An analysis of stakeholder contributions gathered during workshops indicated that a general resistance to change, existing traditions, ageing demographics, and distrust of “new” practices may all hinder the uptake of ReCAP. Participants from Spain, Romania, and Slovenia underlined a strong resistance to change among farmers due to traditions and path dependency. Farmers from Switzerland explained that deviation from the norm, neighbourhood pressure, and generational conflicts prevent ReCAP uptake. This is echoed in the countries of other participants, such as Spain, highlighting an ageing farmer population as preventing a change of practices.

In several Living Labs, participants mentioned other structural issues. For instance, participants from Spain and Romania highlighted the challenges linked to land fragmentation and access. Farmers from Slovenia and Spain identified lack of generational renewal as a problem.

Key enablers of ReCAP adoption

The literature and stakeholder feedback point to a range of enablers. Using the same categorisation as above, Figure 2 presents enablers for each of the identified barriers.

FIGURE 2. RELATIONSHIP BETWEEN RECAP BARRIERS AND ENABLERS



Knowledge and technical enablers

Improved advisory services, training, and demonstration farms act as critical enablers to address the lack of accessible, context-specific knowledge and the perceived need for new skills (Heller et al., 2024; McNeill et al., 2021). Similarly, increasing access to robust, region-specific evidence on the outcomes of ReCAP adoption helps to reduce uncertainty linked to variable local agrological conditions (Shennan-Farpon et al., 2025; Nyssens & Leake, 2021). **Evidence of tangible benefit through shared farmer experiences**, such as improved soil health or enhanced resilience to drought and flooding, can strengthen farmer confidence and support informed decision-making. Finally, the development of harmonised indicators and monitoring frameworks at the European level can address current limitations in assessing long-term impacts (Sánchez & Odriozola, 2024; Bravo-Garcia et al., 2025). By making outcomes more measurable and comparable, these tools reinforce the evidence base and enhance trust in ReCAP performance.

Economic and financial enablers

Farmers transitioning towards regenerative practices are in clear need of financial support, as farmer decision-making is strongly shaped by investment costs and risks (Nyssens & Leake, 2021; Padel et al., 2025). In this context, **longer-term funding commitments and transition support schemes are key enablers**, as they align financial support with the time needed for benefits to materialise (Hansda et al., 2021; Nikolov et al., 2023). **Targeted financial incentives**, such agri-environmental payments, play a critical role in reducing initial investment burdens and lowering the financial threshold for adoption.

Institutional and policy enablers

Ensuring a **stable and coherent policy environment can reduce uncertainty and farmer resistance** by aligning regulatory targets with adequate support (Nyssens & Leake, 2021; Reinecke et al., 2023). More effective financial support can be achieved by redirecting subsidies towards upfront transition costs and aligning payments with environmental outcomes (McNeill et al., 2021; Heller et al., 2024). Finally, strengthening advisory systems and simplifying administrative procedures can improve access to support schemes and facilitate implementation (Phillips et al., 2021; SURE FARM, 2021). Combined with investments in enabling infrastructure, such as soil monitoring and adapted machinery, these measures create a more consistent and supportive framework for adoption.

Socio-cultural enablers

Peer networks, farmer groups, and demonstration farms emerge as cross-cutting enablers across multiple dimensions of ReCAP uptake (McNeill et al, 2021; Heller et al., 2024; Shennan-Farpon et al., 2025). They facilitate the exchange of experience-based knowledge and allow farmers to observe tangible results under conditions similar to their own. By reducing perceived risks and uncertainties, these networks may also support the development of local communities of practice, and, by including Conservation Agriculture and Regenerative Agriculture farms, enhance the visibility and acceptance of ReCAP. These socio-cultural enablers therefore play a critical role in facilitating behavioural change (Reinecke et al., 2023; Heller et al., 2024; van den Hoorn et al., 2024).

Importantly, these factors do not act in isolation. For instance, policy misalignment can increase economic risk, which in turn may reinforce socio-cultural resistance. Hence, addressing these interlinked barriers

requires action on multiple fronts, including policy, funding, and support instruments that address financial, institutional, technical, and socio-cultural barriers.

How can the existing policy framework support change?

The EU policy framework contains several instruments that can support the transition to ReCAP, partly addressing the identified barriers and supporting enabling conditions. This section examines how existing EU policies may facilitate ReCAP uptake and where structural limitations remain.

Strengthening monitoring systems and knowledge support

A key knowledge-related barrier to ReCAP uptake is the lack of long-term monitoring of ReCAP outcomes (McNeil et al., 2021; Hansda et al., 2021). This is amplified by an initial absence of defined indicators and harmonised metrics at the European level, limiting soil performance assessment of ReCAP (Phillips et al., 2021; Bravo-Garcia et al., 2025). National soil monitoring systems differ considerably between EU countries, due to varying methodological robustness, which further limits comparability across EU Member States. The **Soil Monitoring Law (SML)**[6] explicitly acknowledges this fragmentation and the significant gaps and differences in national monitoring systems. It partially addresses this by introducing harmonised soil health descriptors, systematic monitoring, and regular assessment requirements (European Commission, 2025).[7] Under the SML, Member States are responsible for establishing soil districts and units, creating a more coherent framework for data collection. The SML does not expect individual farmers to conduct soil monitoring themselves but remains a beneficiary of advisory and support measures linked to soil resilience. Through effective advisory support networks, the transition towards sustainable agriculture practices is thus facilitated.

The **Sustainability Benchmarking/On-Farm Sustainability Compass**, outlined as a key proposal in the EU Vision for Agriculture and Food, is another instrument that can respond to this need for monitoring[8]. This tool, currently under development by the European Commission, is expected to support farmers to measure, assess, and enhance their farm-level sustainability performance (European Commission, 2025). The results may serve as a basis for payments and policy evaluations, verifying whether policy objectives are achieved. This system could potentially provide an evidence base for implementing performance-linked public subsidies under the CAP and create opportunities for private-sector payments for ecosystem services. Benchmarking could thus play a crucial role in scaling ReCAP by facilitating access to sustainability data, enabling performance comparison with other farmers, and linking outcomes to policy support.

[6] Directive (EU) 2025/2360 of the European Parliament and of the Council of 12 November 2025 on soil monitoring and resilience (Soil Monitoring Law)

[7] TRAILS4SOIL soil health indicators are aligned with those proposed by the Soil Monitoring Law. Consequently, the project results will provide monitoring data for locations covered by the Living Labs.

[8] COM/2025/75 final: *Vision for agriculture and food.*

Incentivizing the transition to sustainable practices

A recurring economic barrier includes the investment costs and risks associated with a transition towards new agricultural practices. Financial incentives, such as subsidies and other agri-environmental payments, are considered strong enabling factors, lowering certain economic risks faced by farming communities (Nikolov et al., 2023).

The **Common Agricultural Policy (CAP)** remains one of the most influential instruments shaping agricultural production systems across Member States. To date, the EU has strongly relied on mandatory and financial incentives to promote healthy soil practices as associated with ReCAP. Under the 2023-2027 CAP, this has taken place through the GAECs (e.g., GAEC 7, GAEC 6, GAEC 5) and funded voluntary measures within eco-schemes and agri-environment-climate interventions, such as reduced tillage, improved nutrient management, organic farming, and grassland maintenance. However, these remain optional and may vary by Member State, with limited mandatory integration or strong incentives for systemic adoption (EESC, 2023). While targeted support schemes exist for specific Regenerative Agriculture methods, they remain insufficient as the CAP does not comprehensively address the systemic changes required for an effective and holistic transition (EU CAP Network, 2024; European Commission, 2023). Therefore, farmers seeking to go a step further in the transition to ReCAP often lack access to the support they need from the CAP.

In this regard, the proposal outlined in the **post 2027 CAP** includes a new policy tool accelerating the transition towards more sustainable production methods, which Member States can deploy with funding under the CAP. Although the possibility for Member States to offer **transition aid** to farmers already exists, the option of transition aid for broader environmental purposes is recent (Hart & Baldock, 2026). This innovation, outlined in broad terms in the Commission proposals, indicates that funding for transition can be granted when an action plan is set up by farmers and approved by the Member State in question. These transition payments will be made available to farmers, reducing the pressure of upfront investments and the perceived risk of lower yields. Despite these welcomed transition benefits for farmers, the vagueness of this proposal in the upcoming CAP has multiple drawbacks for ReCAP adoption. There are no requirements on Member States to design parameters for this transition tool to address key sustainability objectives effectively. Therefore, it still needs to be further developed, refined, and use evidence-based objectives so that it can be deployed at scale by Member States (Hart & Baldock, 2026).

Using target setting as a policy lever to drive uptake

Uncertainty in the regulatory environment discourages farmers from making the long-term changes needed for a transition to ReCAP (Philips et al., 2021; Shennan-Farpon et al., 2025; Padel et al., 2025). In this context, policy target-setting can serve as an important lever. The **Nature Restoration Law (NRL)**[9] provides an example of how binding targets can create a more predictable policy framework that can act as a lever for ReCAP. The regulation translates broad ecological goals into binding obligations that must be implemented through national restoration plans, indicators, and funding choices. As a key policy framework implementing objectives established by the EU's Biodiversity Strategy, its restoration measures aim to cover at least 20 % of European land and seas by 2030, and all ecosystems needing restoration by 2050[10]. By creating predictable, long-term demand for practices that ensure soil carbon sequestration,

[9] Regulation (EU) 2024/1991 of the European Parliament and of the Council of 24 June 2024 on nature restoration and amending Regulation (EU) 2022/869

[10] COM/2020/380 final: *EU Biodiversity Strategy for 2030 Bringing nature back into our lives*

enhanced biodiversity, and improved ecosystem function, the NRL targets can function as a driver for ReCAP adoption (European Academies' Science Advisory Council, 2024). Although the targets of this policy support soil-related benefits, they remain focused on climate mitigation and biodiversity restoration instead of soil health.

Leveraging emerging instruments to support adoption

Other emerging instruments can address economic barriers by improving access to finance for farmers through public-private partnerships. The **European Competitiveness Fund (ECF)**, a new EU funding instrument proposed as part of the post-2027 Multiannual Financial Framework (MFF), is primarily expected to target SMEs and the broader business sector rather than individual farmers[11]. While it is not specifically designed for ReCAP, it can play an indirect role in supporting investment in food value chains and at the farm level, particularly through its dedicated window on health, biotech, agriculture, and bioeconomy (Hallak, 2025; Carbon Gap, 2026). By fostering the development of markets and processing infrastructure, supply chain coordination, the ECF could help create the enabling conditions and market demand necessary for ReCAP products. This is relevant as shifting to outcome-based models, including ReCAP, often takes several years before yields and soil health stabilise for farmers (Nyssens & Leake, 2021). Although the existing CAP framework already provides support for agro-ecology, carbon farming, and organic farming via eco schemes, agri-environment and other measures, an "investment gap" remains for scaling regenerative practices (Deloitte et al., 2025). In this context, the ECF's potential to finance value chain development and landscape-level projects could complement CAP payments, which are often limited to individual farm-level interventions.

Recommendations and final reflections

Drawing on the main findings of the literature review and stakeholder inputs presented above, this section presents a set of **preliminary recommendations to support ReCAP uptake** and facilitate a more systemic transition across the EU. These recommendations should be regarded as indicative and subject to change, as the TRAILS4SOIL project is only just beginning to test ReCAP approaches across a range of Living Labs, and a more robust evidence base will emerge as these experiments progress. Further analysis and iterative learning will therefore be essential to refine and substantiate a more comprehensive and actionable set of policy recommendations as both empirical insights and the policy landscape develop.

1. Increasing collaboration between different actors

Knowledge barriers, such as a lack of specific training and uncertainty about local-level outcomes, are only partially addressed by existing advisory measures under the SML and CAP. Socio-cultural barriers, including lack of trust in new practices and resistance to change, also persist. Meanwhile, financial struggles, including the costs and risks of transitioning towards ReCAP, need to be addressed. These various

[11] COM/2025/555 final: *Proposal for a Regulation of the European Parliament and of the Council on establishing the European Competitiveness Fund ('ECF') including the specific programme for defence research and innovation activities*

constraints can be partly overcome by strengthening collaboration across different actors (Wedl & Kam, 2025; Shennan-Farpon et al., 2025).

- **Support equipment sharing:** One solution proposed by TRAILS4SOIL workshop participants is the provision of easier access to technology and machinery. Shared equipment pools managed by cooperatives or local authorities can help reduce the high capital requirements for specialised machinery. These shared pools are essential to ensure the accessibility and affordability of the equipment needed to transition towards ReCAP. This is the case with organizations such as Asociación AlVelAl in Spain, which launched a bank of shared specialised machinery, aiming to create a community around RA to share, exchange, and inspire (Asociación AlVelAl, 2024). Additionally, subsidised leasing schemes can also significantly lower entry barriers and overall investment costs (Heller et al., 2024; EU CAP Network, 2024; Wedl & Kam, 2025).

- **Scale-up peer-to-peer learning and collective action:** Establishing mentorship programs, peer-to-peer knowledge frameworks, and Living Labs connect farmers, facilitate knowledge exchange, build farmer confidence, and provide technical guidance during the transition (Reinecke et al., 2023; Heller et al., 2024; Wedl & Kam, 2025). Indeed, results from the TRAILS4SOIL workshops highlight that having trusted, practical, and long-term advice, especially from their peers, motivates farmers to test new practices. Existing illustrative examples include the regAg Mentoring Network, an EIP-AGRI Operational Group project[12] set up to develop a self-learning peer-to-peer group for farmers transitioning to regenerative grassland practices, or Regenerate Forum's Soil Peer Groups[13], known as Boden AGs, which are small self-organised farmer groups formed after training for regenerative practices.

- **Invest in targeted capacity building and advisory support:** Technical support and training for farmers could help reduce uncertainty over the technical feasibility of ReCAP adoption, adapted to local contexts (Corsi & Muminjanov, 2022; European Academies' Science Advisory Council, 2022). There is a need for customised training for ReCAP variants, and a need for rural development programs to prioritise advisor networks, as a uniform approach fails to account for diverse farm types (EASAC, 2022). European and national programs need to increase CAP funding through rural development measures to support these advisory and collaborative structures in the long term (European Economic and Social Committee, 2025).

- **Ensure farmer involvement in the design of agri-environmental and transition measures:** Including farmers in the co-design of agri-environmental measures and wider transition instruments, rather than solely consulting them, helps ensure that schemes are better tailored to farm realities, reduces implementation gaps, and increases uptake, while also strengthening the legitimacy of public support. This is consistent with the European Commission's recently published best practice guidance on agri-environmental and climate actions (European Commission, 2026).

[12] https://eu-cap-network.ec.europa.eu/projects/regag-mentoring-network-establishment-self-learning-peer-peer-network-practice-oriented_en
[13] https://regenerateforum.org/en/soil-peer-groups/

2. Enhancing EU policy coherence

Regulatory uncertainty and inadequate subsidies have been noted as major challenges to a ReCAP transition (Padel et al., 2025; Deloitte, 2025; Shennan-Farpon et al., 2025). Strengthening policy coherence requires clear long-term signals, stronger links between objectives, performance targets and funding, and improved monitoring frameworks. In this context, an EU policy architecture that rewards environmentally beneficial practices would not only strengthen incentives for ReCAP adoption but also signal a long-term commitment to a sustainable transition (Deloitte, 2025; Wedl & Kam, 2025).

- **Strengthen the stability and operationalisation of EU-level environmental and climate objectives and requirements relevant to agriculture:** While environmental and climate objectives relevant to agriculture are already established at EU level, they change across policy cycles, are implemented differently by Member States, and are not always translated into clear and measurable requirements for farmers, creating uncertainty. Policy instability undermines trust and reduces willingness to engage in long-term transitions. Farmers require clear and predictable frameworks that are consistently applied and adaptable to local conditions, a need repeatedly highlighted by TRAILS4SOIL workshop participants. Strengthening the continuity of these objectives across policy cycles, and embedding them in clear, measurable and monitorable frameworks, would provide a more reliable pathway for improving soil health and sustainability outcomes (Wedl & Kam, 2025). This would reduce regulatory uncertainty, support long-term investment, and improve the alignment between policy signals, funding instruments, and on-the-ground implementation.

- **Strengthen a result-based approaches under Article 10 of the post-2027 CAP:** The Commission's current proposal refers to result-based schemes but does not make them mandatory or strongly encourage their use. Member States should be explicitly incentivised and provided with design guidance to ensure that outcome-based commitments become the default mechanism for agri-environmental and climate actions, rather than input-compliance approaches. This shift would help ensure that public funding rewards measurable environmental performance rather than prescribed practices.

- **Integrate ReCAP-related outcomes in the CAP performance monitoring and evaluations framework (PMEF):** The PMEF tracks the implementation and impact of the CAP through common outputs, results, and indicators (EU CAP Network, 2026). Integrating key ReCAP practices and outcomes into the PMEF would allow Member States to better monitor progress on soil health within their Strategic Plans and strengthen the link between payments and verifiable environmental results. This could build on harmonised soil health descriptors (e.g., soil organic carbon content and soil biodiversity) established under the SML and would reduce regulatory uncertainty for farmers and increase alignment of financial incentives within environmental outcomes. (Tools4cap, 2024; EU Soil Observatory, n.d.). This is consistent with TRAILS4SOIL workshop inputs, which emphasise the importance of credible evidence, robust soil monitoring systems, and relevant indicators to demonstrate the benefits of ReCAP.

- **Strengthen and better target funding for ReCAP:** Although the CAP 2023-2027 eco-schemes and agri-environmental measures support some ReCAP, heir impact remains limited due to

fragmented uptake and persistent ambiguity on eligible practices (EU CAP Network, 2025). European institutions such as the EESC (2025) propose several options to scale up regenerative practices, including stronger alignment of CAP funding, expansion of soil health/soil cover measures in CAP Strategic Plans, and increased investment support. One possible approach is to better link CAP funding to measurable soil health outcomes. For instance, aligning the CAP's European Agricultural Guarantee Fund (EAGF) payments with ReCAP-related could involve a gradual shift away from area-based income support towards financial incentives linked to soil cover results and environmental performance relative to comparable regional benchmarks (European Economic and Social Committee, 2025). These incentives could be adapted to regional contexts and farm structures. Similarly, the European Agricultural Fund for Rural Development (EAFRD) could support performance-based per-hectare payments, especially for young farmers and new entrants (European Economic and Social Committee, 2025). Stakeholder inputs from TRAILS4SOIL workshops point in a similar direction, highlighting the need for transition funding, better targeted subsidies, and practice-based incentives.

3. Private financing within an enabling policy framework

Public funding alone is insufficient to bridge the financing gap required for the transition. Faced with upfront transition costs, yield uncertainty, and limited market support for ReCAP products, farmers also experience insufficient investment support, risk exposure, and a lack of targeted insurance. Mobilizing private investment in ReCAP is therefore crucial within a supportive policy environment (Wedl & Kam, 2025, Deloitte et al., 2025).

- **Mobilise private capital through blended finance mechanisms:** Currently, the scale of private support instruments available to European farmers is still insufficient to bridge the finance gap for the transition to sustainable agriculture (Deloitte et al, 2025). Mobilizing private capital requires a supportive policy environment that de-risks investment and builds investor confidence. Blended finance mechanisms, combining concessional public or philanthropic capital with commercial funds, offer a path forward. Effective models stack offtaker contracts, concessional loans, and targeted insurance, providing the needed mechanisms to lower risks related to the transition (Wedl & Kam, 2025; European Economic and Social Committee, 2025).

- **Support landscape approaches and value-chain partnerships:** These approaches have the potential to attract more conservative investors and insurance companies, as they require partnerships of different players across the value chain and public-private investment (Wedl & Kam, 2025). Collaborative structures can deliver larger, more diversified investment opportunities while fostering shared accountability for outcomes. Scaling private finance requires credible data to verify environmental outcomes, standardised MRV (monitoring, reporting, verification) systems, and larger investment opportunities. This can only be achieved through stable rules, robust monitoring frameworks, and transparent indicators for soil health (Wedl & Kam, 2025; Deloitte, 2025). Clear standards and data help increase investor confidence and further channel private capital towards projects focusing on ReCAP. Shared soil-health indicators and consistent validation methods strongly support funding decisions and scale private-sector engagement (Dahl & Peterson, 2025; Bravo-García et al., 2025).

- **Establish and strengthen the use of outcome-based indicators and benchmarks**: Clear and credible outcome-based indicators are critical for mobilising private investment, as they allow investors to assess performance, price risk, and compare projects across regions. Developing coherent frameworks of soil health indicators and benchmarks, aligned with EU initiatives such as the Soil Monitoring Law and the Commission's proposed on-farm sustainability compass, can improve consistency while maintaining flexibility across farming systems Such frameworks can support policy coherence across land-use related legislation within and beyond the CAP framework rather than using different methodologies to assess the performance (Lakatos et al., 2025), reduce reporting burdens on farmers and provide robust and comparable data sets as a basis for investment decisions(European Economic and Social Committee, 2025; Wedl & Kam, 2025).

The transition to Regenerative and Conservation Agriculture requires a **shift from fragmented practice-based support towards a coherent enabling framework for long-term transition**. The review of available evidence, stakeholder feedback, and policy gaps shows that adoption is primarily hindered by economic and policy-related barriers, while key enablers are often socio-cultural. Case studies across Europe consistently highlight concerns about the financial viability of transitioning, suggesting that large-scale uptake depends on a supportive and coherent policy environment that reduces economic risk for farmers. As reflected in Table 2, addressing these challenges requires policy-making, funding, and support instruments to better account for the interconnectedness between knowledge gaps, regulatory uncertainty, socio-cultural pressures, and financial constraints while remaining adaptable to local conditions.

Supporting wider uptake of ReCAP requires a combination of complementary actions. Collaboration mechanisms, such as equipment-sharing schemes, peer networks, and demonstration farms, could reduce entry costs and technical uncertainty for farmers. At the same time, improved policy coherence, including clearer objectives, better-targeted funding, and stronger monitoring frameworks, can reduce regulatory uncertainty and provide long-term planning certainty. Mobilising private finance through blended finance models and value-chain partnerships can help address investment gaps and de-risk the transition, specifically for smaller farms.

Ultimately, **scaling up the adoption of ReCAP requires a systemic and forward-looking approach that goes beyond immediate policy adjustments**. This transition is not only essential for improving farm-level resilience and long-term economic stability but also for contributing to broader EU objectives such as climate mitigation, biodiversity restoration, and soil health enhancement.

TABLE 2. SUMMARY TABLE OF RECOMMENDATIONS

Recommendation	Instruments used	Barriers overcome
Increasing collaboration between different actors	Promoting equipment sharing	Knowledge gaps, financial constraints
	Scale-up peer networks and collective action	Knowledge gaps, lack of trust in new practices and resistance to change
	Invest in targeted capacity building and advisory support	Knowledge gaps, financial constraints
	Ensure farmer involvement in the design of agri-environmental and transition measures	Inadequate payments/incentives

Recommendation	Instruments used	Barriers overcome
Enhancing policy coherence	Strengthen the stability and operationalisation of EU-level environmental and climate objectives and requirements relevant to agriculture	Regulatory uncertainty, perceived financial risk
	Strengthen a result-based approaches under Article 10 of the post-2027 CAP	Inadequate compensation for delivering environmental outcomes
	Integrate ReCAP-related outcomes in the CAP PMEF	Knowledge gaps, perceived financial risk, regulatory uncertainty
	Strengthen and better target funding for ReCAP	Regulatory uncertainty, perceived financial risk
Private financing within an enabling policy framework	Mobilise private capital through blended finance mechanisms	Perceived financial risks
	Support landscape approaches and value chain partnerships	Perceived financials risks
	Establish and strengthen the use of outcome-based indicators and benchmarks	Regulatory uncertainty, knowledge gaps, perceived financial risks

References

Arias-Navarro, C., Baritz, R., & Jones, A. (Eds.). (2024). *The state of soils in Europe* (JRC137600). Publications Office of the European Union. https://data.europa.eu/doi/10.2760/7007291

Asociación AlVelAl. (2024). *Servicios*. https://alvelal.es/servicios-alvelal-2/

Bravo-García, J., Blanco-Velázquez, F. J., González-Peñaloza, F. Á., Alonso-Martín, F., Tamm, K., Frick, F., Winkler, G., Bartollini, F., Iglesias, A., Alemu, M. H., & Anaya-Romero, M. (2025). Soil health and business models: A review and analysis carried out in the NOVASOIL project. Journal of Applied Life Sciences and Environment, 58(2), 245–286. https://doi.org/10.46909/alse-582175

Carbon Gap. (2026, January 15). *European Competitiveness Fund (ECF)*. Carbon Gap Policy Tracker. https://tracker.carbongap.org/policy/european-competitiveness-fund-ecf

CEFE International. (2021). RegAgri4Europe status analysis (IO1). RegAgri4Europe Project. https://regagri4europe.eu/wp-content/uploads/2022/03/RegAgri4Europe-Status-Analysis.pdf

Corsi, S., & Muminjanov, H. (2022). *Manual on sustainable soil management in Europe and Central Asia*. Food and Agriculture Organization of the United Nations. https://www.fao.org/3/i7154en/i7154en.pdf

Dahl, H., & Peterson, N. (2025). *From selection to scale: Understanding early-stage soil health innovations in Africa*. Centro Internacional de Agricultura Tropical - CIAT. https://cgspace.cgiar.org/server/api/core/bitstreams/3f0a77b7-bec7-4c7a-8260-b04f89dd6119/content

Davis, A. G., Huggins, D. R., & Reganold, J. P. (2023). Linking soil health and ecological resilience to achieve agricultural sustainability. *Frontiers in Ecology and the Environment, 21*(3), 131–139.

Deloitte, Unilever, OP2B, and WBCSD (2025). Closing the gap: An analysis of the costs and incentives for regenerative agriculture in Europe. [online] Available at: https://www.wbcsd.org/resources/closing-the-gap-an-analysis-of-the-costs-andincentives-for-regenerative-agriculture-in-europe/

EU CAP Network. (2026, April 27). *Performance Monitoring and Evaluation Framework (PMEF)* | https://eu-cap-network.ec.europa.eu/topics/performance-monitoring-and-evaluation-framework-pmef_en

EU CAP Network. (2024, November 13). *Factsheet: EU CAP Network Focus Group 'Regenerative agriculture for soil health'*. https://eu-cap-network.ec.europa.eu/publications/factsheet-eu-cap-network-focus-group-regenerative-agriculture-soil-health_en

EU CAP Network. (2024, November 14). EU CAP Network Focus Group 'Regenerative agriculture for soil health'. https://eu-cap-network.ec.europa.eu/publications/eu-cap-network-focus-group-regenerative-agriculture-soil-health_en

European Academies' Science Advisory Council. (2024, April 5). *Strong backing for EU Nature Restoration Law*. EASAC. https://easac.eu/news/details/strong-backing-for-eu-nature-restoration-law

European Academies' Science Advisory Council. (2022). *Regenerative agriculture in Europe: A critical analysis of contributions to European Union Farm to Fork and Biodiversity Strategies* (EASAC policy report 44). German National Academy of Sciences Leopoldina. https://easac.eu/fileadmin/PDF_s/reports_statements/Regenerative_Agriculture/EASAC_Reg Agri_Web_290422.pdf

European Commission. (2020). *Caring for soil is caring for life: Ensure 75% of soils are healthy by 2030 for food, people, nature and climate: Report of the Mission Board for Soil Health and Food*. Publications Office. https://data.europa.eu/doi/10.2777/821504

European Commission. (2023, December 3). *Eco-schemes: Evolving the CAP's green architecture*. EU CAP Network. https://eu-cap-network.ec.europa.eu/publications/policy-insights-eco-schemes-evolving-caps-green-architecture_en

European Commission. (2025, December 5). *First EU law on soil set to enter into force*. https://environment.ec.europa.eu/news/first-eu-law-soil-set-enter-force-2025-12-05_en

European Commission. (2025). *Vision for agriculture and food*. Agriculture and Rural Development – European Union. Retrieved February 13, 2026, from https://agriculture.ec.europa.eu/overview-vision-agriculture-food/vision-agriculture-and-food_en

European Commission, Directorate-General for Agriculture and Rural Development, Unit A.3. (2025). *Rough estimate of the soil protection potential of the CAP Strategic Plans over the 2023–2027 period: Executive summary*. European Commission. (n.d.). *Soil Monitoring Law*. European Commission – Environment. https://environment.ec.europa.eu/topics/soil-health/soil-monitoring-law_en

European Commission, Directorate-General for Agriculture and Rural Development. (2026). *Driving sustainable farming: New guidance for CAP 2028–2034*. https://agriculture.ec.europa.eu/media/news/driving-sustainable-farming-new-guidance-cap-2028-2034-2026-04-28_en

European Economic and Social Committee. (2025). *Regenerative agriculture as a target towards enhancing sustainable food production, supporting climate and biodiversity objectives* (Opinion NAT/948-EESC-2025; C/2025/4207). *Official Journal of the European Union*. https://www.eesc.europa.eu/en/our-

work/opinions-information-reports/opinions/regenerative-agriculture-target-towards-enhancing-sustainable-food-production-supporting-climate-and-biodiversity

European Environment Agency. (2019, February 25). *Conservation agriculture: Making climate change mitigation and adaptation real in Europe*. Climate-ADAPT. https://climate-adapt.eea.europa.eu/en/metadata/publications/conservation-agriculture-making-climate-change-mitigation-and-adaptation-real-in-europe

European Environment Agency. (2024, November 20). *Soil* (In-depth topics). https://www.eea.europa.eu/en/topics/in-depth/soil

EU Soil Observatory - dashboard with indicators. (n.d.). Joint Research Centre. https://joint-research-centre.ec.europa.eu/eu-soil-observatory-euso/eu-soil-observatory-dashboard-indicators_en

European Parliament. (2024, April 10). *European Parliament resolution on Soil Monitoring and Resilience (P9_TA(2024)0204).* https://www.europarl.europa.eu/doceo/document/TA-9-2024-0204_EN.html

European Parliament, & Council of the European Union. (2018). *Regulation (EU) 2018/841 of the European Parliament and of the Council of 30 May 2018 on the inclusion of greenhouse gas emissions and removals from land use, land use change and forestry in the 2030 climate and energy framework, and amending Regulation (EU) No 525/2013 and Decision No 529/2013/EU* (OJ L 156/1). EUR-Lex. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R0841

FAO and ITPS. (2021). *Recarbonizing global soils: A technical manual of recommended management practices* (Vol. 3: Cropland, grassland, integrated systems and farming approaches – Practices overview). Rome. https://doi.org/10.4060/cb6595en

FEFAC. (2024, July 19). *EC political guidelines: New vision for agriculture and food*. https://fefac.eu/newsroom/news/ec-political-guidelines-new-vision-for-agriculture-and-food

FAO (2022.). *Conservation agriculture*. Factsheet. https://openknowledge.fao.org/server/api/core/bitstreams/024e17be-9fad-4556-be94-a8e2f229023d/content

Gosnell, H. (2022). Regenerating soil, regenerating soul: An integral approach to understanding agricultural transformation. *Sustainability Science, 17*(2), 603–620. https://doi.org/10.1007/s11625-021-01000-5

Gutiérrez García, A., & Nafría García, D. A. (2025). *Integration of farm-level data towards CAP monitoring and evaluation (Deliverable D4.1)*. Tools4CAP Project. https://www.tools4cap.eu/wp-content/uploads/2024/04/Tools4CAP_Integration-of-farm-level-data-towards-CAP-monitoring-and-evaluation-D4.1.pdf

Hallak, I. (2025, November 27). *European competitiveness fund* (EPRS Briefing No. 779225). European Parliamentary Research Service. European Parliament. https://www.europarl.europa.eu/thinktank/en/document/EPRS_BRI%282025%29779225

Hansda, R., Areal, F., Reed, M., & Study Site partners. (2021). Soil Care Report describing final stakeholder workshops held in study sites, detailing stakeholder feedback on preliminary findings (Deliverable 3.4). SOILCARE Project. https://soilcare-project.eu/deliverables

Hart, K., Baldock, D. (2026, February 11). *Strengthening environmental ambition in the proposal for the CAP 2028–2034*. https://ieep.eu/publications/strengthening-environmental-ambition-in-the-proposal-for-the-cap-2028-2034/

Heller, O., Di Bene, C. D., Nino, P., Huyghebaert, B., Arlauskienė, A., Castanheira, N. L., Higgins, S., Horel, A., Kir, A., Kizeková, M., Lacoste, M., Munkholm, L. J., O'Sullivan, L., Radzikowski, P., Rodríguez-Cruz, M. S., Sandén, T., Šarūnaitė, L., Seidel, F., Spiegel, H., Stalenga, J., Uusi-Kämppä, J., Vervuurt, W., Keller, T., & Vanwindekens, F. (2024). Towards enhanced adoption of soil-improving management practices in Europe. *European Journal of Soil Science, 75*(2), e13483. https://doi.org/10.1111/ejss.13483

Kassam, A.; Friedrich, T.; Derpsch, R. (2022). Successful Experiences and Lessons from Conservation Agriculture Worldwide. *Agronomy*, *12*, 769. https://doi.org/10.3390/agronomy12040769

Lakatos, E. S., Vatca, S. D., Cioca, L., Rhazzali, A. L., Kis, E., Boinceanu, B., & Perciun, R. (2025). Standardized Metrics in Regenerative Agriculture for climate change adaptation and mitigation. *Agriculture*, *15*(21), 2278. https://doi.org/10.3390/agriculture15212278

McNeill, A., Muro, M., Tugran, T., & Lukacova, Z. (2021). Report on the selection of good policy alternatives at EU and study site level (Deliverable 7.2). SOILCARE Project. https://soilcare-project.eu/downloads/public

Miller-Klugesherz, J. A., & Sanderson, M. R. (2023). Good for the soil, but good for the farmer? Addiction and recovery in transitions to regenerative agriculture. *Journal of Rural Studies, 103*, 103123.

Musto, G. A., Swanepoel, P. A., & Strauss, J. A. (2023). Regenerative agriculture v. conservation agriculture: Potential effects on soil quality, crop productivity and whole-farm economics in Mediterranean-climate regions. *The Journal of Agricultural Science, 161*(3), 328–338. https://doi.org/10.1017/S0021859623000242

Newton, P., Civita, N., Frankel-Goldwater, L., Bartel, K., & Johns, C. (2020). What is regenerative agriculture? A review of scholar and practitioner definitions based on processes and outcomes. *Frontiers in Sustainable Food Systems*, *4*, 577723. https://doi.org/10.3389/fsufs.2020.577723

Nikolov, D., Boevsky, I., Banov, M., Tzvetanova, E., Kostenarov, K., & Marinova, T. (2023). D3.1 – Report on mapping existing incentives for sustainable soil health business models (Deliverable D3.1). NOVASOIL – Innovative Business Models for Soil Health. https://novasoil-project.eu/index.php/2023/12/14/report-mapping-existing-incentives-for-sustainable-soil-health-business-models/

Nikolov, D., Boevsky, I., Banov, M., Tzvetanova, E., Kostenarov, K., Liebhard, G. C., & Strauss, P. (2024). Analysis of the socio-economic parameters of farms applying soil restoration strategies in Bulgaria and Austria. Bulgarian Journal of Agricultural Economics and Management, 69(1), 46–57. https://doi.org/10.61308/LSPX6383

Nikolov, D., Tzvetanova-Georgieva, E., Boevsky, I., Banov, M., Kostenarov, K., & Todorova, K. (2024). Report on new incentives soil health business models (Deliverable D3.4). NOVASOIL Project. https://novasoil-project.eu/

Nyssens, C., & Leake, A. (2021). EU and UK Policy Context for Regenerative Agriculture. In *AgriCaptureCO2*. https://ec.europa.eu/research/participants/documents/downloadPublic?documentIds=080166e5e2ad82b7&appId=PPGMS

Padel, S., Kunya, Z., Lampkin, N., Jónász, G., & Szépkuthy, K. (2025). Analysis of barriers of conversion and recommendations for strengthening organic advisory services and capacity building (Deliverable D5.2). OrganicTargets4EU Project. https://orgprints.org/id/eprint/55675/

Phillips, A., O'Sullivan, L., & Wall, D. (2021). Summary report on policy needs identified (Deliverable 8.3). European Joint Programme SOIL (EJP SOIL). https://edepot.wur.nl/587409

Prăvălie, R., Borrelli, P., Panagos, P., Ballabio, C., Lugato, E., Chappell, A., Miguez-Macho, G., Maggi, F., Peng, J., Niculița, M., Roșca, B., Patriche, C., Dumitrașcu, M., Bandoc, G., Niță, I.-A., Birsan, M.-V. (2024). A unifying modelling of multiple land degradation pathways in Europe. *Nature Communications, 15*(1), 3862. https://doi.org/10.1038/s41467-024-48252-x

Reinecke, S., Jahrl, I., Willer, H., & Lampkin, N. (2023). Synthesis of key drivers and lock-ins for organic sector development (Deliverable D1.3). OrganicTargets4EU Project. https://orgprints.org/id/eprint/52717/

Sánchez, A., & Odriozola, F. (2024). Comprehensive policy and conservation briefs and recommendations for soil management and conservation (Deliverable D6.3). SOILGUARD Project. https://ec.europa.eu/research/participants/documents/downloadPublic?appId=PPGMS&documentIds=080166e512667060

Sgarbi, F., & Nadeu, E. (2023). Resilience and sustainability in food systems research: A review of the main issues and knowledge gaps. Research Brief, Institute for European Environmental Policy, IEEP, Brussels. https://ieep.eu/wp-content/uploads/2023/11/Resilience-and-sustainability-in-food-systems_Test-ESAD-IEEP-2023-.pdf

Spanish Association of Conservation Agriculture Living Soils. (2024). *After life plan: Development of climate change mitigation strategies through carbon smart agriculture (LIFE Agromitiga) (LIFE17 CCM/ES/000140).* https://lifeagromitiga.eu

Policy Brief on Resilience of farming systems in the EU under current conditions and future scenarios. (2021). In *SURE FARM*. https://www.surefarmproject.eu/wp-content/uploads/2021/03/D5.7-Policy-Brief-Resilience-of-FS-under-current-conditions-and-future-scenarios.pdf

Tools4cap. (2024). *MEF4CAP: Monitoring and Evaluation Frameworks for the Common Agricultural Policy*. TOOLS4CAP. https://www.tools4cap.eu/mef4cap-monitoring-and-evaluation-frameworks-for-the-common-agricultural-policy/

van den Hoorn, H., Jellema, A., van Dam, D., Pessers, R., Geerling-Eiff, F., & Manshanden, M. (2024). *Regenerative agriculture in the EU: Exploring the transition* (Report 2024-141). Wageningen Economic Research.

van Dijk, R., Godfroy, A., Nadeu, E., & Muro, M. (2024). Increasing climate change resilience through sustainable agricultural practices: Evidence for wheat, potatoes and olives (Research report). Institute for European Environmental Policy.

Zieliński, M., Józwiak, W., Żak, A., & Rokicki, T. (2025). Development of eco-schemes as an important environmental measure in areas facing natural or other specific constraints under the Common Agricultural Policy 2023–2027: Evidence from Poland. *Sustainability, 17*, 2781. https://doi.org/10.3390/su17062781

Annex

Annex 1 Methodology overview of reviewed sources

The selected EU-funded projects focus on sustainable soil management practices, encompassing conservation agriculture, regenerative farming practices, and soil-improving cropping systems. Overall, 50 projects were initially selected using keywords such as “soil health” and “sustainable soil management”, “regenerative agriculture”, and “conservation agriculture”. This list was then narrowed to 20 projects using the following four criteria:

1) Projects must identify agriculture as their primary land use category to ensure selected initiatives are directly relevant to farming systems and the soil conditions that support them.
2) Projects must be either ongoing or completed within the past five years (including 2020-2025). This captures up-to-date approaches, challenges, and outcomes within the field.
3) Projects must have produced accessible outputs that can be examined within the time frame of this review.
4) Projects must explicitly incorporate Regenerative Agriculture and Conservation Agriculture as part of their sustainable soil management strategies.

After analysing the content of these 20 projects in further detail, only 12 were ultimately selected. These were chosen for their particularly comprehensive descriptions of ReCAP, as well as the enabling and hindering factors affecting their adoption.

Retrieved sources range from scientific papers and policy briefs to project deliverables. In total, 29 pieces were reviewed, including 14 scientific papers, 5 policy briefs, and 10 project deliverables. Table 3 provides an overview of the EU-funded projects included in the review, alongside additional scientific literature, and indicates the number and type of documents analysed for each.

TABLE 3. OVERVIEW OF SOURCES REVIEWED, BY PROJECT AND DOCUMENT TYPE

Project / Source	Scientific Papers	Policy Briefs	Project Deliverables	TOTAL
TUdi	3			3
SOILDGUARD		1	1	2
OrganiceTargets4EU			2	2
EJP SOIL	1	1		2
SOILCARE		1	1	2
RegAgri4Europe		1		1
LIFE Agromitiga			2	2
SURE-Farm			1	1
NOVASOIL	1		2	3
Soil Mission Report	2		1	3
AgriCapture		1		1
RESET	1			1
Additional literature	6			6
TOTAL	**14**	**5**	**10**	**29**

Annex 2 Overview of geographic coverage and main ReCA practices addressed

The final dataset was analysed to identify the use of specific ReCA practices. These practices were examined within the context of various case studies belonging to the selected projects. Identified practices from these case studies were then compiled and classified into a separate data set based on the country of implementation, the climate zone in which the case study is located, and the EU project they belong to.

The geographic coverage includes various European countries, with a slight concentration of case studies from Mediterranean, temperate continental, and temperate oceanic climate zones. Overall, the dataset shows a stronger representation of Central and Southern Europe, with temperate continental and Mediterranean zones accounting for approximately 53% of all practice entries.

Results indicate that Mediterranean arid zones such as Spain and Greece emphasise water-efficient practices (e.g., mulching) and erosion control (e.g., ground cover, agroforestry) to face drought. Whereas temperate zones such as Belgium and Germany tend to focus more on tillage variations (strip/reduced till) and nutrient management (manure/compost).

The use of cover crops in these case studies represents around 40% of entries, with 90% of these instances recorded in Mediterranean zones. More broadly, the use of cover crops, crop rotation, and minimum or no tillage is found to be commonly applied regenerative practice across EU regions, with reduced or no-tillage in 25% of entries.