

EcoFuture

A socio-ecological approach to combat desertification for a sustainable future



COORDINATOR:

Technical University of Crete (TUC), Greece



STATUS: Completed



IMPLEMENTATION: 1 Apr 2023 - 31 Mar 2026



GEOGRAPHIC / THEMATIC SCOPE:

Jordan Valley: Jordan, Israel and Palestine



PROBLEM TO ADDRESS

The Jordan Valley is simultaneously exposed to chronic water scarcity, desertification, soil and ecosystem degradation, climate-change impacts, pressure on food and energy security, and unequal access to resources. These stresses cross national borders and sectoral mandates, while water, energy, agriculture and ecosystem policies can conflict. The project therefore treats the Valley as one connected socio-ecological system in which adaptation must balance resource security, environmental protection and socio-economic welfare.



OBJECTIVES

- Develop a regional climate-change adaptation plan for the Jordan Valley using an integrated Water-Energy-Food-Ecosystems (WEFE) Nexus approach.
- Use techno-economic and socio-economic models to compare options, trade-offs, costs, benefits and welfare impacts.
- Validate model assumptions through demonstration activities in Jordan, Israel and Palestine, including water reuse, smart/climate-controlled agriculture, renewable energy and efficient irrigation.
- Create transferable methods, indicators, cross-sector dialogue and capacity-building approaches that can be replicated in other Mediterranean regions.



MAIN OUTCOMES / OUTPUTS

- A shared regional evidence base and modelling framework for cross-border WEFE planning and resource-security scenarios.
- Integrated adaptation and agricultural-transformation strategies linking water reuse, renewable energy, irrigation efficiency, food production and ecosystem services.
- Demonstration evidence on technology and Nature-based solution bundles, including treated wastewater reuse and climate-smart greenhouse/irrigation options.
- Policy-coherence analysis, Living Lab dialogue and stronger cooperation among researchers, practitioners and public authorities across the Jordan Valley.
- Training and dissemination materials designed to support replication of the WEFE approach beyond the pilot area.



CONSORTIUM

Coordinator: Technical University of Crete (TUC). **Partners:** Arava Institute for Environmental Studies; TAW (Wald Industries) Ltd.; Hebrew University of Jerusalem; Reichman University; National Agricultural Research Center Jordan (NARC); Green Spectrum for Environmental Consulting (i.GREENS); House of Water and the Environment (HWE); Damour for Community Development (DCD).

Sources: [PRIMA MEL project page](#) | [EcoFuture project website](#)

NexusLabs

Nexus Living Labs for Multi-Level Innovation in Mediterranean Irrigated Agriculture



COORDINATOR:

University of Castilla-La Mancha (UCLM), Spain



STATUS:

Ongoing



IMPLEMENTATION: 1 Apr 2025 - 31 Mar 2028



GEOGRAPHIC / THEMATIC SCOPE:

**Mediterranean irrigated agriculture;
Living Labs across 7 countries**



PROBLEM TO ADDRESS

Mediterranean irrigated agriculture is highly exposed to water scarcity, rising climate variability, energy costs, soil degradation and pressure on ecosystems. Many useful innovations already exist, but they are often tested in isolation and do not account for interactions among water, energy, food production and ecosystems. NexusLabs addresses the gap between scientific knowledge and large-scale practical uptake by testing integrated, affordable and scalable WEFE solutions under real farming and governance conditions.



OBJECTIVES

- Provide a comprehensive package of technological, Nature-based, agroecological and management solutions that improve resource efficiency in irrigated agriculture.
- Test and demonstrate solutions in real-world Living Labs and assess their combined impacts across the full WEFE Nexus.
- Integrate field evidence into holistic tools for scenario analysis, impact assessment and decision support, from farm to basin/territorial scale.
- Build stakeholder capacity and prepare viable pathways for market uptake, replication and scaling across Mediterranean user communities.



MAIN OUTCOMES / OUTPUTS

- A practical NexusLabs toolkit covering smart irrigation, remote sensing, agroecology, Nature-based solutions, alternative water/energy sources and resource-efficiency measures.
- Digital and analytical tools including a WEFE index, advanced weather forecasting, participatory system-dynamics modelling, water/energy footprints, life-cycle sustainability assessment and a decision-support/observatory environment.
- Field-tested combinations of solutions with evidence on environmental, economic and social performance in Mediterranean Living Labs.
- Training, stakeholder co-creation and market-preparation activities that reduce barriers to adoption and improve farmer and authority decision-making.
- Scalable implementation pathways that connect farm-level innovation with wider water, agricultural and ecosystem governance.



CONSORTIUM

Coordinator: University of Castilla-La Mancha (UCLM). **Partners** reported for the current project configuration: AgriSat Iberia; CNR-IRSA; ETIFOR; University of Padua (UNIPD); CREA; Soil and Water Resources Institute (SWRI); Technical University of Crete (TUC); DReVen; Global Water Partnership-Mediterranean (GWP-Med); UTAEM; EA-TEK; Cadi Ayyad University/UCAM; OMNINEX; National Agricultural Research Center Jordan (NARC).

Sources: [NexusLabs official website](#) | [PRIMA 2024 Section 1 results](#)

MORFeuS

Mediterranean Operational Resilience Framework for nexus-based territorial Solutions



COORDINATOR:
INRAE, France



STATUS:
Ongoing



IMPLEMENTATION: 1 May 2025 - 30 Apr 2028



GEOGRAPHIC / THEMATIC SCOPE:
Western Mediterranean:
Algeria, France, Morocco, Portugal and Tunisia



PROBLEM TO ADDRESS

Climate change is already reducing the reliability of water resources for Mediterranean agriculture, while water decisions affect energy use, food systems, ecosystems and territorial economies. Responses are frequently sector-specific and may shift pressures from one sector to another. MORFeuS addresses this fragmentation by working at territorial level, where farmers, communities, public authorities, researchers and businesses can jointly diagnose vulnerabilities and combine technical, organisational and policy solutions.



OBJECTIVES

- Identify existing and potential WEFE solutions and co-design combinations that increase territorial resilience.
- Integrate stakeholder knowledge and local needs into technical, organisational and institutional solution packages tailored to each territory.
- Implement and assess solutions in demonstration sites, share learning across sites and translate evidence into actionable policy recommendations.
- Assess transferability and scaling potential across the Western Mediterranean.



MAIN OUTCOMES / OUTPUTS

- A practical WEFE Nexus resilience framework, territorial diagnostics and operational guidelines for establishing local WEFE strategies.
- Co-designed cross-sector solution bundles tested in demonstration territories, with assessment of impacts and governance processes.
- Cross-site comparison, business-model analysis and scaling procedures for transferring effective solutions within and beyond demonstration sites.
- Training, knowledge-sharing and communication materials supporting farmers, young people, SMEs and territorial actors.
- Policy-oriented evidence and examples of transparent, participatory governance for more resilient Mediterranean territories.



CONSORTIUM

Coordinator: INRAE (France). Consortium includes CIRAD; International Network for Agricultural and Rural Training (FAR); HSTI; IRD; Parc Naturel Regional de la Narbonne; CREAD (Algeria); Groupement d'interet Economique de Pomme M'Semrir-Tilmi; Ecole Nationale d'Agriculture de Meknes; Institut Agronomique et Veterinaire Hassan II; Orvignon Strategie et Management; University of Algarve; Lisbon School of Economics and Management (ISEG); Rizoma Cooperativa Integral; ACCORD (Tunisia); Institut National Agronomique de Tunisie (INAT); Universite Mohammed V de Rabat.

Sources: [MORFeuS official website](#) | [PRIMA 2024 Section 1 results](#)

DIONYSUS

Operational adaptation Nexus-based systems solutions in Mediterranean



COORDINATOR:

**CIHEAM - Mediterranean Agronomic Institute
of Montpellier (CIHEAM-IAMM), France**



STATUS: **Ongoing**



IMPLEMENTATION: **1 Jun 2024 - 30 Nov 2027**



GEOGRAPHIC / THEMATIC SCOPE:

**4 Demonstration Sites + 3 Replication Sites
in the Mediterranean**



PROBLEM TO ADDRESS

Many adaptation strategies are still designed sector by sector, even though competition and trade-offs among water, energy, food and ecosystems drive conflicts, resource overuse and weak stakeholder participation. Climate change, market shocks, urbanisation, migration and changing macro-economic conditions add further pressure. DIONYSUS responds with a cross-sector, stakeholder-driven approach that links adaptation measures to viable business and market solutions.



OBJECTIVES

- Establish four cross-sectoral Demonstration Sites and three Replication Sites and implement operational adaptation and sustainable market solutions.
- Create seven local Action-Panels that bring together stakeholders from competing and complementary WEFE sectors.
- Co-design and validate WEFE Nexus adaptation measures, then adapt the most promising solutions for replication.
- Develop the DIONYSUS-inov web-based decision-support platform and establish a Mediterranean DIONYSUS Think-Tank.



MAIN OUTCOMES / OUTPUTS

- Seven functioning territorial Action-Panels linked to demonstration and replication processes.
- Operational WEFE adaptation packages covering production practices, technologies, management processes and market/business models.
- DIONYSUS-inov: a DSS for co-design, impact/feasibility assessment, trade-off analysis and strategic guidance under climate, demographic, policy and market change.
- Replication evidence showing how successful solutions can be transferred across contrasting Mediterranean contexts.
- A DIONYSUS Think-Tank and policy reflection process intended to influence longer-term Mediterranean WEFE strategies.



CONSORTIUM

Coordinator: CIHEAM-IAMM. **Partners:** University of Thessaly; Consorzio di Tutela Arancia Rossa di Sicilia IGP; University of Catania; Leibniz Centre for Agricultural Landscape Research (ZALF); TOEV Tavropou Karditsas; Ankara University; Institute of National Planning (Egypt); Mohammed VI Polytechnic University; Almaviva; Ibn Zohr University; CREAD (Algeria); National Agricultural Research Institute of Tunisia (INRAT); Egyptian Association for Sustainable Development (EASD).

Sources: [PRIMA MEL project page](#) | [DIONYSUS official website](#)

RES-MAB

Promoting WEFE Nexus-based adaptation and mitigation solutions and landscape resilience to climate change in the Mediterranean Biosphere Reserves



COORDINATOR:

Forest Science and Technology Centre
of Catalonia (CTFC), Spain



STATUS: Ongoing



IMPLEMENTATION: 1 Apr 2024 - 31 Mar 2027



GEOGRAPHIC / THEMATIC SCOPE:

7 Mediterranean UNESCO Biosphere
Reserve demonstration landscapes



PROBLEM TO ADDRESS

Mediterranean Biosphere Reserves face interacting climate hazards, rising temperatures, altered rainfall and increasing demand for water, food and energy. These pressures threaten biodiversity, livelihoods, food security and social cohesion, while adaptation plans often remain fragmented across sectors. RES-MAB uses Biosphere Reserves as large landscape laboratories where conservation and development trade-offs can be negotiated through a common WEFE framework.



OBJECTIVES

- Develop and apply a WEFE-Nexus Socioecological Modelling Tool (WEFE-SEM) for integrated landscape management and climate resilience.
- Embed WEFE-SEM evidence into cross-sector policies, development plans and action plans, with capacity building for decision-makers and vulnerable groups.
- Co-create a network of seven Biosphere Reserve demo sites implementing eight transformative adaptation and mitigation solutions.
- Monitor environmental and socio-economic impacts and develop inclusive business models that engage the private sector.



MAIN OUTCOMES / OUTPUTS

- A transferable WEFE-SEM tool and decision framework for landscape-scale climate adaptation and mitigation.
- A Mediterranean network of seven Biosphere Reserve demonstration sites implementing and comparing eight WEFE Nexus solutions.
- Actionable information for policy integration, long-term planning and capacity building in protected and inhabited landscapes.
- Environmental and socio-economic monitoring evidence on resilience, cohesion and adaptive capacity.
- Business models and private-sector engagement pathways designed to support sustainable markets and benefits for vulnerable communities.



CONSORTIUM

Coordinator: Forest Science and Technology Centre of Catalonia (CTFC). **Partners:** Alto Bernesga Biosphere Reserve Foundation; Mont-Ventoux Natural Regional Park; Association for the Protection of Jabal Moussa; ANDZOA; Royal Society for the Conservation of Nature - Azraq Wetland Reserve; Veneto Regional Park of Po Delta Authority; Public Institute Park Skocjan Caves; Istituto Oikos Onlus; Organization for the Defense and Management of AOC Ventoux; La Pola de Gordon City Council.

Sources: [PRIMA MEL project page](#) | [RES-MAB official website](#)

FrontAg Nexus

Impact of Climate-Smart and Water-Saving Frontier Agriculture on the WEFE Nexus in Arid Mediterranean Regions



COORDINATOR:

University of the Bundeswehr Munich, Germany



STATUS:

Ongoing (extended implementation
date shown in MEL)



IMPLEMENTATION: 1 May 2023 - 31 Oct 2026



GEOGRAPHIC / THEMATIC SCOPE:

Demonstration and policy work across
Mediterranean and arid contexts



PROBLEM TO ADDRESS

Climate change intensifies competition for scarce water, land, energy and biodiversity resources in Mediterranean food systems. Conventional linear production models can worsen these trade-offs, while farmers and communities need livelihood options that work under severe resource constraints. FrontAg Nexus tests whether climate-smart "frontier agriculture" can deliver food and nutrition security, jobs and entrepreneurship while reducing pressure on WEFE resources.



OBJECTIVES

OBJECTIVES

- Identify and demonstrate climate-smart prototypes and proof-of-concept applications for hydroponics, aquaponics, insect farming and vermiculture/vermicomposting, supported where relevant by agriphotovoltaics.
- Compare productivity and resource efficiency with conventional farming and analyse supply chains, value chains and business opportunities.
- Assess socio-economic and governance impacts of frontier agriculture on WEFE resources and livelihoods.
- Support cross-sector policy learning, capacity building and dissemination of practical knowledge for adaptation and scaling.



MAIN OUTCOMES / OUTPUTS

- Demonstration cases and practice evidence for modular frontier-agriculture systems in diverse rural and urban settings.
- Business and value-chain models showing where frontier agriculture can strengthen livelihood security and entrepreneurship.
- Cross-sector policy and governance evidence on managing WEFE resources without siloed decision-making.
- Capacity building and practice abstracts supporting adoption by producers, communities and public authorities.
- Progression of relevant innovations toward higher readiness and broader uptake, with anticipated co-benefits for resource efficiency, jobs and resilience.



CONSORTIUM

Coordinator: University of the Bundeswehr Munich. **Partners:** Aquaponik Manufaktur GmbH; Reframe Food; Ben-Gurion University of the Negev; University of Bologna; National Agricultural Research Center Jordan; Mohammed VI Polytechnic University; ElBosten Phytagri; EUROSOLAR Turkey Renewable Energy Association; Bodrum Municipality.

Sources: [PRIMA MEL project page](#) | [FrontAg Nexus official website](#)

CIRQUA

Integrated Approaches at Local Scale for Enhancing Water Reuse Efficiency and Sustainable Soil Fertilization from Wastewater's Recovered Nutrients



COORDINATOR:

Democritus University of Thrace (DUTH), Greece



STATUS: Ongoing



IMPLEMENTATION: 1 Apr 2024 - 31 Mar 2027



GEOGRAPHIC / THEMATIC SCOPE:

Mediterranean wastewater reuse, soil fertility
and circular bioeconomy



PROBLEM TO ADDRESS

Mediterranean water scarcity is worsening under climate change, population growth, urbanisation and unsustainable land and freshwater management. At the same time, treated wastewater can still contain micropollutants, pathogens and genetic material, limiting safe agricultural reuse. Soil degradation and declining fertility create an additional challenge. CIRQUA addresses these problems together through decentralized treatment, nutrient recovery, bio-nanomaterials and smart monitoring.



OBJECTIVES

- Upgrade decentralized Nature-based wastewater treatment, especially constructed wetlands, using novel filter materials and photocatalytic polishing.
- Increase water quality and reuse efficiency while lowering energy demand and carbon footprint.
- Recover nutrients and convert biomass into safe soil improvers and slow-release fertilizers that support soil fertility.
- Develop monitoring, awareness, education and financing approaches that help communities and institutions adopt sustainable water-reuse practices.



MAIN OUTCOMES / OUTPUTS

- Enhanced constructed-wetland treatment trains combined with portable nanostructured filtration and photocatalytic modules for safer water reuse.
- Biomass-derived nutrient materials designed to recover nitrogen/phosphorus value and improve soil structure and fertility.
- Integrated monitoring using sensors, IoT and forecasting to assess effluent quality and environmental/health impacts.
- Lower-energy, lower-carbon wastewater management options that support circular water and nutrient use in agriculture.
- Education, stakeholder awareness and financing concepts to improve uptake of Nature-based and circular wastewater solutions.



CONSORTIUM

Coordinator: Democritus University of Thrace (DUTH). **Partners:** Ain Shams University; Monitoring and Management of Microbial Resources (M3R); University of Cyprus; Manouba University; Universidad Carlos III de Madrid; Istanbul University; University of Patras; African Biotechnology Company; uDevelop e.V.; Abdelmalek Essaadi University; University of Basilicata; CIIMAR - Interdisciplinary Centre of Marine and Environmental Research.

Sources: [PRIMA MEL project page](#) | [CIRQUA official website](#)

WEFE4MED

Towards a Mediterranean WEFEX Nexus Community of Practice



COORDINATOR:

The Cyprus Institute (Cyl), Cyprus



STATUS:

Ongoing - final project month



IMPLEMENTATION: 1 Oct 2022 - 30 Sep 2026



GEOGRAPHIC / THEMATIC SCOPE:

Mediterranean-wide Community of Practice
and WEFEX demonstration networking



PROBLEM TO ADDRESS

The WEFEX Nexus is widely recognised conceptually, but decision-makers still need practical evidence, trusted peer networks and mechanisms to transfer integrated solutions between places. Knowledge is scattered across projects and sectors, and successful demonstrations can remain isolated. WEFEX4MED addresses this implementation gap by building a Mediterranean Community of Practice that connects science, policy, investment, local authorities, civil society and demonstrator projects.



OBJECTIVES

- Build and operate a Mediterranean WEFEX Nexus Community of Practice linking scientists, practitioners, policymakers, investors, local authorities, media and other stakeholders.
- Identify, federate and promote best practices and demonstration projects that provide practical evidence of Nexus benefits.
- Enable mutual learning, twinning, replication and upscaling of promising demonstrations across countries.
- Establish a durable digital knowledge and cooperation platform that supports science-based advocacy, funding opportunities and integrated resource management.



MAIN OUTCOMES / OUTPUTS

- A Mediterranean Nexus Community of Practice designed to persist beyond the formal project period.
- An open digital Nexus Knowledge Hub bringing together practices, projects, evidence and learning resources.
- Twinning and peer-learning links among flagship demonstrations, strengthening replication and upscaling pathways.
- Science-based communication and advocacy targeted at policymakers and investors, backed by practical demonstration evidence.
- A structured regional dialogue and cooperation platform connecting WEFEX actors and helping mobilise future collaboration and funding.



CONSORTIUM

Coordinator: The Cyprus Institute (Cyl). **Partners:** Global Water Partnership-Mediterranean; Berytech Foundation; Energy and Water Agency (Malta); Jozef Stefan Institute; MedCities; Arab Water Council; Centre of Arab Women for Training and Research (CAWTAR); Egyptian Center for Innovation & Technology Development; Global Water Partnership Organisation; International Center for Agricultural Research in the Dry Areas (ICARDA).

Sources: [PRIMA MEL project page](#) | [WEFE4MED official website](#)