EU CAP NETWORK

EU CAP Network Workshop ‘Circular water management’

Seville, Spain
12 - 13 March 2024

Funded by the European Union

EU funded R&I on sustainable water (and soil) management for enhanced water resilience: latest developments

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Circular water management in agriculture

- Water stress affects 30% of the EU population with an economic damage of up to EUR 9 billion annually.
- Droughts are increasing in frequency, magnitude and impact, and the affected area is expanding towards central and western Europe.
- Agriculture is the main water user in many Member States, particularly in the south.
- 6 times more treated water could be reused than current levels.
- Barriers for implementing wastewater reuse
  - absence of a regulatory framework and lack of trust towards the control bodies
  - lack of knowledge from farmers on the benefits and characteristics of wastewater
  - production and specially transport costs translate into wastewater price higher than freshwater
  - not reliable source of effluent due to seasonal variations
  - nutrient imbalance and salinity, heavy metals and emerging contaminants

EU funding on water management R&I

- Common Agricultural Policy
  - Key objective: foster sustainable development and **efficient management of natural resources such as water**, soil and air, including by reducing chemical dependency.
- Horizon Europe Strategic Plan 2021-2024
  - Key strategic orientation: Restoring Europe's ecosystems and biodiversity, and **managing sustainably natural resources**
  - Expected impact: **sustainable and circular management** and use of natural resources
- 2014-2022 R&I investment
  - Horizon 2020: 179 projects, € 420 million
  - Horizon Europe: 34 projects, € 145 million
- EU co-funded partnerships
- EU Missions
  - 'A Soil Deal for Europe'
  - 'Restore our Ocean and Waters'

Topics

- More energy-efficient treatments and water reuse with minimal environmental risks
- Real-time monitoring of water quality parameters for safe water reuse
- Cost-efficient and safe water recovery from effluent from processing industries
- Nature based solutions to retain, regulate, store and treat water in the farm or agricultural watershed
- Soil water retention and nutrient recycling
- Emerging areas
  - Facilitating the acceptance of reclaimed water
  - Water-energy-food-ecosystem nexus approaches
  - Long-term effect of reclaimed water
  - New contaminants

A selection of EU-funded projects

- Demonstration of water loops with innovative regenerative business models for the Mediterranean region

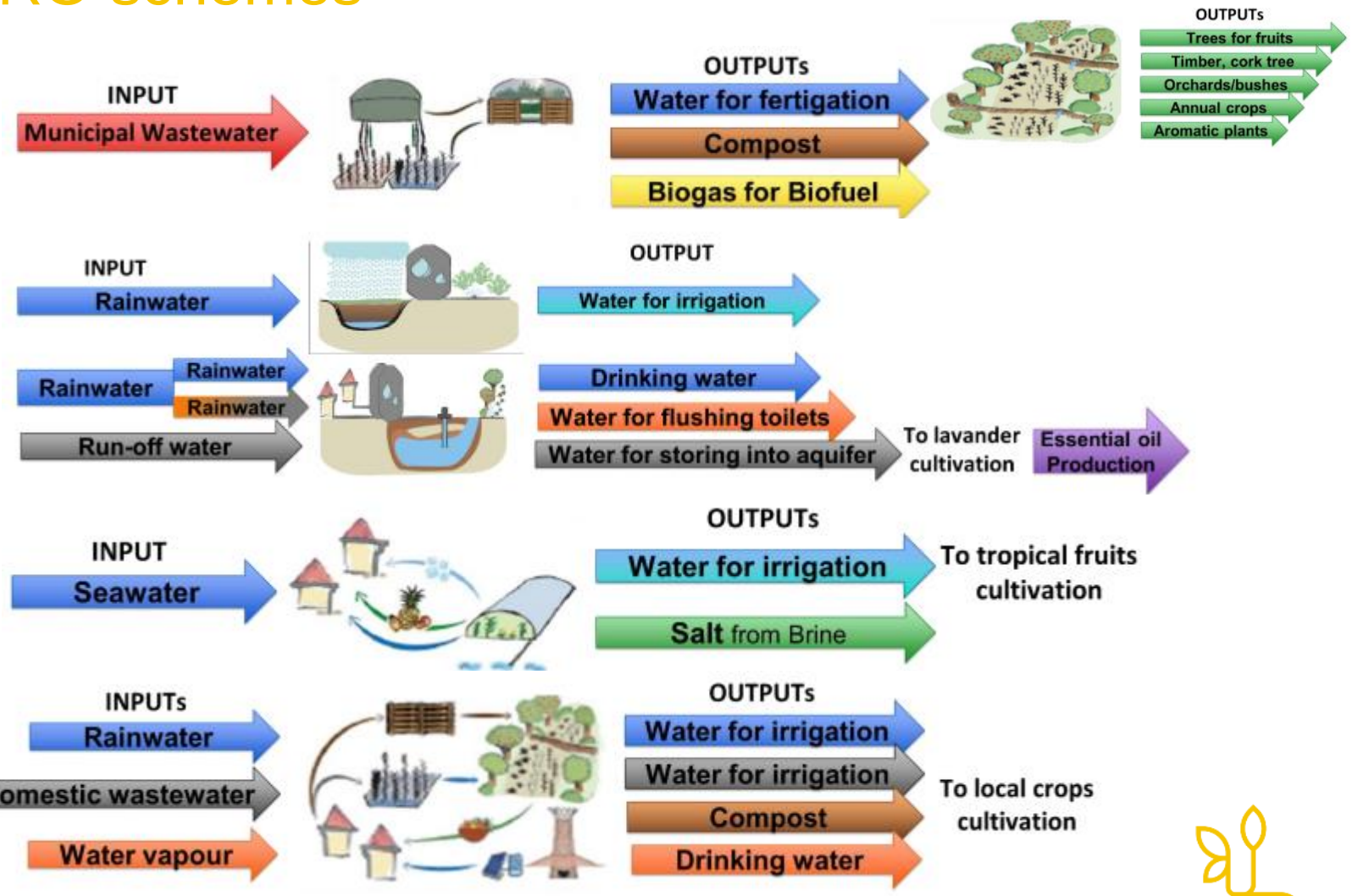
- Network for effective knowledge transfer on safe and economic wastewater reuse in agriculture in Europe

- OPtimal strategies to retAIN and re-use water and nutrients in small agricultural catchments across different soil-climatic regions in Europe

- Demonstration of planning and technology tools for a circular, integrated and symbiotic use of water

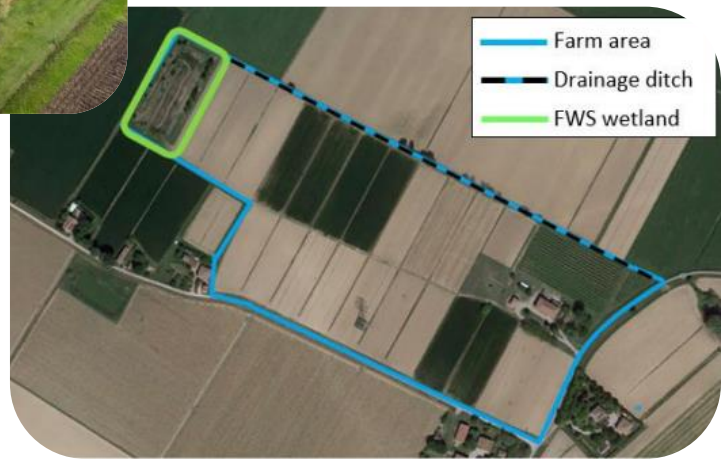
- Water retention and nutrient recycling in soils and streams for improved agricultural production

HYDRO schemes



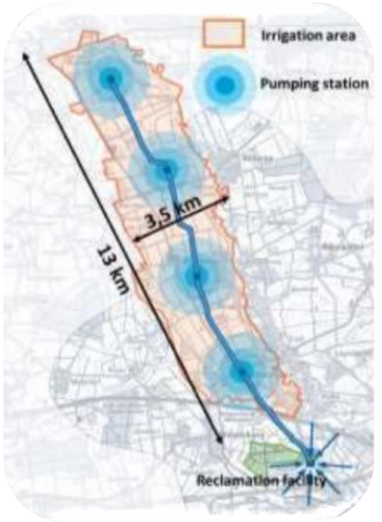
Farm constructed wetlands for water and nutrient retention

- NBS used for retaining water in the agricultural landscape to use it for irrigation when needed, reducing rain peaks and contributing to groundwater recharge.



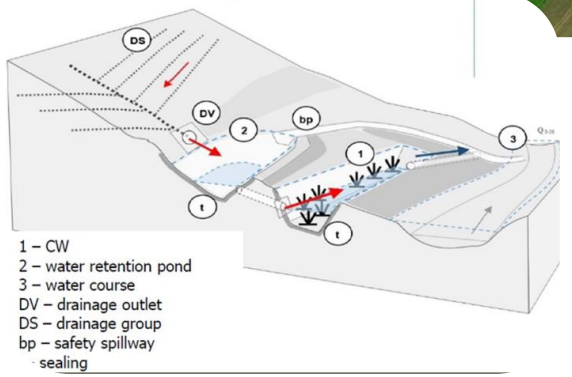
Information for irrigators and advisory services

- Irrigation equipment adapted to the use of reclaimed water
- Cost benefit analysis and feasibility of using reclaimed water
- Irrigation schemes when using reclaimed water
- Water and fertilizers savings
- Sensors and other innovative tools for monitoring reclaimed water quality
- Light-driven technologies for producing reclaimed water
- Lighthouses



Natural Small Water Retention Measures (NSWRM)

- Retention or detention ponds
- Grassed waterways
- Afforestation of reservoir catchments
- Wetland restoration and management
- Constructed wetland with tile drainage
- Peak flow control structures (leaky woody dams)



Demo cases

- Reuse of wastewater for agricultural irrigation and production of slow-release fertilizers
  - Wastewater treatment plant with special features for water reuse and nutrient recovery.
    - Membrane system and a distribution network for water reuse by local agriculture.
    - Process line for the PHA production/extraction as well as the installation of final filters filled with Biochar and zeolites for nutrients (N and P) adsorption.
- Greening of urban areas with waste water
  - UV disinfection.
  - Micro- and nanofiltration membranes for removal of residual concentrations of suspended solids.
  - Reverse osmosis.
  - Advanced oxidation (ozonation followed by active carbon sorption) processes and sorption for removal of pharmaceuticals and hormones.

Examples of future relevant projects

- HORIZON-MISS-2023-CLIMA-OCEAN-SOIL-01-01: Joint demonstration of approaches and solutions to address nutrient pollution in the landscape-river-sea system in the Mediterranean sea basin
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- HORIZON-CL6-2024-CLIMATE-01-1: Improving irrigation practices and technologies in agriculture
  - On-farm water management practices and results at the catchment level by quantifying the impacts of water recycling in the whole basin water balance, optimizing catchment-based agriculture production, reducing runoff patterns and possible changes in hydrological cycles linked to climate conditions.
  - Tools for an efficient combined use of water and fertilizers via irrigation for different agricultural systems.
  - New, innovative forms of alternative water for agriculture (e.g., superabsorbent polymers/‘solid water).
  - Improve practices and solutions in small and large-scale farms to deal with the effects of water abundance (rapid showers, floods) and/or water scarcity.

New tools for faster uptake of solutions: (soil health) living labs

- **Living labs** are a core element of the Mission Soil. A living lab is
  - Composed of a group of (10-20) site.
  - Actors such as farmers, researchers, advisors, SMEs, citizens…
  - Co-design, test, monitor and evaluate solutions to soil health challenges.
  - Real-life conditions, long-term set up.
  - All types of soils and land uses.
- **Lighthouses** are individual sites, such as a single farm, of exemplary performance to showcase good practices.
  - Places for demonstrations, training and communication.
  - Practical tools for advisors to best inform soil managers.
  - Increase the awareness of the importance of soil.
- **Objectives**
  - Empower a rapid green transition by scaling up the uptake of solutions.
  - Solutions adapted to local, pedo-climatic, socio-cultural-economic conditions across Europe (systemic approach).
  - Driven by end-users' needs.

100 Living Labs and Lighthouses

+1000 testing sites across Europe

≈EUR 240 million

Specific mechanism to involve farmers (financial support to third parties)

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All information on the workshop is available on the event webpage:

https://eu-cap-network.ec.europa.eu/events/eu-cap-network-workshop-circular-water-management