

Strategic Analysis Paper

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Death on the Nile: Egypt's Burgeoning Food and Water Security Crisis

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Key Points

- One in five Egyptians are currently experiencing food insecurity as a result of structural issues in the food supply system.
- The Nile is Egypt's only renewable water source, but the shifting geostrategic balance between states in the Nile Basin means it is likely to lose part of its share of the Nile's flow.
- There is a growing gap between Egypt's long-term agricultural production potential and its estimated population growth.
- Egypt's food imports will have to increase to meet future food needs, but trade-based food security may not be viable in the long-term if Egypt can't mend its struggling economy.

Summary

The fertility of the Nile allowed the ancient Egyptians to build a great agricultural civilisation. Now, Egypt faces rising food insecurity and is on track to become a country of close to 100 million people struggling to meet its basic food and water needs. Egypt's food security issues are largely structural – rising poverty, wasteful food production and distribution systems, and exposure to price volatility. The effects of these challenges have been accumulating for over a decade and will be difficult to fix, given the country's ongoing political instability and stagnant economy.

Egypt faces an even more serious and insidious long-term threat to its food and water security though. The population is booming and its food needs are on the rise, but it has a declining resource base. It has a shortage of arable land and competition from countries up-river means Egypt's 'historic right' to the Nile's water is under threat. The significant gap between agricultural potential and population growth will lead to Egypt relying increasingly on imports for its food security. The country's dismal economic outlook, however, draws into question the viability of a trade-based approach to food security.

Analysis

Hunger in Egypt

Egypt's burgeoning food security issues are structural and cumulative. They have their roots in years of instability. The worrying upward trend in food insecurity has been caused by an accumulation of crises: the avian influenza epidemic in 2006; the food, fuel and financial crises of 2007-2009; the 2010 global food price spike; the economic deterioration caused by political instability since the 2011 revolution; and the [2013 coup](#).

As a result of these crises, a growing number of Egyptian people are experiencing hunger. The most recent figures from the World Food Program show that 17 per cent of the Egyptian population – 13.7 million people – were food insecure in 2011, up from 14 per cent two years earlier. These figures are likely to be even higher in 2014 after three more years of economic stagnation.

Food insecurity in Egypt is an issue of economic access; a growing number of people can't afford to purchase enough nutritious food. The average Egyptian household spends more than 40 per cent of its income on food (for the poorest families it's more than half), making them vulnerable to sudden increases in food prices. Poverty has risen by 40 per cent in the past decade to affect over a quarter of the population, some 21 million people. Almost another 20 million are hovering just above this level. Increased poverty results in over-reliance on cheap, calorie-dense foods with limited nutritional content. As a result, nutritional outcomes are worsening; chronic malnutrition among children has reached high levels and Egypt now has the world's highest rate of double nutritional burden (consumption of low-nutrition calorie-dense foods can cause people to be overweight, while also suffering from nutritional deficiencies).

The food subsidy system

The Egyptian Government's food subsidy system masks the full extent of food insecurity. The government supplies ration cards to 80 per cent of the population, allowing quotas of specific foods to be purchased at subsidised prices. It also provides an unrestricted supply of *baladi* bread, sold at 5 piastres (around US \$0.01) per loaf.

The subsidy system has played an important role in protecting the poor from high food prices in the recent crises. Without immediate substitution of another form of safety net, removing food subsidies would push those below the poverty level from 25.2 to 34 per cent of the population. Food subsidies fail to reach 19 per cent of Egypt's most vulnerable households, however, and don't provide good nutrition.

Most critically, the subsidy system is a major drain on the country's fiscal position; the government's ability to finance its spending. Food subsidies account for at least 14 per cent of the government budget, at a cost of over US\$2 billion a year. Furthermore, wastage of subsidised *baladi* bread is over 30 per cent. The wheat purchased by the government to support the subsidy system is predominantly imported (placing pressure on the trade balance) or purchased at inflated, subsidised rates from domestic producers. This high-cost system creates an unsustainable fiscal burden and the wastage it creates undermines long-term food security.

Resource Scarcity

Poverty and the structural problems in Egypt's food system will be difficult to fix in the current political and economic environment. The more serious threat to Egypt's food security is long-term, however. There is a growing gap between its long-term agricultural production potential and population growth estimates. Egypt already imports 60 per cent of its food needs and this figure is likely to rise as Egypt fails to increase food production in line with population growth.

Egypt has one of the world's highest fertility rates and its population growth has surged in the past three years. The population is expected to grow by over 20 million in the next decade, to almost 97 million people by 2025. Rapid population growth will exacerbate pressure on Egypt's, already overburdened, resource base, increasing food and water insecurity.

While the agricultural plains of the Nile have long been famed for their fertility, only 3.5 per cent of Egypt's landmass is potentially arable. The remaining land is arid desert. Agricultural production is concentrated along narrow strips of fertile land adjacent to the Nile. Population growth and urbanisation are now encroaching on this land. The consequent environmental degradation is leading to the contamination and desertification of Egypt's already limited fertile areas. Efforts to reclaim land from the desert to counteract this trend are restricted by the need to secure sufficient water supplies.

Water Insecurity

Egypt faces severe threats to its water security. The UN predicts that Egypt could be water scarce by 2025. Water security is at risk for a number of reasons - increasing water demand from the growing population, inefficient irrigation, pollution and degradation. The greatest threat though, is the possibility of [Egypt losing control of the Nile](#).

The Nile supplies 97 per cent of Egypt's water needs. Given its low rainfall and limited access to groundwater aquifers, the country has no viable alternative water supplies. Possession of the Nile is central to Egypt's national identity and its "historic rights" to the river have encouraged overdependence on its waters. The Nile flows through ten upstream countries before reaching Egypt. Those countries of the Nile Basin depend heavily on the river, which for many riparian states is their only source of renewable water.

Egypt consumes the largest share of the Nile's flow, although none of the water in the river originates within its borders. Until recently, allocation of the Nile's flow was governed by two colonial-era agreements, signed by Egypt and Britain (1929) and Egypt and Sudan

(1959). The agreements gave Egypt and Sudan monopoly control over the Nile's flow; Egypt claimed three-quarters of the Nile's total water volume and allowed Sudan the remaining quarter. The remaining Basin nations have vehemently criticised the legitimacy of these agreements, claiming that they were not independent at the time and thus unable to negotiate for a fair share of the water that originates within their borders.

In 1999, the *Nile Basin Initiative* (NBI) was formed with the objective of providing an integrated structure for stakeholders to manage the region's water resources. Increased cooperation between upstream countries resulted in the Entebbe Agreement, which was recognised under international law in 2011 when a sixth riparian nation, Burundi, signed up. The Entebbe Agreement restores water rights and allows riparian states to construct dams and other infrastructure projects on the Nile that would have violated the colonial treaties. Egypt has refused to sign the framework agreement, arguing that it impinges on pre-existing water rights.

The shift in the region's geopolitical framework has led to a proliferation of upstream developments, including dams and irrigation networks. Egypt has been most concerned by Ethiopia's construction of the Grand Ethiopian Renaissance Dam (GERD), which will be Africa's largest hydroelectric project. Egypt claims that evaporation will cause the loss of 3 billion cubic meters of water each year, which would disrupt water and silt flows downstream. In 2013, concerns about the dam triggered fiery threats from former Egyptian President Morsi. The aggressive rhetoric belied the fact that Egypt is no longer in a position to command hegemonic control over the Nile's flow.

As the country's only renewable water source, the Nile is a critical strategic resource for Egypt. Development and shifting geostrategic alliances in upstream states mean that a decrease in Egypt's share of the Nile's flow is inevitable. Meanwhile, domestic water demand is expected to increase by 20 per cent by 2025. Water availability per capita will decline. The Egyptian Water Research Centre has revealed that the country will face serious water shortages and the possibility of devastating droughts within the next fifteen years.

Water supply and agriculture

Water shortages will have a severe impact on Egypt's food security. Of Egypt's total water supply, 80 per cent is used in agriculture. As water flow shrinks and available agricultural land is used up, Egypt's food production capacity will fall. The impacts of resource scarcity will be exacerbated by the changing global climate.

The United Nations Environment Program lists Egypt as highly vulnerable to the impending impacts of climate change. Studies of a range of potential climate scenarios overwhelmingly predict long-term reductions in the Nile's flow. Estimates range between 10 and 90 per cent loss by 2095. Egypt could also experience coastal damage from rising sea levels, together with land deterioration, soil salinity and an increased incidence of drought. Further temperature rises would also increase agricultural water requirements, while decreasing crop water efficiency. Food production in Southern Egypt is expected to decline by 30 per cent by 2050 as a result of climate change. Egypt needs to build resilience in its agricultural sector now to minimise severe consequences for food security.

Trade-based food security

Egypt's rapidly growing population will demand more and more food over the coming decades. Meanwhile, resources for food production will become increasingly scarce as Egypt's water access shrinks, available arable land is used up and climate change disrupts agricultural systems. Egypt faces an expanding gap between its long-term food production capacity and the food and water needs of its population. This could further undermine its food security, as close to one in five people are already experiencing food insecurity and many more are vulnerable.

Food security can be based on two possible sources of supply: production from domestic agriculture or imported food commodities from food surplus nations. Egypt already relies on the global market for up to 60 per cent of its food needs. Egypt is self-sufficient in the production of most fruit, vegetables and livestock, but is unable to produce enough grains, sugar or vegetable oil; foods that make up a large portion of the Egyptian diet. Because of this, Egypt is the world's largest wheat importer. As Egypt's food production fails to keep pace with the needs of the growing population, it will rely more and more heavily on imports.

The risks of import reliance

Relying heavily on trade to support domestic food supply exposes a nation to two vulnerabilities. First, global food prices have been highly volatile in recent years and shocks in world prices can feed into the domestic market. Second, for reliance on imported food to be sustainable beyond the short-term, a healthy fiscal position is required.

A major cause of the rise in Egypt's food insecurity over the past decade has been exposure to global food price spikes, which have threatened domestic supply and pushed up prices. When the average household already spends 40 per cent of its income on food, sudden price spikes can be disastrous. Over 80 per cent of households have reported having to resort to eating cheaper, less-nutritious staple foods to cope with higher food prices. If resource scarcity and import-dependence continue to push food prices upwards, more of the population will come to rely on food subsidies. This will add to the government's fiscal burden and further jeopardise the viability of the subsidy system.

As recently as 2013, the Egyptian Government struggled to maintain crucial grain stocks as economic conditions threatened its ability to pay for food imports. In early 2013, grain stocks fell to a record low of only three months supply, as foreign currency reserves plummeted. Only emergency financial support from Saudi Arabia, the United Arab Emirates and Kuwait saved the government from a balance-of-payments and food supply crisis.

Financing imports

To ensure its food security as resource scarcity rises, Egypt will need to maintain the level of food imports without exacerbating the structural fiscal deficit. This will require sustained economic growth, but there are serious economic challenges inhibiting that growth. The 2011 revolution brought the Egyptian economy to a standstill, as limited policy flexibility and the prolonged transition to a new political regime created uncertainty and virtually eliminated capital inflow. Three years later, the economy is still suffering from a severe deceleration in its growth rate and the new government faces numerous obstacles.

The central challenge will be to implement far-reaching reforms to address the structural weaknesses of the economy and attract private investment. Efforts to achieve this will be hampered by vested interests and public backlash against any austerity measures. One of the key structural faults in the Egyptian economy is the dominance of inefficient military or state-owned enterprises, which developed during the Mubarak years. Reforming these is a crucial step towards economic recovery, but is unlikely to happen under a conservative government and a president with close military links.

There have been indications that one of Sisi's major goals will be to set the economy back on a growth path. He is expected to seek to implement reforms encouraged by the UAE and re-open negotiations with the IMF for a loan to assist stabilisation. Maintenance of political calm will assist investor confidence and probably allow the economy to hobble along (with support from the Gulf States) in the medium-term; which will improve immediate food insecurity issues. The strong action and wide-spread reform required to ensure inclusive, long-term prosperity and to support trade-based food security, however, will be hampered by the current political environment.

Securing food and water for the future

Many of the Egyptian Government's current strategies to improve food security are unsustainable, as they exacerbate entrenched inefficiencies and resource scarcity. This includes reclaiming desert areas for agricultural production and increasing subsidies for domestic food producers. The three key policy approaches required to improve Egypt's food and water security prospects are: to cooperate with regional stakeholders on water allocations, restructure the food subsidy system and reduce wastage throughout the food and water supply chains.

i. Regional cooperation on water supply

It is crucial that the Egyptian Government accepts that it is no longer in a position to bully upstream states into forgoing their water entitlements. The geostrategic framework of the Nile Basin is changing and Egypt cannot continue to act unchallenged as the regional hegemon. Efforts to cling to the fading status quo, will only damage and delay opportunities for cooperation.

Ethiopia's persistence over construction of the Renaissance Dam, in the face of vehement protest and obstruction from Egypt, demonstrates that refusal to cooperate with upstream states won't work. There are considerable benefits for the region if upstream water infrastructure projects are pursued. GERD will become the 'battery of Africa', supplying energy to neighbours for development projects. With improved irrigation, parts of Sudan and South Sudan could become major food producers. By refusing to take a seat at the table, Egypt rules out the possibility of mutually beneficial outcomes.

The prospects for regional dialogue and cooperation on water supply issues have improved since the election of President Sisi. While the Morsi Government took a combative stance on water security issues, one of Sisi's first acts in office was to reopen dialogue with the Ethiopian Government. In his inaugural speech, Sisi signalled readiness to cooperate on GERD and a possible diplomatic deal.

Egypt has no real option but dialogue. Openness to pursue this and to seek to minimise reductions to its water allocation, are critical steps in securing Egypt's future water supply and protecting its food production capacity.

ii. Reforming the subsidy system

The current food subsidy system is poorly targeted and unsustainable. By burdening the government budget, it undermines long-term food security and prevents funding of more effective food security and poverty reduction initiatives. The subsidy system, however, is also critical to reducing hunger among Egypt's poor. To remove the system altogether would have disastrous results; but a drastic overhaul is needed if it is to continue to provide support to the vulnerable members of its population.

The subsidy system must be more effective in reaching those in need, at tackling wider poverty-related challenges (including poor nutrition) and providing an effective and cost-efficient safety net.

The current system is widely popular and many parts of the population have a vested interest in its continuation. Reforms will need to balance popular preferences with economic necessity. Its entrenched nature will necessitate a gradual transition. Since coming into power, the Sisi government has made limited changes to the food subsidy system, trialling a [new smart-card system for bread distribution](#). In July, the government announced major reforms to energy subsidies. Similarly bold actions will be needed for food subsidies. Key policy changes should involve better targeting of subsidies (by better use of ration cards, and geographic and vulnerability targeting) and a shift towards cash-transfers in place of in-kind food provision.

The International Food Policy and Research Institute has said that by reforming the subsidy system, Egypt would achieve a triple benefit: fiscal savings, reaching the most vulnerable people and improving nutrition.

iii. Comprehensive waste reduction

While Egypt's domestic agricultural sector will never be capable of approaching national self-sufficiency, major gains can be made in the efficient use of agricultural inputs and waste reduction throughout the food system. To end unnecessary losses from Egypt's food chain and water supply, a comprehensive effort is required to improve agricultural productivity and reduce waste. Wastage is endemic throughout Egypt's water infrastructure and its food production and distribution systems. Its irrigated agriculture is plagued by water-loss as a result of its out-dated practices. In irrigation efficiency, Egypt ranks in the bottom 10 per cent of countries in the region. In the food distribution chain, waste is also rife.

Programs to improve agricultural practices and better understand the specific points of supply chain loss, could drastically reduce pre- and post-harvest food loss and the wastage in water inputs. Further reform to the food subsidy system could also assist waste reduction.

The Egyptian Government needs to act now to introduce a suite of initiatives to address resource scarcity, inefficiency and growth challenges if it is to avoid increasing rates of poverty and food and water insecurity between now and 2025. Increasing levels of food and water insecurity could spur further revolts among Egypt's population, which has only just

learnt the influence of people power. An Egyptian government that fails to meet the needs of its people is no longer guaranteed to remain in power.

Egypt is a large, growing nation and a key geostrategic player in the Middle East and North Africa. Social and political instability there could have a destabilising effect on the whole region. Egypt's ability to meet the food and water needs of its population is a matter of global importance.

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