

11-12 FEBRUARY 2025

RABAT, MOROCCO

Institut Agronomique et Vétérinaire Hassan II



WEFE NEXUS INTERNATIONAL CONFERENCE

**EXPLORING AND BRIDGING NEXUS FOR
A SUSTAINABLE FUTURE**



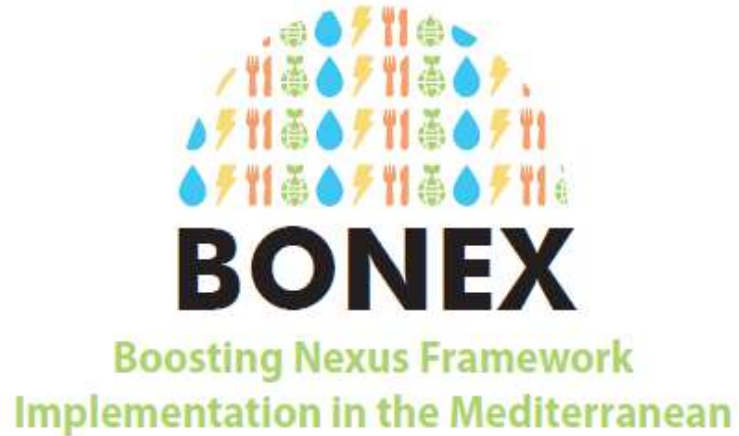
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Day 2 – 12th February 2025

PILLAR 3: WEFE NEXUS SOLUTIONS

INNOVATIVE SOLUTIONS SHOWCASING DEMONSTRATION CASES FROM BONEX/SURENEXUS



BONEX Case Studies



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PILLAR 3: WEFE NEXUS SOLUTIONS

INNOVATIVE SOLUTIONS SHOWCASING DEMONSTRATION CASES FROM BONEX/SURENEXUS



DP Jordan
Wadi Mujib

Prof Arwa Abdelhay
German Jordan University



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Boosting Nexus Framework Implementation in the Mediterranean (BONEX): Jordan Demonstration Pilot

Prof. Arwa Abdelhay



الجامعة الألمانية الأردنية
German Jordanian University



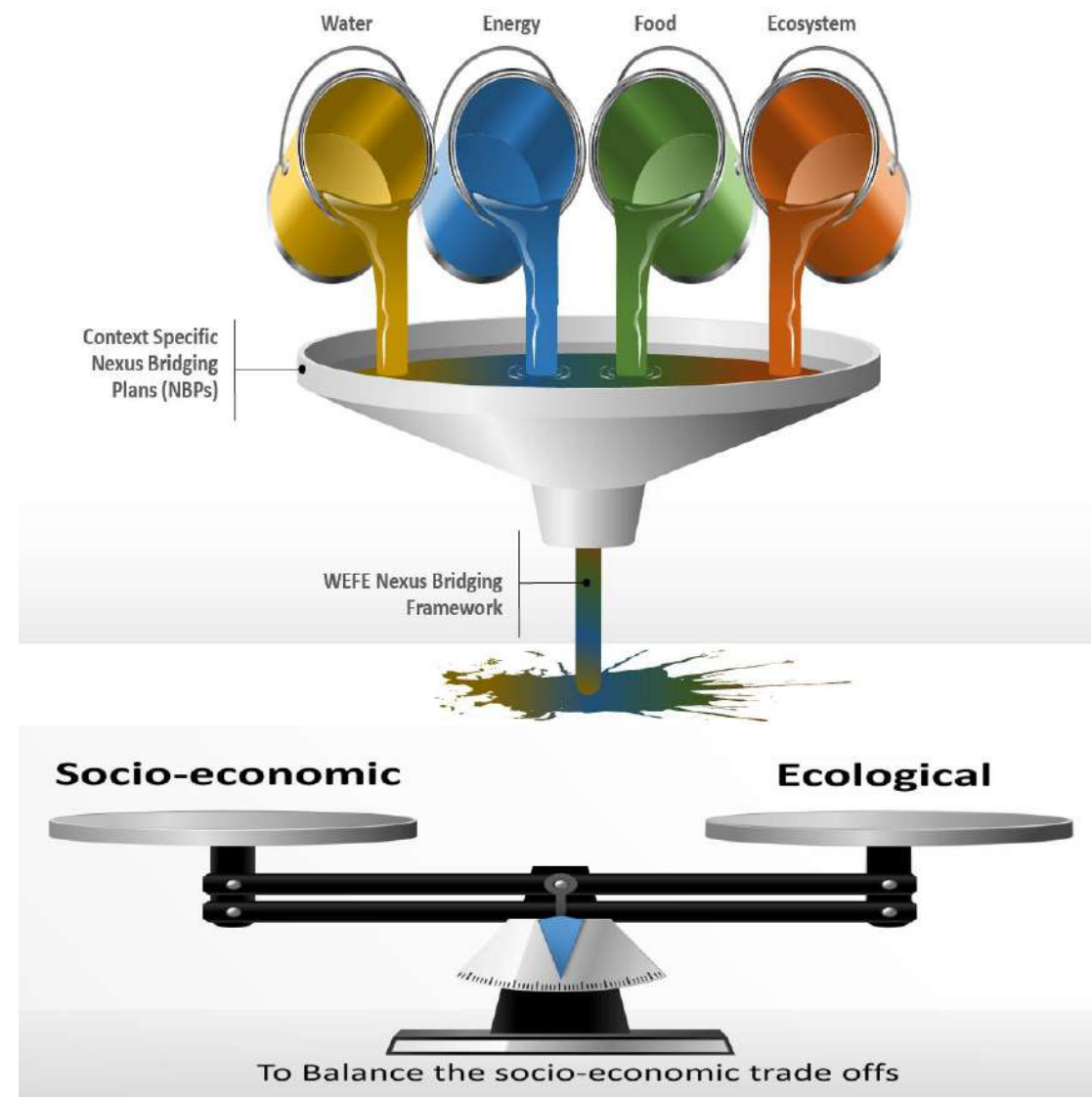
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BONEX Project Aim

1- To produce a novel, robust, transdisciplinary, and diagnostic **Water, Energy, Food and Ecosystems Nexus (WEFe) Bridging Framework**.

2- To serve the production of context-specific **Nexus Bridging Plans (NBPs)** tailored to different innovative technologies, their combination, and socioeconomic contexts across the MedRegion.

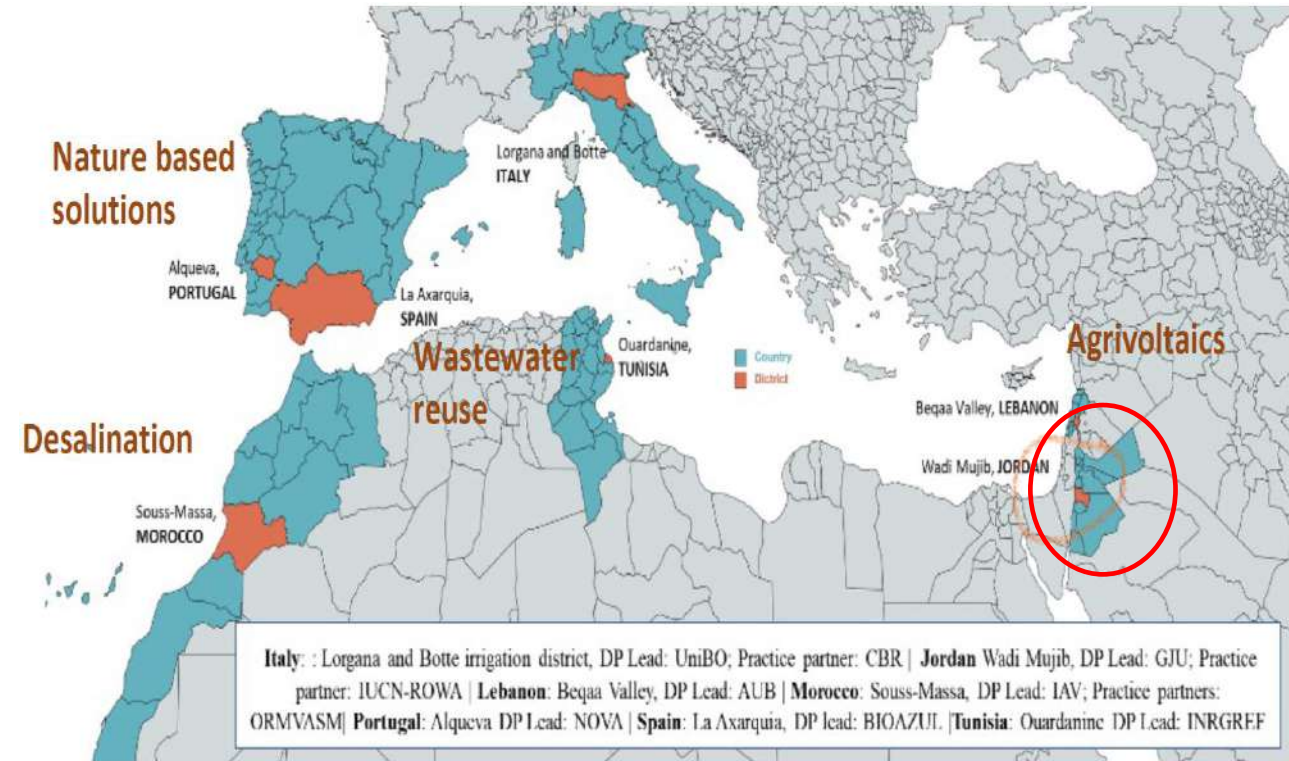
3- Facilitate the the practical implementation of the WEFe Nexus that balances the social, economic, and ecological trade offs



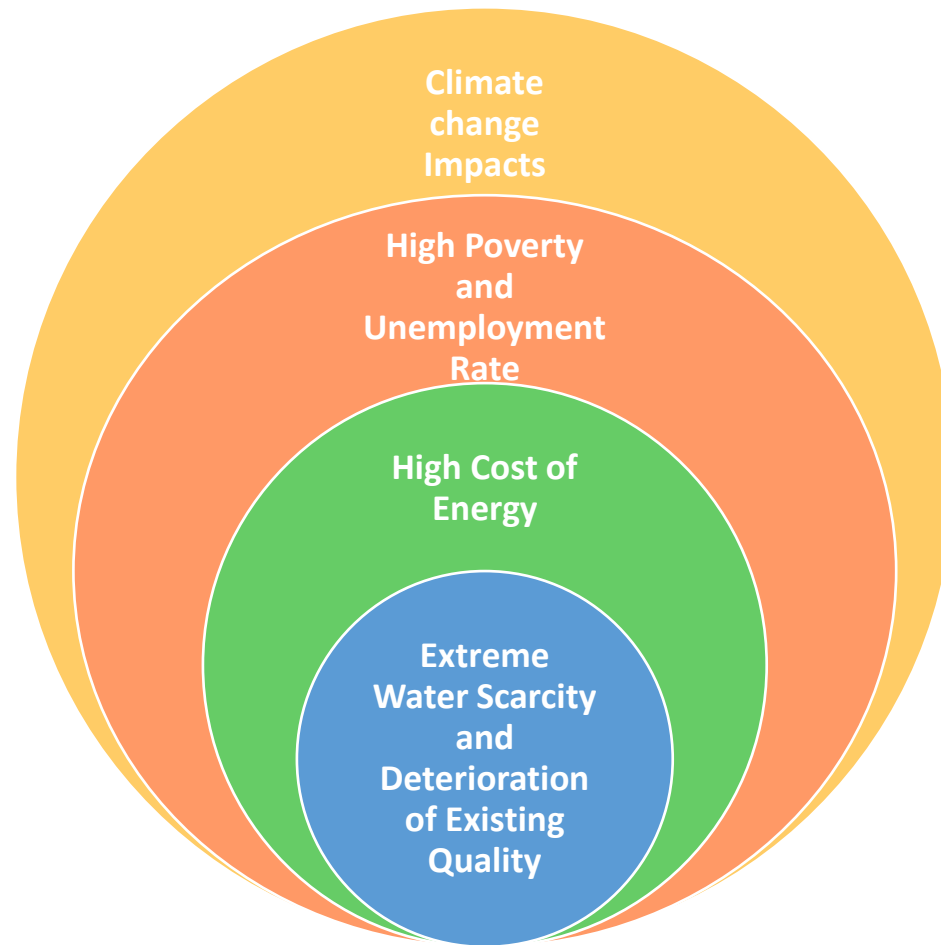
Approach

WEFe Nexus solution approaches are tested in **7 Demonstration Projects (DP)** covering a diversity of MedRegion contexts, challenges, and technologies

Demonstration Projects (DP) in Jordan is located in Mujib Basin



Challenges



Context



DP in Jordan

The intervention consists of

1. two hydroponic production systems (46.5 m x 9 m, 418.5 m² each) powered by solar PV system
2. and two other traditional-farming greenhouses established (control)

The **hydroponic irrigation system** is drip irrigation with soilless growing medium which is tuff (locally available)

The **water** is collected from Al Wala valley stream, filtered, and circulated in a **closed loop** throughout the hydroponic green houses

The **fertilizers** are supplied and dozed based on a self-adjusting system

Hydroponic



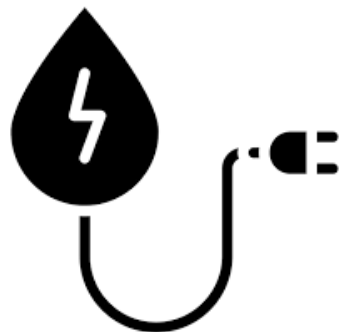
Traditional



Performance Monitoring & Key Indicators



**Agricultural
Productivity**



**Water and Energy
Efficiency**



Economic Impact



**Environment
Safeguarding**



Societal Benefits

Key Results For Jordan DP

Hydroponic System Outperformance

Water Saving over 2 cycles is 27%



Water Efficiency

PV saved 26.7 L of Diesel or 65 KWh



Energy Efficiency

Agricultural productivity during 2 cycles is 37.7% higher



Agricultural Productivity

For Diesel, a reduction of 71.4 kgCO₂eq
For Electricity, a reduction of 28.4 kgCO₂eq



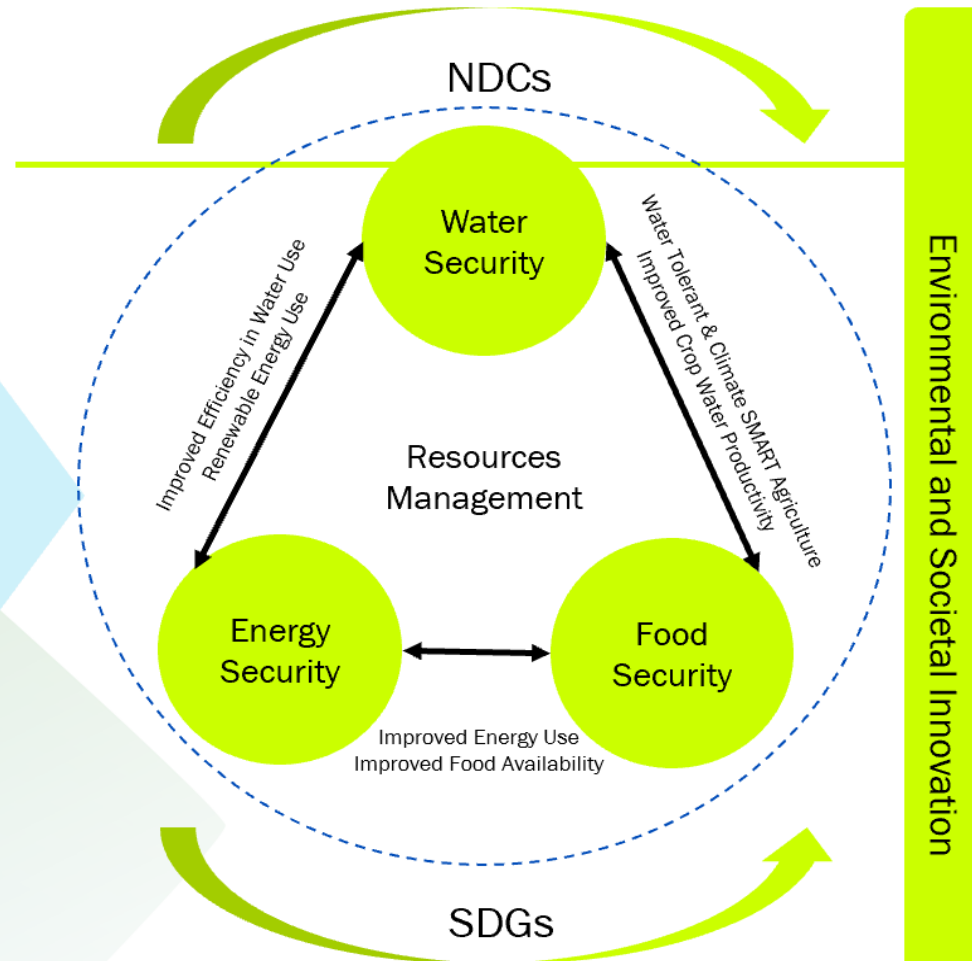
Environmental Impact

DRIVERS IN JORDAN CONTEXT

- ❖ High Impact of Climate Change
- ❖ Extreme Water scarcity
- ❖ Sustained Population Growth
- ❖ High cost of energy
- ❖ High unemployment rate (mainly for youth and females)
- ❖ Poverty rate in Mujib is higher than National rate

WEFe Nexus Operationalization

BRIDGING FRAMEWORK



APPROACH

OUTCOMES

Stakeholders Consultation	Co-designed System
Demonstration Site	Hydroponic Vs Traditional GHs
Ecosystem Safeguarding	Closed Loop & water tolerant system
Capacity Building	Site Management by Youth cooperatives (15 females out of 23)
Co-Implementation by academia, INGOs, and Youth cooperatives	Improving livelihood & Enhancing resilience/inclusion
Integration of new projects/initiatives to improve the system performance and sustainability	Context adapted system/Improved Upscaling Potential /replication

A successful story

However!

What about the way forward?

- Improve up scaling potential/replication
- To connect to other complementary interventions





**SURE
NEXUS**



PRIMA
PARTNERSHIP FOR RESEARCH AND INNOVATION
IN THE MEDITERRANEAN AREA



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