

# Compendium of good practice examples for improved water resilience in rural areas

**Thematic Group on Improving Water Resilience  
in Rural Areas through the CAP**

April 2026



Funded by  
the European Union

# Table of Content

<b>1. Introduction</b>	<b>1</b>
<b>2. CSP Interventions</b>	<b>2</b>
2.1. Belgium (Flanders): Eco-scheme for increasing the soil carbon content	2
2.2. Belgium (Wallonia): Aid for non-productive investments in agricultural holdings	2
2.3. Cyprus: Integrated irrigation and water reuse schemes	3
2.4. Germany: Land use change and management for climate resilience	4
2.5. Germany: Investing in non-productive water landscape interventions	5
2.6. Greece: 31.1 Use of resilient and adapted species and varieties	5
2.7. Poland: Payments for water retention on permanent grassland	6
2.8. Slovakia: Interventions for landscape water retention	6
2.9. Spain: Actions for climate resilient cropping systems, through compensation, productive investments and sectoral support	7
<b>3. Example of projects and initiatives</b>	<b>9</b>
3.1. Catchment scale/landscape scale approaches	9
3.1.1. Croatia: DRAVA LIFE Integrated River Management	9
3.1.2. Finland: Catchment area planning	9
3.1.3. Hungary: WWF Hungary's Tisza Programme – developing sustainable water management and landscapes in the Tisza Plain	10
3.1.4. Hungary and Romania: Landscape level water retention and cross-border water resource management	11
3.1.5. Latvia: LIFE GOODWATER IP project – Water retention and quality in rural areas	12
3.1.6. Spain: Rehydrating a landscape: demonstration farm in Southern Spain	13
3.1.7. Spain: Water-oriented living lab La Axarquía – Water-smart agriculture with safe reuse and nutrient management	14
3.2. Improved water governance/collaborative approaches	15
3.2.1. Belgium (Flanders): Blue Deal – Compass for a water-wise Flanders	15
3.2.2. Italy: Building agricultural resilience through improving irrigation networks – The Italian experience	15
3.2.3. Germany: Regional Cultural Landscape Management Plan	17
3.2.4. The Netherlands: Initiatives by Deltaplan Agrarisch Waterbeheer	19
3.2.5. Poland: Climate action initiatives – Local Water Partnerships in the Kujawsko-Pomorskie region	19
3.2.6. Portugal: Water management in the Lis Valley	19
3.2.7. Romania: Community-based water retention solutions facilitated by LEADER	20
3.2.8. Spain: Organic transformation of an olive grove (Finca Hermanos Jiménez Pérez CB)	21



<b>3.3. Technical solutions</b>	<b>22</b>
3.3.1. Belgium (Flanders): Winter water for summer irrigation	22
3.3.2. Finland: Investment support for controlled subsurface drainage and irrigation	22
3.3.3. Italy: AQUA SMART – Water and nutrient savings for sustainable and resilient agriculture	23
3.3.4. Italy: Water harvesting systems to increase water availability with no pressure on water bodies	24
3.3.5. Italy: IT tools to optimise technological efficiency of irrigation systems	24
3.3.6. Spain: My Greens – Circular vertical farming in Málaga	25
3.3.7. Sweden: PRECILIENCE – Assessing performance of combined drainage and storage for supplemental irrigation to improve water resilience	26
<b>3.4. Advice and knowledge sharing</b>	<b>27</b>
3.4.1. EU wide: Water Management Guidebook	27
3.4.2. International: Water Stories	28
3.4.3. Spain: App GO TIC4BIO	29
3.4.4. Sweden: Study circles on ditches	29
3.4.5. Sweden: App: <i>Hur mår min jord?</i> (how healthy is my soil?)	30
<b>4. Other useful links and resources</b>	<b>31</b>

## Disclaimer

*This document has been developed as part of the work carried out by the CAP Implementation Contact Point under the EU CAP Network to support the activities of the Thematic Group (TG) on [Improving Water Resilience in Rural Areas through the CAP](#). The information and views set out in this document do not necessarily reflect the official opinion of the European Commission.*



# 1. Introduction

The availability of clean, reliable water resources is key for our livelihoods, for human health and wellbeing, food security and environmental sustainability. Yet, in the light of a changing climate, water is increasingly becoming a scarce resource, affecting citizens, farmers, foresters, environment and businesses alike. Taking action to improve water resilience to secure its ongoing availability is therefore paramount, for example, through reducing water demand through e.g. changing to less water-intensive crops, and investing in nature-based solutions to improve infiltration and water retention in the landscape, increasing the efficiency of water use and increasing water re-use. Improvements in water efficiency should result in real water savings, whereby water saved by the improvements in irrigation efficiency is associated with a reduced water abstraction by the irrigator or the irrigation network.

The overall aim of the recent EU CAP Network's [Thematic Group on Improving Water Resilience in Rural Areas through the CAP](#) was to examine how to best utilise the Common Agricultural Policy's (CAP) potential for improving water resilience in rural areas and promote more systemic transformative changes in the way water and land are managed, enabling rural areas to better withstand climate extremes such as droughts and floods. The TG looked at how this can be best supported through the CAP Strategic Plans (CSPs), e.g. through greater uptake of actions, such as natural solutions for greater water retention within the landscape, investments required to improve water efficiency or water reuse. It comprised 40 members representing Managing Authorities (MAs), Paying Agencies (PAs), National Networks (NNs), farmers and farming organisations,

environmental NGOs, European and national/regional stakeholder organisations and farm advisors. The [background briefing](#) of the TG provides some facts and figures about water resilience in rural areas and the types of practices to improve this. It outlines the role of the CAP in addressing water resilience and the main barriers that exist.

This briefing presents a selection of CSP interventions and examples of projects and initiatives that aim to improve water resilience in rural areas. These initiatives are funded from a range of sources, including the CAP, but also other EU funds (e.g. Communities4Climate, LIFE, Horizon Europe), as well as funding sources such as foundations and national funding. These initiatives have been shared by members of the TG. [Chapter 2](#) highlights a range of different CSP interventions designed and implemented in Member States (MSs). Not much information on uptake and impact is available yet, but the examples give an idea of the different tools available at Member State level. [Chapter 3](#) provides examples of projects and initiatives that address water resilience in different ways by: (i) working at the catchment level / following a landscape scale approach, (ii) improving water governance and working in a collaborative way involving different stakeholders, (iii) applying technical solutions and (iv) providing support through enhanced advice and knowledge sharing. At the end of the document, useful additional resources and links are provided ([Chapter 4](#)). The purpose of this briefing is to **give a flavour of the range of initiatives happening in different parts of the EU to provide inspiration to others** – it is by no means a comprehensive list.



## 2. CSP Interventions

### 2.1. Belgium (Flanders): Eco-scheme for increasing the soil carbon content



**CSP Intervention:** Eco-scheme 1.7 Soil eco-regulation organic carbon content

**Planned budget:** EUR 47 817 286

**Links:** [Soil Passport video](#)

**Description:** To reduce agricultural water demand and increase resilience to drought, Flanders prioritises source-oriented water retention by strengthening the soil's natural sponge function. Healthy soils with higher organic-carbon content can store more water, improve infiltration and reduce runoff, thereby lowering pressure on surface water and groundwater resources. Rather than relying on end-of-pipe solutions, the approach focuses on preventing water loss at field level by improving how soils absorb, store and release water.

The Flemish eco-scheme encourages practices that increase soil organic matter and improve soil quality (incl. its structure and biodiversity), improve soil water holding capacity, including:

- the use of carbon rich organic materials (e.g. compost, solid manure);
- diverse crop rotations that increase carbon inputs;
- no tillage systems, which concentrate carbon in the topsoil, reduce runoff and improve infiltration;
- the construction of small thresholds in ridge crops to slow down runoff and retain water on the field.

To support long-term soil improvement, the [soil passport tool](#) centrally stores soil data and allows farmers to simulate how different management practices affect soil carbon accumulation over a 30 year horizon. This helps farmers make informed decisions and links short-term actions to long-term benefits.

**Supporting measures and integrated approach:** Eco-schemes are complemented by investment support, such as for non-tillage machinery, and knowledge transfer. Other policy instruments reinforce the same objectives. For example, the nitrates action plan (NAP) promotes the use of compost and solid manure through standards for reduced phosphorus, while Flanders is developing a regulatory framework for on-farm composting. Demonstration projects encourage composting of residual biomass from grass strips, hedgerows and other small landscape elements, either on farms or at local hubs. Transitioning from ploughing to no-till is recognised as challenging. It requires new machinery, precise timing, and increased knowledge. Farmers, therefore, need practical support and peer-to-peer learning, for example, through farmer networks and informal exchange groups. Over time, as soil structure improves, tillage intensity and machinery requirements typically decrease. A key success factor is coordination across policy frameworks (CAP, NAP, erosion control, EU Water Framework Directive, Natura 2000). Attention is also paid to side effects: higher soil carbon affects fertilisation strategies, and reduced tillage can increase weed pressure. These trade-offs underline that water resilience cannot be achieved through single measures, but requires a coherent, system-based approach integrating soil, water, nutrients and biodiversity.

### 2.2. Belgium (Wallonia): Aid for non-productive investments in agricultural holdings



**CSP Intervention:** 352 – Aid for non-productive investments in agricultural holdings

**Planned budget (2023–2029):** Total public expenditure of EUR 900 000 (EU amount: EUR 333 720), targeting 225 separate investments

**Uptake (by 2025):** Ten operations (three in 2024 and seven in 2025), with total expenditure of EUR 36 612

**Links:** [Aides aux investissements non-productifs dans les exploitations agricoles \(Nouveauté 2026\) – Portail de l'agriculture wallonne](#), [Aides aux investissements non-productifs dans les exploitations agricoles](#)

**Description:** The intervention supports non-productive investments on agricultural land to reduce soil erosion and strengthen local hydrological functioning. It focuses on the construction of 'soft' hydraulic infrastructure, such as retention basins, buffer ponds, grassed waterways, infiltration zones and similar landscape elements that complement agricultural practices and upstream land management.

These measures do not generate direct financial returns for farmers, yet they are essential for mitigating erosion, runoff and flood risks at the catchment scale, pressures that are increasingly linked to climate change, particularly in large-scale arable regions where soil organic matter is low and erosion risk is high.



The overall aim is to increase the resilience of agricultural systems and landscapes to climatic and hydrological stresses while contributing to broader environmental objectives, such as sustainable natural resource management and biodiversity protection. From a water resilience perspective, it enhances water retention and infiltration, and contributes to improving water quality, within agricultural catchments through the creation and restoration of wetlands, buffer zones and vegetated hydraulic features. Eligible investments include:

- > installation of filter dams made of straw or bundled branches to slow runoff and trap sediments;
- > creation or restoration of wetlands, buffer strips and temporary inundation zones;
- > adaptation or construction of ditches and swales with retention and vegetated features; and
- > modification of drainage outlets to reduce concentrated runoff and improve water management on drained plots.

Conventional drainage works are explicitly excluded from funding.

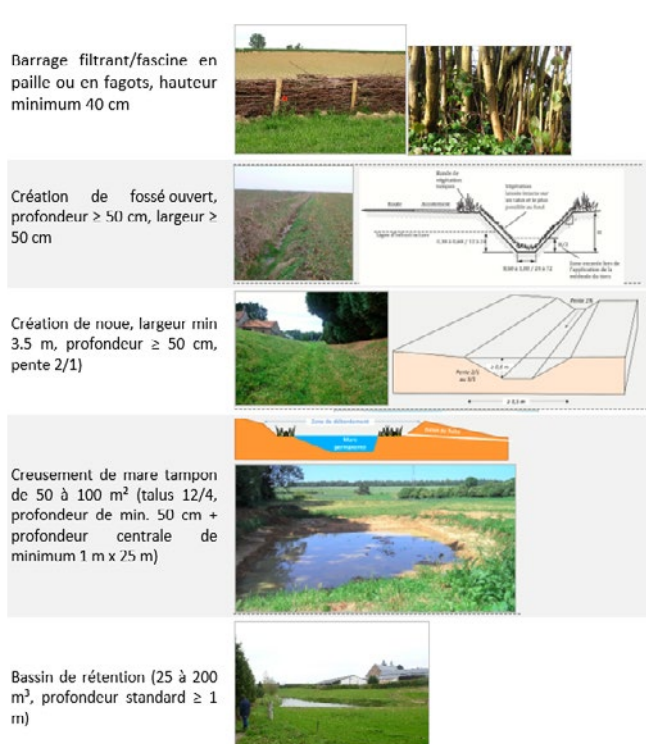


Illustration of possible investments ([Agriculture Wallonie](#))

## 2.3. Cyprus: Integrated irrigation and water reuse schemes



**CSP Intervention:** Intervention A.A.4.5.1 – Infrastructure for recovery of recycled water and reduction of losses from irrigation networks

**Planned budget (2023–2029):** Total public expenditure of EUR 10 000 000, targeting seven operations

**Uptake (by 2025):** The first call for intervention A.A.4.5.1 was made in October 2025. To date, one application has been submitted regarding the improvement of the infrastructure of a particular dam belonging to an irrigation association in order to minimise losses.

**Description:** This intervention promotes circular water management by combining the reuse of treated wastewater with the modernisation of irrigation networks to enhance water sustainability and irrigation efficiency. This integrated approach addresses water scarcity by reducing dependence on freshwater resources while improving the efficiency and resilience of agricultural water use. The intervention pursues two complementary strands:

- A. The development of infrastructure for the reuse of tertiary-treated wastewater.
- B. The rehabilitation and modernisation of ageing irrigation networks that currently suffer from significant water losses.

The intervention finances recycled-water infrastructure such as storage tanks, pumping stations, primary and secondary pipelines, and winter storage reservoirs or dams to collect surplus treated wastewater for use during the dry season. These systems enable the safe reuse of reclaimed water for irrigation of crops and green areas in compliance with water-quality standards and the Code of Good Agricultural Practice. In parallel, support is provided for the replacement or upgrading of outdated irrigation networks to reduce losses, integrate modern technologies and optimise water distribution at farm level.

Eligible costs include engineering and construction works, equipment installation, technical studies and related professional fees. Funded projects must achieve a minimum water savings of at least 12%, rising to 60% in water bodies with poor quantitative status. Beneficiaries include public and semi-public bodies, local authorities and irrigation associations that function as farmer cooperatives and play a central role in collective water management.

Given the scale and complexity of recycled-water and irrigation infrastructures, particularly large-scale systems, long-term planning, coordination and stakeholder involvement are essential to ensure timely implementation within the programming period. Accordingly, this intervention underwent several stages of consultation, including dedicated discussions within the Monitoring Committee, to ensure technical feasibility, regulatory compliance and alignment with national water management priorities.



## 2.4. Germany: Land use change and management for climate resilience



**CSP intervention:** AECC EL-0101 – Management commitments to improve climate change mitigation, in particular TI: EL-0101-04: Water retention in the landscape

**Planned budget (2023-2029):** Total public expenditure of EUR 139 156 312, targeting 751 068 ha

**Uptake (by 2025):** The intervention has been implemented in six Länder over 1 044 766 ha, and a total expenditure of EUR 16 130 412

**Description:** This intervention promotes a comprehensive set of climate-oriented land use and land management measures, including the conversion of arable land to permanent grassland and rewetting peatlands. The intervention supports climate-adapted production practices on both grassland and arable land, with the aim of improving natural production conditions and strengthening landscape resilience.

A central element of the intervention is the restoration, creation and use of water retention areas along water bodies and within designated catchment areas, including agricultural land in environmentally sensitive or polluted zones. These areas are designed to allow floodwaters to spread and be temporarily stored, enabling rainwater to infiltrate and accumulate in the soil. By keeping as much water as possible within the landscape, the intervention helps reduce the frequency and severity of both droughts and flood events and mitigates their impacts.

Water retention areas play a key role in adapting agriculture to climate change, particularly in the context of more variable rainfall patterns and longer dry periods. The intervention addresses critical needs related to greenhouse gas reduction, enhanced carbon storage, biodiversity conservation and climate adaptation.

Funding is available for the following measures to increase soil water holding capacity, slow runoff, support groundwater recharge and improve hydrological regulation at landscape scale:

- › Water retention on permanent grassland without the use of plant protection products (PPP) or fertilisers.
- › Water retention on permanent grassland without extensification requirements.
- › Water retention on arable land without the use of PPP or fertilisers.

The intervention is embedded in a broader package of climate measures, including:

- › Conversion of arable land to grassland or permanent grassland (EL010101) to create long term CO<sub>2</sub> sinks and improve soil protection.
- › Extensive grassland management (EL010102) through low intensity grazing and restrictions on fertilisation or mowing, supporting biodiversity and reducing emissions.
- › Peatland protection measures (EL010103) focusing on peatland rewetting and restoration to recover carbon storage, water retention and ecosystem regulation functions.
- › Cooperative climate action (EL010105) supporting collective, site-specific projects involving multiple land managers to coordinate climate-adapted practices across larger areas.

**Implementation in Brandenburg:** While most German Länder programme these measures primarily for climate mitigation purposes, Brandenburg is the only region implementing EL010104 with a dedicated focus on landscape-scale water retention. Approximately 1 282 hectares have been targeted (2025). Farmers in designated water retention zones receive payments for retaining water on grassland or arable land and forgoing drainage improvements, based on a formally approved water management plan. This plan is developed in cooperation with a designated Niedrigwasser Koordinator and the relevant water and nature conservation authorities. The management plan identifies suitable fields within the retention area; defines water management objectives (e.g. target water levels, operation of weirs); specifies concrete measures and their implementation; and documents coordination with neighbouring land users affected by altered water levels.

This structured and cooperative approach ensures that water retention measures are environmentally effective, socially acceptable, and well integrated into local land-use and water-management systems.



## 2.5. Germany: Investing in non-productive water landscape interventions



**CSP Intervention:** Investment intervention EL-0401 – Non-productive water investments

**Planned budget (2023-29):** Total public expenditure: EUR 189 827 722, targeting 815 operations

**Description:** The intervention promotes sustainable water and landscape management to mitigate the impacts of climate change and human pressures on water resources. It supports integrated actions that reduce pollutant discharges, enhance pollutant retention, and restore or protect lakes, rivers and other water bodies. A strong emphasis is placed on nature-based solutions that improve the hydrology and morphology of watercourses and adjacent landscapes. It also promotes measures that increase landscape-scale water storage, reduce drainage and enable targeted water retention to improve water availability under changing climatic conditions. The overarching aim is to protect and enhance the ecological and chemical status of surface and groundwater, strengthen the natural water-retention capacity of landscapes, and promote sustainable and resource-efficient water use.

Only activities with environmental purposes that do not generate direct economic benefits for beneficiaries are financed. This includes technical and structural actions to reduce pollutant discharges – such as upgrades to drainage systems, wastewater treatment, and lake restoration using biological or chemical techniques – as well as hydrological and morphological measures and nature-based interventions. These include the restoration of rivers, wetlands and floodplains, the reconnection of former watercourses, and the creation of buffer and retention zones. Additional support is provided for the modernisation, adaptation or removal of hydraulic infrastructure (e.g. dams, weirs and drainage ditches) to restore natural water dynamics, enhance groundwater recharge and improve climate-change adaptation. Eligible activities cover the full project cycle, including design studies, monitoring, land acquisition and project management.

Eligible beneficiaries include public and private legal entities, associations, natural persons, partnerships and cooperative arrangements among these types of beneficiaries. The intervention is planned to be implemented in six German Länder: Brandenburg, Hessen, Mecklenburg-Vorpommern, Niedersachsen, Sachsen-Anhalt and Schleswig-Holstein.

## 2.6. Greece: 31.1 Use of resilient and adapted species and varieties



**CSP Intervention:** Eco-scheme 31.1 Use of resilient and adapted species and varieties

**Planned budget:** EUR 215 309 014 for a five year period

**Link:** [Information Leaflet on Greek eco-schemes](#)

**Description:** The eco-scheme ‘Use of resilient and adapted species and varieties’ promotes a shift towards crops that are better suited to hot and dry Mediterranean conditions, with the aim of reducing irrigation demand, increasing climate resilience and supporting biodiversity. The intervention consists of two complementary actions:

**Action A (winter cereals and winter legumes):** This action supports the cultivation of winter cereals and winter legumes as alternatives to water-intensive crops such as maize, alfalfa (*Medicago sativa*) and cotton. These crops, including local and traditional varieties, are naturally adapted to Mediterranean conditions, rely mainly on rainfall, and have lower water and nutrient requirements. By prioritising winter crops, the action helps reduce irrigation needs even during prolonged droughts expected under climate change.

**Action B (innovative and resilient crops, including aromatic and medicinal plants):** This action supports the introduction of climate-resilient and innovative crops, as well as adapted aromatic

and medicinal plants. Eligible crops include quinoa, chia, teff, black mustard, nigella, camelina, mucuna, tritordeum, sweet potato, nettle (for fibre), flax (for oil or fibre) and a wide range of aromatic and medicinal species. These crops have already been tested under Greek conditions, and relevant agronomic knowledge is available. Due to their high drought tolerance, they meet most of their water needs through rainfall, require minimal irrigation and have reduced nutrient demands.

By encouraging the adoption of drought adapted crops, it reduces pressure on water resources and enhances the resilience of farming systems. Even when supplementary irrigation becomes necessary due to extreme drought conditions, water requirements remain significantly lower than for conventional water intensive crops.

**Implementation (by 2025):** Uptake has varied across actions. The most popular actions have been the cultivation of aromatic and medicinal plants and the replacement of maize or alfalfa with winter cereals. There has been much lower uptake of innovative crops such as quinoa and other eligible crops.

The level of financial support has been a critical factor influencing initial adoption. Even though new crops offer greater long-term stability and resilience, initial support is required to compensate for potential income losses during the transition period and provide a modest incentive to encourage farmers to change established cropping systems. Market demand and price stability also play a decisive role in farmers’ crop-choice decisions. The availability of reliable markets for new or alternative crops is essential for scaling up the intervention and ensuring its long-term success.



## 2.7. Poland: Payments for water retention on permanent grassland



**CSP Intervention:** Eco-scheme 4.5 Water retention on permanent grassland

**Planned budget (2023–2029):** Total public expenditure EUR 97 262 550, targeting 1 575 000 ha

**Description:** This Polish eco-scheme promotes water retention on agricultural land, particularly in areas naturally prone to temporary flooding or waterlogging during the growing season. By maintaining higher soil moisture levels and limiting drainage, the measure also contributes to reducing greenhouse gas emissions by slowing the decomposition of soil organic matter. The design of the measure, was developed in consultation with farmers and agricultural organisations, including the national council of agricultural chambers, private and institutional advisors, and representatives of the national advisory centre.

Farmers are financially compensated for making their land available for temporary water storage, thereby integrating water retention into farm management. The intervention supports a climate resilient, low intensity agricultural model that delivers environmental benefits while offsetting farmers' opportunity costs.

Payments target landscapes that are naturally suited to water retention and wetland functioning. Eligibility is conditional on actual flooding or submersion of the parcel in the given year, defined as a soil profile being at least 80% waterlogged for a minimum of 12 consecutive days between 1 May and 30 September. The scheme relies on satellite based monitoring to identify eligible parcels, reducing administrative burden and ensuring objective verification.

Support can be granted to permanent grassland that is already covered by specific eco-schemes and agri-environment-climate commitments, as well as GAEC 2 from 2025.

The payment rate reflects a balance between income losses from flooded grassland (e.g. reduced hay harvest) and lower production costs, particularly savings on harvesting operations.

In total, PLN 45.6 million was paid under the ecoscheme in 2023–2024, with the area covered totally 109 000 ha in 2023 and 57 000 ha in 2024. For 2025, the supported area is expected to increase to approximately 165 000 ha, with total payments estimated at PLN 40.5 million.

Available information suggests that the ecoscheme generally requires limited changes to existing practices, as it compensates for naturally occurring flooding rather than requiring new management actions.

## 2.8. Slovakia: Interventions for landscape water retention



**CSP Intervention:** Non-productive Intervention 73–18 on green and blue corridors; Intervention 73–13 on forest water retention

**Planned budget (2023–2029):** Total public expenditure:

- › Intervention 73–18 EUR 40 000 000, targeting 80 operations
- › Intervention 73–13 EUR 7 000 000, targeting 35 operations

**Description:** The Slovak CSP includes two complementary non-productive investment interventions that address water resilience through landscape-scale and forest-based measures. Intervention 73–18 focuses on green and blue infrastructure in agricultural and consolidated landscapes, while Intervention 73–13 targets water retention and management in forest areas. Together, they aim to increase the landscape's capacity to retain water and carbon, reduce flood, drought and erosion risks, and restore natural hydrological functions in line with climate-adaptation objectives and the EU Water Framework Directive.

Intervention 73–18 (green and blue infrastructure) supports non-productive investments that improve water retention, soil quality and ecological stability within land-consolidation areas.

Eligible actions include afforestation and windbreaks, buffer zones along watercourses, vegetation corridors, infiltration strips, terraces, sedimentation belts, wetland restoration, stream revitalisation, and small flood-protection and retention structures such as reservoirs, polders and retention tanks. These measures are designed to reduce runoff and erosion, enhance infiltration and groundwater recharge, and restore natural hydrological and ecological processes. Implementation is closely aligned with nature-based solutions and often combined with agri-environment-climate measures, such as erosion control on arable land, permanent grassland support and organic farming, to maximise cumulative landscape-scale benefits.

Intervention 73–13 (water retention in forests) strengthens climate resilience in mountain and sub-mountain regions by improving water retention and runoff regulation in forested areas. Supported measures include the construction and restoration of small forest water-retention structures (e.g. ponds, infiltration zones, earth or wooden dams, small polders and sedimentation reservoirs), as well as the rehabilitation of forest transport networks to reduce erosion and surface runoff. Preference is given to projects using natural materials and those combining water retention with fire-prevention functions. Additional activities include targeted reforestation with climate-adapted species and improvements to forest structure to enhance microclimatic and hydrological stability. Beneficiaries include public, private, municipal and church forest managers, with some projects implemented through cooperative approaches to coordinate actions at micro-catchment level.



These two interventions demonstrate Slovakia's shift towards landscape-based, nature-based water-retention strategies under the CAP. While uptake data are not yet publicly available, early implementation highlights the importance of local engagement and coordination across farms and municipalities.

The implementation of these interventions has led to several positive environmental outcomes:

- › By establishing buffer zones, vegetation corridors and wetland areas, the landscape's capacity to retain rainwater has increased, supporting more stable groundwater levels and reducing surface runoff.
- › Strip cropping, erosion control measures and forest cover improvements have significantly decreased topsoil loss, especially in sloping agricultural areas, contributing to better soil health and water quality downstream.
- › Green and blue infrastructure investments have restored degraded habitats and created migration corridors for species, supporting regional biodiversity goals, including those under Natura 2000.
- › Forest-based water retention and agroecological land management practices have increased the landscape's resilience to extreme weather events (e.g. droughts, floods), contributing to long-term climate adaptation and risk mitigation.

However, these outcomes cannot be quantified due to the lack of monitoring. There is a need to improve data collection, tracking and reporting of nature-based water retention measures, including through farmer self-reporting, GIS mapping, and more consistent indicator frameworks.

Improving water resilience in rural areas in Slovakia involves a wide range of stakeholders across policy, implementation, research and land management sectors. Their effective collaboration is essential for the uptake and success of CAP interventions related to water retention, sustainable land management and climate adaptation.

This multi-actor landscape is crucial to enable systemic and transformative changes in how water and land are managed. Coordinated governance, knowledge sharing and targeted support mechanisms are key enablers for success.

## 2.9. Spain: Actions for climate resilient cropping systems, through compensation, productive investments and sectoral support



**CSP intervention:** ENVCLIM Intervention 6501.2 – Agri-environment commitments on agricultural areas/ commitments on sustainable crops; Productive Investment Intervention 6841.1 – Aid for productive investments on agricultural holdings; Sectoral interventions INVRE and CLIMA

### Planned budget (2023-2029):

- › Intervention 6501.2: EUR 212 280 083 total public expenditure, targeting 1 755 630 ha
- › Intervention 6841.1: EUR 100 911 406 total public expenditure

**Description:** Spain's CSP supports water resilience through a package of agri-environmental, investment and sectoral interventions that jointly address climate adaptation, water scarcity and sustainable resource use. Key instruments include ENVCLIM 6501.2 (agri-environment-climate commitments for sustainable crops), INVEST 6841.1 (productive investments for climate adaptation and natural resource efficiency), and sectoral interventions targeting the fruit and vegetable sectors. Together, these measures promote diversification of production systems, the uptake of drought-resilient crops and breeds, and a transition towards climate-smart, resource-efficient and biodiversity-friendly farming.

At the core of this policy mix is the objective to reduce water demand and increase resilience to drought and extreme weather. The interventions encourage shifts towards multi-year and perennial crops with lower water requirements, the adoption of drought-tolerant crop varieties, and the use of livestock breeds better adapted to rising temperatures and changing humidity conditions. By combining environmental commitments with productive investments and sector-specific support, Spain addresses water resilience both at farm level and along agri-food value chains.

- › ENVCLIM 6501.2 – Agri-environment-climate measures for sustainable crops: This intervention supports farming practices that improve soil health, water retention and nutrient efficiency. Eligible commitments include conservation agriculture (reduced or no tillage, crop rotation, soil cover), organic fertilisation and nutrient optimisation, integrated pest management, and the use of reclaimed water for irrigation. In permanent crops, green cover management and incorporation of pruning residues enhance soil organic matter and structure. The intervention is regionally tailored, supporting systems of high environmental value such as traditional vineyards, chestnut groves and raisin systems in Andalusia, cochineal cactus in the Canary Islands, and precision farming approaches in Navarra. Collectively, these practices reduce soil degradation, nutrient losses and vulnerability to droughts and heatwaves.



- > **INVEST 6841.1 – Productive investments for climate adaptation and resource efficiency:** This intervention finances on farm investments that help agricultural holdings adapt to climate change while improving the efficient use of water, soil and air resources. Supported actions include conversion to drought resistant or low water crops, diversification towards woody or perennial systems with higher carbon sequestration potential, and adoption of low emission livestock feeding strategies. Investments also cover modernised irrigation systems, precision agriculture technologies, and equipment for sustainable fertiliser, manure and plant protection management.
- > **Sectoral interventions (INVRE, CLIMA):** These focus on the fruit and vegetable sectors and support both nonproductive environmental investments and productive adaptation measures. They include water efficient irrigation technologies, soil carbon-enhancing practices (green cover, incorporation of pruning residues), crop diversification and climate-adapted production, as well as renewable energy installations. Mandatory membership in producer organisations (POs) is a key feature, enabling collective investment, joint marketing and improved bargaining power, while also facilitating coordinated climate and water resilience actions at sector level.

**Implementation:** Implementation of these interventions varies across Spain's regions. While all regions have operationalised these measures within their CSPs, Andalusia and Murcia stand out in terms of budget execution and alignment between environmental and productive objectives. For ENVCLIM 6501.2, Andalusia accounts for the largest share of applications, particularly for rainfed herbaceous crops, greenhouse systems, cotton and sugar beet, as well as emblematic systems such as chestnut groves and Málaga raisin production. In 2023, 2 639 applications were approved for rainfed herbaceous crops.

Murcia, Andalusia, Madrid and Aragón lead the way in implementation of INVEST 6841.1. Murcia allocated EUR 5.1 million in its 2024 call, while Madrid has earmarked EUR 1.5 million for 2025. Producer organisations and cooperatives coordinate collective investments, supporting knowledge transfer and enabling landscape and value chain level responses to water scarcity and climate change.



## 3. Example of projects and initiatives

### 3.1. Catchment scale/landscape scale approaches

#### 3.1.1. Croatia: DRAVA LIFE Integrated River Management



**Objectives:** To restore the natural dynamics of the Drava River, improve groundwater recharge and soil moisture, enhance biodiversity and ecosystem services linked to riverine habitats, promote nature-based solutions and build awareness of local communities to encourage responsible water use.

**Dates:** 01.12.2015 – 30.11.2024

**Funding source and overall budget:** LIFE, Total eligible budget: EUR 4 592 898; EU Contribution: EUR 2 755 739

**Links:** [Drave LIFE Homepage](#) and [DRAVE LIFE on LIFE Public Database](#)

**Description:** The DRAVA LIFE project was implemented along 300 km of the Drava River in northern and eastern Croatia. Led by Hrvatske vode (Croatian waters) in partnership with WWF Adria, local authorities and conservation organisations, and co-funded by the EU LIFE Programme, the project applied nature-based solutions to restore the river's ecological and hydrological balance. The project aimed to strengthen water resilience by restoring natural river dynamics, increasing floodplain retention capacity and improving groundwater recharge, while delivering co-benefits for biodiversity, agriculture and local communities.

**Activities:** Key activities focused on reconnecting the river to its floodplains and restoring natural hydrological processes. Obsolete riverbank protection structures were removed, old side channels were reopened, and gravel and sand banks were recreated to enhance water retention and flow diversity. Floodplain areas were expanded to store excess water during floods and release it gradually during dry periods, improving infiltration, soil moisture and erosion control. Complementary measures included planting native riparian vegetation, improving habitats for fish and birds, and developing educational trails and observation points. Public awareness campaigns and volunteer programmes were also implemented to promote sustainable water use and local stewardship of river ecosystems.

**Results/Benefits:** The project delivered substantial ecological, hydrological and socioeconomic benefits. More than 1 000 hectares of floodplain habitat were restored, increasing natural water retention, reducing flood peaks and improving groundwater recharge, leading to more stable water regimes during dry periods. Biodiversity improved significantly, with the return of indicator species such as the sand martin, little tern and otter. Rural communities benefited from reduced flood risk to agricultural land, enhanced landscape quality and new opportunities for ecotourism. Education and outreach activities increased public awareness of sustainable water management and the value of healthy river ecosystems. The project's success was driven by strong multistakeholder collaboration and the effective use of nature-based solutions, demonstrating that restoring natural river processes can deliver long-term water resilience while supporting conservation and local development.

#### 3.1.2. Finland: Catchment area planning



**Objectives:** Catchment area planning supports flood protection and water conservation, and contributes to broader goals such as climate adaptation, fisheries, biodiversity, ecological values, landscape management and recreational use of nature. It can also help coordinate water supply and drainage for forestry, agriculture, and other livelihoods

**Dates:** Ongoing

**CAP Interventions to which the project is linked:** Some of the measures proposed in catchment area plans may be funded through CAP support. This includes investments (e.g. subsurface drainage), non-productive investments (e.g. wetland construction), and agri-environmental payments (e.g. wetland maintenance)

**Overall budget:** Costs vary by region. In Finland, catchment area planning is often implemented with project funding from multiple funding sources

**Links:** (please note all documents are available in Finnish but they include a summary in English) [Roadmap for Catchment-based Planning, 2024](#) (English summary), [Multi-objective catchment area planning – A summary of instructions, guides, information products and projects, 2024](#) (English summary), [Geospatial Data and Operational Models in Catchment Planning – Examples and Best Practices, 2025](#) (English summary), [ACWA Life website](#) (English version in preparation)



**Description:** Catchment area planning provides tools to manage water throughout a catchment area in ways that benefit everyone in the long term. It helps identify solutions for managing both the quantity and quality of water that consider the needs and challenges of all sectors within the catchment. Through catchment area planning, sustainable, comprehensive and cost-efficient solutions can be developed to improve the condition of water bodies and enhance water management across the watershed. It also enables preparedness for future challenges, such as increasing floods and summer droughts.

**Activities:** The process starts with a catchment area assessment, which gathers data on the area's condition, challenges and land use. It also maps out water management needs and objectives like biodiversity enhancement, flood prevention or collection of irrigation water. The assessment defines the planning area, which can be divided into sub-catchments to focus efforts on critical zones. Once the area is outlined, a general plan is created with land use recommendations and broad solutions. As planning progresses, goals become clearer, enabling a concrete action plan with prioritised measures to prevent environmental problems or improve existing conditions. This leads to a technical plan detailing specific actions and structures, which may require external funding. Planning must be tailored to local conditions and each catchment's unique characteristics. Geographic data and analytical tools help target actions effectively and support discussions with stakeholders. Monitoring is essential for tracking impacts and guiding future action. Collaboration between landowners, local stakeholders, planners, authorities, researchers, and project actors is essential, with early involvement of landowners and key stakeholders particularly crucial for success.

In Finland, the 8-year ACWA LIFE (Actions for Waters from Source to Sea) project started on 1 January 2026. One of the project's components focuses on developing and mainstreaming catchment-based planning.

### 3.1.3. Hungary: WWF Hungary's Tisza Programme – developing sustainable water management and landscapes in the Tisza Plain



**Objectives:** Retain excess water and preserve and develop floodplains along the Tisza River

**Dates:** 2019–2028

**Overall budget:** Secured funds of around EUR 2 million for 2019–2028. Donors include WWF Netherlands, WWF Switzerland, The Coca Cola Foundation – Living Danube Partnership Programme, and the Horizon Europe projects MERLIN and MOSAIC.

**Links:** [Living Rivers – WWF Magyarország](#), [“Forest Bath” – WWF Hungary](#), [YouTube video](#) (Hungarian)

**Description:** Along much of its course in Hungary, the River Tisza is confined between flood protection dikes and largely disconnected from its former floodplains. The surrounding landscape is dominated by arable land and cash crop production. Increasing climate extremes – particularly droughts and heatwaves – are causing the former floodplains of the Tisza and the Great Plain to dry out, making it essential to retain both river water and precipitation in the landscape. The project aims to introduce a sustainable, nature-based floodplain management system in the Hungarian part of the Tisza River basin. By reconnecting parts of an estimated 150 000 hectares of deep floodplains (active and morphological floodplains) to the river, the initiative seeks to improve water retention, restore biodiversity and provide socioeconomic benefits for local communities. Achieving this requires creating space for water in the landscape, including the conversion of some low-lying arable land to grassland, wetlands or forest, and promoting climate-resilient floodplain farming.

**Activities:** Over the past two decades, WWF Hungary has carried out scientific analyses and workshops to explore technical options for nature-based water retention solutions. These efforts have been supported by policy engagement, advocacy, communication and awareness raising activities. Pilot projects have been developed in close cooperation with local communities in areas including the Bereg landscape, Nagykörű village and the Sand Ridge. In 2024 and 2025, test flooding was implemented in the Bereg pilot area in cooperation with the water management authority. In 2024, water from a flood wave was diverted by gravity into an existing reservoir and channel system. In 2025, during an extreme drought period, water was pumped from the Tisza River, with some redirected via small canal dams to inundate grasslands and forest areas. The project also supported a local civil society organisation to obtain permits for the restoration of a biodiverse orchard and a model floodplain landscape management area.

**Results/Benefits:** The pilot actions demonstrated that water can be retained and distributed safely and in a controlled manner, significantly alleviating soil water deficits during critically dry periods. The 2025 water replenishment was well received by local farmers, strengthening trust and providing a strong basis for expanding floodplain inundation to larger areas. Beyond local impacts, the long-term, trust-based cooperation enabled by the project contributed to broader policy dialogue. Lessons from the pilot areas informed discussions with agricultural and water management authorities, leading to policy changes that increasingly support water retention-based and climate-resilient land use practices. Overall, the project shows how nature-based floodplain restoration can improve water resilience, biodiversity and livelihoods in river basin landscapes under growing climate pressure.



### 3.1.4. Hungary and Romania: Landscape level water retention and cross-border water resource management



**Objectives:** Catchment community to restore the sponge function of the landscape. The overarching aim is to improve the climate resilience of a drying agricultural landscape by managing local water resources locally and improving local water balance.

**Dates:** January 2024 (ongoing)

**CAP interventions:** The initiative plans to link up with the CAP through conditionality, agri-environmental climate commitments, productive investments, non-productive investments, knowledge sharing and cooperation.

**Overall budget:** The project has not yet received financial support from CAP or any other source. It has received technical assistance from the Interregio Communities for Climate (C4C) programme, the LIFE-LOGOS4WATERS project, and DG REGIO's BSolutions programme.

**Links:** [Inforegio – Communities For Climate \(C4C\)](#)

**Description:** This initiative is a bottom-up, landscape scale response to drought in an intensively farmed lowland region along the Hungarian-Romanian border. Once rich in surface and groundwater, the area has become increasingly drought prone due to land and water management practices poorly adapted to local conditions, compounded by climate change. Declining rainfall, disappearing surface waters and falling groundwater levels now pose serious risks to agriculture, ecosystems and rural livelihoods. In response, local municipalities and farmers established the Bihari-KisSárrét Catchment Community to jointly restore the landscape's natural 'sponge' function. Supported by WWF Hungary through the LIFE LOGOS4Waters project, the initiative focuses on retaining water in the landscape longer through natural water retention measures (NWRM) and more sustainable agricultural practices. A key ambition is to modernise the outdated Hungarian-Romanian cross-border water agreement, which currently addresses floods but not drought and water scarcity. Key local stakeholders include farmers and landowners (organised partly through the Local Landowners' Council of Kötégán), a LEADER Local Action Group and other rural development actors, as well as hunters and local residents affected by drought.

**Activities:** The initiative combines technical analysis, pilot implementation and governance innovation. Core objectives include developing a catchment-based sponge strategy,

increasing water availability during dry periods, improving soil moisture and infiltration through sustainable farming practices, strengthening cross border water governance, and building a self-sustaining catchment community. Activities include mapping and analysing hydrology, water balance and flow accumulation to identify priority retention areas such as former riverbeds, canals, clay pits, wetlands and low-lying farmland. Based on this analysis, pilot measures are being designed or implemented, including converting canals into controllable retention structures, installing small weirs in ditches, restoring oxbows and clay pits, and creating riparian buffer strips. Agricultural measures such as reduced tillage, cover crops and more diverse rotations are promoted to enhance infiltration and soil water storage. In parallel, informal cross-border discussions with water authorities explore options to revise the 2004 water agreement to better address drought conditions. Uptake is supported through strong local ownership, demonstration sites, alignment with CAP payments and technical assistance from EU instruments such as Communities4Climate, LIFE LOGOS4Waters and DG REGIO's BSolutions.

**Results/Benefits:** Although the initiative is still evolving, several tangible benefits have already emerged. Local municipalities and farmers now share a common understanding of drought drivers, water balances and retention opportunities at catchment scale. A draft sponge strategy and priority NWRM sites have been identified, and pilot measures are underway. The process has strengthened cooperation among farmers, local governments, water authorities and protected area managers, increased awareness of the links between land use, drainage and climate change, and clarified pathways for revising cross-border water governance to include drought resilience and environmental flows. The initiative has also improved local capacity to mobilise EU funding for climate adaptation. A key success factor is strong local ownership: nine Hungarian and three Romanian municipalities, together with farmers and landowners, chose to act collectively rather than wait for national solutions. Focusing on the catchment scale – and integrating water retention with changes in agricultural practices – has been critical, as has the openness of water authorities and conservation institutions to informal cross-border cooperation.



Study visit (Tamás Polgár, János Hajdú and Csaba Vaszkó)





Field visits (Csaba Vaszkó, János Hajdú and Tamás Polgár)

### 3.1.5. Latvia: LIFE GOODWATER IP project – Water retention and quality in rural areas



**Objectives:** The overall aim of LIFE GOODWATER IP (integrated project) is to improve the status of water bodies at risk in Latvia by implementing measures laid down in the Daugava, Gauja, Lielupe and Venta River Basin Management Plans (RBMPs)

**Dates:** 2020-2027

**Funding source and overall budget:** LIFE IP total budget EUR 14 568 050, EU contribution EUR 8 677 830

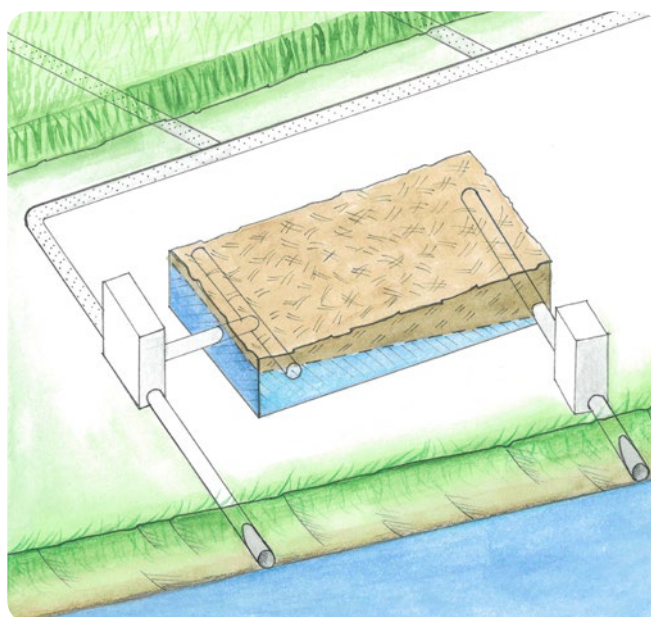
**Links:** [LIFE GOODWATER IP project](#), LIFE GOODWATER IP on [Facebook](#), [Farmers' Parliament website](#)

**Description:** The project aims to improve water quality, nutrient retention and water resilience by integrating green infrastructure solutions into agricultural landscapes and supporting their wider uptake through policy and funding instruments.

**Activities:** Project activities are implemented through close cooperation between a wide range of stakeholders, including ministries, state institutions, research organisations, NGOs, farmers, landowners, planners and construction companies. Suitable locations for green infrastructure measures are

identified, and innovative solutions adapted to Latvian conditions are designed and piloted. These include wood-chip bioreactors, controlled drainage systems and constructed wetlands (both subsurface and open systems). In parallel, a communication and promotion campaign uses podcasts, radio, social media and other channels to raise awareness and increase acceptance among farmers and other stakeholders.

**Results/Benefits:** New green infrastructure measures have been constructed. Testing of the Green infrastructure's (GI) efficiency and management processes is still ongoing. The project has already delivered important results. Through cooperation between LIFE GOODWATER IP partners and the ministry of agriculture, a new CAP-financed support instrument has been developed to help additional farmers adopt the tested green infrastructure solutions. The project has also strengthened dialogue and trust among agricultural, environmental and policy actors, laying the groundwork for long-term adoption and scaling of sustainable water-management practices. As an additional output, an online education programme about the impact of agriculture on water resources was created.



Wood chip bioreactor constructed within LIFE GOODWATER IP, is a trench lined with waterproof material, filled with wood chips, covered with geotextile and a thin layer of topsoil, serving as a water purification system.



### 3.1.6. Spain: Rehydrating a landscape: demonstration farm in Southern Spain



**Objectives:** To enhance the local water cycle through the control and best use of all the precipitation available at the landscape scale

**Funding source:** Fundación Internacional para la Restauración de Ecosistemas (FIRE)

**Links:** [FIRE Website](#), [Laboratorio de campo de agroecología y restauración forestal "La Nava del Conejo"](#), [AguAbundancia website](#)

**Description:** La Nava del Conejo is a publicly owned estate managed by FIRE in collaboration with the Instituto Regional de Investigaciones Agrarias y Forestales (IRIAF) in Castilla-La Mancha. The site functions as a living lab for agroecology and forest restoration, demonstrating how agricultural production and forest management can enhance biodiversity, ecosystem services and climate resilience. The estate covers approximately 220 ha of dry-land herbaceous crops and 150 ha of forested land. Restoration activities address multiple dimensions, including soil health, agroecosystem function, forest resilience, biodiversity and hydrology. To strengthen water

resilience, a holistic water-management plan has been developed, and erosion-control and water-retention interventions are currently being implemented (2025-2027).

**Activities:** The project is implementing a network of 'sponge' landscape features designed to retain, infiltrate and redistribute rainwater across the site. Key measures include infiltration basins, erosion-control structures, and long terraces connected through dispersal pathways to maximise landscape-scale rehydration. Rainwater harvesting plays an important role: runoff from the farm's large roof areas is collected via gutters and directed into a rain garden, from where the overflow is guided through a sequence of interconnected infiltration basins and terraces. In addition, plans are in place to restore a large, drained wetland in 2026, subject to permits, further enhancing the site's hydrological function.

**Results/Benefits:** After the first year of implementation, the water-landscape interventions have already delivered visible hydrological and ecological improvements. Small-scale earthworks, such as ponds, infiltration basins, terraces and erosion-control measures, have significantly increased rainwater infiltration, reduced surface runoff and improved soil moisture across the estate. These initial outcomes demonstrate how integrated water design can mitigate the impacts of droughts and floods while supporting a productive, multifunctional and resilient agricultural-forest landscape. La Nava del Conejo serves as a practical demonstration site for nature-based water-management solutions adaptable to dryland Mediterranean contexts.



Drone image of rehydrating a plot in La Nava del Conejo (AguAbundancia)



Plots and a drained wetland within La Nava del Conejo (FIRE)



### 3.1.7. Spain: Water-oriented living lab La Axarquía – Water-smart agriculture with safe reuse and nutrient management



**Objectives:** To secure irrigation supply through water reuse, optimise fertiliser use by recovering NPK, reduce pressure on aquifers, reduce emissions and support a circular, climate-resilient agricultural model

**Dates:** 2016–2025

**CAP interventions:** EIP Operational Group

**Funding source and overall budget:** Around EUR 1.3 million: RichWater (H2020 – EUR 625 357.36); P2Green (Horizon Europe – EUR 393 375); BONEX (PRIMA – EUR 224 450); Axarquía Sostenible (EAFRD – EUR 77 564.48)

**Links:** [Axarquía Living Lab – Water Europe](#), [Living Lab La Axarquía: Use of Reclaimed Water for Agriculture](#), [Video: Living Lab Axarquía](#)

**Description:** La Axarquía Living Lab is an innovative demonstration site showing how the safe use of reclaimed water, combined with improved nutrient management, can increase irrigation efficiency, reduce freshwater demand and strengthen climate resilience in agriculture. The project is linked to the EIP-Agri Operational Group ‘Axarquía Sostenible’ (contract no. GOPG-MA-20-0002). Through a living lab approach, the initiative integrates technology, research and farmer-led co-creation to test scalable solutions for water-scarce Mediterranean farming systems.

**Activities:** The project implemented full-scale testing of advanced water-treatment technologies, including a membrane bioreactor (MBR) system with a capacity of 150 m<sup>3</sup>/day and tertiary treatment at 72 m<sup>3</sup>/day. Reclaimed water quality is continuously monitored and verified to ensure safe agricultural use. Field trials were conducted on subtropical crops such as avocado, mango, dragon fruit and passion fruit. In parallel, the project developed digital nutrient-management tools and sensor-based irrigation systems to optimise water and nutrient use. A central element of all activities is continuous co-creation and feedback from farmers and local stakeholders.

**Results/Benefits:** The project achieved Class A water quality, high nutrient recovery and stable crop development while reducing mineral fertiliser requirements. These outcomes reduced eutrophication and greenhouse-gas risks and contributed to more efficient and resilient irrigation practices. Strong farmer acceptance was achieved through transparent evidence, continuous monitoring and active stakeholder involvement. Key success factors included robust treatment technology, real-time data, clear economic and environmental benefits, and alignment with regional strategies for water reuse and climate adaptation. Overall, La Axarquía Living Lab demonstrates the viability of reclaimed water as a cornerstone of sustainable agriculture in water-stressed regions.



*Living Lab Visit (Bioazul)*



*Mango crops (Bioazul)*



## 3.2. Improved water governance/collaborative approaches

### 3.2.1. Belgium (Flanders): Blue Deal – Compass for a water-wise Flanders



**Objectives:** To make Flanders more resilient to the effects of climate change while improving water quality

**Dates:** 2025-2029

**Funding source and overall budget:** Flemish Ministry for Environment. EUR 330 million for projects within the Blue Deal. A total of more than EUR 3.5 billion will be invested in improving water policy

**Links:** [Blue Deal Website – Integraal Waterbeleid](#)

**Description:** Launched in summer 2025, the Flemish Blue Deal is a comprehensive strategy aimed at improving water resilience in an integrated way. It focuses on safer river systems, smarter water use, stronger protection of groundwater and drinking water, healthier water quality and increased public engagement with water. A key element is the creation of Local Blue Deals, where local partners (local authorities, farmers, businesses, nature organisations and citizens etc.) collaborate to convert the overarching ambitions into concrete, area specific goals – especially through ‘sponge goals’, concrete and measurable objectives that determine how much water and areas must be able to retain, infiltrate and buffer in order to protect it against negative effects.

**Activities:** The Blue Deal focuses on:

- Safe and healthy rivers and valleys: improved soil sponge function, restoration of meanders and wetlands, reinforcement of dykes, construction of floodplains and water level management to retain water for longer and limit flood damage.
- Smarter water use: through investments in the (re)use of rainwater and wastewater, circular applications in industry and agriculture, and a reform of the Water Bill to make it socially correct and encourage sustainable water use.
- Better protection of soil water and drinking water: through remediation of pollutants, a robust permitting and a strategic investment plan for drinking water security.
- Healthier water quality: through targeted measures in agriculture, industry and residential areas, supported by impact monitoring and clear quality targets for each water body.
- Local experience and awareness: promotion of recreation activities, such as walking or cycling along the water, swimming and canoeing.

**Results/Benefits:** A shift from isolated, top-down initiatives to integrated, community driven action should enhance water security, quality and climate resilience.

### 3.2.2. Italy: Building agricultural resilience through improving irrigation networks – The Italian experience



**Objectives:** Supporting the resilience of local areas by promoting efficient irrigation infrastructure and associated ecosystem services; combating water scarcity by eliminating the inefficiency and structural deficiencies that amplify reduced water availability caused by drought

**Dates:** Since 2018

**CAP interventions:** Investments in infrastructure, Sub-measure 4.3 of the 2014-2020 National Rural Development Programme (NRDP)

**Funding source and overall budget:** EUR 2.2 million, funded via 2014-2020 NRDP (EAFRD)/Development and Cohesion Plan (2014-20 DCP)/National Recovery and Resilience Plan (NRRP)/EAFRD Investment 4.3 (off-farm and collective irrigation), funded by national budget laws

**Links:** [Website on NRDP measure](#), general directorate for rural development – [Office for the irrigation networks and water management for irrigation](#), national database of investments for irrigation and environment ([DANIA](#)), national information system for water management in agriculture ([SIGRIAN](#))

**Description:** In Italy, approximately 20% of utilised agricultural area (UAA) is irrigated, and around 60% of irrigated land receives water through collective irrigation systems managed by farmer associations known as irrigation agencies. These agencies are responsible for water abstraction, operation and maintenance of irrigation networks, as well as the regulation of water distribution to users. Collective irrigation is recognised as an effective governance tool for ensuring efficient and sustainable water use, as it aligns water distribution with availability and crop needs while supporting environmental protection by maintaining irrigation and drainage infrastructure. Improving irrigation efficiency and water resilience is a key priority of the Italian Ministry of Agriculture, Food Sovereignty and Forestry (MASAF).

As part of the 2014-2020 CAP programming period, Italy's National Rural Development Programme (NRDP) supported strategic interventions at the national level, with a strong focus on the sustainable and efficient use of water in agriculture. Within the NRDP, Measure 4 (investments in physical assets), and in particular Submeasure 4.3, played a central role by financing the development and modernisation of irrigation infrastructure. Investments in irrigation infrastructure have been supported through multiple funding instruments beyond the CAP, including via the Cohesion Fund and, more recently, the National Recovery and Resilience Plan. Together, these instruments form a coherent investment strategy aimed at safeguarding agricultural businesses, promoting food sovereignty and improving the longterm resilience of irrigated agriculture in the face of increasing drought risk.



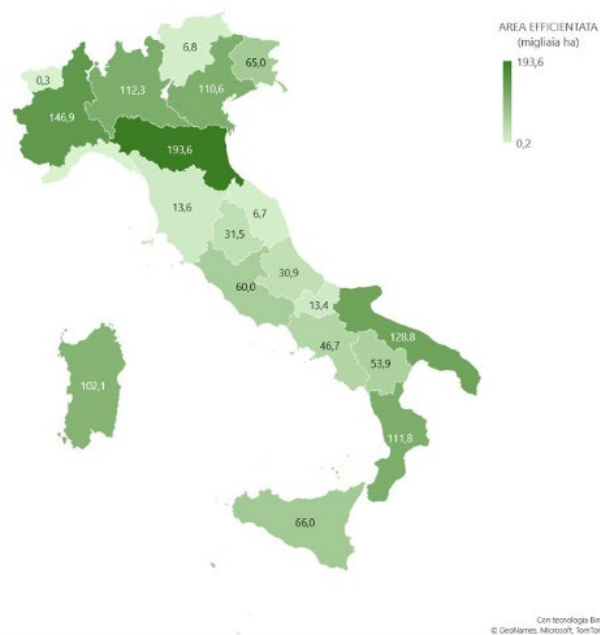
**Activities:** Supported measures include a broad range of collective and off-farm irrigation investments, such as the:

- > construction of small reservoirs and networks for wastewater reuse;
- > development of new collective irrigation networks to replace individual self-supply systems, without increasing the irrigated area;
- > modernisation of existing irrigation infrastructure to reduce water losses;
- > installation of water meters and remote-control systems for monitoring water use; and
- > energy-efficiency measures, including small hydropower installations and irrigation advisory services.

In line with NRDP Measure 4.3, eligible actions also include functional completion of existing irrigation schemes, restoration of basin efficiency, improvements to water supply infrastructure, hydraulic works supporting land reclamation and digital solutions for flow measurement, monitoring of withdrawals and remote control of networks.

Eligibility criteria require guaranteed minimum water savings, no net increase in irrigated area and compliance with water-metering obligations. Projects are designed to increase system resilience through higher storage capacity, improved planning of water balances, and proactive management of droughts and water surpluses, while enabling water savings and protecting ecosystems.

**Results/Benefits:** Between 2018 and 2023, MASAF financed more than 270 projects, modernising approximately 8 000 km of existing irrigation networks and constructing 1 000 km of new networks. These investments are estimated to generate annual water savings of around 990 million cubic metres, significantly improving water-use efficiency and resilience in irrigated agriculture. Beyond quantitative water savings, the modernisation effort has contributed to adapting historically extensive and often obsolete irrigation canal systems to current climate conditions, integrating digital monitoring, efficient water-use practices and storage solutions into collective water management. Implementation and monitoring of this strategy are supported by two national databases developed by CREA on behalf of MASAF: SIGRIAN, which provides an overview of Italy's irrigation system, and DANIA, which collects technical and financial data on irrigation investments.



Irrigated area under improved irrigation networks (thousand hectares) (CREA-DANIA, 2024)



Water savings achieved (billions of cubic meters) (CREA-DANIA, 2024)



### 3.2.3. Germany: Regional Cultural Landscape Management Plan



**Objectives:** Retention of water in the landscape while conserving the region's cultural heritage in Brandenburg through the development of a Regional Cultural Landscape Management Plan (RCLMP), collaboratively designed with farmers, conservationists and local stakeholders

**Dates:** Development of RCLMP September 2020–December 2022, with implementation ongoing

**CAP interventions:** Indirectly via the use of AECM. Since 2023, funding for collective agri-environmental measures in Brandenburg has been provided via the 'Guideline on the promotion of cooperative measures to improve climate protection and biodiversity on agricultural land'. Further AECM used are 'peatland-conservation system' (Moorschonende Stauhaltung), 'nature conservation-oriented grassland use' (Naturschutzorientierte Grünlandnutzung), or 'nature conservation-oriented agricultural use' (Naturschutzorientierte Ackernutzung)

**Funding sources:** Department for rural development, environment and agriculture in Brandenburg, for RCLMP development

**Links:** [LPV Potsdamer Kulturlandschaft](#), [funding schemes in Brandenburg](#) (DE)

**Description:** In Brandenburg, the landcare association (LCA) LPV Potsdamer Kulturlandschaft, initiated and facilitated the development of a RCLMP. With their wide local acceptance, they closely cooperated with a broad range of stakeholders, including farmers, conservation organisations, hydrology experts, municipalities, planning offices and research institutions. The aim of the RCLMP is to strengthen ecosystems and water resilience through nature-based solutions while supporting sustainable and economically viable agriculture. The RCLMP integrates land management, biodiversity conservation and climate adaptation into a regionally tailored framework. The inclusive governance model ensures that ecological, technical and practical perspectives are jointly addressed.

**Activities:** The RCLMP provides a concrete ten-year roadmap with short-, medium- and long-term measures to improve water retention, biodiversity and climate resilience across Brandenburg's cultural landscapes. Key activities include:

- Ecosystem restoration: management of partially rewetted peatlands to enhance water retention and act as CO<sub>2</sub> sinks, promotion of paludiculture and extensive grazing with water buffalo.
- Agroforestry and landscape structures: establishment and revitalisation of orchards, hedges and tree rows, as well as flower strips and fallow land, to improve biodiversity, soil health and biotope connectivity.
- Water management: installation of weirs and peatland dams in fen areas, alongside measures to improve soil moisture retention and regulate hydrological cycles.
- Formation of cooperatives: supporting the formation of agri-environmental cooperatives that collectively plan, apply for and implement agri-environmental measures of the CAP, like farming with high water levels, to make nature conservation and agricultural funding more effective and efficient.
- Cooperation and education: facilitation of collaboration between farmers, authorities and scientists, delivery of training and public outreach, and promotion of direct marketing initiatives to add local value.

The implementation of the RCLMP is currently supported by the project 'Collective Models for Promoting Biodiversity (KoMBi)' (2023–2028), in which LPV Potsdamer Kulturlandschaft and DVL are partners (see also [Biodiversity actions at scale – inspiring examples from Member States | EU CAP Network](#)).

**Results/Benefits:** Key benefits include improved groundwater regulation and reduced runoff through peatland restoration, enhanced biodiversity through agroforestry and connected habitats, and increased farm resilience through collective action. Agri-environmental cooperatives play a central role in implementation. By 2025, eight cooperatives had been established in Brandenburg, involving 4–17 farms each. In 2024, cooperative measures were implemented on approximately 6 860 ha of agricultural land with 66 participating farms, supported by the AECM guideline on cooperative climate and biodiversity measures. In 2023, cooperatives received around EUR 360 000 in support. Farmers benefit from collective funding applications, technical advice, shared responsibility and reduced administrative risk, while long-term trust and capacity are built through cooperation and knowledge exchange.





*Guided walk to a buckwheat field (Olivia Kummel, LPV Potsdamer Kulturlandschaft)*



*Water retention in winter (Lara Meller, LPV Potsdamer Kulturlandschaft)*



### 3.2.4. The Netherlands: Initiatives by Deltaplan Agrarisch Waterbeheer



**Objectives:** To improve water retention and infiltration by working with different stakeholders

**Dates:** Ongoing

**CAP interventions:** CAP interventions may be used as part of implementation (e.g. AECC, eco-schemes)

**Links:** [Deltaplan Agrarisch Waterbeheer DAW](#) website

**Description:** Deltaplan Agrarisch Waterbeheer (DAW) works with local communities, farmers and authorities in projects to improve soil and water management in the Netherlands.

**Activities:** Two examples: (i) In Goeree-Overflakkee, farmers work together to improve the retention of rainwater in the landscape to combat drought by creating infiltration ditches and adjusting field design; and (ii) in Gelderse Vallei, sandy soils cause water leaching and flooding. Awareness raising for farmers was key to implementing soil management measures to improve water infiltration and soil drainage capacity.

**Results/Benefits:** Since 2013, more than 500 local projects have been implemented, involving one third of Dutch farmers.

### 3.2.5. Poland: Climate action initiatives – Local Water Partnerships in the Kujawsko-Pomorskie region



**Objectives:** To support integrated water management and improve water governance by coordinating the actions of all stakeholders involved in rural water systems

**Dates:** Since 2022

**Description:** In Poland, local water partnerships (LWPs) were launched in 2020 by the ministry of agriculture and rural development in response to several years of severe drought. Inspired by the Spanish water tribunals, LWPs function as voluntary, informal cooperation platforms at county level, bringing together institutions and stakeholders responsible for water management and climate adaptation. Partners include regional agricultural advisory centres, local governments, Wody Polskie (the national water authority), water companies, farmers' organisations, nature-protection bodies, NGOs and local businesses. LWPs represent a bottom-up governance model for local climate action, characterised by shared decision-making, use of local knowledge, and integration of public, private and civic actors. The drought-prone Kujawsko-Pomorskie region became a frontrunner in establishing LWPs, driven by urgent water-scarcity challenges.

**Activities:** LWPs support coordinated planning and investment in water management through a range of collaborative actions, including:

- Coordinating investment and renovation activities in local water infrastructure
- Establishing participatory decisionmaking mechanisms
- Raising awareness of sustainable water use and climate risks
- Supporting farmers in preparing documentation for waterrelated investments
- Developing countylevel Water Management Plans that identify priorities and funding needs

Activities are implemented through regular meetings, workshops and consultations involving all relevant stakeholders.

**Results/Benefits:** By 2022, 18 LWPs had been established in the Kujawsko-Pomorskie region, and 19 county-level water management plans had been completed. More than 2 000 participants took part in workshops, consultations and meetings, supported by comprehensive communication tools such as publications, videos and local awareness campaigns. The region is now recognised as a national leader in LWP implementation, with emerging good practices including joint mapping of water-management challenges, cross-sectoral cooperation mechanisms, transparent prioritisation of investments, and strong educational programmes on retention technologies and sustainable agriculture. LWPs have also promoted small-scale retention solutions – such as ponds, wetlands, tree belts and micro-catchment measures – and created a neutral, trusted space for long-term cooperation between institutions and rural communities.

### 3.2.6. Portugal: Water management in the Lis Valley



**Objectives:** Improve water management in the Vale do Lis Hydro-agricultural development to increase agricultural competitiveness and environmental sustainability

**Dates:** 2019-2022

**CAP Interventions to which the project is linked:** Operational Group

**Links:** [Operational Group for Water Management in the Lis Valley](#)

**Description:** The Lis Valley hydro-agricultural development (AHVL) project aimed to stimulate agricultural development through the modernisation of collective irrigation and drainage systems. By partially transforming water-distribution networks, the project strengthened the planning and management capacity of the association of irrigators and beneficiaries of the Lis Valley (ARBVL) through monitoring, experimentation and demonstration activities. The initiative addressed multiple challenges affecting irrigation efficiency and sustainability, including



water scarcity and quality issues, flood and drainage risks, lack of monitoring systems, insufficient agrometeorological data, limited decision-support tools for irrigation planning, and the absence of structured rural extension practices to support rational water use at plot level.

**Activities:** To tackle these challenges, the project developed a comprehensive knowledge base on water demand, integrating meteorological, soil and crop data to generate irrigation warnings. This information was combined with flow measurements in hydraulic sectors to improve operational water-distribution plans and better align supply with plot-level demand. Farmers received technical support in the design and management of on-farm irrigation systems, leading to improved irrigation efficiency. Critical points in water transport canals were identified, enabling targeted maintenance and infrastructure reinforcement to reduce losses and improve flow regulation. Water-quality monitoring supported the safe reuse of drainage water, minimising sanitary and soil-degradation risks. All relevant data – meteorological information, water quality, energy use, water supplies and operational records – were integrated into a web-based management platform, providing a decision-support tool for infrastructure operation, flow control, pumping stations and field operations.

**Results/Benefits:** The combined use of real-time monitoring, precision irrigation, decision-support tools, field experimentation and farmer training led to higher water-use efficiency and improved water-quality management across the Lis Valley. Better alignment between water supply and crop demand reduced losses, supported more reliable irrigation services and strengthened the overall sustainability and resilience of the irrigation system.

### 3.2.7. Romania: Community-based water retention solutions facilitated by LEADER



**Objectives:** Address water scarcity by community-led implementation of nature-based solutions (NbS) for water retention

**Dates:** Cooperation started in late 2023. The C4C programme ran from June 2024 to March 2025. Weirs were built in August 2025. The EU Staff Fund support runs from June 2025 to June 2026

**CAP interventions:** LEADER/Cooperation intervention, non-productive investments

**Funding source and overall budget:** Communities for Climate (C4C) provided technical assistance and EUR 1 000 for a study trip (complemented by EUR 7 000 from the LAG). The EU Staff Fund contributed EUR 10 000 for the university camp and good practice brochure. The community is planning to apply for EUR 20 000 available through the planned LAG measure

**Description:** This example illustrates the role of LEADER Local Action Groups (LAGs) in facilitating knowledge transfer and mobilising funding for nature-based solutions (NbS) that enhance water retention at community and watershed scale. In response to increasing water scarcity over the past decade, the LAG Asociația GAL Homoród-Küküllő (Harghita County, central Romania) identified water resilience as a priority in its local development strategy. After an initial low engagement, a small community of around 200 residents in the village of Daia, severely affected by water shortages, initiated local discussions on potential solutions. The LAG supported the community in applying to the European C4C initiative, enabling Daia to become a regional pioneer for NbS. Expert support and a study visit to similar initiatives in Slovakia were instrumental in building trust and demonstrating the feasibility of the potential for NbS to improve water retention for farmers, local authorities and water-management institutions. The LAG also facilitated inter-institutional dialogue to address procedural and regulatory aspects. At the end of 2025, the LAG launched a LEADER call for nature-restoration measures, aiming to restore the local water balance, recharge groundwater, improve the micro-climate and strengthen the small water cycle.

**Activities:** Cooperation began in late 2023. C4C technical assistance produced an expert proposal for restoring water retention on the community pasture, where springs and livestock water sources had dried up. Proposed measures included shallow contour swales planted with tree lines, restoration of small ponds and reservoirs, reinforcement of dirt roads to prevent erosion, and the introduction of rotational grazing. The community plans to apply for a LEADER water-retention grant (EUR 20 000) in 2026 to implement priority measures such as swales, ponds and tree planting. In parallel, with a EUR 10 000 grant from the EU Staff Fund, the LAG organised a hands-on student camp to construct ten small weirs from natural materials near drinking-water springs, improving supply to the local network. There is also an aim to build regional capacity in water resilience and NbS, where expertise is limited. A good-practice brochure is planned to enable replication by other communities.

**Results/Benefits:** Community engagement increased significantly, with around 50 residents participating in on-site implementation activities. Interest has since expanded to other LAGs, farmers and local authorities, strengthening inter-institutional dialogue and cooperation. Key success factors included the LAG's strategic focus on water resilience, strong local social capital, urgent community needs, trust-building through practical demonstrations, and expert support from C4C. Although still in an early phase, the initiative has laid the groundwork for scaling NbS-based water-retention measures in the region, with three additional LEADER associations already expressing interest in launching similar actions.



### 3.2.8. Spain: Organic transformation of an olive grove (Finca Hermanos Jiménez Pérez CB)



**Objectives:** To reduce dependency on irrigation and improve water efficiency by adapting farming practices and varieties

**CAP interventions:** Eco-schemes

**Description:** The organic transformation of a traditional olive grove in Jaén demonstrates how irrigation can be phased out while maintaining productivity and enhancing biodiversity in semiarid Mediterranean conditions. The overall objective was to eliminate irrigation by improving soil organic matter, restoring natural water holding capacity, enhancing biodiversity and selecting drought-resilient olive varieties. The initiative contributes to sustainable water management by reducing dependency on external water inputs and supporting the recovery of natural water cycles in water scarce rural areas.

**Activities:** The project combined practical field implementation with knowledge sharing and stakeholder engagement. Key activities included the gradual phasing out of irrigation, the introduction of cover crops to protect and enrich soils, and practices to increase soil organic matter and infiltration capacity. Additional measures involved the selection and management of drought-resistant olive varieties and a shift toward low intervention, regenerative farming practices. Demonstration activities and knowledge exchange events were organised for neighbouring farmers and local cooperatives to showcase results and encourage replication of the approach in similar agroecological contexts.

**Results/Benefits:** The organic transformation achieved a full transition to zero irrigation olive production, eliminating water use while improving soil structure, biodiversity and ecosystem functioning. The olive grove remains productive and resilient despite semiarid conditions increasingly affected by climate variability. The project demonstrates that traditional crops, when managed regeneratively, can thrive with minimal external inputs and without irrigation, and that restoring soil health through regenerative practices – rather than relying on irrigation – can build long-term water resilience and reduce vulnerability to climate change. These results provide a replicable model for water scarce regions seeking to enhance agricultural resilience, reduce pressure on water resources and align agricultural production with long-term environmental sustainability.



Olive groves (Jiménez)



Finca Hermanos Jiménez Pérez CB – Alberizas (Jiménez)



## 3.3. Technical solutions

### 3.3.1. Belgium (Flanders): Winter water for summer irrigation



**Objectives:** To capture winter surplus water for irrigation

**Dates:** 2025-2028

**Funding source and overall budget:** EUR 2.2 million. Financed through VLIF, EFRO and the lead farmer

**Description:** The project aims to strengthen water resilience by capturing surplus winter water and reusing it for agricultural irrigation. During winter, excess surface water from run-off is collected and stored in a large basin with an estimated capacity of approximately 120 000 m<sup>3</sup>. This stored water is then distributed via a piping network to surrounding agricultural fields and used for irrigation during the spring and summer growing seasons. The initiative focuses on maintaining productivity on fertile soils while avoiding groundwater abstraction and returning surplus water to the land. The project is still under development (2025).

**Activities:** Project development has been driven by a lead farmer who is coordinating with multiple authorities and organisations to explore regulatory, technical and organisational requirements. Activities to date include:

- › designing the water storage basin and irrigation distribution network;
- › engaging with relevant authorities and stakeholders to address permitting and governance issues;
- › studying comparable water storage and reuse projects to identify best practices and potential risks; and
- › building cooperation among farmers who are expected to benefit from the system.

Key partners involved include the lead farmer, participating farmers, the farmers' organisation Boerenbond and the research and innovation institute (VITO).

**Results/Benefits:** Once implemented, the project is expected to enhance water availability during dry periods, improve yield stability and secure food production in the region. By relying on stored winter water rather than groundwater, it supports sustainable water use and reduces pressure on sensitive aquifers. Beyond direct irrigation benefits, the project demonstrates a farmer-led approach to water resilience, showing how collective action and cooperation with research organisations and authorities can enable innovative, climate adaptive water management solutions for agriculture.

### 3.3.2. Finland: Investment support for controlled subsurface drainage and irrigation



**Objectives:** To increase the availability of water and reduce run-off on fields by subsurface drainage and irrigation

**Dates:** Ongoing

**CAP interventions:** Investment support (investments promoting environmental conditions and sustainable production practices), agri-environmental payment.

**Funding levels:** Investment support for (controlled) subsurface drainage: amount of aid from eligible costs max. +40% support for wells; for controlled subsurface drainage: 77 EUR/ha/yr and subsurface irrigation: 214 EUR/ha/yr

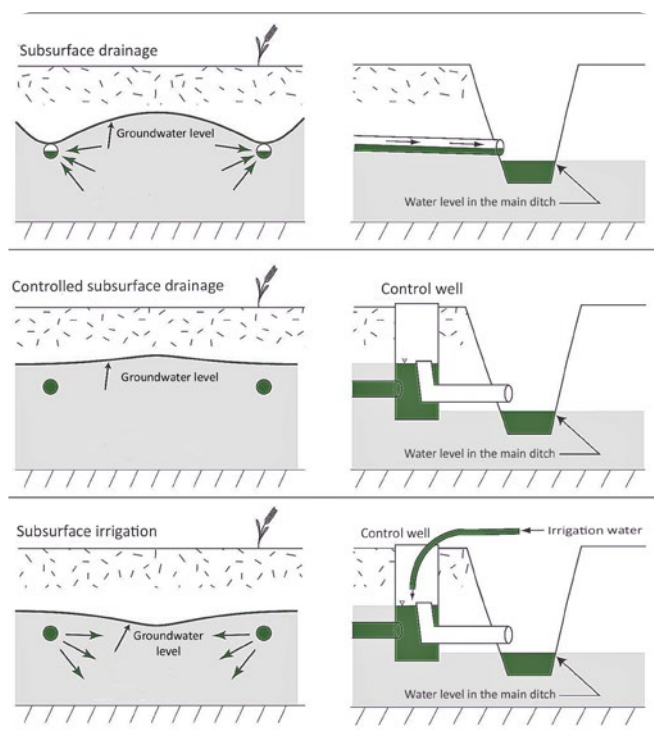
**Links:** [Knowledge Base](#) | [Drainage Support Foundation](#)

**Description:** In controlled subsurface drainage, runoff from fields is regulated using damming devices installed in control wells located along collector drains. The required number of control wells depends on the slope of the field and the layout of the drainage system. Controlled subsurface drainage systems can also be used for subsurface irrigation. In this approach, additional water is supplied to the soil through the drainage pipes. Drainage water can be recycled by collecting it in a storage basin and pumping it back into the subsurface drains during the growing season.

**Activities:** In Finland farmers can get investment support for implementing and improving controlled subsurface drainage. The cost of conventional subsurface drainage is approximately EUR 3 000-4 000 per hectare. In controlled drainage systems, additional control wells are required, costing approximately EUR 1 000 per well.

**Results/Benefits:** When controlled subsurface drainage is applied, growing conditions are improved by maintaining water availability for crops throughout most of the growing season. This is particularly beneficial during dry periods, as a higher groundwater level ensures more stable moisture conditions for plants. Controlled drainage can also reduce nitrogen (N) and phosphorus (P) loading to water bodies by decreasing runoff volumes. In addition, nutrient losses may be shifted to periods when their impact on surface waters is less harmful.





Principles of subsurface drainage, controlled subsurface drainage and subsurface irrigation (Paasonen-Kivekäs 2016)



Control well (Kulmala)

### 3.3.3. Italy: AQUA SMART – Water and nutrient savings for sustainable and resilient agriculture



**Objectives:** To automate water management by providing integrated control tools for precision irrigation

**Dates:** 2020-2021

**CAP interventions:** 2014-2020 RDP, Operation 16.1.01 (Emilia Romagna)

**Overall budget:** EUR 199 659.59

**Links:** [SMART WATER – CER Consortium](#)

**Description:** AQUA SMART aims to automate water and fertiliser management at the Agricultural Water Board (AWB) and farm level by providing integrated control tools applied to the control devices of AWB water networks, fertigation benches and irrigation machines. It also aims to provide guidelines and decision support systems for the modernisation of irrigation systems. All innovations, along with the best irrigation technologies, are then brought together at a training camp to transfer and promote the most modern and efficient irrigation techniques.

**Activities:** Three main activities have been carried out. The first involves the creation of remote interface protocols for the peripherals controlling consortium water networks and fertigation benches. The second connects site-specific irrigation advice with the processing protocols of an irrigation machine equipped with variable-rate technology. The third activity tests new irrigation system materials to propose new criteria for farm irrigation efficiency. Another activity promotes the innovations produced, aggregating them in an exhibition area that brings together the most innovative irrigation technologies.

**Results/Benefits:** The activities allow for the remote monitoring of delivery networks, verification of their proper functioning and downloading reports on the volume of water dispensed. Farmers can optimise the fertiliser distribution process by connecting the fertigation recipe to the fertigation distribution stations, also making fertiliser inputs traceable. A communication protocol is created that allows the transfer of irrigation prescription maps to machines capable of applying variable irrigation management. This increases the efficiency of water resources and the profitability of farmers. Farms and policymakers benefit from software to select and evaluate the most efficient farm irrigation systems, which supports operations aimed at modernising them.



### 3.3.4. Italy: Water harvesting systems to increase water availability with no pressure on water bodies



**Objectives:** To improve water harvesting systems to collect water during periods of high water availability for later use.

**Dates:** Since 2007

**CAP interventions:** Measure 125 (2007–2013) and Measure 4.1.03 (2014–2020)

**Funding source:** Rural Development Programme (RDP) of Emilia-Romagna 2007–2013 and 2014–2020, LIFE

**Links:** [Pianeta PSR website](#), [Consorzio di Bonifica della Romagna Occidentale](#), [Adaptation in Agriculture](#) project

**Description:** This example focuses on water harvesting systems as a key adaptation measure to climate change, aimed at increasing water availability in rural areas and reducing drought-related risks. The approach is based on collecting and storing water during periods of high availability and using it later during periods of high irrigation demand and water scarcity. Water can be stored in reservoirs of different sizes, ranging from large dams to smaller inter-farm or on-farm basins. By shifting water abstraction to periods of greater availability, these systems reduce pressure on water bodies during dry periods, while maintaining the same overall volume of water use. This also helps limit conflicts between agricultural, environmental and other water uses when resources are most constrained.

**Activities:** Within the LIFE project 'ADA – Adaptation in Agriculture', a cost-benefit analysis was conducted by [CREA](#) on eight small reservoirs developed under the Emilia-Romagna Rural Development Programme (2007–2013 RDP, Measure 125, and 2014–2020 RDP, Measure 4.1.03). The analysis examined investment costs, benefits for agricultural production and organisational aspects of implementation. It also assessed governance and support structures, highlighting the role of:

- > regions as funding authorities (Romagna RDP);
- > irrigation agencies as technical and administrative intermediaries; and
- > farmers as final beneficiaries.

Special attention was given to cooperation models, technical requirements, access to public funding and longterm management needs.

**Results/Benefits:** The analysis showed that water harvesting reservoirs are particularly effective when implemented through cooperative approaches, allowing costs to be shared and investments to be rationalised. Benefits are greatest for high-value crops such as fruit and vineyards, where prolonged droughts can compromise not

only annual yields but also long-term plant health. The study also highlighted that these interventions require substantial technical, administrative and financial capacity. Irrigation agencies play a crucial role in supporting farms with project design, permitting and access to funding. Due to the level of private cofinancing required, these measures are currently most viable for medium to high-value farming systems with strong entrepreneurial capacity and openness to innovation. Overall, water harvesting systems offer a scalable and effective solution for improving agricultural water resilience, reducing drought impacts and supporting climate-adapted farming, particularly when supported by cooperation, targeted funding and strong institutional support.

### 3.3.5. Italy: IT tools to optimise technological efficiency of irrigation systems



**Objectives:** To support the design of irrigation systems with different IT tools

**Dates:** Since 2005

**CAP interventions:** RDP, Operation 16.1.01 (Emilia Romagna)

**Links:** [Tecnirri – Consorzio CER](#), [Seti – Consorzio CER](#), [Decidirri – Consorzio CER](#)

**Description:** [Tecnirri](#) is a tool to support the design of irrigation systems. It includes a unit converter and other calculation tools for designing irrigation systems and verifying proper installation. [Tecnirri](#) is divided into six sections: emitter selection, emitter arrangement, pipe size, filter selection, hourly irrigation rate and unit converter.

[SETI](#) helps select the most suitable and efficient irrigation method. The methods and systems used for crop irrigation are numerous and highly diverse. Their performance characteristics vary, and a purely technical comparison risks errors that can cause a significant impact on the overall sustainability of irrigation. The choice of the best irrigation method must take into account numerous factors: agronomic, climatic, water quality and its source. If the advantages and disadvantages of the various methods are equal, the choice can be made solely on an economic basis.

[DECIDIRRI](#) allows the efficiency of irrigation systems to be evaluated. The tool provides a comprehensive overview of irrigation system characteristics, providing essential data for evaluating and optimising irrigation efficiency. The IT tool considers the technical elements related to irrigation system use and the effectiveness of irrigation practices, aiming to avoid situations where theoretically efficient systems fail to achieve maximum yield due to unsuitable operating conditions. Irrigation categories considered are: micro-irrigation, reel irrigation, linear and pivot irrigation, and swivel irrigation.



**Activities:** A dedicated portal has been created, giving free access to users of all the IT tools. The functionality of the IT tools is continuously upgraded. As an example, the data set of irrigation equipment that is tested by an independent body for its technological characteristics and overall quality includes approximately 200 devices (emitters, etc.), produced by the principal irrigation industries.

**Results/Benefits:** Irrigation system design is left to the individual manufacturers' dealers or to multi-dealer brokers. Consequently, system design is based solely on the products sold by the company. This impacts an investment that can be amortised over 10–20 years, which can lead to infrastructural rigidity and an impediment to achieving high efficiency. Offering farmers the opportunity to explore alternatives in terms of quality, design characteristics, and efficiency, customised to the specific characteristics of the irrigated plot, has improved the quality of operational irrigation systems over the years.

### 3.3.6. Spain: My Greens – Circular vertical farming in Málaga



**Objectives:** To improve water use efficiency of vertical farming

**Links:** [My Greens website](#)

**Description:** My Greens circular vertical farming project in Málaga introduces an innovative model that reduces water consumption by over 95% through closed-loop irrigation, reuse systems, and controlled environment agriculture. It illustrates the potential for urban-rural knowledge transfer and the role of digital tools in water-smart production.

**Activities:** In My Greens, vertical farming modules were designed to optimise water reuse through closed-loop hydroponic systems, rainwater collection and digital monitoring systems. Training programmes, partnerships with cooperatives and collaboration with researchers and innovators incentivised local uptake and awareness of water-smart practices.

**Results/Benefits:** My Greens reduced water use by over 95% compared to traditional agriculture, showcasing how closed-loop systems and digital controls can be applied in small-scale vertical farms. Benefits include year-round production, reduced water footprint and strong potential for replication in peri-urban and climate-stressed areas. Lessons learnt highlight the need for cross-sector collaboration and skills development for scaling these innovations.



*Closed-loop production system (MyGreens, Jiménez)*



*Vertical farming (MyGreens, Jiménez)*



### 3.3.7. Sweden: PRECILIENCE – Assessing performance of combined drainage and storage for supplemental irrigation to improve water resilience



**Objectives:** Assess performance of combined drainage and storage for supplemental irrigation

**Dates:** Since 2023

**CAP interventions:** Investment support

**Funding source and overall budget:** Swedish CAP allocation for financial support for investment in irrigation dams 2025: budget SEK 169 958 761 (approved SEK 10 238 258, n=25); for 2024: budget SEK 169 958 761 (approved SEK 2 046 396, n=10)

**Links:** [PRECILIENCE website](#), [Swedish Board of Agriculture payments](#), [Swedish Board of Agriculture Compensations 2026](#)

**Description:** In Sweden's temperate climate, agricultural production has historically depended on extensive subsurface tile drainage and ditch systems to manage excess water during wet autumn and winter conditions and to maximise the relatively short growing season. Today, approximately 43% of cropland is tile-drained, while only 3–5% is equipped with irrigation. However, climate trends in southern and south-eastern Sweden show increasingly frequent spring and early-summer dry periods, which often limit crop growth and reduce yields. In response, farmers – particularly in water-scarce yet highly productive areas – are developing a new generation of on-farm water storage systems (irrigation dams). These systems collect drainage water during high-flow winter periods and store it for use in spring and summer irrigation. Unlike nature-based solutions, such as constructed wetlands, these irrigation dams are typically off-stream and designed primarily for water recirculation and irrigation resilience.

**Activities:** Under the Horizon Europe project [PRECILIENCE](#) (Precision Solutions for Climate Adaptation, GA No. 101157094), research activities are being carried out to assess the performance, impacts and scalability of farm level water storage and recirculation systems. The project monitors approximately 15 irrigation dams across three regions in southern and southeastern Sweden. Key activities include level water storage and recirculation systems. The project monitors approximately 15 irrigation dams across three regions in southern and southeastern Sweden. Activities include:

- Monitoring hydrological performance, including water retention and reuse for irrigation.
- Assessing impacts on crop yields and production stability.
- Investigating nutrient recirculation potentials, particularly where drainage water contains peak nutrient concentrations.

- Evaluating broader environmental effects, including potential benefits or risks for biodiversity (e.g. birdlife) and downstream flood reduction.
- Analysing regulatory, financial and administrative barriers to wider adoption, including permitting processes and investment costs.

Data collection and monitoring are ongoing, with results expected in 2026–2027 after 2–3 years of observation.

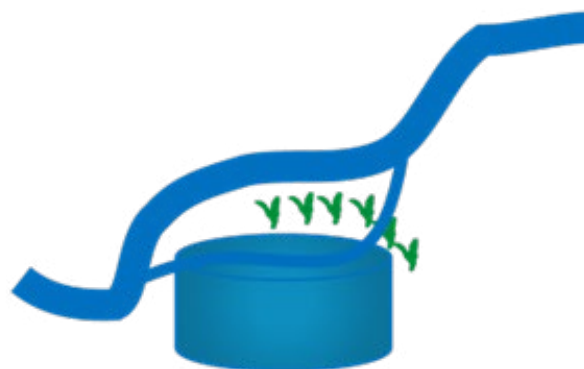
**Results/Benefits:** Preliminary observations indicate that farm level water storage and recirculation can significantly strengthen agricultural water resilience by improving access to water for both yield quantity and quality through supplementary irrigation, while intensifying production on existing land with minimal impact on natural water bodies.

Additional benefits include reduced downstream flood risk through winter water retention and the potential for nutrient recirculation, thereby lowering nutrient losses to surface waters. From a socioeconomic perspective, irrigation dams have so far been adopted by large scale farming enterprises due to high investment costs and administrative complexity. Although CAP support can cover up to 40% of investment costs (up to approximately EUR 150 000), uptake has been limited: less than 87% of allocated funding was distributed in 2025 and less than 2% in 2024, according to the Swedish Board of Agriculture.

Key barriers include high upfront costs for smaller farms and lengthy, costly permitting processes for water outtake and dam construction, which can take several years.



A) Water retention structure instream



B) Water retention structure off-stream

*Construct water storage off-stream (Barron)*





Water storage for irrigation adapted for biodiversity with constructed islands (copyright Barron 2025)

## 3.4. Advice and knowledge sharing

### 3.4.1. EU wide: Water Management Guidebook



**Objectives:** To provide practical guidance for improving water retention on farmland

**Dates:** 2025

**Funding source:** Climate Farmers Academy

**Links:** [Water Management Guidebook Download – Climate Farmers](#)

**Description:** The Water Management Guidebook was developed in collaboration with farmers and technical experts to provide practical guidance for regenerative land and water management. The guide supports land managers in understanding their local context, reading the landscape, and evaluating suitable interventions to improve water retention and distribution. It introduces key principles of regenerative water management and emphasises a processbased approach that encourages informed decisionmaking, experimentation and longterm learning. The primary objective of the guidebook is to make a wide range of watermanagement strategies accessible and actionable for farmers and land managers working in diverse landscapes and conditions.

**Activities:** The guidebook leads users through a structured process, beginning with the identification of sitespecific challenges and opportunities. Readers are guided through landscape assessment, information gathering and contextual analysis, enabling them to evaluate appropriate watermanagement interventions. The techniques presented focus mainly on landscapescale solutions, including erosion control, rainwater spreading, infiltration and retention. Additional topics such as sediment management, impurity filtration and waterquality improvement are also addressed. As users move towards implementation, the guide encourages experimentation and adaptive management, supported by clear guidance on monitoring and measurement.

**Results/Benefits:** The guidebook enables users to develop tailored watermanagement strategies to increase water retention and achieve more uniform dispersal of rainfall across the landscape. Its processbased design creates a feedback loop that supports continuous improvement: from context creation and design, through implementation, monitoring and evaluation, to refinement or scaling of interventions. Because the approach is adaptable, outcomes vary according to each user's landscape, goals and constraints. Overall, the guidebook empowers farmers and land managers to make informed, regenerative watermanagement decisions that enhance resilience, improve soil and water functioning, and support longterm sustainability.



### 3.4.2. International: Water Stories



**Objectives:** Community based support to improve water restoration

**Dates:** Since 2021

**Links:** [Water Stories](#)

**Description:** Water Stories is a global learning, training and action platform dedicated to Water Cycle Restoration. It brings together a growing international community of more than 14 000 people who are interested in restoring water cycles in farms, landscapes and watersheds. The platform provides accessible educational resources and peer support through its online community and openaccess media content. The core aim of Water Stories is to equip people passionate about water restoration with the practical knowledge and confidence needed to apply restoration principles in realworld contexts.

**Activities:** Water Stories delivers a range of educational and capacity building activities. These include a live core course on water cycle restoration, which has been completed by hundreds of participants from over 50 countries. Many graduates have gone on to establish professional practices or businesses focused on rehydrating farms and landscapes. In addition, Water Stories has organised 11 hands-on practical workshops over three years, produced free educational videos, podcasts and webinars, and released several short films showcasing real-world restoration projects. These films are freely available on the Water Stories website and have received multiple awards, including recognition for productions such as 'Reviving Rivers'. The platform also maintains a public directory of water cycle restoration practitioners and professionals, enabling land managers to connect directly with experienced consultants building activities. These include a live core course on water cycle restoration, which has been completed by hundreds of participants from over 50 countries. Many graduates have gone on to establish professional practices or businesses focused on rehydrating farms and landscapes on practical workshops over three years, produced free educational videos, podcasts and webinars, and released several short films showcasing real world restoration projects. These films are available for free on the Water Stories website and have received multiple awards.



*Learning about spring water tapping during an intensive practical course in Portugal, June 2025 (Water Stories)*

**Results/Benefits:** Water Stories has built a global learning community that actively supports the uptake and application of water cycle restoration practices. Its training programmes have helped participants move from theory to implementation, contributing to the emergence of new restoration projects and professional services worldwide. Notably, AguAbundancia in Spain is one of the initiatives

that has developed from graduates of the professional Water Stories course, translating training into on-the-ground landscape restoration and water resilience work. By combining accessible learning materials, practical training and peer-to-peer exchange, the platform lowers barriers to entry and accelerates the spread of effective, landscape-scale water restoration solutions.



### 3.4.3. Spain: App GO TIC4BIO



**Objectives:** To develop and test digital and decision-support tools that help organic farmers manage water more efficiently and sustainably

**CAP Interventions:** EIP-AGRI Operational Groups

**Links:** [TIC4BIO website](#)

**Description:** TIC4BIO focuses on developing and testing digital and decision support tools that help organic farmers manage water more efficiently and sustainably. By combining real-time monitoring, soil and crop data, and tailored advisory support, the project enables farmers to optimise irrigation practices, reduce unnecessary water use and improve water use efficiency without increasing total consumption. The project contributes to improved water resilience in rural areas by promoting data-driven decision-making and precise, needs based irrigation. Rather than encouraging higher water abstraction, TIC4BIO supports smarter water management that helps farmers adapt to water scarcity and climate variability while maintaining sustainable organic production systems.

**Activities:** TIC4BIO implemented a range of activities, including the installation of soil moisture and climate sensors, the development of digital tools for irrigation decision support, and field trials demonstrating water saving practices under real farming conditions. Farmers worked closely with advisors to interpret monitoring data and adjust irrigation schedules according to actual crop and soil needs. To support uptake, the project emphasised farmer led demonstrations, personalised advisory support and the use of simple, user friendly digital tools. Involving farmers directly in testing and tool development helped build trust and ensured solutions were aligned with real on farm needs.

**Results/Benefits:** The project demonstrated clear improvements in water use efficiency, enabling farmers to irrigate more precisely based on real time data. This resulted in reduced water consumption, healthier crops and more resilient production during dry periods. Farmers reported increased confidence in irrigation decisions and a better understanding of soil-water dynamics. Key success factors included close collaboration between farmers, advisors and technical partners, the simplicity and usability of the digital tools, and continuous advisory support to translate data into action. Demonstrating tangible water savings proved critical for adoption. Overall, TIC4BIO shows that well integrated digital tools and advisory services can significantly enhance sustainable water resilience on organic farms.

### 3.4.4. Sweden: Study circles on ditches



**Objectives:** Peer-to-peer learning to increase farmers' competence in the maintenance of ditches

**Dates:** 2018–2024

**Funding source and overall budget:** Rural Development Programme, approximately EUR 1 000 000

**Links:** [Study guide and other training materials](#)

**Description:** The study circles on ditches project was developed to strengthen farmers' competence in the maintenance of ditches and the management of collectively dug drainage systems. Collectively dug ditches – shallow drainage channels maintained by groups of neighbouring landowners – are critical for effective water runoff and soilmoisture control in Swedish agriculture. Proper management of these shared structures improves water efficiency, reduces individual costs and labour, and supports resilient crop production. The project used the studycircle model, a voluntary peertopeer learning format in which participants meet regularly to discuss a predefined topic, share experiences and develop practical solutions. This participatory approach promotes knowledge exchange, local ownership and longterm capacity building among rural stakeholders.

**Activities:** The project developed comprehensive study materials, including a study book, study guide, checklists, templates, FAQs and case studies. Special training was provided for studycircle leaders, and participants had access to expert support in water management. Peertopeer study circles formed the core activity, with groups meeting to learn and discuss good practices for ditch maintenance and cooperative management. In addition, 'open activities' such as information events were organised to raise awareness of ditch management and attract new participants. A national project website provided information about the study circles, learning materials and registration options, and a shared project name ensured clear recognition across regions.

**Results/Benefits:** In total, 208 study circles were carried out, involving 1 873 participants. A participant survey conducted in 2021 showed high levels of satisfaction: most respondents found the study circles and materials highly useful, felt more confident in addressing ditch and watermanagement issues, and several had already implemented improved management measures on their land. The project's strong national and regional coordination, consistent branding, qualityassured training for circle leaders and access to expert support contributed to its credibility and success. Overall, the initiative enhanced farmers' practical skills, strengthened cooperation around shared drainage systems, and supported more effective and sustainable water management in Swedish agriculture.



### 3.4.5. Sweden: App: *Hur mår min jord?* (how healthy is my soil?)



**Objectives:** To help farmers assess and improve soil health and infiltration capacity

**Dates:** Since 2021

**Funding source and budget:** Rural Development Programme, EUR 55 000 for app development

**Links:** [Hur mår min jord? – Greppa](#)

**Description:** The soil health assessment app is a digital tool designed to help farmers and agricultural advisors assess and improve soil health directly in the field. Available in both Swedish and English, the app makes soil structure evaluation accessible, practical and easy to follow. Its main aim is to increase understanding of soil health, support informed decision making and enable long-term monitoring of soil structure improvements. A well functioning soil structure is fundamental to productive and resilient agriculture. Healthy soils promote root development, improve nutrient use efficiency, increase yield stability in both wet and dry years, support carbon sequestration and reduce the need for plant protection measures. By strengthening soil structure, the app contributes to more profitable, resource efficient and environmentally sustainable farming systems.

**Activities:** The app guides users through three stepbystep field tests:

- › General field assessment, providing an overview of the field's condition and potential soil health issues.
- › Soil structure test, where users dig a soil pit, photograph the soil profile and answer guided questions supported by images, videos and explanatory information.
- › Infiltration test, measuring water infiltration rates in different soil layers (conducted after the soil structure assessment).

Based on test results, users can create a tailored action list by selecting recommended measures to maintain or improve soil structure. Tests can be performed using simple tools commonly available on farms. The app's builtin map function records test locations, allowing users to return to the same spots for followup assessments and longterm evaluation of management measures.

**Results/Benefits:** By combining the three tests, users gain a clear and practical understanding of their soil's condition and can plan targeted improvement measures suited to each field. The mapbased followup function supports longterm learning by enabling repeated assessments and evaluation of changes over time. The app is based on the established report Soil Structure Testing in the Field (SLU, 2008), but the transition from paper forms to a smartphone application has greatly increased accessibility and usability. Key success factors include the app being free, the use of simple field tools, clear stepbystep guidance, and pedagogical support through images and videos. Continuous input from farmers and agricultural advisors during development ensured that the app meets real onfarm needs, contributing to strong uptake and practical value.



## 4. Other useful links and resources

[MERLIN](#) – Mainstreaming Ecological Restoration of freshwater-related ecosystems in a Landscape context: INnovation, upscaling and transformation, project

[AQUAGRI-KNOW](#) – Empowering farmers with practical knowledge and innovative solutions for efficient on-farm water management, project

[NWRM+ Platform](#) – Natural Water Retention Measures

[SpongeScape](#), project

[FORTH20](#) – Policy Innovation Partnership (UK)

[L'acqua si Pianta! Waterwise communities in Ligurian Hinterland, Italy](#), Communities4Climate project

[open workroom SPONGE LANDSCAPES](#), project

[Farming for Water](#), European Innovation Partnership – Farming for Water EIP

[Be water wise](#), EU campaign

[Handbook of Agricultural Measures for Enhancing Water Retention, Water Quality and Biodiversity in Germany](#), Ecologic 2024

[Can Europe's farmers save the water cycle?](#), video on Euronews

[Climate risk to resilience: shaping a water-smart Europe](#), Policy Insights, EU CAP Network 2025

[Water efficiency for rural Europe](#) – Policy Insights, EU CAP Network 2024

EU CAP Network brochure on [circular water solutions](#) (2024)

EU CAP Network Workshop report – [Circular water management](#) (2024)

EU CAP Network factsheet – [Nature-Based Solutions for water management under climate change](#) (2022)

ENRD event report – [Supporting sustainable management of water and soils through the RDPs](#) (2018)

EIP-Agri focus group – [Water and agriculture](#)

EIP-Agri focus group – [Nature-based solutions for water management](#)

CAP evaluations:

- > [Water protection advice in the RDP of Lower Saxony and Bremen](#) – Implementation in the advice setting according to the Water Framework Directive (2021)
- > [Assessing RDP Effects on Water Abstraction: A Mixed Methods Approach from the Greek Region of Thessaly](#) (2020)
- > European Commission: Directorate-General for Agriculture and Rural Development, EEIG Alliance Environnement, Schwaiger, E., Pierrepont, A. d., Rosell, J. et al., [Evaluation of the impact of the CAP on water – Final report](#), Publications Office (2020)



**EU CAP Network** *supported by*  
CAP Implementation Contact Point  
Rue de la Loi 38 (bte 4)  
1040 Brussels, Belgium  
+32 (0) 2 801 38 07  
[implementation@eucapnetwork.eu](mailto:implementation@eucapnetwork.eu)

