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Challenges Facing Egypt and the Nile Basin

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WORLD SITUATION: Water Scarcity

Map 8.1  Increasing water scarcity

Source: Based on Comprehensive Assessment of Water Management in Agriculture 2007.
Rivers at Tensions: Longstanding, Always, Growing With Demand
In Africa

- 61 international rivers (out of 276 worldwide)
- Many countries per basin.
- Many basins per country.
- Weak capacity
- Conflicts
Challenges Facing Egypt in Water Sector

- Demographic changes - Population of Egypt and the World (Present and Future).

![Graph showing changes in population in Egypt and the world over time.](image-url)
Challenges Facing Egypt in Water Sector

- Available Fresh Water Resources in Egypt in 2011

<table>
<thead>
<tr>
<th>Source</th>
<th>Nile Water</th>
<th>Deep Groundwater</th>
<th>Desalination</th>
<th>Rainfall</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>95</td>
<td>1.9%</td>
<td>0.9%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Gross (Billion m³)</td>
<td>55.5</td>
<td>1.1</td>
<td>0.5</td>
<td>1.3</td>
</tr>
</tbody>
</table>

- Available Fresh Water Resources in Egypt in 2017

<table>
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<tr>
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<th>Nile Water</th>
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</thead>
<tbody>
<tr>
<td>%</td>
<td>90.1</td>
<td>5.8%</td>
<td>1.9%</td>
<td>2.2%</td>
</tr>
<tr>
<td>Gross (Billion m³)</td>
<td>61.6</td>
<td>3.6</td>
<td>1.2</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Fresh Water Resources is, and will continue to be, limited for Egypt.
Challenges Facing Egypt in Water Sector

- Water Resources Uses in Egypt

**in 2011**

- Agriculture: 58.2 Billion m³, 81.3%
- Domestic: 5.5 Billion m³, 7.7%
- Industrial: 7.6 Billion m³, 10.6%
- Fish: 0.3 Billion m³, 0.4%

**Gross: 71.6 Billion m³**

**in 2017**

- Agriculture: 60.6 Billion m³, 75.8%
- Domestic: 8.0 Billion m³, 10.0%
- Industrial: 11.0 Billion m³, 13.8%
- Fish: 0.4 Billion m³

**Gross: 79.9 Billion m³**

Sectoral competition on water resources is challenging.
Re-using available water multiple times is practiced widely.
Challenges Facing the Water Sector in Egypt

• Water per capita decreased from 1,893 m³ in 1959 to 700 m³ in 2009 and expected to be 582 m³ in 2025.

• Agricultural area per cap decreased from 0.85 Acres in 1900 to 0.13 Acres in 2009.

• Environmental deterioration (water quality)

• On-farm water management problems (at farm level).
Challenges Facing Egypt in Water Sector

- Vulnerability of Nile Delta to Climate Change
  - Sea level rise
  - From 4 to 8 million people affected
  - Great agricultural land losses
  - Sea water intrusion
Challenges Facing the Water Sector in Egypt

- Decrease Per-Capita Share of Water and Agricultural Lands
Nile Basin Countries

- Burundi
- DRC
- Eritrea
- Egypt
- Ethiopia
- Kenya
- Rwanda
- Sudan
- South Sudan
- Tanzania
- Uganda
Main Features Of River Nile

- 11 Riparian States with 424 million Capita (2010), 648 million Capita (2030).
- Drainage Basin: about 2.9 million square km.
- Area of Lakes is 81,500 square km.
- Area of swamps is 70,000 square km.
- Length: about 6,700 km.
- Total Rainfall over the Basin is about 1600 BCM/Year.
- Average annual yield of the Nile is estimated as 84 BCM.
- Ratio of the annual yield is 5% of the potential.
- Maximum water losses in the Nile Basin occurs south of Sudan in the swampy regions (about 42 BCM is lost every year)
River Nile Characteristics

River Nile: Longest Rivers of the World
River Nile Characteristics

River Nile: 6th in basin area
River Nile Characteristics

River Nile: 24th in flow discharge
Examples of Water Abundance in the Nile Basin: The Congo River

CONGO RIVER
YIELD: Discharge = 42,000 m³/sec
Outflow to the Ocean = 1,300 Billion m³/year

Outflow to the Ocean:
The Congo River: ➔ 1,300 Billion m³
The Amazon River: ➔ 6,400 Billion m³
Rainfall on each Riparian Country in The Nile Basin

Total Amount of Rainfall over the Nile Riparian Countries = 7,375 Billion m³
Nile Basin Challenges

- Extreme Poverty.
- Instability.
- Rapid Population Growth.
- Environmental Degradation
- Natural Disasters (Floods, Droughts, ....etc.)
- Complicated hydrology of Basin.
- Low Specific Yield.
Poverty

Drought
Floods
Uganda – September 2007
Food Shortage
Drinking Water
Improper Measures
Climate Change
POLITICAL INSTABILITY
CIVIL WARS
Agr. Prod. Levels in the Nile Basin Equals Agr. Prod. Levels during the Roman Empire

Farm House in Roman Empire

Contemporary Farm House in Africa
Nile Basin Opportunities

Total Amount of Rainfall over the Nile Riparian Countries = 7,375 Billion m³

Nile Flow at Aswan 84

Inside the Basin 1,661

Outside the Basin 5,714

Unallocated within the Basin 7,291
Nile Basin Opportunities

- River is least developed in upper reaches.
- Potential is great. (Water saving, Agriculture, Power pooling, ….etc)
- Great chance for win-win solutions.
- Serious steps taken for cooperation is an incentive for donors.
Conclusions and Recommendations

"Good Basin Management" is the key for success.

High potential for development

Cooperation, creativity and good management can change history

Political will and participatory approach are essential for success

Water as a catalyst
Thank you