



## Conflict Factsheet

# Security Implications of Growing Water Scarcity in Egypt

Type of conflict  
**Main**

Intensity  
**1.5**

Conflict Locality  
**Northern Africa**

Time  
**2013 –ongoing**

Countries  
**Egypt**

Resources  
**Water**

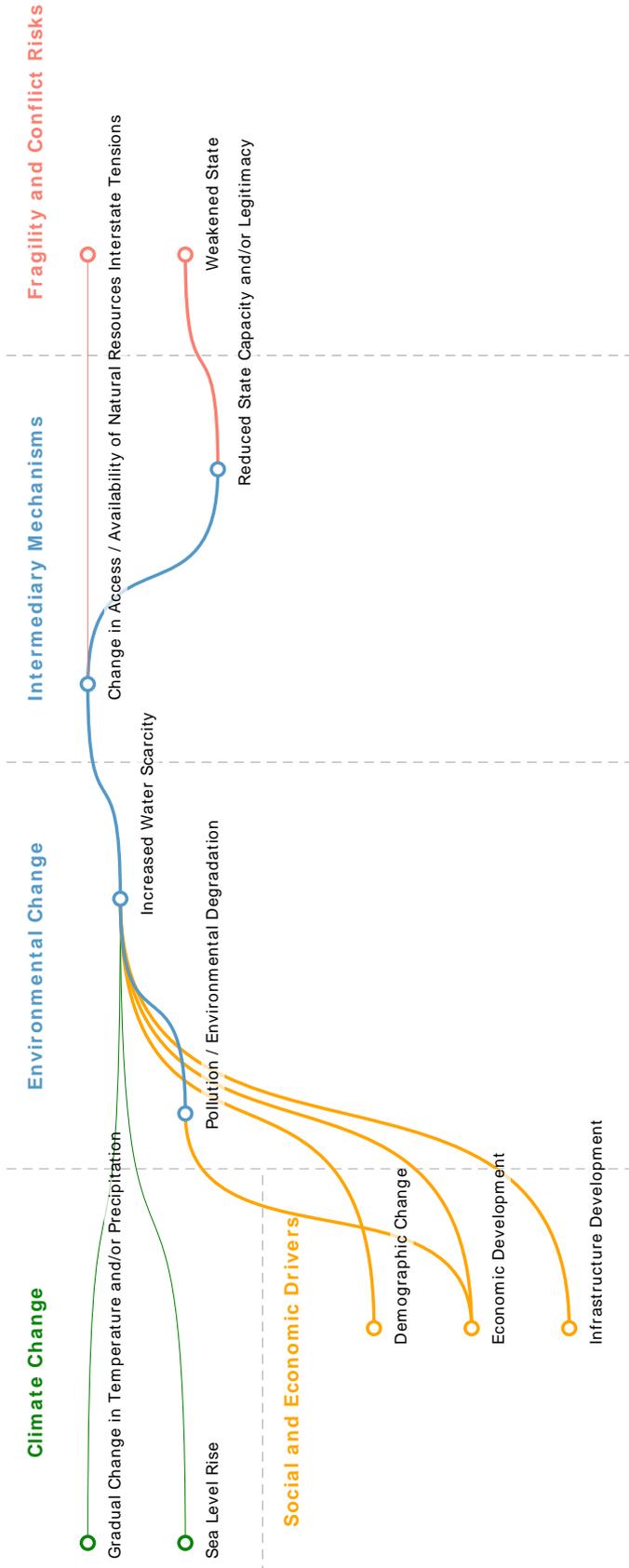


## Conflict Summary

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



### Context Factors



Water

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

Political Transition



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## 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 2,526m<sup>3</sup>/year in 1947 to less than 700m<sup>3</sup>/year in 2013, which is well below the 1,000m<sup>3</sup>/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 350m<sup>3</sup>/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](#)).

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## 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 ([Luzi, 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 ([Luzi, 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



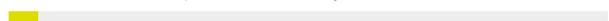
demanding crops from upstream countries, which can produce them more efficiently (UNEP, 2014; Reiter, 2015). In view of recent tensions between Egypt and its upstream neighbours, such measures will however require a considerable diplomatic effort (See [Dispute over water in the Nile basin](#)).

### Intensities & Influences

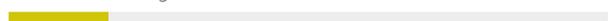


#### INTENSITIES

International / Geopolitical Intensity

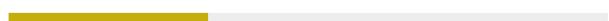


Human Suffering



#### INFLUENCES

Environmental Influences



Societal Influences



Violent Conflict

Yes



Salience with nation

Regional



Mass displacement

None



Cross Border Mass Displacement

No



### Resolution Success

Reduction in geographical scope

There has been no reduction in geographical scope.

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Increased capacity to address grievance in the future

The capacity to address grievances in the future has increased.



Grievance Resolution

Grievances have been partially addressed.



Causal Attribution of Decrease in Conflict Intensity

There has been no reduction in intensity

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## Entry Points for Resilience and Peace Building

<p><b>Cooperation</b></p> <p>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.</p>	0
<p><b>Improving infrastructure &amp; services</b></p> <p>A strategy for increasing the treatment and reuse of drainage and waste water has been prepared by the Egyptian government.</p>	1
<p><b>Improving resource efficiency</b></p> <p>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.</p>	1
<p><b>Environmental restoration &amp; protection</b></p> <p>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.</p>	1

## Resources and Materials

### Conflict References

[Dispute over Water in the Nile Basin](#)

[Disputes over the Grand Ethiopian Renaissance Dam \(GERD\)](#)

### References with URL

[Abdel-Shafy, H. & Mohamed-Mansour, M.S. \(2013\). Overview on water reuse in Egypt: Present and Future, Sustainable Sanitation Practice, 14, 17-25](#)

[Amin, G. \(2014\). Egypt country report: Policies and mechanisms for integration into the workforce and job creation, prepared for the 2014 ministerial conference on youth employment, Abidjan, 21-23 July 2014](#)

[CEDARE \(2011\). Water use efficiency and economic approach: National study Egypt ci:graps. Country fact sheet Egypt \[accessed 2015-12-14\]](#)

[CIA. The world Factbook: Egypt \[accessed 2015-12-14\]](#)

[Cunningham, E. \(2012\). Could Egypt run out of water by 2025?](#)

[Dakkak, A. \(2016\). Egypt's Water Crisis - Recipe for Disaster](#)

[El Bedawy, R. \(2014\). Water Resources Management: Alarming Crisis for Egypt, Journal of Management and Sustainability, 4\(3\), 108-124](#)



[El-Gindy, A-G.M. \(2011\). Sustainable Use Of Agricultural Resources Program](#)

[Elshamy, M.E., Sayed, A. & Badawy, B. \(2009\). Impacts of Climate Change on the Nile Flows at Dongola Using Statistical Downscaled GCM Scenarios. Nile Basin Water Engineering Scientific Magazine 2. 1-14](#)

[IRIN \(2011\). Egypt: Water challenges forcing a rethink on usage](#)

[IRIN \(2010\). Egypt: Growing protests over water shortages](#)

[Jeuland, M. \(2015\). Challenges to wastewater reuse in the Middle East and North Africa, Middle East Development Journal, 7\(1\), 1-25](#)

[Kim, U. & Kaluarachchi, J.J. \(2009\). Climate Change Impacts on Water Resources in the Upper Blue Nile River Basin, Ethiopia. Journal of the American Water Resources Association 45\(6\). 1361-1378](#)

[Luzi, S. \(2010\). Driving forces and patterns of water policy making in Egypt, Water Policy, 12\(1\), 92](#)

[Masr, M. \(2014\). Water resources per capita drop 60 percent since 1970](#)

[MWRI \(2014\). Water Scarcity in Egypt: The Urgent Need for Regional Cooperation among the Nile Basin Countries. Cairo: Ministry of Water Resources and Irrigation \(MWRI\)](#)

[Pacific Institute. Water Conflict Chronology Map \[accessed 2015-12-18\]](#)

[Power, L. \(2014\). Death on the Nile: Egypt's Burgeoning Food and Water Security Crisis](#)

[Reiter, T. \(2015\). In search of blue gold: How water scarcity in Egypt affects the country's economy](#)

[Roudi-Fahimi, F., Creel, L. & De Souza, R-M. \(2002\). Finding the Balance: Population and Water Scarcity in the Middle East and North Africa, Washington, DC: Population Reference Bureau](#)

[Soussa, H.K. \(2010\). Effects of Drip Irrigation Water Amount on Crop Yield, Productivity and Efficiency of Water Use in Desert Regions in Egypt, Nile Basin Water Science & Engineering Journal, 3\(2\), 96](#)

[Swain, A. \(2011\). Challenges for water sharing in the Nile basin: changing geo-politics and changing climate. Hydrological Science Journal 56\(4\). 687-702](#)

[UNEP \(2014\). Green Economy Scoping Study: Egypt](#)

[World Bank \(2014\). Turn Down the Heat: Climate Extremes, Regional Impacts, and the Case for Resilience. Washington DC: World Bank.](#)

Further information

<https://factbook.ecc-platform.org/conflicts/security-implications-water-scarcity-egypt>