

BONEX

**Boosting Nexus Framework
Implementation in the Mediterranean**

2nd Stakeholders Workshop in Morocco

Opportunities and Impacts of Using Desalinated Water and Other Technological Innovations for Sustainable Agriculture in Souss-Massa

The 2nd BONEX Workshop Morocco, was held on **February 01, 2024** in **Souss Massa basin – Agadir’s city**. The workshop was organized in collaboration with **the Regional Agricultural Development Office (ORMVA)**, aimed to assess and develop specific tools to improve the practical implementation of the WEFE nexus (water, energy, food, ecosystem) in the basin, integrating socio-economic balance and ecological aspects. The objective was to study the opportunities and impacts of using desalinated water and other technological innovations for sustainable agriculture, especially in the current climate crisis context, in the Souss-Massa region.

During the second workshop, stakeholders identified a range of interventions aimed at addressing the challenges related to the WEFE Nexus and its underlying issues. Each intervention was assessed based on two main criteria:

- i) its potential to improve or resolve the WEFE Nexus—particularly by enhancing the status of ecosystem services as diagnosed during the first workshop, and
- ii) its implementation feasibility, taking into account political, economic, and social dimensions.

This highly interactive workshop brought together **37 participants from various institutions**. The approach adopted was participatory, conducted with a cross-sectoral vision involving all stakeholders represented by public administrations in agriculture, water, energy, environment, farmers and farmer associations, water user associations, interprofessional organizations, technology suppliers, researchers, NGOs, as well as civil society and consumers.



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Methods and results

First, the BONEX project was presented to all participants, focusing on the Water-Energy-Food-Ecosystem (WEFE) Nexus. It also emphasized the importance of multi-stakeholder collaboration as a key factor for successful implementation. An overview of the current state of water resources in the Souss-Massa basin was provided, along with a summary of the preliminary results from the first year of project implementation.

The final version of the causal loop diagram—developed collaboratively with stakeholders during the 1st workshop—was then shared and validated.

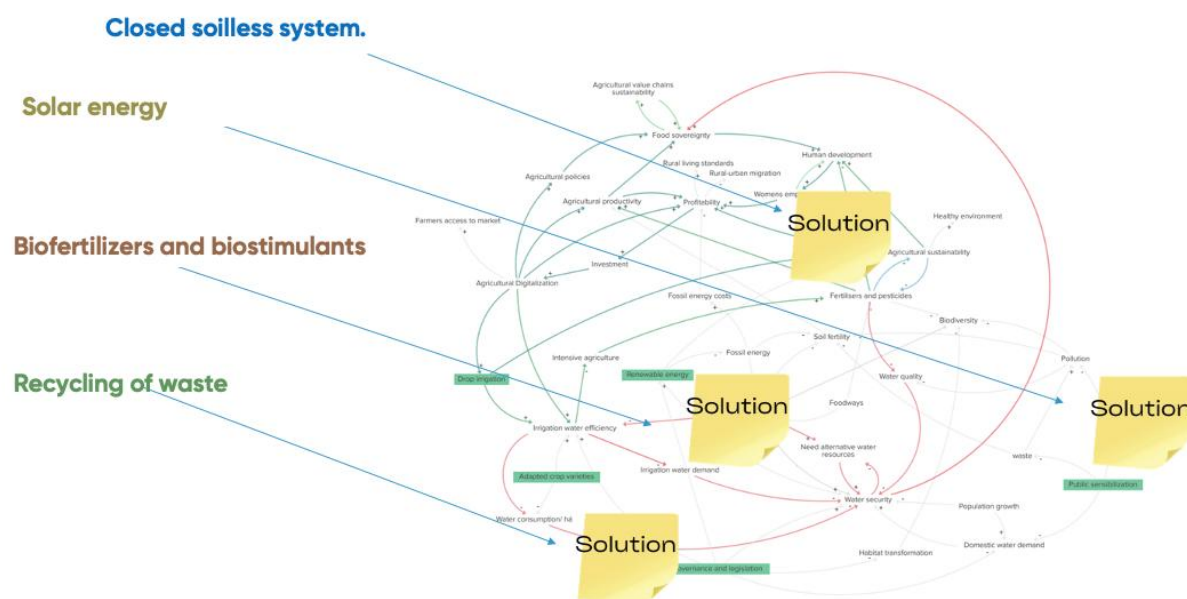
The participatory session of the workshop was launched with an explanation of the methodological approach and the specific goals of the day's activities. Participants were then divided into **three working groups** consisting of a combination of institutions. In the first stage, participants examined and discussed the variables comprising the causal loop diagram, after which each group proposed appropriate solutions for each component of the WEFE concept, indicating the types and degrees of impact of each, while specifying the reasons justifying these choices. The integration of these solutions into the causal loop diagram using the most relevant solutions was the second activity developed by all participants under the coordination of the BONEX team.



During the second BONEX workshop held in the Souss-Massa region, the use of desalinated seawater for irrigation emerged as a central topic in discussions on sustainable agricultural development. Stakeholders emphasized that while desalination offers a promising solution to water scarcity, its integration into local farming systems also raises important challenges and trade-offs across the WEF_e Nexus.

To mitigate these risks and enhance the sustainability of desalinated water use, participants identified a set of complementary technological and agroecological interventions:

- **Magnetic treatment of desalinated water**, to improve water quality and enhance plant uptake efficiency;
- **Solar energy**, as a clean and decentralized source to reduce the high energy footprint of seawater desalination and irrigation;
- **Closed soilless cultivation systems**, allowing for precise water and nutrient management while minimizing losses and pollution;
- **Biofertilizers and biostimulants**, to reduce dependency on chemical inputs and support soil regeneration and plant resilience;
- **Waste recycling**, particularly of organic and plastic materials, to promote circularity and reduce environmental externalities.



To conclude the event, a brief recap was provided of the final outcomes and the active participation of the 37 attendees. The second Moroccan BONEX workshop provided an opportunity to bring together multiple institutions to discuss the opportunities and impacts of using desalinated water and other technological innovations for sustainable agriculture in the Souss-Massa region. Additionally, it served as an excellent opportunity to establish professional connections among the involved stakeholders.