



Food and Agriculture  
Organization of the  
United Nations



# WATER-ENERGY-FOOD-ECOSYSTEMS (WEFE) NEXUS TO INCREASE FOOD SYSTEMS' RESILIENCE TO CLIMATE CHANGE AND CONFLICT'S CASCADING EFFECTS IN THE MEDITERRANEAN REGION

Wednesday 6 July 2022 | 09:00 - 10:30 (CEST)

## BACKGROUND

**Climate change affects the Mediterranean region significantly more than the world average, endangering the sustainable provision of water, energy, food and ecosystem services.** In a context of an increasing population, the demand for water and food in the Mediterranean is projected to increase by over 50 percent by 2050,<sup>1</sup> while energy demand in the Southern Mediterranean currently accounts for 40 percent of the region's and will expand to 61 percent by 2050,<sup>2</sup> leading to competing needs for the already degraded regional resources. Irrigation for crops, water for energy and agricultural processing, potable water, and oil and gas revenues to pay for food imports are some of the climate change's dependencies in the region.<sup>3</sup> Currently, in the Southern Mediterranean countries, most water is used for agriculture (76 percent<sup>4</sup>), and the Middle East and North Africa (MENA) region has become one of the biggest net importers of cereals in the world.<sup>5</sup>

Furthermore, the unfolding crisis in Ukraine and the ongoing fallout from the COVID-19 pandemic have disrupted commodity markets and threatened global food security, jeopardising sustainable development and resource efficiency in the specific hard-hit Mediterranean. Addressing this situation effectively necessitates urgent, deeper, and more substantial transformation to sustainable food systems.

In this context, a **holistic, integrated and transversal approach to resource management represented by the WEFE Nexus is pivotal to a successful transition to a green economy and sustainable development.** Addressing interdependencies is indeed considered essential to achieving the Sustainable Development Goals (SDGs) and the Paris Agreement.

Several dialogues held in preparation for the UN Food Systems Summit in 2021 emphasized the need to promote the WEFE Nexus approach and practical implementation in land and water management. Furthermore, the importance of mainstreaming the WEFE Nexus approach in national and regional strategies was highlighted, as reported in a stocktaking exercise of Summit dialogues in the Mediterranean, developed by the SFS-MED Platform.<sup>6</sup>

Interlinkages across sectors (water, food, energy) and the natural resources base (water, land, soils) are understood but not adequately reflected in policies. Despite its potential, **full adoption of the Nexus approach has been hindered by a lack of actionable strategies and effective governance to guide its deployment on the ground.** Participatory approaches, including stakeholder involvement, and monitoring and evaluation of community responses are critical to ensuring that the priorities of those affected by policies are being met.

## THE SFS-MED PLATFORM

The Food and Agriculture Organization of the United Nations (FAO), the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), the Secretariat of the Union for the Mediterranean (UfM) and the Partnership for Research and Innovation in the Mediterranean Area (PRIMA) have joined forces in a [multi-stakeholder initiative for Sustainable Food Systems in the Mediterranean \(SFS-MED Platform\)](#), as an affiliated project of the One Planet Network Sustainable Food Systems Programme. The SFS-MED initiative aims at promoting dialogue and collaboration among Mediterranean countries and stakeholders while they implement national and local efforts for a transformation to more sustainable food systems.

## THE SFS-MED WEBINAR SERIES

This series of technical webinars is organized to leverage the knowledge and expertise of a network of researchers, development practitioners and decision-makers. The webinars aim at **strengthening knowledge sharing** and **stimulating debate** around themes relevant to food systems transformation in the Mediterranean, **peer exchange** about recent research and study findings, as well as **showcasing successful and inspiring actions** to promote the operationalization of food systems approaches.

Building on the findings of a [stocktaking exercise of the UN Food Systems Summit \(UNFSS\) Dialogues held in the Mediterranean](#), the webinars will revolve around a set of shared priorities and trends that are common to most countries in the region, considered as entry points or main thematic areas regarding what to transform in the Mediterranean food systems. Many of these were reflected as well in the national pathways for food systems transformation that countries developed within the UNFSS process during 2021.

<sup>1</sup>2030 Water Resources Group (2030 WRG). 2009. *Charting Our Water Future. Economic frameworks to inform decision-making*. Washington, D.C., USA, 2030 WRG. <https://bit.ly/3aAHk70>

<sup>2</sup>Observatoire Méditerranéen de L'Énergie (OME). 2021. *Mediterranean Energy Perspectives – MEPTo2050*. Paris, OME. <https://bit.ly/3H526Je>

<sup>3</sup>Elferink, M., Schierhorn, F. 2016. Global Demand for Food Is Rising. Can We Meet It?. In: *Harvard Business Review*. <https://bit.ly/3NOF7o1>

<sup>4</sup>MedECC. 2020. *Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report*. [Cramer, W., Guiot, J., Marini, K. (eds.)]. Marseille, France, UfM, Plan Bleu, UNEP/MAP. <https://doi.org/10.5281/zenodo.4768832>

<sup>5</sup>INRAE. 2015. *Addressing agricultural import dependence in the Middle East - North Africa region through the year 2050*. Paris, INRAE. <https://bit.ly/3Q4Kd0J>

<sup>6</sup>FAO, CIHEAM and UfM. 2021. *Food systems transformation – processes and pathways in the Mediterranean: a stocktaking exercise*. Rome, FAO. <https://doi.org/10.4060/cb7978en>

“How to translate the WEFE Nexus concept from theory into practice” was the subject of the WEFE Nexus Science Advances Conference in September 2021, jointly organised by the European Commission’s Directorate-General for Research and Innovation and its Joint Research Center (JRC), the Cyprus Institute (CYI), PRIMA, and UfM, to address the role of science as a driver of innovation and its interface with the policymaking process. **Experts and ministerial representatives from the Mediterranean countries have recognised the urgency of congregating scientists and stakeholders in a Mediterranean WEFE Nexus Community of Practice (NCoP)** to ensure that nexus solutions emerging from research and innovation activities can be applied broadly across the region. This Mediterranean NCoP will need to build on and synergize with existing networks and communities on the topic, such as the Discussion Group on the Water-Energy-Food Nexus ([click here](#) to join) created in the framework of the regional project “Water efficiency, productivity and sustainability in the Near East and North Africa regions ([WEPS-NENA](#))” under the FAO-led regional Water Scarcity Initiative. This community is complemented by others focused on understanding the water situation using water accounting (*Water Accounting & Water for Food*, [click here](#) to join) and exploring the water and agriculture productivity (*Water productivity and agriculture*, [click here](#) to join). One important function of the Mediterranean NCoP would also be to help mainstreaming a WEFE Nexus approach into relevant global and regional governance frameworks, such as the Global Water Partnership Mediterranean ([GWP-Med](#)); the Global Framework on Water Scarcity in Agriculture ([WASAG](#)); the Intergovernmental committee on water and agriculture led by the League of Arab States, FAO and the United Nations Economic and Social Commission for Western Asia (ESCWA); etc.

**Increasing food insecurity in the region, further aggravated in the post-COVID-19 context and by the cascading impacts of the recent Ukrainian war, presents a timely need and opportunity to showcase solutions with tangible impact on the sustainability of food systems and concrete opportunities for securing food supplies, preventing a looming food crisis.**

## EXPECTED OUTCOME

Based on this background, the SFS-MED Platform is organising this webinar to bring together stakeholders from across the Mediterranean to share practical experiences of their engagement in adopting WEFE Nexus solutions and demonstrate the more comprehensive socio-economic benefits of their proposed practices on the food system at large, going beyond a fragmented system of sectors and players.

Stakeholders will share case studies and tangible examples of WEFE Nexus technical solutions applied in the Mediterranean region, with emphasis on the MENA, reflect on success factors and challenges, and discuss ways to facilitate replication and upscaling solutions across the Mediterranean, and influence policy change. Particular focus will be given to the participation of stakeholders involved in WEFE Nexus demonstration sites.

The webinar will aim to address a key question: **how could the application of the WEFE nexus influence food systems transformation in the Mediterranean, towards increased resilience to climate change and conflicts?**

## OBJECTIVES

### KNOWLEDGE

Create a knowledge base about opportunities, innovative solutions and gaps or limitations for food systems transformation, specific to the Mediterranean context.

### EVIDENCE SHARING

Facilitate replication and upscaling of concrete solutions for food systems transformation through the dissemination of evidence about successful approaches and lessons learned from across the Mediterranean.

### AWARENESS

Promote and raise awareness on food systems thinking by facilitating multi-disciplinary and multi-sectorial exchanges.

## ENVISAGED PARTICIPANTS/ TARGET AUDIENCE

The webinar is open to stakeholders engaged in implementing WEFE Nexus solutions across the Mediterranean. Decision-makers and the private sector provide evidence of the collective benefits of adopting a Nexus transformative approach instead of disjointed sectoral actions. Particular attention will be given to stakeholders involved in WEFE Nexus demonstration sites.



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## AGENDA

Interpretation will be provided in English and French

9:00-9:05

### Welcome and technical background

Setting the scene, lessons from the past: outcomes emerging from PRIMA



**Antonella Autino**

Coordinator, [PRIMA Foundation](#)

9:05-9:15

### Keynote remarks

The WEFE Nexus for food systems resilience in the Mediterranean



**Sasha Koo-Oshima**

Deputy Director, [Land and Water Division](#), FAO

9:15-10:15

### Panel discussion

Case studies of integrated and transformative systems and WEFE Nexus approach to increase resilience to climate change and conflicts

Increasing the resilience of food systems adopting a WEFE Nexus thinking: the private sector's experience

Closing the governance gaps for the implementation of the WEFE nexus



Moderator:

**Maroun El Moujabber**

Scientific Officer, [CIHEAM Bari](#)

Chair, PRIMA Scientific Advisory Committee



**Domitille Vallée**

Chief Technical Adviser, [FAO Regional Office for Near East and North Africa](#)

Project: Water efficiency, productivity and sustainability in the NENA regions ([WEPS-NENA](#))



**Ramy Boujawdeh**

Chief Operating Officer, [Berytech](#)



**Dimitris Faloutsos**

Deputy Regional Coordinator, Global Water Partnership Mediterranean ([GWP-Med](#))

Theme Leader on Transboundary, WEFE Nexus, and Environment



**Mona Fakh**

Director, Water Resources, [Ministry of Energy and Water of Lebanon](#)

Chair, UfM Task Force on WEFE Nexus

10:15-10:25

### The way ahead

Community of Practice



**Rabi Mohtar**

Dean, Faculty of Agricultural and Food Sciences, American University of Beirut ([AUB](#))

Research Professor, Departments of Biological and Agricultural Engineering, [Texas A&M University](#)

10:25-10:30

### Closing remarks



**Almotaz Abadi**

Water Managing Director, Union for the Mediterranean ([UfM](#))

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### Events

- European Commission's Joint Research Centre (JRC) and DG Research and Innovation, PRIMA, The Cyprus Institute (CYI) & UfM. *WEFE Nexus Sciences Advances Conference*. 27-29 September 2021. <https://bit.ly/3Mp45c7>
- PRIMA. Online seminar *The Water-Energy-Food-Ecosystems (WEFE) Nexus: From Research to Practice*. 06-08 December 2021. In: *Partnership for Research and Innovation in the Mediterranean Area (PRIMA)*. Barcelona, Spain, PRIMA. <https://bit.ly/3NXOrWz>
- Stockholm Environment Institute (SEI), Royal Institute of Technology (KTH) & FAO. *FAO Water-Energy-Food Nexus Webinar series*. In: *Stockholm Environment Institute > Events*. Stockholm, SEI. <https://bit.ly/3NuHZ9r>

### Publications

- 2030 Water Resources Group (2030 WRG). 2009. *Charting Our Water Future. Economic frameworks to inform decision-making*. Washington, D.C., USA, 2030 WRG. <https://bit.ly/3aAHk70>
- FAO, CIHEAM and UfM. 2021. *Food systems transformation – processes and pathways in the Mediterranean: a stocktaking exercise*. Rome, FAO. <https://doi.org/10.4060/cb7978en>
- FAO. 2014. *The Water-Energy-Food Nexus. A New Approach in Support of Food Security and Sustainable Agriculture*. Rome, FAO. [fao.org/3/a-bl496e.pdf](http://fao.org/3/a-bl496e.pdf)
- FAO. 2020. *Addressing Food Security Challenges in Lebanon: A Water-Energy-Food-Health Nexus Approach*. Policy brief. Rome, FAO. [fao.org/3/cb4203en/cb4203en.pdf](http://fao.org/3/cb4203en/cb4203en.pdf)
- INRAE. 2015. *Addressing agricultural import dependence in the Middle East - North Africa region through the year 2050*. Paris, INRAE. <https://bit.ly/3Q4KdOJ>
- MedECC. 2020. *Climate and Environmental Change in the Mediterranean Basin – Current Situation and Risks for the Future. First Mediterranean Assessment Report*. [Cramer, W., Guiot, J., Marini, K. (eds.)]. Marseille, France, UfM, Plan Bleu, UNEP/MAP. <https://doi.org/10.5281/zenodo.4768832>
- Observatoire Méditerranéen de L'Énergie (OME). 2021. *Mediterranean Energy Perspectives – MEPTo2050*. Paris, OME. <https://bit.ly/3H526Je>

### Articles

- Elferink, M., Schierhorn, F. 2016. *Global Demand for Food Is Rising. Can We Meet It?*. In: *Harvard Business Review*. <https://bit.ly/3NOF7o1>
- Mohtar, R.H., Lawford, R. 2016. *Present and future of the water-energy-food nexus and the role of the community of practice*. *Journal of Environmental Studies and Sciences*, 6:192–199. <https://doi.org/10.1007/s13412-016-0378-5>
- Mohtar, R.H., Sharma, V.K., Daher, B., Laspidou, C., Kim, H., Pistikopoulos, E.N., Nuwayhid, I., Lawford, R., Rhouma, A. and Najm, M.A. 2022. *Opportunities and Challenges for Establishing a Resource Nexus Community of Science and Practice*. *Frontiers in Environmental Science*, vol. 10. <https://doi.org/10.3389/fenvs.2022.880754>

### Websites and other online resources

- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). *The Water, Energy & Food Security Resource Platform*. Bonn, Germany, GIZ. <https://bit.ly/3mttN50>
- FAO. *Water efficiency, productivity and sustainability in the NENA regions (WEPS-NENA)*. Cairo, FAO. <https://bit.ly/3aEf5Fr>
- FAO. *Water-energy-food nexus*. In: *FAO Land & Water Division*. Rome, FAO. <https://bit.ly/3xv1UQj>

The SFS-MED Platform is an affiliated project of the One Planet Network's Sustainable Food Systems Programme

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