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# Think Tanks in Brief

Water & Climate Change:  
From Risk to Resilience



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# Water Governance

Reimagining Water Governance to Ensure Long-term Water Security in Egypt



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Throughout history, ensuring water security in Egypt has been the most challenging task.

Greek historian Herodotus visited Egypt sometime after 454 BC. He observed that Egypt "is the gift of the Nile." From ancient times to July 1970, when the High Aswan Dam was completed, Egypt's water and food security depended primarily on the annual flooding of the Nile. Droughts and

famines followed when the annual flooding was not enough.

The construction of the High Aswan Dam gave Egypt a few decades of water security. Conditions in Egypt have changed significantly since 1970, when the population was 34.7 million. By 2023, this number had increased to 112.7 million. In addition, higher income, literacy levels and the communication and information revolution

have ensured that the average Egyptian expects a better living standard than their forefathers. They expect the country to have good food, water, energy security, and a better standard of living, including health, environment, and employment opportunities. To ensure all these needs, a common essential requirement is water security.



Source: NASA

During the post-2010 period, climate change and evolving environmental conditions, all over the world, have introduced new complexities to water security in recent years. Egypt, among other North African countries, has experienced challenging impacts of climate change.

Agriculture uses nearly 86% of all water. Nearly 60% of food is produced in the Nile Delta. Nearly a quarter of the labor force is engaged in the agricultural sector.

Sea level rise and saline water intrusion are important topics for Egypt, particularly in its coastal areas. In this regard, international reports, such as UN reports, have shared insights suggesting that certain coastal areas may experience changes that could influence the living conditions of their residents. These changes present an opportunity for strategic planning and innovative solutions that can help communities adapt and thrive in the face of these environmental shifts. With thoughtful approaches, there is potential for resilience and growth in these vibrant cities.

Other concerns are the increasing magnitudes, frequencies, and durations of hydrometeorological events, like floods and droughts, as well as heat waves, in addition to changes in Nile flows and developments like the construction and operation of the Grand Ethiopian Renaissance Dam (GERD) along with the rapid population growth; all require adaptive and forward-looking strategies.

Hence, the country should leverage its national expertise in water resources and irrigation to address these challenges with maximum efficiency and develop practical solutions, turning them into opportunities that benefit its people.

The country needs to formulate a long-term realistic water management plan that considers its unique hydro-climatic, economic, social, cultural, and institutional conditions. This plan should be updated every five years as more knowledge and data are available, new technological advances take place, and societal perceptions and attitudes to water change. This would include significantly increasing water use efficiencies



in domestic, industrial, and agricultural sectors. The country has a valuable opportunity to enhance its water efficiency per USD 1,000 of GDP, drawing inspiration from international examples and successful practices such as China.

The Ministry of Water Resources and Irrigation and the Ministry of Agriculture and Land Reclamation, have two of the largest research centers in the world. By venturing into emerging fields like digitalization, informatics, sensors, robotics, big data analytics, digital twinning, and artificial intelligence, the

country's resilience in tackling the challenges associated with climate change could be significantly enhanced.

All in all, a comprehensive long-term water management plan is essential to meet Egypt's unique hydro-climatic, economic, social, cultural, and institutional needs. The good news is that the country has the expertise to do it. However, it will need strong and sustainable support from its highest levels of policymakers if the much-needed radical transformation of the water sector can be achieved to ensure water security in the post-2025 period.