Conflicts Factsheet

Security Implications of Growing Water Scarcity in Egypt

<table>
<thead>
<tr>
<th>Type of conflict</th>
<th>Intensity</th>
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<td>Main</td>
<td>1.5</td>
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</tbody>
</table>

Conflict Locality

Northern Africa

Countries

Egypt

Resources

Water

Conflict Summary

Egypt is currently using more water than its internal renewable resources, mainly based on Nile fresh water inflows, supply. Water stress in Egypt is expected to further increase in the future as a result of rapid population growth, rising temperatures and increasing water consumption in Egypt and other Nile basin countries. If not properly dealt with, growing water scarcity will put severe strains on Egypt’s economy and make the country more vulnerable to renewed internal strife.
Conceptual Model

Climate Change
- Gradual Change in Temperature and/or Precipitation
- Sea Level Rise

Environmental Change
- Increased Water Scarcity
- Pollution / Environmental Degradation

Intermediary Mechanisms
- Reduced State Capacity and/or Legitimacy
- Change in Access / Availability of Natural Resources

Fragility and Conflict Risks
- Interstate Tensions
- Weakened State

Social and Economic Drivers
- Demographic Change
- Economic Development
- Infrastructure Development

Context Factors

Water

Dysfunctional Resource Management
Inadequate Infrastructure
Overreliance on Specific Supplies
Water-stressed Area

Political Transition
Conflict History

Egypt is currently using more water than its internal renewable resources supply and is expected to use even more water in the near future. According to the Egyptian statistics agency CAPMAS, the country’s per capita water resources have fallen from 2,526m³/year in 1947 to less than 700m³/year in 2013, which is well below the 1,000m³/year threshold deemed necessary by the United Nations to provide enough water for drinking, agriculture and nutrition (Masr, 2014). This trend is expected to continue, leading to a possible figure of less than 350m³/year by 2050 (see UNEP, 2014).

Similarly, aggregate water consumption is expected to increase by more than 20% in the next few years (El-Gindy, 2011; MWRI, 2014), while upstream development projects on the Nile risk to reduce the amount of water flowing down to Egypt. As a result of growing water scarcity, Egypt could face rising food insecurity and unemployment, which, in turn, could revive anti-state grievances or even lead to political instability in the Nile basin region (See Dispute over water in the Nile basin).

Growing demand for water

In Egypt, rapid population growth increases water stress by augmenting water requirements for domestic consumption and increased irrigation water use to meet higher food demands (Dakkak, 2016). Egypt has one of the highest population growth rates in the Middle East. Between 1970 and 2001 the number of people living in the country has doubled from 35.3 million to 69.8 million and is expected to reach about 100 million by 2020 (Roudi-Fahimi, et. al., 2002; UNEP, 2014).

Although Egypt is already importing the major part of the food it consumes, rising population numbers are contributing to an intensification of water use for domestic crop production, which accounts for nearly 86% of water withdrawals (CI:GRAPS, 2015; Power, 2014). Water demand is also expected to increase as a result of ambitious projects to expand agriculture, industrial activities and urban centres into the Egyptian desert (see Swain, 2011; El Bedawy, 2014).

Mismanagement and degradation of water resources

Wasteful irrigation practices, deficient water delivery infrastructures and pollution are additional factors reducing the amount of available water in Egypt. Only 6% of total irrigated areas use improved irrigation systems. This places Egypt at the bottom 10% of MENA countries in terms of irrigation efficiency (Soussa, 2010; Power, 2014). In fact, it is estimated that most of Egypt’s irrigation systems operate at only 50% efficiency (El-Gindy, 2011).

Additional water is lost due to leaking pipes and drains (IRIN, 2011). Due to a lack of water treatment facilities and lax regulations, agricultural runoffs containing pesticides, industrial effluents and untreated sewage are being dumped in the Nile River, making its water gradually unfit for human consumption (Dakkak, 2016; El Bedawy, 2014).

Upstream development projects

In addition to these internal pressures, water availability in Egypt could also be reduced by external factors, such as the diversion of Nile water by upstream countries of the Nile basin, which are eager to harness their potential for hydropower and irrigated agriculture. Given that the Nile provides almost 97% of Egypt’s
water, such development could affect Egypt’s water security in a significant way (See Dispute over water in the Nile basin and Dispute over the Grand Ethiopian Renaissance Dam).

**Water resources under a changing climate**

Detailed climatic predictions vary across emission scenarios and employed models, but experts generally agree that the Nile region and Egypt in particular will experience further warming, thus increasing irrigation needs (Elshamy, Sayed & Badawy, 2009; Kim & Kaluarachchi, 2009; UNEP, 2014). Moreover, sea-level rise is going to put pressure on agriculture and water resources in the Nile delta, home to more than 35 million people and providing 63% of Egypt’s agricultural production (World Bank 2014). Due to intensive irrigation, the Nile’s environmental flows are already very limited, contributing to salinization and making the delta more vulnerable to seawater intrusion with detrimental effects on agricultural productivity and local water resources.

**Possible security implications**

Agriculture accounts for 14.5% of GDP as well as for most youth employment in Egypt (CIA, 2015; Amin, 2014). Given that water is an essential agricultural input and in view of the fact that food price inflation and youth unemployment were among the major grievances expressed in the 2011 uprising, scarcity-induced agricultural downturns risk plunging the Egyptian state into a serious crisis of legitimacy (Reiter, 2015). Dwindling water resources may further aggravate existing grievances related to deficient water infrastructures, limited transparency and accountability in the water sector, as well as unequal distribution of water (c.f. Cunningham, 2012). Recent years have already seen numerous violent and non-violent protests in response to water shortages, excessive water pollution and water-intensive land reclamation projects in the Egyptian desert (Swain, 2011; IRIN, 2010; Pacific Institute, 2015). Such protest could intensify as available water resources are further depleted. Eventually, water scarcity and political instability in Egypt may affect the entire Nile basin, whether as an unintended effect of Egyptian instability or as a result of a deliberate exercise of blame deflection: the Egyptian government may perceive fewer political risks in blaming or even punishing upstream countries for the situation than in attempting to reform Egypt’s water sector in line with what is environmentally sustainable (See Dispute over water in the Nile basin).

**Resolution Efforts**

Mounting water scarcities in Egypt have attracted the attention of various actors. The Egyptian Ministry of Water Resources and Irrigation (MWRI) is mainly responsible for water allocation, but other bodies such as the ministries of agriculture, environment or health also have important responsibilities with regard to water allocation and water quality. In cooperation with international donors - in particular the World Bank - and the private sector they are currently working on regulating water demand and improving water supply (El Bedawy, 2014).

**Reducing unnecessary losses**

In an effort to limit wasteful irrigation practices, the Egyptian government is introducing innovative techniques to surface irrigation such as land levelling, gated pipes or canal lining. These have the potential
to increase irrigation efficiency, but need to be backed by tedious interventions and firm policies (see CEDARE, 2011; UNEP, 2014). On the other hand, efforts to reduce unnecessary losses at the household level, for example by investing in water saving devices or introducing an efficient metering system and applying rising tariffs to encourage users to save water, remain yet limited (UNEP, 2014). Technical measures in the water sector are complemented by a public awareness program directed by the 'Water Communication Unit' of the MWRI. The program promotes water saving in irrigation and domestic uses and informs citizens about the importance of water conservation via regular newsletters, media announcements and public awareness campaigns (El Bedawy, 2014).

Improving water supply and quality
On the supply side, the Egyptian government has prepared a strategy for increasing the treatment and reuse of drainage and waste water (UNEP, 2014). Yet, there are important obstacles: high treatment costs, lack of political commitment and lack of public acceptance/awareness: due to important data gaps and limited information many Egyptians are suspicious as of the quality of treated water (Abdel-Shafy & Mohamed-Mansour, 2013). Egypt's capacities for water reuse thus remain limited in comparison with other MENA countries (Jeuland, 2015).

In addition, the government is attempting to curb water pollution in order to increase the amount of usable water resources. Yet, outside the MWRI and the Ministry of State for the Environment, water quality control is generally not a top priority in the different ministries and their departments dealing with the issue often lack internal support. Moreover, the ministry of the environment has only limited influence in the water sector and, more generally, few resources (about 0.4% of public expenditures) are devoted to environmental protection (Luzzi, 2010; UNEP, 2014).

Information and coordination challenges
Besides these measures, addressing Egypt's water issues will also require a concerted effort of relevant government bodies and the active participation of water users. Despite promises of improving cooperation, mandates and objectives differ considerably across ministries. Organisational routines as well as conflicts of interest between sectors and levels of government - prioritizing political stability or particular interest groups - often challenge the MWRI's ability to design and implement sustainable water development strategies (Luzzi, 2010).

Moreover, coordination between stakeholders is hampered by important data and information gaps (UNEP, 2014). Data is collected over distant intervals and only for a few indicators. Data on municipal and industrial water use is seldom accurate and water losses within distribution networks are hard to quantify. Moreover, collected data is often not disseminated among different stakeholders, which constrains the development of comprehensive water development plans (El Bedawy, 2014).

Need for increased cooperation with other Nile basin countries
Given that the large majority of Egypt’s water resources originate outside its territory, Egypt’s relations with upstream Nile countries play a major part in any effort to address current and future water scarcity. There are opportunities for improving the efficiency of basin wide infrastructures and increasing the yield of the Nile, for example by completing the construction of a large canal through the South Sudanese Sudd, where an important amount of water is lost to evaporation (UNEP, 2014; El Bedawy, 2014). A further benefit from increased cooperation could be the transition to water saving crops, while importing more water
demanding crops from upstream countries, which can produce them more efficiently (UNEP, 2014; Reiter, 2015). In view of recent tensions between Egypt and its upstream neighbours, such measures will however require a considerable diplomatic effort (See Dispute over water in the Nile basin).

**Intensities & Influences**

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<td>Societal Influences</td>
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**Resolution Success**

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<td>Increased capacity to address grievance in the future</td>
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<td>Grievance Resolution</td>
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<td>Causal Attribution of Decrease in Conflict Intensity</td>
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**Violent Conflict**

- Yes

**Salience with nation**

- Regional

**Mass displacement**

- None

**Cross Border Mass Displacement**

- No
Entry Points for Resilience and Peace Building

Cooperation
An increased cooperation between Egypt and other Nile countries could help address current and future water scarcity by improving the efficiency of basin wide infrastructures and importing water-intensive crops from upstream countries, where they can be produced more efficiently. Increased cooperation is also needed between government bodies in Egypt, in order to design and implement sustainable water development strategies.

Improving infrastructure & services
A strategy for increasing the treatment and reuse of drainage and waste water has been prepared by the Egyptian government.

Improving resource efficiency
The Egyptian government is introducing technical measures to increase irrigation efficiency and to reduce unnecessary losses at the household level. A public awareness program promoting water saving in domestic uses is also being conducted.

Environmental restoration & protection
The government is attempting to curb water pollution in order to increase the amount of usable water resources. However, water quality control is not being treated as a priority.

Resources and Materials

Conflict References
Dispute over Water in the Nile Basin
Disputes over the Grand Ethiopian Renaissance Dam (GERD)

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Further information
https://factbook.ecc-platform.org/conflicts/security-implications-water-scarcity-egypt