Egypt
Pioneering Participatory Integrated Water Resources Management in the Nile Delta

The World Bank’s Global Environmental Facility (GEF) Trust Fund financed a project centered on piloting participatory Integrated Water Resources Management (IWRM) in the Nile Delta. The Enhanced Water Resources Management Project resulted in improved surface and groundwater management. From the project start in 2011 to the project closure in 2016, 4,436 people were trained on pilot schemes. In addition, due to the reduction of water used by applying the system of rice intensification, water savings reached 8,500 cubic meters/feddan/year (a feddan is defined as an Egyptian unit of area equivalent to 1.038 acres or 0.42 ha).
Challenge

Water scarcity has long been a central problem in Egypt. The combination of increasing socioeconomic demands, physical water scarcity, and competing transboundary needs spells further trouble for the country’s water supply and sanitation sector. Meeting the needs of multiple water users further strains relatively fixed water resources in Egypt. The ongoing impacts of a changing climate also include reduced precipitation, increased temperatures, and even changes in the direction of the Nile flow.

The country relies on the Nile River, which provides 98% of the annual renewable water resources. The river runs through eleven countries, and the Nile’s journey ultimately ends when it spreads out and drains into the Mediterranean Sea. This means that it is not only critical to protect and clean the Nile waters for the sake of Egyptian water security, but also to protect the ecosystem health of the Mediterranean Sea.

In addition, agriculture uses about 85% of the available freshwater resources in Egypt and irrigation water quality is a critical concern. Most agricultural land is heavily irrigated and polluted by industrial effluent and untreated sewage, which are typically dumped into open drains.

Approach

The World Bank helped the Government of Egypt to tackle these water challenges in a sustainable and comprehensive way. Encompassing the requirements of multiple water users, institutions, and groups, the project was designed to enhance the knowledge and capacity of water sector institutions for IWRM. Through funding and technical assistance, the project established the basis for scaling up investments to improve pollution control and to improve the ecosystem health of the Mediterranean Sea.

The Enhanced Water Resources Management Project addressed constraints to Egypt’s sustainable development with the following water quality and pollution control measures: (i) capacity building for surface water and groundwater management and monitoring; (ii) piloting schemes that develop synergy between ongoing water sector projects through demonstration activities; (iii) improving rural sanitation and drainage water quality; and (iv) establishing a results based monitoring and evaluation system for reporting and disseminating lessons learned on IWRM.
Results

The Project raised the quality of water management in Egypt by not just improving surface and groundwater management, but also by strengthening capacity building and participation.

The following key results were observed during the life of the project:

- Better informed groundwater development through the creation and submission of a groundwater development strategy and action plan;
- By applying the system of rice intensification, water savings per feddan was reduced to 8,500 cubic meters/feddan/year;
- Strengthened water sector institutions through knowledge and capacity building activities that included the training of 4,436 people;
- A Geographic Information System (GIS) platform was put in place as targeted and 6 staff members of the Ministry of Water Resources and Irrigation were trained;
- Rural communities dependent on irrigated agriculture greatly benefitted from improved water quality and access and better health outcomes;
- Nine government documents were issued for IWRM policies, procedures, and implementation;
- Enhanced water quality through the establishment of 250 water quality monitoring stations for surface water;
- A climate change impact assessment in water and agriculture was conducted and hardware was installed, including 10 weather stations;
- The data generated by the Climate Change Laboratory and the Nile Forecasting Center enabled the government authorities to respond faster when storms hit coastal cities in 2015 and 2016 to reduce loss of life and property damage;
- An instream wetland facility was constructed by the Egyptian Public Authority for Drainage for reducing biochemical oxygen demand (BOD) and total dissolved solids (TDS) in treated water, and BOD was reduced to 30 mg/L.

Bank Group Contribution

The Global Environment Facility (GEF) provided the Arab Republic of Egypt with grants in the amount of US$6.6 million towards the total project cost of US$8.27 million. The project
activities build upon other Bank-financed projects in Egypt such as the Integrated Irrigation and Management Project (IIMP), the Second National Drainage Project (NDP2) and the Integrated Sanitation and Sewerage Project (ISSIP).

Partners

The Ministry of Water Resources and Irrigation served as a key partner in this project. Six other government agencies were involved in project implementation, including the Planning Sector, the National Water Resources Center, the Groundwater Sector, and the Irrigation Improvement Sector.

In addition to the World Bank funding, there was parallel financing for complementary activities from the German Development Bank (KfW), African Development Bank (AfD), the Islamic Development Bank, and the Organization of Petroleum Exporting Countries (OPEC) Fund.

Beneficiaries

Rural communities located in the Nile Delta region who are dependent on irrigated agriculture benefitted greatly from the project. By improving IWRM, the project interventions had a positive effect on water quality and health outcomes. In addition, the project increased farmer incomes and economic opportunities due to improved access to safe and reliable fresh water sources.

Farmer based Water User Associations (WUAs) also particularly benefitted from project activities through training and enhanced participatory management, from decision making to service provision awareness.

Moving Forward

The Government of Egypt demonstrated strong commitment to the project and is well positioned to continue further cross sectoral interventions. After project completion, there is considerable potential for the development and implementation of additional capacity building activities by the Project. To maintain momentum toward water sustainability, further financial support from the Green Climate Fund may be secured to expand the Climate Change Lab and the Climate Research Institute. In addition, the model packages for surface water and groundwater modeling, research, and analysis need to be continuously updated to improve Egypt’s water situation.