Financing the WEFE Nexus in the Mediterranean

Study to support the Union for the Mediterranean (UfM) on the financing dimension of its Water-Energy-Food-Ecosystem (WEFE) strategy, 2025

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Study Goal, Outputs and Tools

Mobilize financing for WEFE-aligned investments across the Mediterranean region

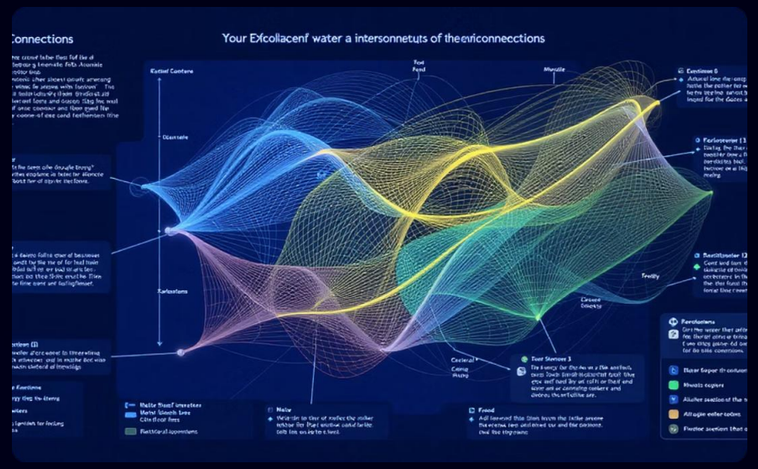
FOCUS: Improving access to financial instruments, supporting cross-sectoral project design, and aligning with funding criteria.

1. Mapping Funding for WEFE

Existing financing solutions and schemes to support WEFE projects, and step-by-step guidance on access targeted mechanisms

2. WEFE Screening Tool

Framework and Excel simulation tool to assess project alignment with WEFE principles and enhance design.



3. Matrix of WEFE Actions

Tool to support implementation and planning, listing synergies, trade-offs and private sector opportunities.

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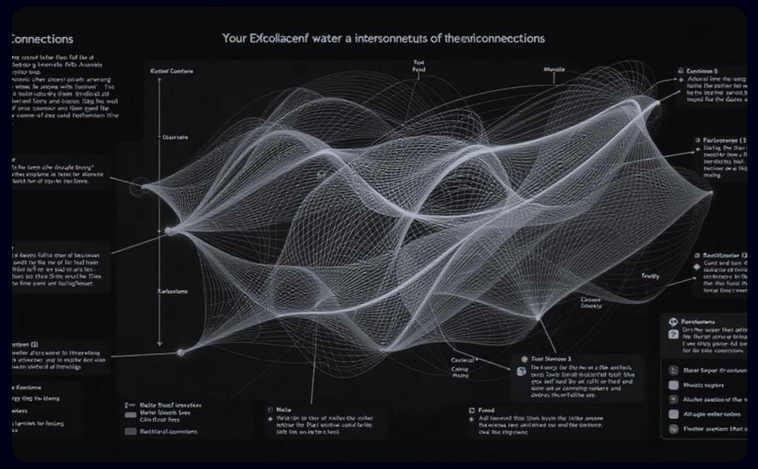

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1. Key Financing Challenges for WEFE Initiatives

Main Research and Consultation Findings

- Limited WEFE Project Pipeline
- Institutional Silos
- Difficulty Quantifying Co-benefits
- Fragmented Funding Landscape

Addressing both supply and demand barriers is essential to build a stronger pipeline of bankable WEFE investments in the Med

1. Key Financing Challenges for WEFE Initiatives

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2. WEFE Screening Tool

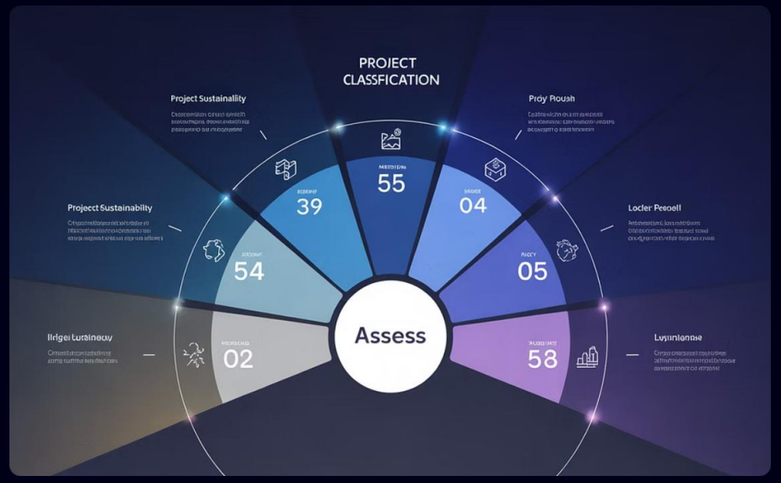
A comprehensive framework to guide financial institutions and project promoters in aligning investments with WEFE principles

Assessment Framework

Quantifies cross-sectoral benefits and identifies high-impact sustainable investments

Scoring Methodology

Transparent **four-step evaluation process** to measure alignment with WEFE Nexus principles



Classification System

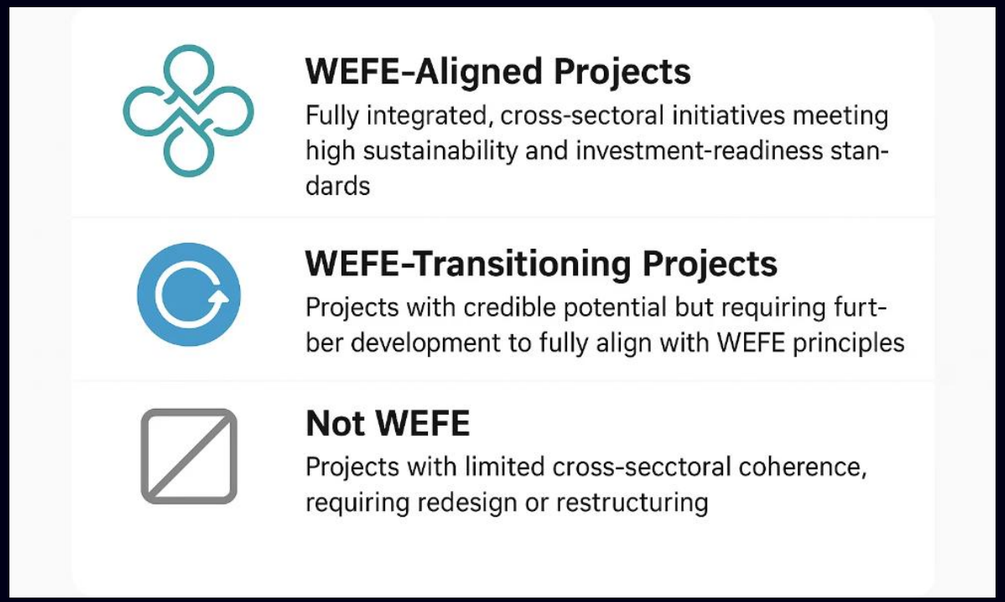
Projects categorized based on final scores to prioritize initiatives with greatest nexus benefits and impacts

AI-generated images/icons (Gamma.App)

2. WEFE Screening Tool Steps & Scoring

Four transversal objectives

Classification Based on Final Score



Environmental Value **Value-Driven Approach** **Evolutionary Perspective** **Adaptation**

Available as a **User-friendly spreadsheet & Example** for testing, implementation and adaptation for evaluation of investments

2. WEFE Screening Tool application – Real Life Examples

EXAMPLE – Biogas & Circular Agro-Water Treatment System – Real Project and Technology Example

WEFE Nexus Screening Tool and Guidance

Screening Tool Process Overview:

Projects are evaluated with the Screening Tool through a **4-Step Process**, guiding both **Financial Institutions** and **Project Promoters** in structuring and aligning projects with the WEFE Nexus principles.

→ **Step 1 - Entry Dimension** (Main Focus and/or Project Owner's Sector) Go to Step 1
→ **Step 2 - Eligibility Criteria** (Minimum Threshold) Go to Step 2
→ **Step 3 - Evaluation & Scoring** (Selection Evaluation) Go to Step 3
→ **Step 4 - WEFE Alignment** (Final Classification and Alignment) Go to Step 4

See Results Summary and Classification Go to Results

WEFE Aligned and WEFE-Transitioning Projects – REAL EXAMPLE

1. **Biogas & Circular Agro-Water Treatment System – Real Project and Technology Example** [1]

Onsite Wastewater Treatment (Water as main Entry Point) and Resource Recovery for Agro-Industrial Resilience

This project involves the installation of an onsite wastewater and solids treatment system. The system is implemented at a dairy farm and cheese factory in Palestine, with the objective of treating agro-industrial effluents using a patent-protected system that integrates low-energy oxidation, nutrient recovery, and biogas production.
In addition to treating wastewater, the system includes a manure biodigestion unit that processes up to 5000 kg/day of dry cow manure, producing biogas and contributing to soil protection and nutrient recycling. The treated effluent, energy, and by-products are reused locally for farming operations – such as powering equipment, refrigeration, heating, and irrigation – reducing pollution, lowering operational costs, and enhancing circularity. The solution is compliant with Israeli and Palestinian environmental regulations and designed for scalability and replication across similar agro-industrial facilities.

- **Risk mitigation** – Reduces environmental pollution risks (W, Ec), enhances hygiene and operational safety in agro-industrial facilities (F), and increases energy autonomy through biogas production (En).
- **Synergy optimization** – Combines wastewater treatment (W), clean energy generation (En), water and soil protection (Ec), and reuse of treated outputs for agricultural and industrial purposes (F), reducing external dependencies and supporting closed-loop systems.
- **Efficiency maximization** – Achieves up to 30% reduction in energy and O&M costs, maximizes reuse of water and organic matter, and reinforces economic viability and resilience at the farm level (W, En, F).
- **Ecosystem restoration** – Achieves high contaminant removal efficiency (>98%), reduces ecological degradation risks, and improves freshwater quality relative to a non-treatment baseline (Ec). Biodigestion of manure also contributes to waste reduction and soil protection (Ec).

Opportunities to Strengthen WEFE Alignment – Based on Screening Tool Insights
The system could be further enhanced through:
- Integrating nature-based post-treatment solutions (e.g. constructed wetlands),

Introduction | Step 1 - Entry Dimension | Step 2 - Eligibility | Step 3 - Evaluation | Step 4 - Alignment | Results Summary

References
1 - Laguna Innovation Ltd. & Arava Institute for Environmental Studies. (2023). Final UNDP ADS Proposal.

Making the Invisible Visible: Economic vs. Financial Returns

Financial Returns

Direct revenue and profitability for developers/investors (sales, tariffs, monetized income).

Economic Returns

Broader societal benefits beyond direct financial gains (ecosystem services, avoided costs, resilience, public health, food security).

WEFE projects often have significant economic value that remains invisible in traditional appraisals.
Valuing these broader economic benefits is crucial for fair evaluation and strengthening WEFE investments.

Quantifying Value

NPV, BCR (Benefit-Cost Ratio), and monetized ecosystem services demonstrate extensive value of WEFE initiatives.

Outperforming Grey Infrastructure

Nature-based solutions often outperform traditional infrastructure when all societal benefits are accounted for.

Competitive Advantage

Economic valuation quantifies overlooked benefits, making WEFE Nexus solutions competitive.

Mobilizing Finance

Distinguishing financial and economic returns unlocks finance and mainstreams Nexus approaches.

01 Egypt | National Intensive Water Reuse Programme

Entry: WATER • WEFE outlook: integrated by design at concept stage; no project-level evidence yet

W WATER Drainage-water reuse	**En** ENERGY Demand / solar options	**F** FOOD Crops + irrigation design	**Ec** ECOSYSTEMS Soil + water safeguards

KEY INSIGHTS

- National concept only: map sources, salinity, quality and feasible end uses; pilot not selected.
- Strong planned W–F link; energy options, lifecycle costs and environmental safeguards are built into the approach.
- Financing is unconfirmed; assumptions and delivery model must be tested before scaling.

OPPORTUNITIES TO STRENGTHEN WEFE + INVESTMENT CASE

- Co-design a WEFE pilot: fit-for-purpose treatment + irrigation + crop markets + safeguards (already envisaged).
- Compare low-energy / solar options, residuals and brine management, and soil-salinity protection.
- Link farm demand and O&M to verified savings and revenues; use preparation / pilot support to de-risk scale-up.

PROPOSED INVESTOR-RELEVANT KPIs

W — **m^3/year of freshwater abstraction avoided**
Demonstrates resource savings against a baseline

En — **kWh per m^3 of water safely reused**
Links operating cost to efficient treatment choices

F — **€ agricultural value added per m^3 reused**
Shows the productive return from water reuse

Ec — **ha irrigated within agreed soil-salinity limits**
Evidence of safe long-term environmental performance

FINANCING LEVER **Fund the evidence first: feasibility + pilot → performance, demand and bankable scale-up.**

Indicative WEFE lens only — no formal screening score • Source: MWRI / MED-RISE, 27 Oct 2026, pp. 6–13

02 Alexandria | New WWTP + Sustainable Sludge Management

Entry: WATER • WEFE outlook: strong W–En–F integration; ecosystem results to document

W WATER	**En** ENERGY	**F** FOOD	**Ec** ECOSYSTEMS
300,000 m^3/day design	Biogas included	Reuse via El Hammam	Pollution benefit to quantify

KEY INSIGHTS

- New WWTP designed for 1.5m people, with biodigesters and agricultural reuse via tertiary treatment.
- €72m financing agreements signed (2025); construction start planned in 2027.
- Existing East Alexandria upgrade shows 50–60% energy self-sufficiency; NOT a stated target for the new plant.

OPPORTUNITIES TO STRENGTHEN WEFE + INVESTMENT CASE

- Assess the entire reuse chain: treatment + transfers + energy + compliant agricultural offtake.
- Advance planned sludge strategy: drying, recovery routes, market/offtake and viable PPP opportunities.
- Quantify receiving-water benefits, avoided transport / GHG impacts and cross-sector ERR / O&M savings.

PROPOSED INVESTOR-RELEVANT KPIs

W — **m^3/year of treated water delivered for reuse**
Connects plant output to productive offtake

En — **% of electricity supplied by onsite biogas**
Shows operating-cost and energy-security benefits

F — **ha of farmland served with compliant reuse water**
Demonstrates agricultural benefits and end demand

Ec — **t/year of pollutant load avoided in receiving waters**
Supports quantified source-to-sea environmental value

FINANCING LEVER **Core plant financed → develop complementary sludge/resource-recovery PPP and outcome-based O&M.**

Indicative WEFE lens only — no formal screening score • Source: AFD, New East Alexandria WWTP, pp. 3–7

03 Gortys, Crete | Water-Smart Olive Production

Entry: FOOD • WEFE outlook: transitioning / scaling pathway; evidence and 4D benefits to verify

W WATER 24 L/tree/day reported	**En** ENERGY Pumping savings; no KPI	**F** FOOD Premium olives + yield	**Ec** ECOSYSTEMS Soil practices + Phase 2

KEY INSIGHTS

- Implemented private-funded organic olive-grove model: precision irrigation and on-farm soil circularity.
- A 60,000-tree regional scenario and >99% water savings are projections/claims, not independently validated outcomes.
- Phase 2 proposes sensors, olive-mill waste valorisation and catchment measures; partnerships sought.

OPPORTUNITIES TO STRENGTHEN WEFE + INVESTMENT CASE

- Verify a controlled baseline: actual irrigation use, yield, energy, soil health and aquifer response.
- Cost and test scale-up options: sensor irrigation, efficient / solar pumping where viable, farm aggregation.
- Validate proposed waste-treatment and nature measures, then link costs and premium-market revenues to finance.

PROPOSED INVESTOR-RELEVANT KPIs

W **m^3/year of irrigation water saved vs control**
Verifies savings and reduced water cost

En **kWh per tonne of olives produced**
Quantifies energy efficiency and cost exposure

F **€ gross margin per hectare**
Makes yield, price premium and costs investable

Ec **Change in soil organic carbon (%)**
Tracks soil resilience and nature benefits

FINANCING LEVER **Independent pilot data + farm unit economics → aggregation / green agrifood finance for scale-up.**

Indicative WEFE lens only — no formal screening score • Source: Single Estate Gortys presentation, pp. 2–11

Recommendations for Action

Apply WEFE Thinking Early

Regardless of the initial entry point

Integrate WEFE Valuation

In investment decisions and project design and appraisal

Include ERR + FRR

In funding decisions and applications

Enable cross-sector co-financing and planning

Unlock shared budgets and reduce investment silos

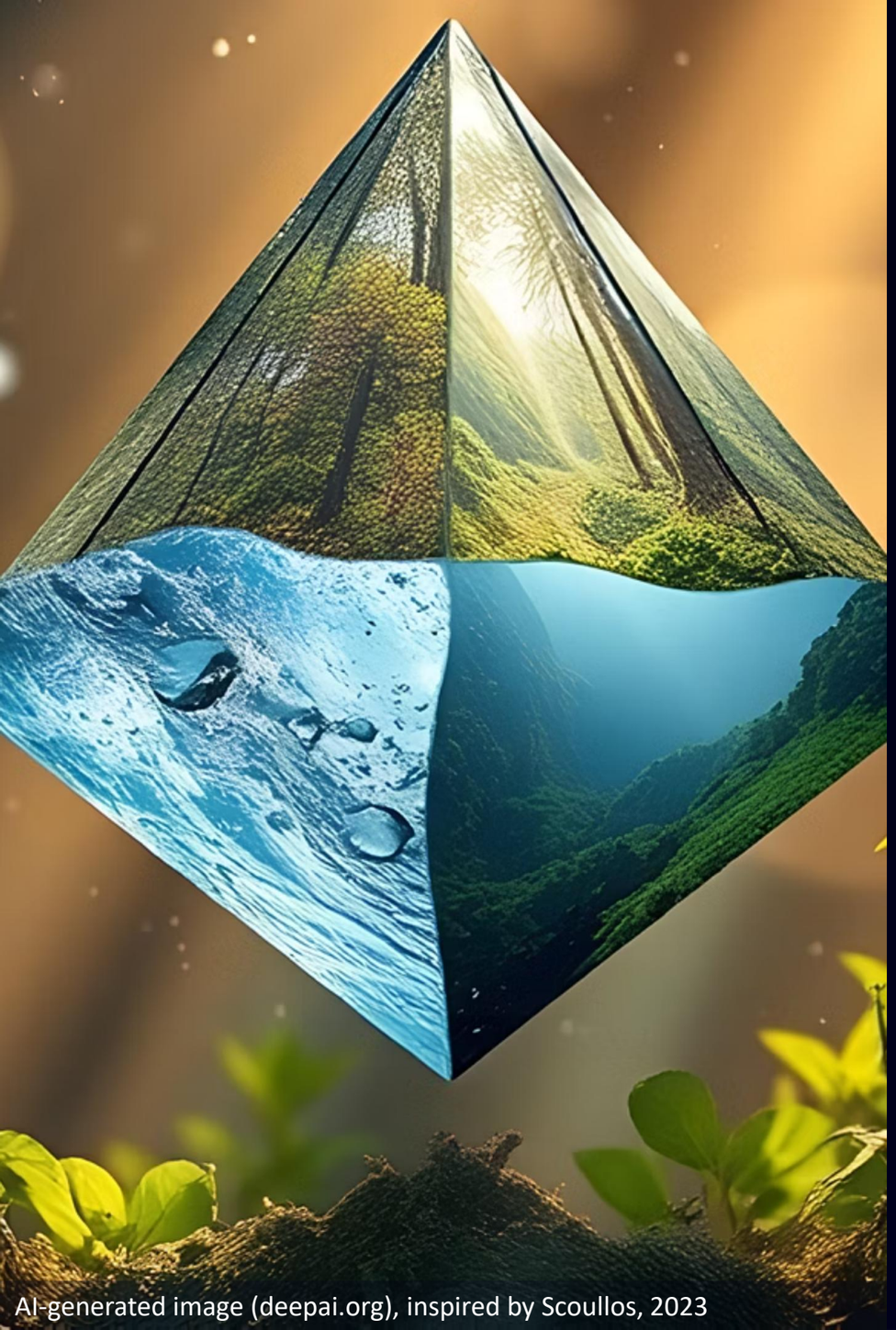
Scale Nature-Based and multi-benefit solutions

And show that they outperform grey infrastructure

Some proposals | From WEFE Projects to Bankable Investments

1. Target available funding windows
   - Align project proposals with existing financing priorities and opportunities.
   - Engage IFIs through EU Delegations, as well as national and regional banks.
2. Position projects to access adaptation finance
   - Adaptation remains underfunded relative to climate vulnerability.
   - Frame projects around national adaptation priorities, demonstrating resilience benefits and establishing a clear monitoring framework.
3. Finance long-term performance, not just infrastructure
   - OPEX and operational sustainability are critical. Technical capacity building should also be recognised and financed as an essential investment component.
4. Demonstrate measurable WEFE impacts
   - Establish baselines and quantify cross-sectoral benefits.
   - Use clear, credible indicators to demonstrate results and strengthen the investment case.

For the UfM and WEFE Partners: Create a measurable impact framework for WEFE



AI-generated image (deepai.org), inspired by Scoullos, 2023

Thank you!

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