D2.22. The new App-Prototype: DSS-NEW

Baselines for Demonstrator Regions and Factsheets for Replicator Regions (not yet defined)

Deliverable Information

Version	Step 5 Version
Grant Agreement Number	101112876
Project Acronym	MountResilience
Project Title	Accelerating transformative climate adaptation for higher resilience in European mountain regions
Project Call	HORIZON-MISS-2022-CLIMA-01
Project Duration	1 September 2023 – 29 February 2028
Deliverable Number	D2.22
Deliverable Title	DSS-NEW, the prototype of new app to manage irrigation and increase agriculture resilience in a changing climate
Deliverable Type	DEM – Demonstrate, pilot, prototype
Deliverable Dissemination Level	P – Public
Work Package	2
Lead Partner	UNITO - University of Torino (Italy)
Authors	Carlo Grignani, Francesco Ferrero, Ornela Yoana Cavalieri, Mattia Racco, Alessio Fariello, Laura Zavattaro, Enrico Chiesa, Luigi Perotti, Federico Spanna, Irene Vercellino
Contributing Partners	UNITO - Piedmont Region
Reviewers	University of Milan (UMIL) & Piedmont Region (REGPIE)
Official Due Date	30 September 2025
Delivery Date	7 October 2025

Publishable summary

DSS-NEW, the prototype of new app to manage irrigation and increase agriculture resilience in a changing climate

This report presents DSS-NEW, an innovative prototype DSS developed within the MountResilience project under the Horizon Europe programme. DSS-NEW is a new software for guiding farmers to smarter and more resilient irrigation management in the framework of the ongoing climate change. More specifically it aims to: 1. optimize actual irrigation techniques and suggest possible alternative solutions to improve irrigation methods; 2. collect data about irrigation water use at the farm scale to judge the value and the efficiency of irrigation water used in agriculture. The first aim is mainly in the farmer's interest; the second includes farmers, irrigation consortia and any interested citizen. The analysis focuses on the Piedmont Region, where increasing temperatures, irregular precipitation, glacier retreat, and declining snow cover can severely affect water availability. As these climatic shifts threaten agricultural productivity and generate conflicts between agricultural, industrial, and civil water uses in many other European regions, the use of DSS-NEW intends to be replicated elsewhere. A review of existing irrigation Decision Support Systems revealed that, although effective in integrating meteorological, soil, and satellite data, current solutions do not fully meet the requirements imposed by new climatic and organizational challenges. They do not offer the possibility do suggest evolution over a long period of time. DSS-NEW addresses these limitations through a free, accessible, and interoperable platform linked to regional open databases. It automatically collects and processes environmental, meteorological, and agronomic information to calculate daily water balances, simulate irrigation scenarios, and estimate crop yields. The system integrates Sentinel-2 information, employs FAO-based evapotranspiration models, guide irrigation and generates performance and sustainability indicators about the irrigation water use.