# Sustainable soil management in the Spanish CAP Strategic Plan: a regional perspective on stakeholder's challenges

This brief explores how the Common Agricultural Policy (CAP) (2023–2027) supports the most pressing challenges for implementing Sustainable Soil Management (SSM) practices in the Region of Murcia, Spain. It examines whether the soil-related needs identified in the CAP Strategic Plan (CSP) align with those raised by stakeholders, and how these are addressed and taken-up through programmed interventions. The analysis shows that while there is a general alignment, crucial gaps remain between stakeholder priorities, interventions, and funding. Two identified areas requiring additional measures and/or funding are water management and training and advice. Water availability, a top regional concern, could be improved through soil conservation practices (e.g. cover crops and reduced tillage) as well as maintaining traditional landscape structures (e.g. terracing, check-dams). Better funding and targeting of measures aiming to improve advisory services and provide training to farmers could increase farmer adoption and upscaling of SSM practices, improving soil health.

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The Region of Murcia, located in the southeast of Spain, produces almost one quarter of Spain's fruit and vegetable exports (ICEX, 2020). Two forms of agriculture co-exist in the Region: intensive irrigated agriculture (vegetables, horticulture and woody crops) and extensive non-irrigated agriculture (mostly woody crops) (EC, 2025a). While the former occupies 31% of the agricultural area and represents 96% of the gross value added, the latter is much less known of despite accounting

for 69% of the agricultural area (EC, 2025a). This wide spatial extent of the second type of agriculture means that, although its impact on food production is low, it can play a key role in the delivery of other ecosystem services, such as those related to the regulation of cycles (climatic, water, nutrient, and erosion), supporting services (biodiversity, soil quality), and cultural services (identity, tourism, cultural heritage), highlighting their importance beyond agricultural productivity. The low yields of rainfed crops have made them dependent on subsidies over time (Agronews, Castilla y León, 2025), and while the mechanisation of agricultural activities have allowed for higher yields and lower costs, this trend is reversing as soil degradation increases and machinery costs go up (Brunelle et al. 2015).

Two of the main environmental concerns in the Region are the **high levels of soil erosion and insufficient water resources** (EC, 2025a). Almost two thirds of groundwater bodies have a "poor quantitative status", due to lowering water table and saline intrusion (European Environment Agency, 2018). The **risk of desertification** in the Region is high (PAND, 2008); its semiarid climate with scarce but often torrential rainfall, in combination with its mountainous terrain and marly lithology, translates into very slow soil formation (Wilcox et al,. 1988), a generally infertile soil, prone to erosion and low in organic matter (around 1% in agricultural soils Albaladejo et al., 2013). More than half of the region's land is affected by soil erosion rates that exceed agreed tolerance levels (11 $t^{-1} \cdot ha^{-1} \cdot yr^{-1}$), being significantly higher in arable land (average of 25 $t^{-1} \cdot ha^{-1} \cdot yr^{-1}$) (INES, 2002).

Poor soil management is a well-known trigger of soil degradation (Eekhout and de Vente, 2022), and the frequent extreme weather events in the Region have demonstrated the significant consequences that poor soil management strategies can also have downstream in the form of floodings or the wash-up of excess nutrients to the Mar Menor coastal lagoon that triggers episodes of eutrophication and anoxia (Senent-Aparicio et al., 2021).

(Fallow cereal fields. Photo by Carolina Boix Fayos)

Soil is the base of the agri-food chain. Ensuring good soil health is not only pivotal in addressing food security but can also provide an array of Ecosystem Services (ES) that extend beyond agricultural productivity (Dale and Polasky, 2007; Boix-Fayos and de Vente, 2023; Van Oudenhove et al., 2024). **Sustainable Soil Management** (SSM) practices can contribute to reversing soil degradation by enhancing overall soil health and the ecosystem services (ES) that healthy soils offer. Many SSM practices—also found within regenerative, agroecological, and conservation-based

approaches to agriculture—include the following: **reduced or no tillage, cover cropping, crop rotations, the application of organic amendments and reduction in chemical inputs (fertilisers, plant protection products)**. These practices reduce soil erosion, enhance water retention, promote nutrient cycling and sequester carbon, overall improving soil resilience and productivity (Almagro et al., 2016; Boix-Fayos and de Vente, 2023; Van Oudenhove et al., 2024).

Historically, the adoption of sustainable agricultural practices in the region has been low due to various types of barriers. Financial barriers, such as high initial costs, limit farmers' capacity for innovation and experimentation in systems with tight profit margins (Batlle et al., 2023), effectively locking them into the current model. Educational and psychological barriers also play a significant role, including knowledge gaps and resistance to change (Durgude and Yeginna, 2025). Additionally, cultural barriers persist, such as unscientific misconceptions (e.g., beliefs about competition for water and nutrients between plants, or increased pest outbreaks; van Oudenhove et al., 2024) and a widespread 'wait-and-see' attitude, which hinders the adoption of regenerative farming practices among farmers (Stofferis et al., 2025).

The CAP could be a driver of change in the region by supporting the implementation of SSM practices, reducing financial uncertainties for farmers. Recent data shows that 76% of the UAA received Common Agricultural Policy (CAP) payments in 2024 highlighting the significance of the CAP in shaping soil management practices in the region. The current CAP framework is built around 10 specific objectives (SO), several of which directly target environmental aspects related to soil. These objectives are to be met through the enhanced conditionality, including ten Good Agricultural and Environmental Conditions (GAECs), as well as voluntary measures, both programmed under the European Agriculture Guarantee Fund (EAGF) and the European Agriculture Fund for Rural Development (EAFRD). Nonetheless, several assessments of programmed interventions and the limited existing implementation data suggest that, despite its potential, the environmental and climate ambition of the Spanish CAP Strategic Plan (CSP) remains low (Nadeu et al., 2023; Cuadros-Casanova et al., 2022; Díaz et al., 2021; Meister et al., 2024) even as recent studies show that certain SSM practices such as cover crops can benefit the provisioning of Ecosystem Services without detriment to the main crop, competition for water resources or pest-proliferation (Dominati et al., 2019; Fernández-Soler et al., 2024, Van Oudenhove et al., 2024). It has been suggested that misalignments between the CSP's interventions and regional needs and challenges could be hampering broader acceptance and uptake of SSM practices (CARM, 2024).

### Aim and scope of this brief

This brief explores how the CAP (2023-2027) supports stakeholder needs in implementing sustainable soil management practices in the Region of Murcia, Spain, through its voluntary measures. Two questions are addressed:

1. **Are the soil management needs identified in the CAP Strategic Plan (CSP) aligned with the challenges identified by stakeholders in the Region?**
2. **How are identified needs addressed through programmed interventions in the CSP? And how are they being taken up?**

To answer these questions, a mixed approach was used. Information from the latest version of the Spanish CSP was combined with existing stakeholder input from workshops (Volkman et al., 2024[1]), and interviews[2]. Publicly available implementation data (available in April 2025) was consulted.

# 1. Are the SSM needs identified in the CSP aligned with the challenges identified by stakeholders in the region?

CAP Strategic Plans contain a needs assessment, which frames the overall structure of the plan and the design of the interventions and is conducted for the ex-ante evaluation process. The needs assessment is built upon a SWOT analysis, independently conducted for each Specific Objective, incorporating national and regional specifics. Key actors, including the Autonomous Communities and the Ministry of Agriculture, Fisheries and Food, played a central role. Furthermore, agricultural organisations, environmental entities, food chain entities, and Local Action Groups were also involved in the consultation process.

To assess how well the identified needs correspond to actual stakeholder challenges in the Region, the needs related to SSM in the Strategic Plan (Section 2.1) were compared to challenges for SSM identified by farmers and other stakeholders at workshops conducted in the Region (Section 2.2). These needs and challenges were grouped into categories based on content analysis by expert judgement (Scheier, 2012[3]) (**Table 1**).

[1] Volkman, F., Berlin, A., Creamer, R., et al. (2024). Spain-La Junquera, Stakeholder workshop results. Soil Health Benchmarks.

[2] The stakeholders' challenges stem from previous work conducted by the Soil and Water Conservation Research Group at CEBAS-CSIC (Murcia, Spain) between 2023 and 2024. This included a workshop at La Junquera (Murcia, Spain) with over 40 participants (Volkman et al., 2024), an online survey with 184 respondents, and 21 in-depth semi-structured interviews with farmers of the Region and farmer representatives.

[3] Schreier, M. (2012). Qualitative content analysis in practice (1.ª ed.). SAGE Publications Ltd.

**Table 1**. Categories of identified needs and challenges in relation to SSM.

| Category | Description |
|---|---|
| **R&D and competitiveness** | Enhancement of research and innovation to increase agricultural competitiveness.<br>E.g., foster R&D&I and digitalisation; address high costs. |
| **Climate and emissions** | Needs or challenges related to mitigating emissions or adapting to climate change strategies.<br>E.g., promote adaptation to climate change; reduce pollutants. |
| **Water management** | Needs or challenges related to water-saving strategies, infrastructures and irrigation improvements.<br>E.g., achieve good water status; increase water resources. |
| **Soil management** | Needs or challenges related to soil conservation techniques and those that enhance its overall health.<br>E.g., reduce erosion and desertification; stop soil erosion. |
| **Biodiversity, habitats, and landscapes** | Needs and challenges aimed at the preservation and enhancement of habitats and their biodiversity.<br>E.g., maintain agroforestry, biodiversity, or combat pests. |
| **Training and knowledge transfer** | Needs and challenges addressing access and dissemination of technical and regulatory information, know-how and capacity building on SSM.<br>E.g., sustainable and diversified agri-food and forestry systems; increase awareness |
| **Sustainable production and consumption** | Needs and challenges related to the harmful inputs and outputs of agricultural activity and consumer awareness.<br>E.g., reduce the use of pesticides; increase the adoption of sustainable practices. |

## 1.1: Identification and prioritisation of the needs in the CSP

The Spanish CSP prioritises the identified needs from low to high priority through a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis per region (Autonomous Community). The prioritisation is used to guide and motivate the choice and design of interventions taken up by each region. For this study, **34 needs identified in the CSP** for the Region of Murcia which are directly or indirectly related to soil were selected and linked to each defined category in this study (Table 1), together with their assigned priority (low, medium or high) in the Plan (Table 2). The Plan assigns the highest priorities to needs grouped under (i) **Water Management** and (ii) **Sustainable Production and consumption**. Meanwhile, needs under (iii) **R&D and Competitiveness**, (iv) **Climate and Emissions**, and (v) **Soil Management** are generally of medium priority. Finally, needs in the categories (vii) **Biodiversity, Habitats and Landscapes**, and (viii) **Training and Knowledge Transfer** receive some of the lowest priority ranks (**Table 2**).

**Table 2**. Needs and their level of prioritisation as identified in the Region's CSP through a SWOT analysis and grouped into the thematic categories (high priority needs are shaded).

| Category | Needs as defined in the CSP | Priority |
|---|---|---|
| **1. R&D and competitiveness** | Foster R&D&I. digitalisation. and advisory services | medium |
| | Competitiveness and sustainability | medium |
| | Productivity and sustainability | medium |
| | Differentiated and organic quality | medium |
| **2. Climate and emissions** | Minimise GHG emissions | medium |
| | Increase carbon sequestration | medium |
| | Reduce climate change impacts | high |
| | Promote adaptation to climate change | high |
| | R&D&I in climate change mitigation and adaptation | low |
| | Knowledge transfer in mitigation and adaptation | medium |
| | Minimise risks from extreme climatic events | medium |
| | Reduce $NH_3$ emissions | medium |
| | Reduce PM2.5 particulate matter emissions | medium |
| | Prevention of fire-related emissions | medium |
| **3. Water management** | Achieve good water status | high |
| | Reduce agricultural water pollution | high |
| **4. Soil management** | Reduce erosion and desertification | high |
| | Soil quality | medium |
| | Protect agricultural soil | low |
| **5. Biodiversity, habitats, and landscapes** | Maintain agroforestry biodiversity | medium |
| | Maintenance and restoration of habitats | medium |
| | Maintain and enhance landscapes and connectivity | low |
| | Minimise the impacts of phytosanitary products | medium |
| | Reduce use and improve management of plastics | medium |
| | Promote sustainable production systems | medium |
| | Knowledge transfer and improvement in the field of biodiversity | medium |
| **6. Training and knowledge transfer** | Sustainable and diversified agri-food and forestry systems | medium |
| | Training. outreach. and knowledge transfer in bioeconomy | low |
| **7. Sustainable production and consumption** | Consumption habits aligned with nutritional recommend. & sustainability | medium |
| | Sustainable production | high |
| | Reduced plant protection product use & promote sustainable practices | high |

## 1.2. Identification and prioritisation of the challenges identified by stakeholders

Stakeholders' identification and prioritisation of challenges were based on[4]:

- a **workshop** in La Junquera (Murcia, Spain) with 40 participants from different stakeholder groups related to agriculture (farmers, foresters, technicians and researchers) (Volkman et al., 2024),
- **21 semi-structured interviews** with farmers and farmer associations,
- a **survey with 184 responses from farmers, technicians, researchers and consumers**.

During the workshop at La Junquera participants identified and ranked challenges for soil health from low to high according to their relative importance. This was further complemented with information extracted from the semi-structured interviews and surveys, where participants were asked to mention the most important challenges for soil health. To allow comparisons with the needs assessed in the Plan, these challenges were grouped into the same categories established in **Table 1**.

Overall, a total of **20 key challenges** related to maintaining and improving soil health were identified and ranked according to their importance, as expressed by stakeholders (**Table 3**). Some challenges identified by stakeholders which scope falls outside of the CAP were not included (e.g. access to land, urbanisation, soil sealing, lack of private investment).

**Table 3**. Challenges identified by stakeholders along with their assigned priority and grouped into thematic categories.

| Category | Challenges | Priority |
|---|---|---|
| **1. R&D and competitiveness** | Addressing research gaps | medium-high |
| | Financial support | medium-high |
| | High costs | high |
| **2. Climate and emissions** | Addressing climate change | high |
| | Reducing pollutants | high |
| | Alternatives to heavy machinery | medium-low |
| **3. Water management** | Water resources | high |

[4] Data was collected within several research projects. AGRI_SER PID2020-119825RB-I00 (Spanish Ministry of Science and Innovation), AGROALNEXT (PRTR-C17.I1) and THINKINAZUL (C17.I01) from the Spanish Ministry of Science and Innovation with funding from European Union NextGenerationEU–and Fundación Séneca (Region of Murcia). Data were collected also under the European Union's Horizon Europe research program within the Soil Health BENCHMARKS project (101091010) and AGROECOLOGY project (101132349) and several interviews carried out for the present report.

| Category | Challenges | Priority |
|---|---|---|
| | Water management | high |
| 4. Soil management | Addressing soil degradation (including Erosion, Soil compaction) | high |
| | Soil fertility | medium-high |
| | Addressing nutrient imbalance | low |
| | Soil health monitoring | medium-low |
| 5. Biodiversity, habitats, and landscapes | Reducing biodiversity loss | medium-high |
| | Combating pests | high |
| | Diversifying farming | medium-low |
| | Land management | medium-high |
| 6. Training and knowledge transfer | Policy limitations | high |
| | Awareness | high |
| 7. Sustainable Production and Consumption | Food security | high |
| | Sustainable practices | medium-high |

## 1.3: Alignment between needs and challenges identified by the CSP and stakeholders

The seven established categories were used to compare needs identified in the CSP with the stakeholder-identified challenges. To do so, a unique prioritisation 'score' was given at category level. This was done by averaging the priority numbers of its components[5] and afterwards sorting them into quartiles. The quartiles were then translated to a low (Q1) to high (Q3) scale. The resulting prioritisation (Table 4) shows that most soil-related challenges with a high priority for regional stakeholders were also ranked with a high priority in the Region of Murcia's CSP. This overlap suggests a broad consensus on the main needs/challenges in relation to soil health. An exception is the perceived importance of R&D and Competitiveness or Training and Knowledge Transfer categories, which have a high priority for stakeholders but relatively lower for the CSP (**Table 4).**

[5] $s_i = 1/n_i \sum_{j=1}^{n_i} p_{ij}$ where $s_i$ is the average score of each category, $n_i$ is the number of components in category $c_i$ and $p_{ij}$ is the priority score of the $j$-th component in $c_i$

**Table 4**. Alignment of CSP soil-related needs with challenges for soil health identified by stakeholders.

| Category | CSP | Stakeholders |
|---|---|---|
| **1. R&D and competitiveness** | medium | high |
| **2. Climate and emissions** | medium | medium |
| **3. Water management** | high | high |
| **4. Soil management** | medium | medium |
| **5. Biodiversity, habitats, and landscapes** | medium | medium |
| **6. Training and knowledge transfer** | medium | high |
| **7. Sustainable production and consumption** | high | high |

# 2. How are SSM needs addressed through the CSP?

Several interventions in the CSP support SSM on agricultural land, most notably eco-schemes (under the EAGF) and environmental and climate commitments under the EAFRD. These are explored in further detail here, alongside other EAFRD interventions, to understand how they respond to the identified needs and challenges, as well as the level of funding they receive. The interventions were selected based on how they support the implementation of SSM practices both directly on the ground and by supporting knowledge and training needs.

## 2.1. Interventions under the EAGF (eco-schemes)

Eco-schemes support farmers in the implementation of SSM practices in the Region. For cropland, eco-schemes with soil-related objectives include:

- Eco-schemes on **carbon farming and agroecology**, that support crop rotations with improving species, which encourage farmers to rotate part of their crops annually with soil enhancing species (e.g. legume crops); as well as no-tillage and direct seeding on 40% of the arable area. Two versions of the eco-scheme exist for non-irrigated arable land (1PD31001803V1), and irrigated arable land (1PD31001805V1);

- Eco-schemes on **carbon farming** supporting soil cover under woody crops either with **plant cover or mulching**, on flat land (1PD31001806V1), medium slopes (1PD31001807V1) or steep slopes (1PD31001808V1), which can enhance soil quality and increase carbon storage;

- Eco-scheme on the **creation of biodiversity spaces on cropland**, which requires farmers to allocate 4-7% of their arable surface to unproductive areas that act as biodiversity refuges. According to the CSP, this practice provides indirect benefits to soil health by restoring the ecological balance and reducing chemical input needs (1PD31001809V1).

The eco-scheme on carbon farming and agroecology supporting extensive grazing, mowing, and biodiversity on Mediterranean pastures was not included (1PD31001802V1), as this study focuses exclusively on SSM interventions on cropland and not permanent pastures.

## 2.2. Interventions under the EAFRD

The Spanish CSP proposes a wide-ranging set of measures under the EAFRD which can support SSM[6]. At the national level, 10 interventions related to SSM were found. Seven of these **were programmed in the Region of Murcia,** plus one additional intervention (MUR6503.13) that is specific to the Region. The interventions fall under Environmental and Climate Commitments (3), investment measures (2), knowledge exchange and advisory services (2) and payments for area-specific disadvantages (1).

Environmental and climate commitments (ENVCLIM):

- ***Agri-environmental commitments on agricultural land. Protection of birdlife*** (MUR6501.5) – this intervention, which needs to be applied on at least 40% of the area under cereals (medium to long cycle), requires leaving 10% of the crop unharvested, and fallow land on 40% of the UAA without pesticide use. As an additional criteria, a minimum of 40% of fallow land needs to be planted with leguminous crops (considered a soil-improving crop). These practices positively impact soil biodiversity whilst reducing the need for fertiliser inputs.

- ***Maintenance or enhancement of traditional habitats and farming activities preserving biodiversity*** (MUR6501.6) – this intervention requires the maintenance of woody crops, without modifications, and does not allow the restructuring of parcels preserving traditional elements such as terracing which act as soil and water retention structures. It also requires leaving 10% of the area unharvested which contributes towards preserving soil biodiversity.

[6] Measures from sectoral interventions were not considered for this study. Although these may include conditionality pertinent to good soil practices, data on the execution and spending of these measures were not readily available

### Box 1. Carbon farming and agroecology eco-scheme

Description of the supported practice: soil cover under woody crops

(Rainfed almond orchard with native cover crops / Photo by Carolina Boix Fayos)

In contrast to conventional management, where land is often tilled 4-5 times a year in woody crops, the eco-scheme supports the **establishment and/or maintenance of a spontaneous or sown vegetation cover throughout the year so that the soil is never left bare**. The cover is managed mechanically (mowing or clearing), with residues retained on the surface as mulch. Superficial tillage (<20 cm) is permitted between April and September, provided that it does not destroy the cover or alter soil structure. In arid rainfed areas, at least 40 % of the inter-row width must be covered (20 % in summer), with a minimum width of 0.5 m; on slopes over 10 %, an additional 1 m of cover is required. Moreover, if the cover crop is maintained from one year to the next on the same parcel, an extra payment of €25/ha is awarded. In the Region of Murcia where permanent woody crops account for approximately 57% of the total Utilised Agricultural Area (UAA) (INE, 2024) this scheme is of significant relevance.

Identified challenges for farmers (based on the workshops and interviews):

1. **Investment and equipment adaptation**:
   - Cost of seed mixture in sown cover crops
   - Cost of tractor equipment to manage the cover crop.
2. **Technical knowledge and training**:
   - Selection of appropriate species (sown or spontaneous) according to soil type and climate.
   - Management of the cover crop to prevent pest outbreaks, which may require specialised agronomic advice.
3. **Opportunity costs and land management**:
   - While the cover crop is in place, no commercial crop is produced, which can strain financial balance on small or medium-sized farms if there is no specific financial support.
   - Detailed record-keeping in the logbook (dates, dimensions, photographs) adds to the administrative burden.

- ***Organic farming –*** two interventions support organic farming in the Region. An intervention on the maintenance of organic farming (MUR6503) and an intervention on organic farming commitments in previous periods which is specific for the Region of Murcia (MUR6501.3). The most important contribution of these measures towards soil health is via the reduction of agro-chemicals which contribution to soil and water pollution, reducing soil's ecological functions.

Investment measures (INVEST):

- **Support for productive investment in agricultural holdings aimed at contributing to climate change mitigation and adaptation, and the efficient use of natural resources** (MUR6841.1) - this intervention can cofinance investments that can be aimed at reduction of soil erosion and desertification (e.g. investment in equipment for the development of precision farming and conservation agriculture [machinery for conservation agriculture such as no-till seed drills, mowers for managing plant cover, pruning residue shredders, etc.]).

Knowledge exchange and dissemination of information, advisory services:

- ***Knowledge exchange and information transfer*** (MUR7201) – this intervention supports knowledge exchange within the Agricultural Knowledge and Innovation System (AKIS). It finances lines of action focused on education and awareness on environmental protection, better resource use, and climate adaptation.

- ***Advisory services*** (MUR7202) - this intervention aims to strengthen knowledge exchange and advisory services within the AKIS, supporting advisory services for rural and agricultural businesses, focusing on environmental awareness and climate action.

Payments for Area Specific Disadvantages:

- ***Payments for specific handicaps resulting from the implementation of the Water Framework Directive and the Natura 2000 network*** (MUR6712) - in the Region of Murcia, this responds to the following disadvantage: "*non-irrigated herbaceous crops cannot be converted to non-irrigated woody crops*". Under this intervention no herbicides are allowed on fallow land, chemical treatment of seeds is not authorised, 10% of the crop needs to remain unharvested and for every 30 hectares of land a water point for fauna must be established.

The support from the EAFRD for sustainable soil management in the Region of Murcia appears to be limited. Several of the interventions that count towards fulfilling specific objectives related to soil health, only address soil indirectly, with a questionable impact on the ground and only one intervention (MUR6501.6) addresses water retention and runoff regulation structures through soil erosion protection. Over three quarters of the funding is allocated to organic farming measures, which, although it avoids harmful inputs, does not ensure soil erosion

mitigation by promoting a reduced usage of tillage practices (Seitz et al., 2019), thus not necessarily regenerating soil health and associated ecosystem services (Schreefel et al., 2020).

In addition, it is important to highlight that the Region of Murcia has opted not to program some of the EAFRD measures in the CSP which could address SSM needs. This is due to: (i) overlaps with existing interventions (intervention MUR65012, MUR65013, and MUR65017), or (ii) simply unprogrammed with no further explanation (intervention MUR65011). Overall, the Region could better use the EAFRD to design interventions that target its specific needs to improve soil health (e.g. reducing soil degradation, increasing water retention in soils, creating water retention infrastructures).

**Box 2. Organic farming and SSM practices**

Within the Region, two interventions promote organic agriculture (MUR6503 and MUR650313). They can be applied to any crop type and land condition provided it complies with the *Organic Regulation*[5]. In terms of its contribution to SSM, organic farming primarily bans the use of chemicals and Genetically Modified Organisms which improves soil health by reducing harmful inputs, reducing water pollution, with benefits in biodiversity, but not actively regenerating the soil. The interventions (as well as the Organic Regulation[7]) are less stringent when it comes to soil management, for instance, not requiring farmers to take action in preventing soil erosion (e.g. by reducing tillage intensity or frequency), which is a main threat to soil in the Region.

## 2.3 Interventions addressing the identified needs and challenges

Each selected intervention was assigned to one or more of the defined needs and challenges categories (**Table 5**). The attribution was initially based on the CSP needs which the Plan links each intervention to. This was subsequently refined using expert judgement, based on the description of the specific measures proposed for each intervention for the Region of Murcia, and their potential to address those specific needs. All interventions could be related to the category of sustainable production and consumption, while many addressed needs related to biodiversity and soil management. Although water management is identified as a high-priority need for the Region, only eco-schemes and one EAFRD intervention support it.

[7] Organic farming is regulated under *Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labelling of organic products* (Council Regulation (EC) No 834/2007).

**Table 5**. Alignment of interventions with the categories of needs and challenges.

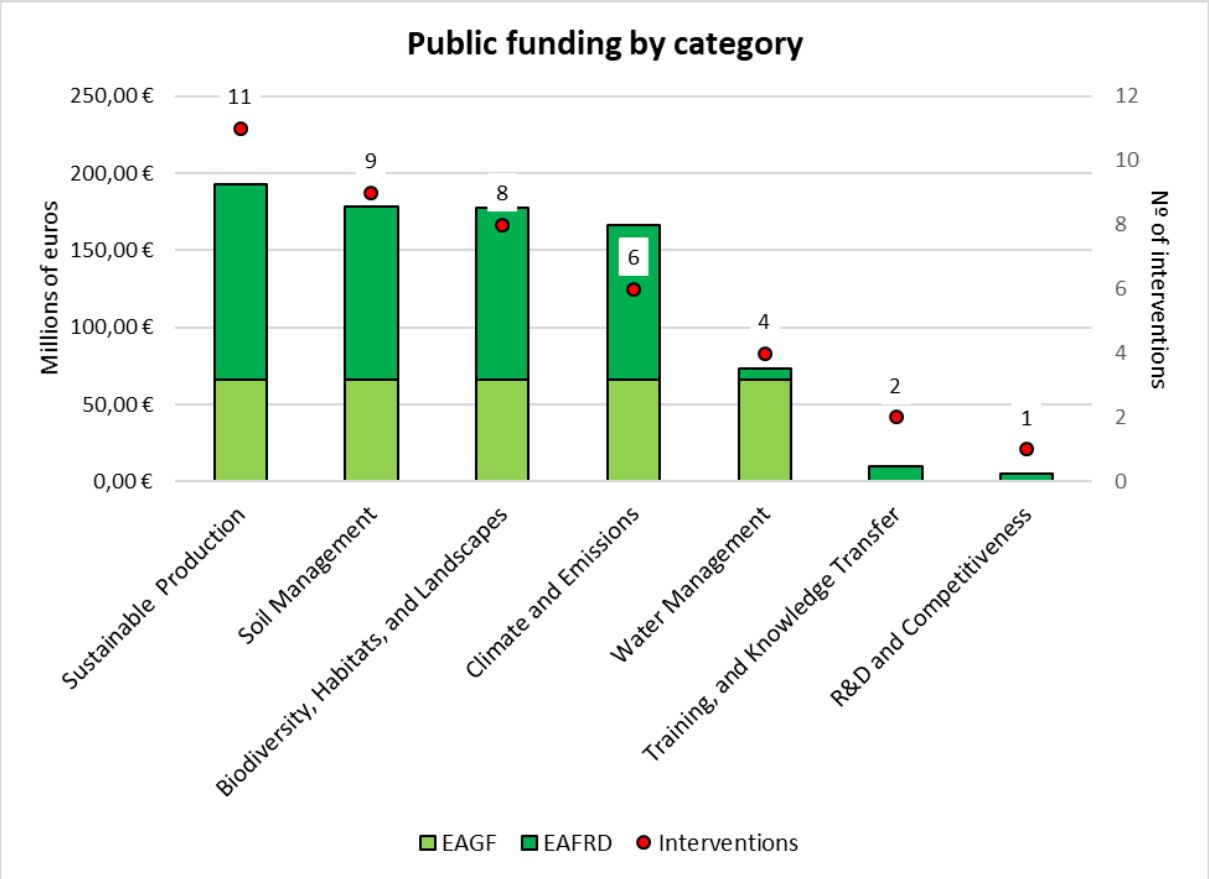
| Topic of intervention | Intervention number | 1. R&D, competitiveness | 2. Climate and emissions | 3. Water management | 4. Soil management | 5. Biodiversity, habitats and landscapes | 6. Training and knowledge transfer | 7. Sustainable consumption and production |
|---|---|---|---|---|---|---|---|---|
| **EAGF** (Eco-schemes) | | | | | | | | |
| Carbon farming and agroecology | 1PD31001803V1 | | ■ | ■ | ■ | ■ | | ■ |
| | 1PD31001805V1 | | ■ | ■ | ■ | ■ | | ■ |
| Carbon farming | 1PD31001806V1 | | ■ | ■ | ■ | ■ | | ■ |
| | 1PD31001808V1 | | ■ | ■ | ■ | ■ | | ■ |
| Creation of biodiversity spaces | 1PD31001809V1 | | ■ | ■ | ■ | ■ | | ■ |
| **EAFRD** (ENVCLIM, INVEST, KNOW, ASD) | | | | | | | | |
| Environmental commitments | MUR6501.5 (ENVCLIM) | | | | | ■ | | ■ |
| Maintenance of habitats | MUR6501.6 (ENVCLIM) | | | ■ | ■ | ■ | | ■ |
| Organic farming | MUR6503 (ENVCLIM) | | ■ | | ■ | ■ | | ■ |
| | MUR6503.13 (ENVCLIM) | | ■ | | ■ | ■ | | ■ |
| Payments for WFD and N2000 | MUR6712 (ASD) | | | | ■ | ■ | | ■ |
| Productive investment | MUR6841.1 (INVEST) | ■ | ■ | | | | | ■ |
| Knowledge exchange | MUR7201 (KNOW) | | | | ■ | | ■ | ■ |
| Advisory services | MUR7202 (KNOW) | | | | ■ | | ■ | ■ |

## 2.4. Funding allocation for the identified needs

Total funding per category was calculated by adding the total public expenditure for the 2023-2027 period of the interventions covering the needs within each category. As one intervention may address more than one need, overlaps among them exist [8].

- Sustainable Production and Soil Management are the categories with the highest amount of funding, with around 192.75M€ (11 measures) and 178.77M€ (9 measures). They are followed by Biodiversity, Habitats and Landscapes, and Climate and Emissions, with 177.51 M€ (8 measures) and 166.12 M€ (6 measures). Lastly, around 73.4M€ are planned to be spent on Water Management, 10.14 M€ on Training, and Knowledge Transfer, and 5.1 M€ on R&D and Competitiveness. These last categories also contain the least number of interventions (4, 2, and 2, respectively).

**Figure 1.** Number of measures and total public expenditure for the 2023-2027 period (all public spending).




[8] Note that interventions in the CAP often have multiple objectives, among which those for soil.

**Table 6.** Alignment of funding and degree to which each category is prioritised in the CSP and by stakeholders.

| Category | CSP priority | Stakeholders' priority | Relative funding allocation |
|---|---|---|---|
| **1. R&D and competitiveness** | medium | high | low |
| **2. Climate and emissions** | medium | medium | medium |
| **3. Water management** | high | high | medium |
| **4. Soil management** | medium | medium | high |
| **5. Biodiversity, habitats, and landscapes** | medium | medium | medium |
| **6. Training and knowledge transfer** | medium | high | low |
| **7. Sustainable production and consumption** | high | high | high |

The examination of the CSP for the Region of Murcia reveals that **most of the needs and challenges receive funding in alignment with the relative importance given to them by the consulted stakeholders**. The majority of the support comes through the EAFRD, in particular, the interventions on organic farming (75%). There are three crucial domains, however, where the number of interventions and their financing level seem to fall short of the importance assigned by stakeholders: R&D and Competitiveness, Water Management, and Training and Knowledge Transfer (**Figure 1, Table 6**):

- **R&D and competitiveness**. Although the CSP for the Region emphasises the importance of research, development, and innovation of agricultural practices and equipment, and has implemented measures to allocate resources, these efforts do not align with the importance stakeholders attribute to them. Stakeholders repeatedly cite a shortage of locally-adapted and affordable precision technologies or SSM practices tailored to their specific conditions as a barrier to their effective implementation. It's worth noting, however, that research and development in this space are often supported through EU and Member State funded research programs (e.g. Horizon Europe).

- **Water management**. Despite being acknowledged as a high priority, funding for good water management through sustainable soil management receives only modest financial support, in particular when it comes to EAFRD interventions. This shortfall hinders the widespread implementation of water-saving SSM practices, such as cover-crops, reduced tillage, or mulching, as well as the preservation or construction of traditional water retention

structures such as cultivation terraces, or berms and swales at the farm-level, that are particularly relevant in semiarid areas.

- **Training and knowledge transfer**. Stakeholders see as a priority robust advisory services and knowledge transfer but, these needs and challenges receive the lowest amount of funding among all categories when adding up the dedicated interventions in the CSP. This may limit the widespread adoption of SSM through the collective action of a wider group of farmers, advisory bodies, technicians and researchers, as information on the *know-how* of legislation, subsidies and agricultural practices does not always reach the expected recipients. There are other EU-level resources outside the CAP, such as the Soil Mission's network of lighthouse farms, which demonstrate good farming practices and support knowledge transfer. However, most farmers are still not well connected to these networks, underlining the importance of developing local, trusted extension services alongside these.

### 2.5. Implementation to date

The available data published by the Spanish Agrarian Guarantee Fund (FEGA) shows that the overall number of beneficiaries in the CAP in the Region of Murcia is declining, with a 2.42% decrease in 2024 compared to the previous year (FEGA, 2025). The data also shows that the uptake of eco-schemes doubled from the first to the second year of CSP implementation (from 31 % to 62% of total CAP beneficiaries) in the Region of Murcia. The total area under the **Carbon Farming and Agroecology eco-scheme** in woody crops **rose 36%,** from 38,696 hectares in 2023 to 52,597 hectares in 2024. Similarly, eco-schemes focused on **Biodiversity Islands** have seen an even higher **increase of 53%,** underscoring a growing commitment towards these practices (FEGA, 2025).

EAFRD implementation data for the CAP 2023-2027 available for consultation in the public domain remains limited. This is partly due to the overlap between the current CAP framework and the previous Rural Development Programme, with current EAFRD measures only starting recently and the previous finalising their execution in February 2025[9]. This overextension of the previous EAFRD and the delay in the implementation of its interventions imply that the discussions around the next CAP period cannot benefit from a thorough examination of previous implementation results. This limits the incorporation of past lessons into a new resource allocation and design of measures for the following programming period.

## 3. Improving CAP's delivery for SSM in the Region of Murcia: conclusions and recommendations

The analysis conducted here sheds light on how SSM practices within the CAP at the regional level align with the needs identified by stakeholders and their prioritisation. Although many interventions effectively address needs and challenges, this study reveals a few misalignments

[9] A structured interview with the Geograhical Unit managing the Spanish CSP at DGAgri confirmed that the information was not yet available.

between stakeholder needs, policy, and the funding of interventions related to SSM that could be addressed. In particular, the region could improve the delivery of the CSP in relation to:

- **Closing the funding gap and increasing action on water management.** As stated in the CSP SWOT analysis for the Region of Murcia and further underscored via stakeholder analysis, water management is a top concern in the region. However, soil-related interventions targeting water management were among the least funded in the Region. Besides the long-standing structural investments on irrigation in the region (Grindlay et al., 2011), strategies for water management can be approached through SSM. These practices can improve soil infiltration, soil's water-holding capacity, and reduce evaporation rates. Interventions that incorporate the use of cover crops and reduced tillage have proved effective in achieving these goals, but additional funding should be deployed for their implementation. There is also potential to programme other interventions through EAFRD that support other lines of action such as the building of traditional terracing elements, which could have a significant impact on soil conservation and water retention.

- **Reinforcing knowledge transfer and advisory support.** Considerable progress has been made in this area during the current programming period with a significantly higher budget than the previous period (twice more financial resources allocated to these measures) (CARM, 2025). Prior to the implementation of the current CSP, the regional CAP administration set up meetings with farmer associations, elaborated brochures and opened websites to aid in the transition from the previous regulatory framework. Nonetheless, stakeholders consistently reported that the existing gap remains in transferring technical support knowledge to farms and rural areas in general. Facilitating the broader adoption of SSM requires a high level of stakeholder engagement with advisory agents, bringing the expertise of knowledge centres to the farms, as well as research and funding to tailor the practices, farm equipment and technology to the regional specificities.

Two other issues which could limit the support for the implementation of sustainable soil management practices through the CAP were identified during the course of the work. These are the **need for enhanced stakeholder interaction in the design and implementation of the CSP**, and **improved monitoring and evaluation of the implementation of the CSP**.

- **Enhancing stakeholders' role in the design and implementation of the CSP** came strongly as a request from various stakeholder groups (farmers, researchers and technicians) at the workshops. While the monitoring processes and stakeholder consultations have broadened their scope over time[10], now featuring structured committees including administrative technicians, farmer representatives, and, to a lesser extent, environmental organisations, the current monitoring committee composition in the Region of Murcia is less diverse and numerous than the 2014-2020 RDP committee,

[10] Based on information in: https://www.mapa.gob.es/es/desarrollo-rural/temas/programas-ue/

particularly in terms of environmental associations[11]. As observed from the official meeting notes of the monitoring committee in the Region, the focus to date has been on increasing the flexibility for meeting the enhanced conditionality rules in the CSP. These leaves open questions on whether the increased flexibility will actually lead to greater adoption of measures or reduce the environmental ambition of the CSP. Strengthening and institutionalising the role of stakeholders in the monitoring committees, promoting greater diversification to ensure proper representation of all actors involved in the agri-food chain could broaden the support for implementing changes that target improvements in soil health.

- Better **monitoring and evaluation** of the CSP's progress would greatly improve the ability to conduct assessments like the present one in this work. Although evaluation and monitoring mechanisms are in place, the regional administration's lack of adherence to specific timeframes or failure to meet deadlines for submitting relevant information on CSP progress hinders the possibility for conducting thorough assessments. Additionally, overlaps with previous programming periods have stalled the implementation of the EAFRD interventions in the CSP.

Overall, there is a good alignment between the needs expressed by the agricultural sector to implement SSM and the needs addressed by CAP interventions. However, there is still potential to improve the design and implementation of the soil-related interventions in the CSP for the Region of Murcia supporting SSM, such as targeted research and technological development to adapt SSM practices to local sector needs and specific environmental conditions. Strategically directing resources towards the identified underfunded areas and fostering synergies with complementary initiatives across Europe (e.g. lighthouse farms) could significantly enhance the uptake of SSM practices among farmers.

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