



Nile River Revival Action Plan (NRAP)

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Mission Statement

NRAP's mission is to exceed UNEP Global River Water Quality Standards by *improving* salinity, *preventing* further environmental degradation, and *reducing* heavy metal concentrations of the northern stretch of the Nile River running through Egypt by the year 2030.

Background

- The **Nile River** is the longest river in the world (by length)
- **11** countries in the watershed
- **Water resources:** Rainfalls play a minor role in Egypt's water resources
- **Industrial pollution:** The drainage water has become contaminated with toxic chemicals and pathogens
- **Domestic Pollution:** No well-controlled sludge management program exists in Egypt
- **Agricultural pollution:** In Upper Egypt, approximately 4 billion m³ of drainage water returns to the Nile every year.



Source:
<http://www.reizen-langs-rivieren.nl/the-rivers/nile-river-from-source-to.html>



River Basin Management History

- **3000 B.C.E** - Egyptian dynasty unifies lower and upper parts of Nile River
- **1882** - Egypt colonized by England
- **1922** - Egypt gained independence
- **1929** - Exchange of letters between Egypt and England recognizing Egyptian historical rights to the Nile; resources split unevenly between Egypt and Sudan
- **1959** - 1929 agreement renegotiated between Egypt and Sudan to allot themselves more shares
- **Mid 1980s** - Ethiopia faces devastating water crisis
- **1987** - Egyptians and Ethiopians begin to cooperate
- **1990s** - Ethiopian water crisis subsides and Egypt plans an expensive irrigation project
- **1999** - Cooperative Framework Agreement on water allocation established by upriver countries; Egypt and Sudan refuse to sign
- **2010** - Ethiopia announces plans to develop GERD in which Egypt and Sudan disagree on its implementation

Policies and Mandates in Place



- The Nile Basin Initiative (NBI) provides a forum for consultation and coordination among the Basin States for the sustainable management and development of the shared Nile Basin water and related resources for win-win benefits
- At an early stage, the NBI identified water and watershed management – through an integrated approach – as being foundational to securing livelihoods and promoting development for the Nile countries
- Factors of success are based on (1) Intensive support to early stages (2) Work at the sub-catchment area as well as across the entire basin and (3) Long-term vision and investment restoring the Nile Basin
- It has helped improved downstream water flows and quality, and protect and maximize the potential of development benefits from irrigation and hydropower.

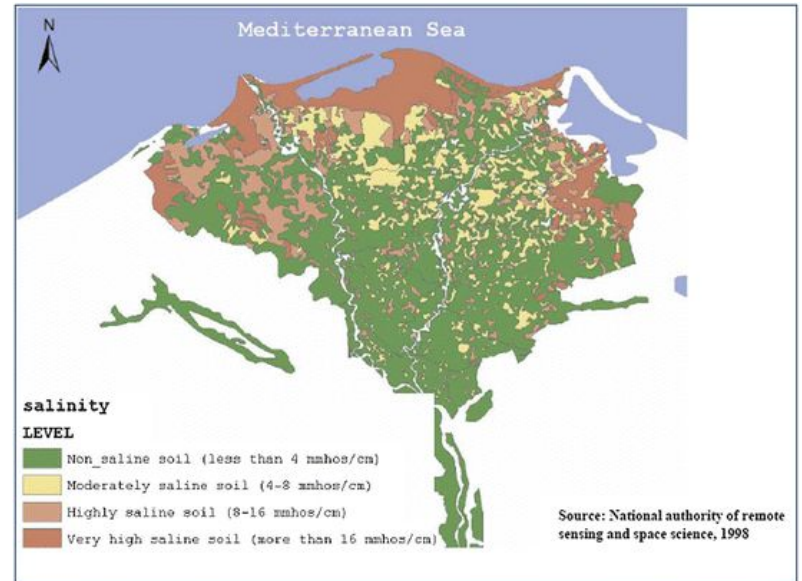
Problem 1: Salinization (Saltwater Intrusion)

Causes for saltwater intrusion:

- 1) Delta plain lies one meter above sea level, and parts of the delta are lowering closer to sea level by 4 to 8 mm/yr
- 2) Sea levels are rising by 3 mm/yr in the region
- 3) Building new dams has made it harder for fresh water to flow downstream.

Consequences of saltwater intrusion:

- 1) Deterioration of soil quality
- 2) Reduced access to fresh water
- 3) Detrimental to agriculture
- 4) Dams make it harder for sediment to flow downstream, weakening the banks and causing erosion
- 5) Erosion accelerates the rate at which salinity levels rise in soils as the land loses its buffer.



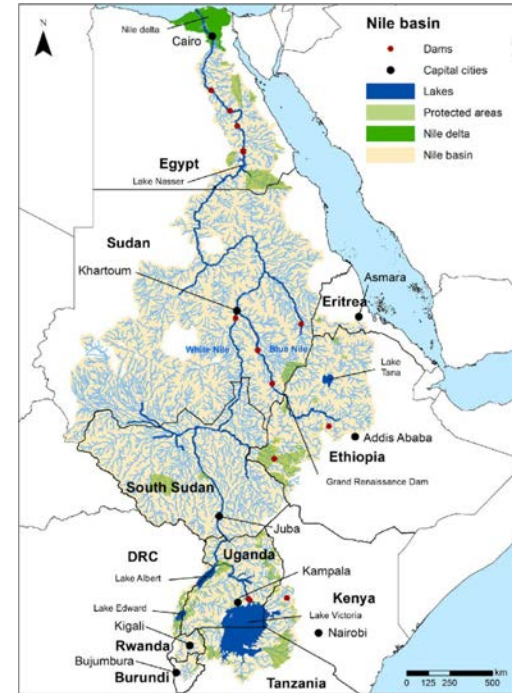
Goals to Reduce Salinity Levels

Two main measures to put in place:

- 1) Cooperative agreement to prevent future dam projects along the Nile
- 2) Protect native vegetation that is present, and restore native vegetation that is degraded or has disappeared.

Benefits:

- 1) Better flow of fresh water down the river
- 2) Reduced erosion to prevent further saltwater intrusion
- 3) Better access to freshwater for populations living along the river, better soils, and continued stability of agricultural practices.



Source: nowater-nolife.org

Problem 2: Environmental Degradation

Source: Stahl, 2017

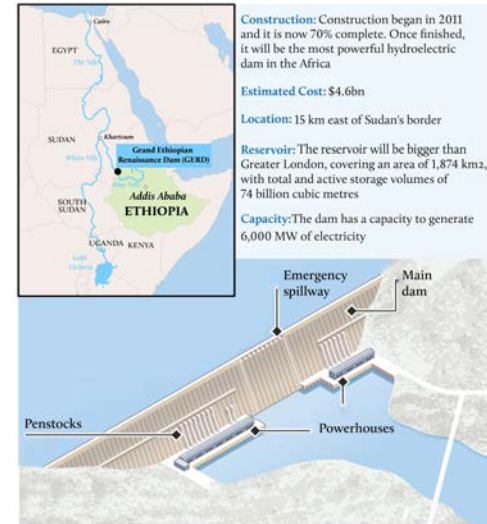
Causes:

- High risk infrastructure
 - Grand Ethiopian Renaissance Dam (GERD)
- Lack of cooperation between countries within the Nile River basin
- Shift in the natural processes of the river system

Consequences:

- Dramatic shift in river flow affecting primarily downstream countries
- Water and food scarcity for Egypt and Sudan
- Obstruction of migrating species
- Increased pollutant accumulation
- Shift in crop patterns
- Exacerbated effects of climate change

The Grand Ethiopian Renaissance Dam (GERD)





Goals to address Environmental Degradation

- Revisit the idea of an equitable water sharing agreement amongst all countries in the Nile River basin
- Initiate an alternate development proposal to Ethiopia in order to avoid the GERD entirely
- Aid Egypt in developing better water management strategies to mitigate the devastating impacts of the dam on the country's well being

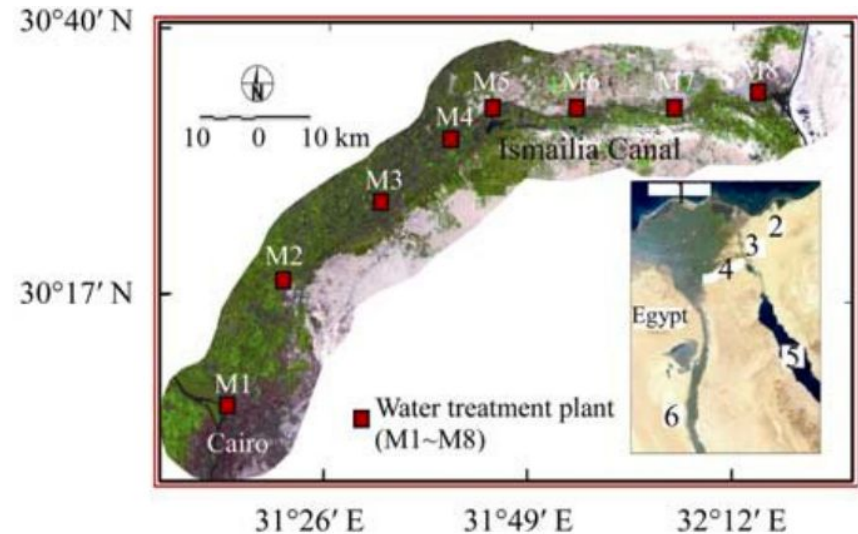
Problem 3: Heavy Metal Pollution

Sources of heavy metal pollution:

- (1) Major industrial zones in the region.
- (2) Various water treatment plants.

Additionally, high temperature and organic matter decomposition during the spring and summer months attributes to heavy metal pollution from the sediments to the water (Ali and Abdel-Satar, 2005).

Source: Goher et al., 2014



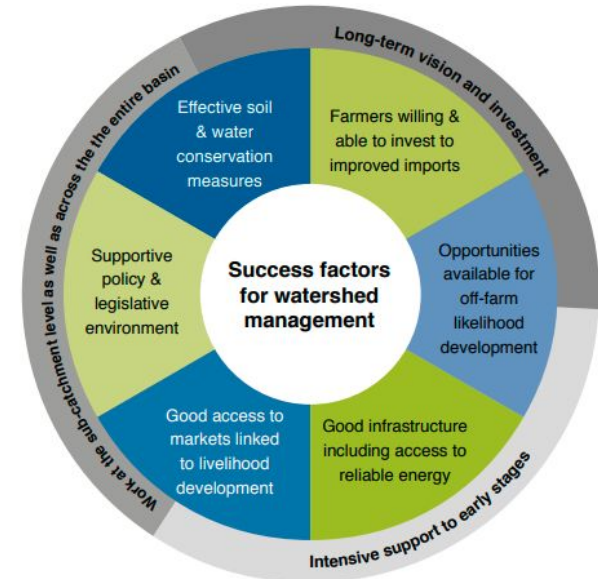
Location map of Ismailia Canal and water treatment plants 1: Mediterranean Sea; 2: Sinai; 3: Suez Canal; 4: Ismailia Canal; 5: Gulf of Suez; 6: Nile River

Goals to Reduce Heavy Metal Pollution

- (1) A vital clean-up of current major industrial discharges in the chemical, textile and food processing sectors.
- (2) Encourage the benefits of monitoring through monthly water sampling.
- (3) Wastewater sewage plants should require a considerable input of new equipment, training of personnel in operation and maintenance, and introduction of better management to finance the water and wastewater services now provided free of charge.

Source: Nile Basin Initiative (NBI) Restoring the Nile Basin, 2015

Lessons and success factors to inform scale up



Source: Wahaab and Badawy, 2004



Summary of Goals

- To create a cooperative agreement negotiated between countries served by the Nile river to prevent the building of additional dams along the river
- To protect and restore native vegetation along the river banks
- To re-initiate an equitable water sharing agreement between Ethiopia and Egypt as well as all of the countries within the Nile River basin
- To initiate an alternate development proposal to Ethiopia that would allow for a separate electricity supply that would not obstruct the resources of Sudan and Egypt
- To aid Egypt in developing better water management strategies for agriculture and domestic consumption
- To initiate a vital clean-up of current major industrial discharges in the chemical, textile and food processing sectors
- To encourage the benefits of monitoring through monthly water sampling
- Wastewater sewage plants should require a considerable input of new equipment, training of personnel in operation and maintenance, and introduction of better management to finance the water and wastewater services now provided free of charge.

Conclusion



Source: <https://www.rti.org/impact/nile-river-basin-initiative>

NRAP will work with key stakeholders to address sources of contamination and degradation to ensure higher quality water and enhance public and ecological health

NRAP will present this plan to the United Nations Environment Program (UNEP) for implementation



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