ManuREsource 2024:
'International conference on manure management and valorization'
20-21 March 2024, Antwerp

LIFE CLINMED-FARM – EFFICIENT AND SUSTAINABLE SLURRY MANAGEMENT SCHEMES FOR ACHIEVING CLIMATE-NEUTRAL FARMS IN MEDITERRANEAN AREAS

Perea-Cachero, A.*[1], Mateo-Marín, N.[1], Friuli, M.[2], Dela Pierre, F.[2], Rollè, L.[2], Clavería, I.[1], Guillén, M.[1], Quílez, D.[1], Daudén, A.[3], Dinuccio, E.[2] & Herrero, E.[3]
*Corresponding author, email: aperea@cita-aragon.es

[1]Department of Environment, Agricultural and Forest Systems. [3]Project Office.
Agrifood Research and Technology Centre of Aragon (CITA)
Avda. Montañana 930, 50059, Zaragoza, Spain (ES)
[2]Department of Agricultural, Forest and Food Sciences (DISAFA), University of Turin.
Largo Braccini 2, 10095 Grugliasco (TO), Italy (IT)

Co-funded by the European Union

THE PROJECT AND PARTNERS

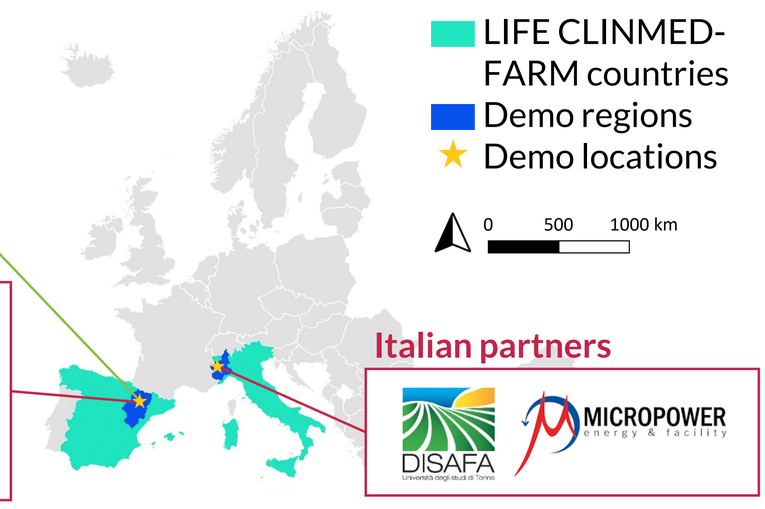
LIFE CLINMED-FARM (LIFE20 CCM/ES/001751)

LIFE Programme:	Climate Action
Sub-programme:	Climate Change Mitigation
Budget:	3,562,937 €
EU co-funding:	1,959,613 € (55%)
Duration:	01/09/2021 – 31/12/2025

Coordinator

Spanish partners

Italian partners

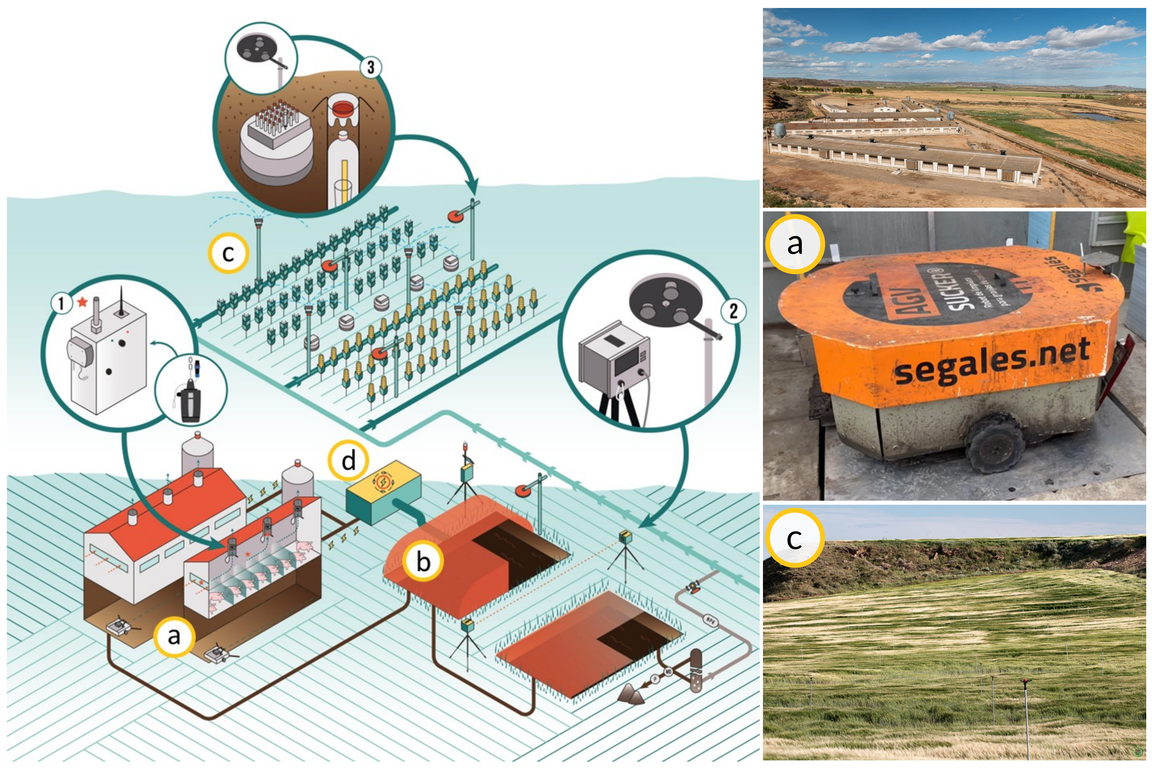


GOALS

- Evaluating the performance of **innovative techniques for circular slurry nutrient and energy management** at **farm scale** by adapting existing facilities. The assessment is based on a **multipollutant case/control approach** where new techniques and traditional practices are compared.
- **Reducing ammonia (NH_3) and greenhouse gas (CH_4 and N_2O) emissions** by 60 and 70%, respectively, by combining simple and innovative abatement techniques at every stage of the manure management chain.
- **Valorisation of energy resources and nutrients** at a local level:
  - **Reducing nutrient losses and emissions** by shortening storage times in houses, using covering systems and efficient fertilising strategies.
  - **Valorising biogas** for on-site as a renewable energy source.
  - **Minimising thermal losses** in anaerobic digesters with efficient covers and facilitating the use of the surplus heat from biomethane upgrading processes in the nearby industries.
  - Developing **robust monitoring methodologies to estimate gas emissions** in manure management and fertilising activities.
- Involving all **stakeholders, policymakers and social agents** in defining sustainable agricultural production models in Mediterranean areas.

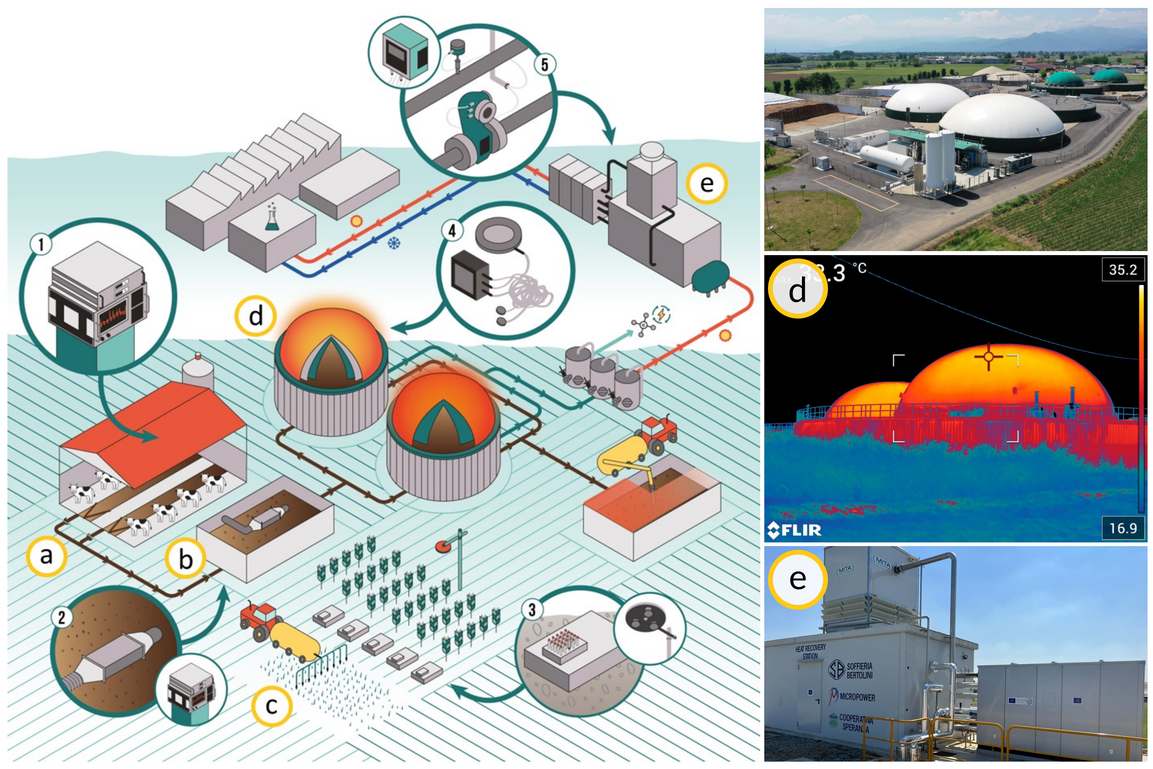
STUDY CASES

STUDY CASE OF ARAGON (ES)
Sow pig farm – 2,600 heads – 190 ha – 17,000 m^3 slurry/yr



a. Frequent slurry removal by an autonomous vacuuming robot.
b. Covering external slurry storage with a plastic cover and biogas recovery.
c. Sprinkler fertigation with liquid digestate in double-crop systems.
d. Anaerobic digestion of slurry and energy valorisation of biogas to use it as a renewable energy source in the farm.

STUDY CASE OF PIEDMONT (IT)
Biogas plant – dairy farm – 1,200 dairy cows – 16,800 m^3 slurry/yr



a. Frequent slurry removal practices.
b. Covering external slurry storage with natural crust.
c. Fertilising strategies: acidification, nitrification inhibitors, and direct incorporation in double-crop systems.
d. Energy-efficient coverage of anaerobic digesters.
e. Absorption refrigeration system to valorise the surplus heat from biomethane upgrading. A nearby industry uses this surplus energy as cooling for its production processes.

TRANSFERENCE

Two Local Platforms, one in Aragon (ES) and one in Piedmont (IT) coordinated by i+Porc and Consorzio Italiano Biogas, respectively, involve public, private, and civil agents to transfer project results and expertise.

Co-funded by the European Union

The LIFE CLINMED-FARM project has received funding from the LIFE Programme of the European Union.