



LAYMAN REPORT



Innovative
technologies for
Climate change
mitigation by
Mediterranean
agricultural sector

LIFE17 CCM/GR/000087

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The ClimaMED Project

***Innovative technologies for climate change mitigation by Mediterranean agricultural sector** with the acronym **LIFE ClimaMED** is a European project implemented with the contribution of the LIFE financial instrument of the European Union.*

The agricultural sector is increasingly challenged by climate change, posing risks to food security, livelihoods, and rural economies. Addressing these challenges requires a blend of adaptation measures, technological advancements, and international cooperation to support sustainable agricultural production in the long term. A key difficulty in implementing climate change mitigation in agriculture is striking a balance between reducing greenhouse gas (GHG) emissions and maintaining or enhancing soil organic carbon stocks, while simultaneously fostering sustainable economic growth and preventing environmental degradation. This issue is especially pressing in the Mediterranean region, one of Europe's most vulnerable areas, already experiencing significant strains from desertification, water shortages, and continuous urban expansion.



Total Project Budget: 2 859 783€

Project Duration: July 2018 – December 2024

Coordinate Beneficiary: Benaki Phytopathological Institute (Greece)

Partners: Foundation for Research and Technology (Greece)
Technical University of Crete (Greece)
Ministry of Rural Development and Food (Greece)
Green Projects SA (Greece)
ENVITECH (Cyprus)
University Miguel Hernández de Elche (Spain)
Centro di Sperimentazione e Assistenza Agricola (Italy)



The Innovation

✓ *ClimaMED has provided technologies and tools to measure, evaluate, and report GHG emissions and SOC sequestration from agricultural land, demonstrating strong potential for application in various other sectors (e.g., forests, tourism, livestock farming).*

✓ *Specifically, LIFE ClimaMED has successfully developed and delivered innovative, reliable, rapid, and cost-effective Tier 3-level technologies for on-site measurement of CO₂, CH₄, and N₂O emissions, as well as SOC stock changes from agricultural fields in real time. These advancements have supported scientists, public authorities, and policymakers in collecting, quantifying, evaluating, mapping, and reporting spatial data on GHG emissions and SOC stock changes*

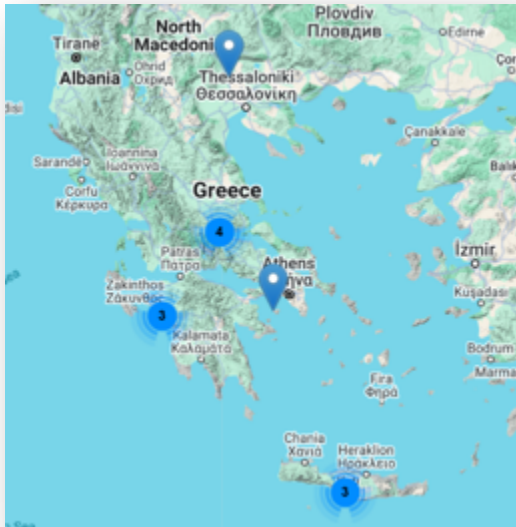


across the Mediterranean agricultural sector.

☑ *ClimaMED results can also benefit individual farmers or farmer groups. With innovative methods to measure net GHG emissions and SOC stock levels, along with assessments through CMM, farmers can certify or label their products as having a low carbon footprint and high soil carbon sequestration.*

Project Results and Achievements

10 Lidar Devices



A total of 10 LIDAR devices were developed and installed, with 6 continuing to take measurements until the project's completion.

These devices were placed in different regions of Greece, monitoring various crops such as grapes, vegetables, and pistachios.

The LIDAR system measures greenhouse gas concentrations in the atmosphere using continuous-wave lasers. It is equipped with three low-power continuous-wave DFB diode lasers for detecting CO₂, CH₄, and N₂O.



IoT Telemetry System

The IoT Telemetry System supports data reception and management (on cloud), visualization of data and reporting generation. It also includes a web App for interfacing with the users as well as a set of APIs for exchanging data with third parties' systems.



IoT Meteorological Station (W-S)

- 1. Rain level sensor
- 2. Wind sensor
- 3. Solar radiation sensor
- 4. Wind direction sensor
- 5. Photovoltaic panel
- 6. Air temperature and humidity sensor
- 7. Meteorological station board
- 8. Hollow beam 80x80x3000mm
- 9. Soil temperature and humidity sensor
- 10. Counterweight block 200x700x400mm

GIS-based web platform



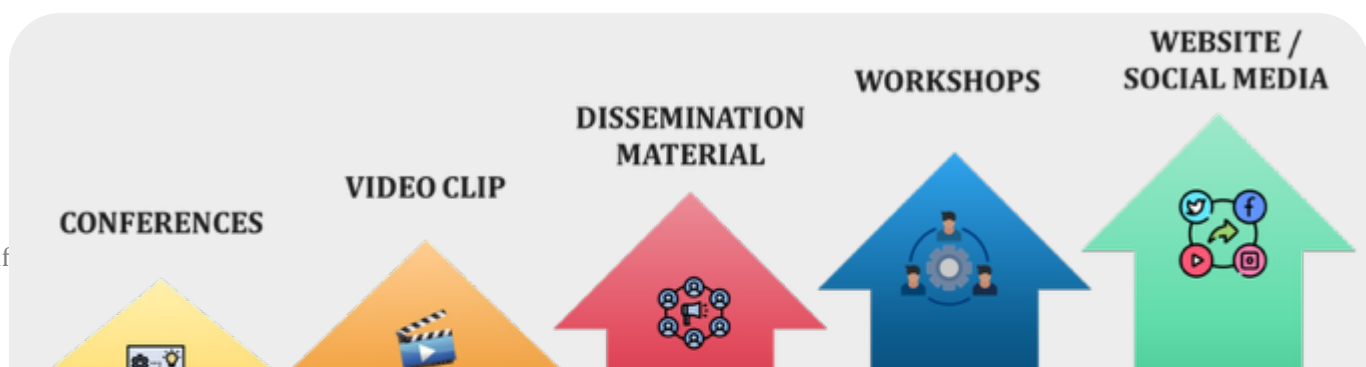
The project develops a platform using the Laravel (PHP) web framework, which primarily follows the MVC architecture. Users can access the platform to choose their preferred device and monitor real-time greenhouse gas measurements.

Legislative Proposal

The Greek Ministry of Rural Development and Food prepared a legislative proposal, taking into account scientific and technical data provided by beneficiaries, as well as input from stakeholders during round-table discussions. The goal is to submit the proposal to the Greek Parliament.

At the same time, Cyprus and Italy prepared their own national proposals for the measurement, mapping, and recording of greenhouse gas emissions and soil organic carbon stock changes at the farm level.

Networking and Dissemination



The future

After full-scale testing, the GHGs Monitoring System (including the platform and device network) will reach a commercial-ready state.

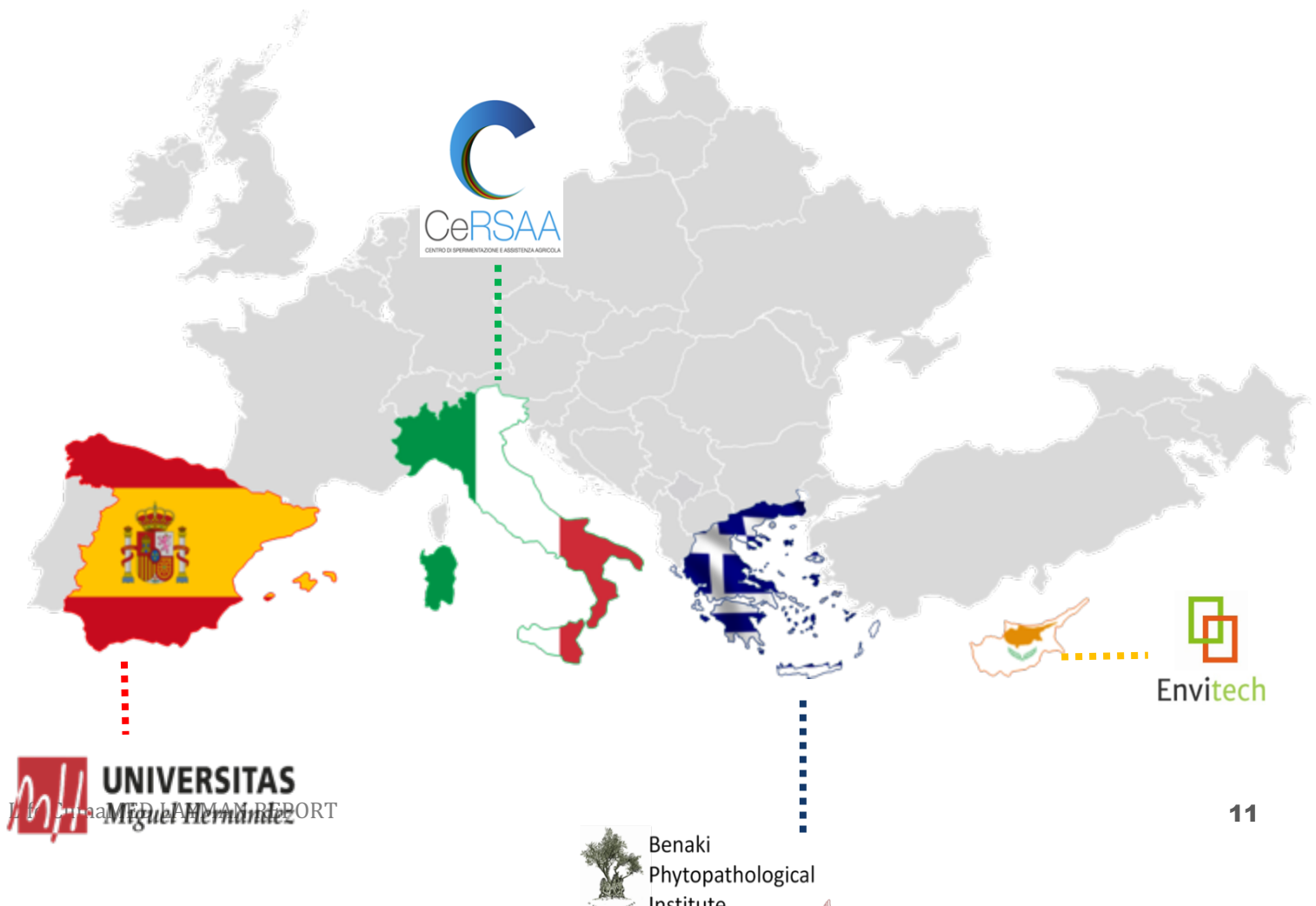
During commercialization, the four participating countries will build a growing network of tele-monitoring systems.

This network will send large amounts of data to the Center of GHGs Monitoring and Management, which will sustain its operation through the system's commercial use.

The GIS-based web platform will remain open and free for the public, without supervision from the beneficiaries.



The Project Team





**The future of
agriculture depends
on how well we adapt
to climate change
today**

<https://life-climamed.eu/>