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"Forum Euroméditerranée
des Instituts de Sciences Economiques"

Despite recent developments in new technologies, the growing weight of research, innovation and development players, Egypt must redouble its efforts in its ambition to counter the effects of climate change. In a white paper, produced as part of the WEF-CAP (Technology Transfer and Capitalization of Water Energy Food Nexus) project, FEMISE studies the case of Egypt and proposes several ways to accelerate an integrated WEFN approach.

The climate emergency is a sad reality in Egypt. All lights are red. The population will jump. From 102 million inhabitants in 2023, it will rise to 116 million in 2040 with, as a corollary, a sharp increase in water consumption. How to feed populations in the face of increasing water stress caused by rising temperatures? Another alarming statistical data, the 8.2% reduction in cultivated areas by 2030. Fertile land cultivated in the Nile Delta is expected to decrease by 30%. Yields of wheat and maize crops are expected to drop by 15% and 19% respectively by 2050. Freshwater resources per capita continue to decline:

1972 m³ in 1970, 570 m³ in 2018 and 390 m³ per year in 2050. If nothing changes, the country will face a severe water shortage.

Faced with such indicators, Egypt launched the Nexus of Water, Food and Energy (NWFE) program during the 27th Annual United Nations Climate Conference held in Sharm el-Sheikh from 6 to 18 November 2022. Dedicated to promoting an integrated approach to issues related to water, energy and food, this ambitious program provides 14.7 billion dollars in investments around five projects for food security and agriculture, three irrigation and water projects and a major energy project which constitutes a milestone in the green energy transition of Egypt.

Need to innovate to succeed in the Water, Energy and Food Nexus

As part of the WEF-CAP project, Femise published in July 2023 a second white paper dedicated to Egypt. The document entitled "Technology, Research and Development and Innovation: Towards the adoption of the Water-Energy-Food Nexus in Egypt", contains a series of recommendations.

Experts in Mediterranean socio-economic issues within Femise and authors of the White Paper, Maryse Louis and Sophie Dahdouh as well as Dr. Amr Radwan, specialist in Research & Innovation Management recommend to persevere on the path of R&D and improve the legal framework related to the use of natural resources.

In addition to enhancing collaboration between the ministries, Femise proposes that the country encourage "the influx of knowledge

and expertise" while integrating "research and innovation" and advocating "interdisciplinarity" in the programs of the WEFN. "In Egypt, WEFN opportunities involve ensuring efficient and re-use of water, reducing water-intensive crops and switching to more efficient irrigation systems using renewable energy including for production of biogas and biosolids and desalination", underlines Femise which lists nearly ten concrete measures in the White Paper.



Photo: During COP 27, the Egyptian government succeeded in obtaining support from the European Investment Bank to finance 25 billion euros for priority projects related to climate change.

- This article is based on the [WEF-CAP](#) White Paper No. 2 entitled: *Technology, Research and Development and Innovation: Towards the adoption of the Water-Energy-Food Nexus in Egypt*. Link to the White Paper: <https://www.enicbcmmed.eu/sites/default/files/users/user2313/White%20Paper-Egypt.pdf>
- This Article is produced in the Context of the [WEF-CAP](#) Project (THE TECHNOLOGY TRANSFER AND CAPITALIZATION OF WATER ENERGY FOOD NEXUS) and received financial contribution from the ENI CBC Programme which is supported by the European Union through the Grant Agreement n° C_A.2.1_0069 running from 1st of September 2021 to 31th of August 2023.
- The views expressed in this article as those of the authors and do not reflect the views of the ENI CBC MED Programme or their partners.

