

# Water demand management in the Mediterranean, progress and policies

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**PAPER**

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*Impact of the Nile Basin Initiative on the Agricultural Policy of Egypt*

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# Impact of the Nile Basin Initiative on the Agricultural Policy of Egypt

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## Context

The splendid engravings in the pharaoh's temples are the oldest witnesses on the importance and sacredness of agriculture since old Egyptian era. Egypt has always been an agricultural country. Beside its economic value as a major source of income, agriculture has always represented prosperity, food security and work opportunity for the Egyptian. The situation nowadays is getting complicated vis à vis agricultural activity in Egypt. Facing the rapidly increasing population density while suffering from water scarcity, force us to reevaluate agriculture and to reconsider it with a different scope. Unfortunately, agriculture is not anymore providing food security as Egypt became a major importer of basic agricultural goods. In addition to that, some of the most important crops like rice and sugar cane consume huge quantities of water while Egypt is on the edge of water scarcity as the none increasing annual discharge from Nile water is 55.5 BCM which represents 97.5% of the country's total water resources (rain and groundwater).

The Nile Basin Initiative (NBI), created in 1999 on the initiative of the Council of Ministers of water resources of the countries of the Nile Basin (Nile COM), furthers a first agreement in 1959 between Egypt and Sudan on the water of the river, and also of the Committee of Technical Cooperation for the Promotion of the Development and the Environmental Protection of the Nile Basin (TECCONILE) in 1993. Among the ten countries included in the Nile Basin (Burundi, Democratic Republic of the Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Uganda and United Republic of Tanzania), only Eritrea is not a member of the NBI, but it is a "prospective member". It participates in the Nile COM dialogue as an observer. The initiative tries to realize sustainable socio-economic development through the use of water resources in the Nile Basin and equitable benefit sharing. Therefore, the main objectives are: (i) to develop the Nile River water resources in an equitable and sustainable manner in order to ensure prosperity, security and peace for the inhabitants; (ii) to guarantee effective water management and optimal resource use; (iii) to promote cooperation and combined action between member countries; and (iv) to combat poverty and promote economic integration. Through the NBI, Egypt aims to build a co operational framework with the Nile Basin countries to allow Egyptian agricultural investments in the region using a win-win approach.

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This study will try to introduce the NBI projects' impact on water efficiency increase, water demand management, and Egypt's agricultural policy.

### **Methodology:**

The following process will be applied to study NBI impact on Egypt's agricultural policy, water efficiency increase and water demand management:

- Discussing the NBI projects tangent with water efficiency, integrated water resources management (IWRM), confidence building and awareness.
- Analyzing the actual gaps and highlighting key contents of Egyptian water policy.
- Determining key contents of Egyptian agricultural policy.
- Interrelating previous elements in order to reach conclusions followed by recommendations.

### **Nile Basin Initiative (NBI) projects:**

The NBI intervention seeks to build confidence and capacity across the basin through a shared vision program (SVP), and to initiate concrete investment and action on the ground through a subsidiary action program (SAP). The NBI plans to implement projects, in partnership with member states that will contribute to strengthening the cooperation mechanism and to long-term sustainable development, economic growth and regional integration.

1. The SVP contributes in the creation of an enabling environment for investments and action on the ground and will promote the shared vision through a set of effective basin-wide activities. An initial set of basin-wide SVP projects has been endorsed by Nile-COM. They include: environmental action, power trade, efficient water use for agriculture, water resources planning and management, coordination, applied training, and socio-economic development and benefit sharing. Following are the SVP projects contributing in water efficiency, integrated water resources management (IWRM), confidence building and awareness and their objectives and expected impacts:
  - Nile Transboundary Environmental Action Project (NTEAP) with its five components (Institutional strengthening , community level land, forest & water conservation, environmental education and public awareness, wetlands and biodiversity conservation, and basin wide water quality monitoring) aims to provide a strategic framework for environmentally sustainable development and to support basin wide environmental action. The water quality monitoring component contributes in the enhancement of water quality in Nile Basin Countries.
  - Water Resources Planning and Management (WRPM) project has four components: water policy good practice guides and support, project planning & management good practice guides, Nile Basin decision support system, and regional coordination & facilitation. These components contribute in achieving the project's goals in enhancing analytical capacity for basin wide perspective to support the development, management and protection of Nile Basin water resources in an equitable, optimal and sustainable manner.
  - Efficient Water Use for Agricultural Production (EWUAP) project with its four components (water harvesting, community managed irrigation, public and

private managed irrigation and project coordination & facilitation) aims to establish a forum to assist stakeholders to address issues related to efficient use of water for agricultural production in the Nile Basin, and to provide an opportunity to develop a sound conceptual and practical basis for Nile Riparian countries to increase the availability and efficient use of water for agricultural production.

- Some of the SVPs have an indirect impact and contribution in the IWRM in the Nile Basin through strengthening the capacity for practitioners and post graduates in subjects of water resources planning and management in public and private sectors (Applied Training project), developing confidence in regional cooperation at both Basin and local levels (Confidence Building and Stakeholder Involvement project) and enhancing the process of integration and cooperation to further socio economic development in the Nile Basin (Socio economic Development and Benefit Sharing)

2. SAPs plan and implement action on the ground at the lowest appropriate level. They comprise actual development projects at sub-basin level, in order to address the challenges of regional co-operation and development opportunities with transboundary implications. Two groups of countries have been formed to investigate the development of investment projects on the Nile Basin. These are the Eastern Nile Group (ENSAP), which includes Egypt, Sudan and Ethiopia; and the Nile Equatorial Lakes Group (NELSAP) comprising Uganda, Tanzania, Kenya, Rwanda, Burundi and the Democratic Republic of Congo and Egypt.

ENSAP relevant projects are as follows:

- Integrated Watershed Management: Obvious regional benefits of this project will be erosion control leading to decreased siltation and sedimentation in downstream river/reservoir reaches, which will increase reservoir life, improve hydropower production and irrigation efficiency, leading to an overall increase in land productivity, which will yield higher agricultural outputs, and thus enhance food security and alleviate poverty. The watershed management project is planned to be fast-tracked, to improve standard of living of the population living within selected watersheds in the Eastern Nile region, decrease population pressures and increase land productivity so that sustainable livelihoods and land use practices can be secured for the target populations.
- Baro-Akobo-Sobat Multipurpose: The project may offer opportunities for win-win multipurpose development. Important water conservation gains may be possible through improved water management, storage and flood routine; several promising sites for hydropower and irrigation development have been identified in the sub-basin. The Baro-Akobo could provide an opportunity to develop possible multi-purpose water resource investments that confer win-win gains from river regulation, flood management water conservation, navigation, fisheries, agricultural production, and improvement of livelihoods for the local population. The specific objectives of the project are to:
  - (i) Generate data and information for the analysis of the technical, social, and economic issues important to the formulation and implementation of integrated multipurpose water resources development projects in the Baro-Akobo Sobat river basin

- (ii) Prepare an integrated multipurpose investment project for possible financing, involving the development of irrigation, hydropower and navigation, and river regulation for conservation, sediment and flood control.
- Eastern Nile Planning Model: An Eastern Nile Planning Model (ENPM) has been proposed as a common analytical basis for identifying, and assessing options, quantifying benefits and impacts, evaluating tradeoffs, and analyzing and managing information to support complex decision making processes on the Eastern Nile. The ENPM seeks to integrate a comprehensive knowledge base and a suite of analytical tools for Eastern Nile to examine economic, environmental and social dimensions of proposed investment strategies in a basin context to facilitate stakeholder discussions and regional and national capacity building. The project would support (i) Modeling system development, (ii) Information System development, and (iii) Institutional Capacity Strengthening associated with the ENPM. It is expected that the ENPM would lead to investment planning facilitation and strengthened institutions
- Flood preparedness and Early Warning: Climate and river flows in the Eastern Nile of water (EN) are highly variable. The region is thus prone to extremes of droughts and floods. While there is some flood warning activity in individual countries, there is no integrated or cooperative flood warning system for the Eastern Nile basin. The FPEW project will play an important role in putting in place the institutional, political, and community involvement mechanisms. The long-term development objective of this project is to reduce damage and loss of life from major floods, and to increase the benefits from excess flood waters, in the Eastern Nile countries. The immediate objective of this project is to improve regional coordination and national capacity in preparedness for and early warning of major floods in the Eastern Nile.
- Irrigation and Drainage: Among other factors, unpredictable seasonal and spatial distribution rainfall in some regions is a factor contributing to low agricultural productivity. The development of irrigation and intensification of existing agricultures offers the potential to increase food security, enhance agricultural productivity and improve livelihoods. The regional benefits of this project are expected to be maximized through the integrated development of different components, as well building different sub-projects under the integrated development of the Eastern Nile Project. ENCOM decided to fast-track the I&D project to achieve clear result of Nile Basin collaboration on the ground; and agreed for carrying out feasibility studies for 100.000ha and investment for initial development of irrigation of around 20000-50000 ha in each of the EN country.
  - Irrigation and Drainage Project for Egypt (Fast track): The project under investigation is part of the country's plan to reclaim 3.4 million feddans till the years 2017 and intends to improve irrigation of lands already cultivated in order to raise its productivity plus the reclamation of additional area of desert lands. The project will be selected to improve the situation of irrigation in the new lands of the most northern part of the West Delta which amounts to 500.000 feddan spread over the area served by Nubariya, Nasr, Bustan, Mariout, Hammam and Extension of Hammam Canal, to change

supply in the areas irrigated by groundwater in the southern part of the West Delta to surface water (255.000 feddans). The objective is to guarantee the provision of adequate water duties that conserve the existing cultivation.

- Eastern Nile Joint Multipurpose Program: Integrated and joint basin management offers the greatest opportunity to unlock economic growth, promote regional integration, and realize peace and stability. Investments in new storage capacity and improvising watershed management have the potential to improve irrigation and agricultural productivity in all countries by reducing sedimentation in reservoirs, mitigating drought impact and flood damage, and supplying substantial hydropower electricity to meet rapidly expanding demand.

NELSAP project: The Regional Agricultural Program will promote opportunities for cooperation in the Nile Basin through private investment, public- private partnerships and enhanced trade, in the field of high value crops and products. It will also identify steps to increase food security through increased investment, income generation and pro-poor growth.

#### **Major gaps facing the water resources management in Egypt:**

- Mismatch of water supply and demand. The increasing gap between available resources and water requirements leads Egypt to soon face water scarcity.
- Even after implementing the "Face the Challenge" strategy (explained in next paragraph), the water resources system will reach its support limit. The management of the system should be adapted to cope with variability.
- Deterioration of water quality.

#### **Key contents of National Water Resources Plan (NWRP) (2005-2017):**

- The NWRP has three major pillars:
  - Increasing water use efficiency.
  - Water quality protection.
  - Pollution control and water supply augmentation.
- The NWRP is based on a strategy called "Facing the Challenge" (FtC) which includes measures to develop additional resources, make better use of existing resources, and measures to ensure water quality and environmental protection.
- The NWRP includes a number of general institutional measures; it initiated the process of decentralization and privatization.
- Cost sharing and cost recovery mechanisms will be implemented to make sustainable changes especially with respect to operation and maintenance.
- Involving stakeholders in water management tasks.
- The NWRP addressed the regional cooperation in the Nile Basin by assuming that Nile Basin countries will continue to implement positively the NBI programs.

#### **NWRP implementation process:**

- The FtC strategy seeks full implementation of all concepts of IWRM.

- The Ministry of Water Resources & Irrigation (MWRI) plans to issue standard IWRM kits for different institutional levels in order to share the experience of ongoing training efforts within the MWRI and its projects.
- MWRI plans to launch a national and regional IWRM certification program as a pioneering attempt to provide a pool of experts in IWRM.

#### **Issues constraining NWRP implementation:**

- The current laws regulating the government's control of water resources do not meet the new policy reform and economic plan.
- Efficient water resources planning, development and management is constrained by the lack of investment.
- Fragmented institutional structures, lack of market based incentives, technical and socio economic constraints in addition to inefficient public awareness.

#### **Agriculture as a major consumer of Egypt's water resources :**

- The agricultural sector in Egypt is responsible for 86% of Egypt's water quota withdrawn from the Nile (WRI 1999).
- Due to population growth, the actual production of cereals is not sufficient for food consumption. Egypt is importing an additional 21% of its available water in the form of food.
- The high water consumption of rice and sugar cane, combined with the calculation of value added per cubic meter of water explain Egypt's policy of trying to minimize rice and sugar cane production. By addressing these two crops, there exists a water saving potential of up to 23% of the agricultural water consumption and 24% of the total national water withdrawal.

#### **Key contents of agricultural policy in Egypt:**

The present agriculture of Egypt is guided by the following principles, quoted from the Minister of Agriculture (MOA 2000):

Gradually removing governmental controls on farm output prices (this does not preclude government voluntary guarantee prices for some strategic crops); crops; areas; and procurement quotas.

- Increasing farm gate prices to cope with international prices.
- Removal of farm input subsidies.
- Removal of governmental constraints on private sector in importing, exporting and distribution of farm inputs to compete with the Principle Bank for Development and Agricultural Credit (PBDAC).
- Removing governmental constraints on private sector in importing and exporting agricultural crops.
- Gradually diverting the role of the PBDAC to financing agricultural development projects.
- Limitation on state ownership of land and sale of new land to private sector.
- Confining the role of the Ministry of Agriculture (MOA) to Agricultural Research, Extension and Economic Policies.
- Adjusting the land tenancy system.

- Adjusting the interest rate to reflect the commercial rate.
- Adjusting the foreign exchange rate to reflect the real value of local currency

The policy of liberalization and deregulation is still in the process of implementation, in some areas at a slow pace due to the different underlying understandings of food security. Egypt seeks to find a balance between the market-oriented and the self-sufficiency goals in the agricultural sector. Egypt produces about 60% of its cereals, the rest is imported, partly a result of the compromise between self-sufficiency and economic considerations. Through the growth of cash crops, however, a higher return per drop of water is achieved. If the entire area was used for cash crops, Egypt's dependency on other countries for basic food supplies would be greater, although its economic power would increase. This would only be possible by creating off-farm opportunities.

The liberalization policy caused an increase in the cropped area, yield and production. There is a clear increase in production for all crops except sorghum and cotton. Self-sufficiency of wheat reached 60.4% in the year 2000 (MOA 2000). Egypt enjoys self-sufficiency in rice, vegetables, fruits, dairy products, poultry, eggs and fish (MOA 2000).

#### **Agricultural policy implementation process:**

- The dominance of cash crops on new lands: the new lands are all used for high investment agriculture. Cash crops such as organic fruit and vegetables are partly sold on the national market.
- An increase of cereal production on old lands: in the old lands, a compromise is sought between self-sufficiency and export crops. Production of wheat has increased, while the production of cotton remains stable, indication that this compromise over the years has tended towards keeping or increasing the level of self-sufficiency of cereals, rather than promoting cotton. World market prices of cotton and wheat also play an important role.
- The limitation of rice and sugar cane: the agricultural policy has aimed at limiting rice and sugar cane in order to save water losses.
- The positive effects of market-oriented economy: The liberalization of the agricultural sector has progressed cautiously, however, in order to maintain social and political stability.

#### **Expected impact of NBI projects on both water and agricultural policies:**

By analyzing NBI projects, their goals and objectives, we can conclude that they will positively impact the implementation of Egypt's water policy guidelines as the SVP contribute in capacity building, environmental awareness, water quality monitoring, stakeholders' assistance in efficient use of water for agricultural production, confidence building between riparian countries, benefit sharing and stakeholder participation as a wide regional framework for cooperation between Nile Basin countries. The SAPs are also expected to play a major role in transboundary IWRM between Nile Basin countries in order to create win-win solutions for water issues throughout the Basin by providing a pool of reliable data exchange leading to efficient

planning and management of water resources and holistic solutions for challenges facing the Nile Basin Countries in different domains as water scarcity, flood preparedness and early warning ,flood protection, irrigation and drainage, food security& poverty alleviation, and all other issues concerning water in the region.

The agricultural policy will also be positively affected by the NBI projects through creating an opportunity for agricultural trading between Nile Basin countries (using the Nile as a trading pathway in safe areas) and opening the floor for off-farm agriculture and Egyptian agricultural investments in the Nile Basin countries in order to provide food security and economic prosperity in the region. Egypt can consequently concentrate on cash crops, industry and tourism which have higher economic revenue with less water consumption.

Some general issues constitute an obstacle in the realization of NBI goals in the field of regional agricultural investment and trading:

- Absence of roads suitable for trading
- Political instability
- Diseases minimizing people's capacity for production
- Lack in standardization and intermediate industries (cooling, freezing, packing...etc)

**Recommendations:**

In order to prepare the ground for NBI activities to maximize their benefits on Egypt, some major local reforms have to take place in several domains:

- Both water and agricultural policies have to focus on regional aspects taking into consideration that an isolated local policy is no more viable under the present circumstances. The NBI concepts and objectives must be taken into account and policies should have a regional win-win scope. In my opinion a regional policy for water and agriculture should be stated to assure basin wide cooperation and integration. Local strategies should be modified to be compatible with the guidelines of that policy.
- Regulations must be reformed in order to facilitate and encourage regional cooperation between Nile Basin Countries in the field of agricultural trading. The government could use incentives to encourage this practice.
- Prepare the ground for reliable data availability and transparency between the Nile Basin countries to achieve IWRM.
- Encourage Egyptian investors to implement agricultural projects in the Nile Basin countries by tax and customs exemptions.
- Provide technical and institutional cooperation and support in the field of irrigation and agriculture as Egypt enjoys a huge pool of experts in both domains.
- Concentrate on public awareness on the necessity of regional cooperation between Nile Basin countries to realize socio economic development and political stability.

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