

Egypt's National Strategy for Adaptation to Climate Change

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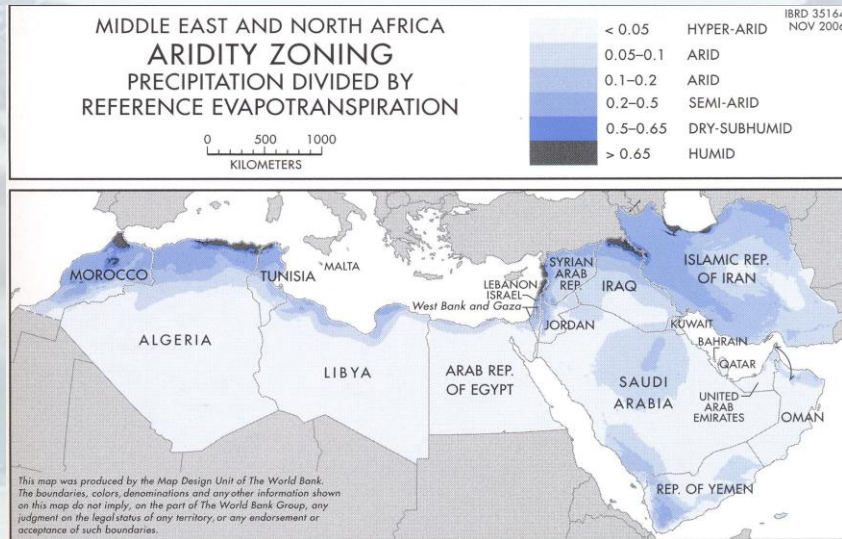


Presentation Outline

- **Introduction**
- **Nile Water Resources**
- **Egypt's Current Situation**
- **Adaptation Strategy to Climate Change**
- **Climate Change Strategy**

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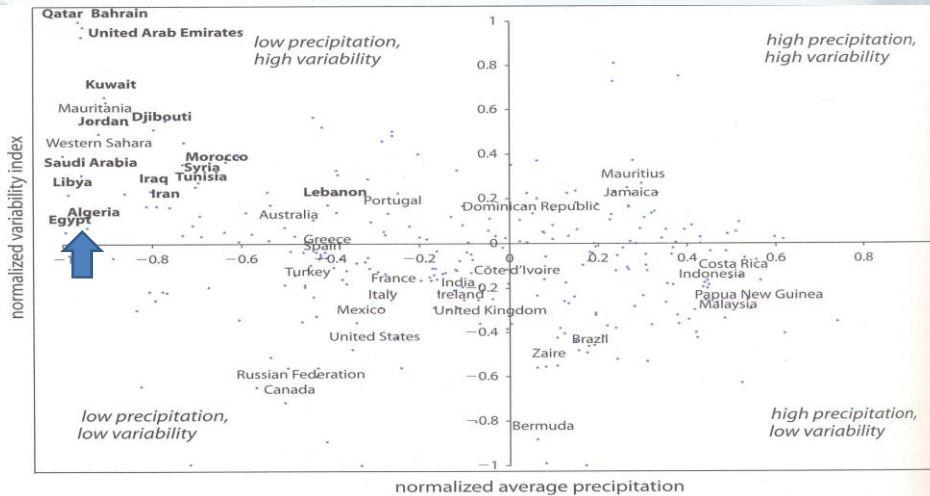
MENA: Aridity



MENA Region

- Most water-scarce region of the world
- Using more water than it receives
- Water availability per capita will fall by half by 2050
- 60% of the region's water flows across international borders
- Rainfall patterns are predicted to shift due to climate change
- Countries has to adapt best water management practices to meet these combined challenges

MENA: Low Precipitation and High Variability



Source: MENA DEVELOPMENT REPORT (2006)

Main Features of Nile Basin

Basin is about 3.0 million square km.

Length is more than 6000 km.

10 Riparian States with 300 million people.

Area of Lakes is 81500 square km.

Length of River and Tributaries is 37500 km.

Area of swamps is 70000 square km.

5 states are among the ten Poorest in World.

Instability.

Rapid population growth.

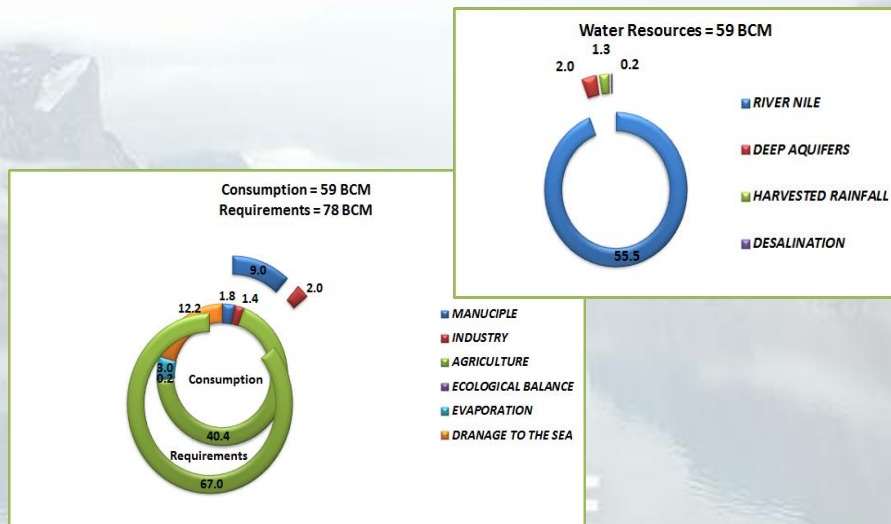
Environmental degradation.

Natural disasters (Floods, Droughts,..... etc)

Complicated hydrology of Basin.



Water Balance 2014



Agriculture Lands in Egypt

1. Cultivated area in Egypt is about **8.44 million acres**, **80% of which are located in the Delta and the Nile Valley (ancient lands)** and **20% are located outside of the valley** on the edge of the valley and delta (new territory).



Ministries concerned with Climate Change in Egypt

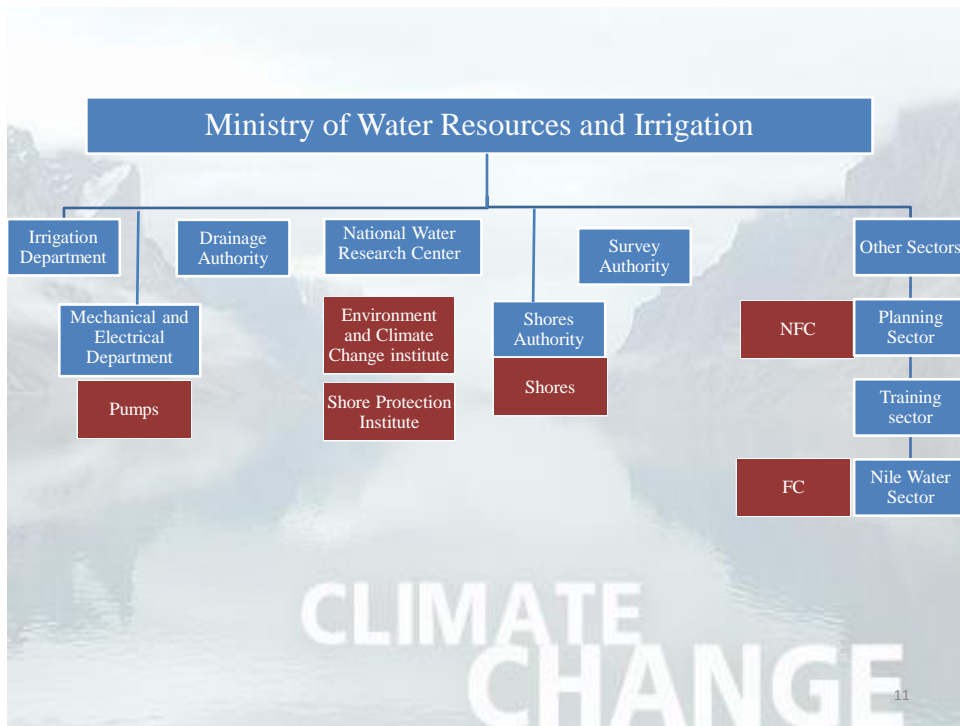
- **Ministry of Water Resources and Irrigation**
- **Ministry of Environment**
- **Ministry of Agriculture and Land Reclamation**
- **Other ministries affected by climate change such as ministries of (Housing, Tourism , Transport, etc).**

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Climate change Concerned Authorities at Ministry of Water Resources and Irrigation (MWRI)

- **Mechanical and Electrical Department**
- **Shores Protection Authority**
- **Environment and Climate Changes Research Institute**
- **Coastal Research Institute**
- **Nile Forecast Center - Planning sector**

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Projects concerned with Climate Change at MWRI

- DEWFORA
- GEF (UNDP)
- Adaptation Strategy
- Climate Change Strategy



CLIMATE CHANGE

Importance of Studying Climate Change

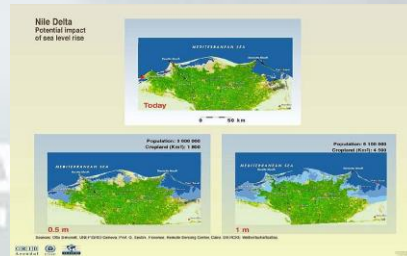
- Egypt as an arid country relying on the Nile River which provides 95% of its water resources .
- Suffering water stress due to the limited supplies and growing population are increasing competition on water from the upper Nile basin countries.
- The uncertain climate change impacts on the Nile flow add another challenge for water management in Egypt. Besides, the projected high temperature would increase the local water demands especially on the agricultural sector.
- the coastal zones are severely vulnerable to the threats of sea level rise.

Impact of Climate Change in Egypt

- **Water Resources (Nile water)**
- **Sea water rise (shore protection)**
- Crop pattern
- Livestock
-

Impact of Climate Change in Agriculture

1. **Salinization** of land in the Delta
2. **Decreased rainfall** in the northern coast and the lack of rainfed
3. **Decreasing aquifer water** and the threat of desert plants
4. **Increase water consumption** for crops
5. **Impact on the productivity** of crops
6. The occurrence of **social and economic effects of employment** as a move from marginal areas and coastal.
7. Potential rise in **sea level and its negative impact** on **agricultural land** and **aquifers** in Delta.



Impact of Rising Temperature on Crop Production

- **Simulation studies have been conducted on various agro-climatic zones.**
- **The results indicated that there will a significant reduction in some major crops like Cereal, Vegetables and Fruits.**



Impact of Climate Change on Animal Production

- Directly affect the heat on animal health and productivity capabilities of dairy and meat.
- Varies according to the quality of the animal breeding sites
- A rise in temperature expected to cause low productivity of dairy,
- Decrease in the growth rate of cattle and poultry.
- diseases are expected to arise:

Adaptation strategy



1) Adaptation measures for the Coastal zones :

- The vulnerable areas of coastal zones and evaluate their environmental impacts and costs.
- Beach nourishment and groins, breakwaters, legal development regulations, integrated coastal zone management (ICZM) and land use change.

Adaptation strategy

2) Sea Water Intrusion and Protection of the Northern Lakes

- A number of different measures have been used to control seawater intrusion and to protect the groundwater resources.
- The main principle of protection is to increase the volume of fresh groundwater and reduce the volume of saltwater.

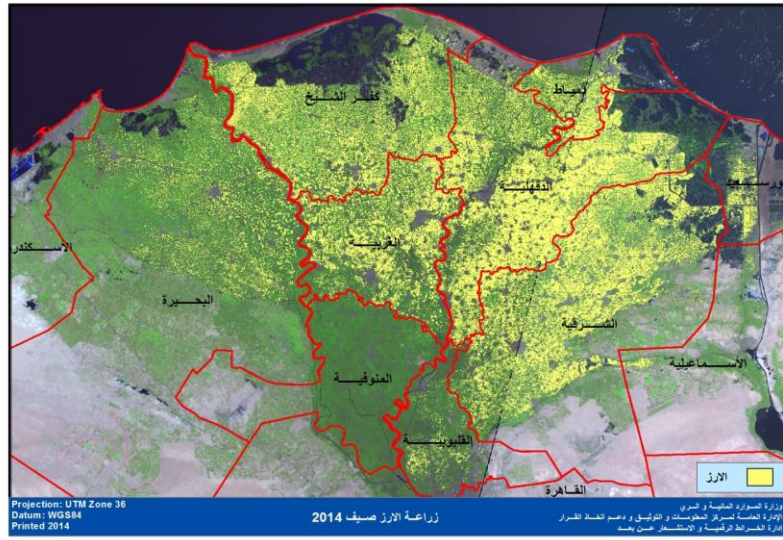
Adaptation strategy

Preventing saltwater from contaminating groundwater sources including:

- Reduction of the abstraction rates in some places.
- Reallocation of abstraction wells.
- Subsurface barriers.
- Natural recharge.
- Artificial recharge.



Rice cultivated area



Adaptation strategy

- **Combination of injection and abstraction systems.**
- **Re-injecting wastewater near the saltwater interface to aid in maintaining a sufficient head of freshwater.**
- **Reduced drainage water disposal to the Sea.**
- **Rainfall and Flashfloods Harvesting.**

All these methods have their own advantages and limitations and are site specific.

