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Egypt: Water Scarcity

Water Solutions Throughout Egypt

Egypt is one of the oldest and most prominent civilizations in the world's history. Located in the northern corner of Africa, Egypt is the largest Arab country with a booming population of 102,334,404 people. Egypt is considered to be a developing country or a country that is struggling agriculturally and trying to improve economically and socially, and though they seem to be on a pathway to becoming a more developed and steady economy, this all obscures a more perilous problem: water scarcity. Egypt has been in control of the Nile River for thousands of years and fluctuations in the river's water levels are nothing new, but a sudden decrease in the Nile's water levels early January of 2019 inflicted an uneasy feeling in many of Egypt's citizens. The Nile river has never been under as much of a strain as it is now. Climate volatility, Ethiopia's Grand Renaissance Dam, pollution, and Egypt's soaring population are beginning to take a colossal toll. This, in turn, will magnify Egypt's already notable struggles tenfold. Though many of these troubles can be mitigated through certain procedures, such as investing in drought-tolerant crops and creating a system of water conservation projects and practices.

Water scarcity is a very unnerving issue, especially for someone with water always at their disposal. I am privileged enough to live in a first-world country where I will always have adequate food, water, and housing; and problems like water scarcity will never reach me like it would if I lived in a developing or struggling country. Studies show that 17 countries, which are home to around 25% of the world's population, are faced with water crises. Although we have many nonprofit organizations and foreign aid trying to help distinguish these issues, these are only temporary solutions to what could become permanent problems. Hydrologists consider that if citizens are only amassing 1,000 cubic meters of water every year per person that their country is facing water scarcity. Egyptians are receiving about only half of that with every person only getting roughly 570 cubic meters of water every year, 20 of those meters being safe, clean water. This puts them significantly under the water scarcity line, not only that but Egypt's overall figure is expected to drop about 500 cubic meters by 2025.

Food insecurity is another pressing problem Egypt is struggling with. As the third most populous country in Africa, poverty and spatial inequality remain major human development challenges, as inconsistency in currency rates and macro-economic challenges affect the country's food and nutrition stability. Ranking 61 of 119 countries that combat hunger, affordability, food quality, and food safety remain among the most imperative challenges as Egypt continues to rely on the world's food market for more than half of its staple goods. Although there is plenty of food in markets and there has been an upward trend in production over the last ten years, Egypt still relies heavily on imports of wheat and other goods from other countries. This makes the country vulnerable to incredibly high prices when purchasing the basic necessity of food.

Egypt is a mainly desert plateau, which makes farming hard enough as it is, diminishing water sources do not help. Though the land that they are able to farm (which only amounts to about 3% of the country) is very fertile and produces a very bountiful yield, it is not nearly enough to provide for the populous country. This is a prime reason Egypt is the world's largest importer of wheat. This also means they are at severe risk of surges in food prices. Recently Egypt's wheat prices have risen close to 47%, and other staple goods are quickly following. These price inflations hit hard on household and family budgets. Street food is what most of the population of Egypt can afford. Egyptians spend nearly 40% of their monthly income on food and as prices rise, purchasing power is dissipated and it significantly slows their country's development.

The rapidly rising population in Egypt is another unsettling issue. The population boom in Egypt has not generated the same attention as the impact of economic reforms on the poor, the country's hyper-constrained politics, or accusations of human rights violations; but the dauntingly high numbers were taken into account when Egypt's head of Statistical Agency spoke and called the recent spike a catastrophe. In 2000, the United Nations predicted the population would only be around 96 million in 2026. Their prediction on population growth was off by an impressive number, this prediction was surpassed in 2017 with the population being around 97 million. The population will continue to grow rapidly unless the fertility rate (3.47) decreases, and by 2030 there will be nearly 128 million people populating Egypt.

This increasing population has begun to take a negative toll on Egypt's housing, making the country face an urbanization crisis. With the population growing at least 2% every year, many cities struggle with overcrowding and a lack of housing. Urban cities are not the only areas facing problems, Egypt's economy, in general, is struggling to keep up with the large population. Rural development is struggling with extreme poverty amongst small scale farmers, lack of coordination between various stakeholders; complex local administration system and centralization; and lessened governmental investments.

Along with the farming struggles in rural areas, nearly 7.3 million people in Egypt do not have access to clean water and sanitation, 5.8 million being in rural areas. In rural areas, around 12% of the population live in dwellings that are not connected to water systems while, in urban areas, it's 4% that does not have a water connection. Since 1978, USAID has invested more than \$3.5 billion to bring clean water and sanitation services to over 25 million Egyptians. Egypt's Housing Ministry plans to connect sanitation services to 179 rural areas with nearly 21.5 million inhabitants by the end of June 2020, bringing the rural population percentage benefiting from sanitation services to 42.4%, leaving more than half still without the benefit of sanitation services.

As the population is on the rise, there is a heavy need for schooling for adolescents. There was a 40% increase in primary school students from 2011-2016. Although families have free access to public schools, they are underfunded and often not the best place for a child to learn. The families that can afford to choose to send their children to private schools for primary education. Towards the end of students' education, they take an exam that chooses which colleges they can attend, and which fields of study are open to them. Top ranking students are given the opportunity to attend American University in Cairo, which teaches its courses in English. Other

students can attend a variety of colleges in the Cairo area including Cairo University, with over 30,000 students, Ayn Shams University, and al-Azhar University, one of the oldest and most prestigious theological schools in the Islamic world. Most children who do not complete school or go on to college learn a trade or apprenticeship in business instead.

Although Egypt offers a universal and free healthcare program, many of the hospitals and companies that deal with healthcare are not of a good standard. With the quickly growing population, reforming Egypt's health care sector is a top priority for the national social development agenda. The main government bodies governing Egypt's health care system are the Ministry of Health and the Health Insurance Organization. HIO was created as an umbrella organization that would provide all Egyptians with insurance and care. Today, it covers only government employees and school-age children. The Egyptian healthcare system consists of two options: public and private; public being low standard due to lack of funding and staffing, and private being of higher standards with plenty of medical staff that deals with foreign nationals and funding.

Egypt's economy is clearly struggling, but the government has made many advancements towards repairing its economy. They implemented their first series of macro-economic and structural reforms that successfully helped stabilize the economy and alleviate some deep-rooted problems. In 2019 GDP growth reached 5.6 percent, up from 5.3 percent in 2018. On the sectoral side, gas extractives, tourism, wholesale and retail trade, real estate and construction have been the main drivers of growth. Unemployment decreased to 7.5% in 2019 (from 9.9 percent in 2018). Though macro-economic conditions are bettering, social conditions remain difficult, much of this is due to the sky-rocketing population and the water crisis.

Agriculture relies heavily on water and getting enough to yield crops to feed a country and to keep relations between countries strong through trade. A way to ensure crop production doesn't drop dramatically is to begin investing in drought-tolerant crops. Researchers have identified new plant genes that could cope with water scarcity, cultivating rice could also help in decreasing the salinity in the soil of Egypt's coastal areas. Oraby rice could be farmed in all kinds of land, as it was successful in sandy soil and clay soil. According to Soliman, professor of Genetics at Faculty of Agriculture, it is possible to cultivate 2m feddans of the engineered rice with the same amount of water, which is used to irrigate 1m feddan of normal rice, and Oraby rice will achieve an increase in productivity by 2m tonnes of rice, meaning 1 tonne per feddan.

Depending more heavily on ground-water rather than the desalination of saltwater could help alleviate the water crisis. This could help meet the domestic demand for water, one of the largest water users in Egypt, which consumes more than 16% of the total renewable water resources. Egyptian groundwater is fresh and has few levels of salinity, thus allows meeting the future demand for domestic water, it is also cheaper than seawater desalination. In addition, the process of seawater desalination is very expensive and the cost of desalinating 1 cubic meter is \$1000, which is too much money for Egypt's poverty-stricken country to handle.

Overall there are many more solutions that can be put into practice, but the most fundamental action that should be taken would happen between Ethiopia and Egypt. The tension between

Ethiopia and Egypt has been high ever since Ethiopia made the decision to build a dam that would affect at least 25% of Egypt's water supply. Senior Egyptian officials have even gone so far as to threaten war on Ethiopia due to the belief it will diminish Egypt's water supply to detrimental rates.

Egypt's civilization comes from the water the Nile offered and has a 1929 British treaty that grants it 80% of the Nile's supply, 80% of which originates from Ethiopia. Ethiopia does not recognize this treaty, due to them not signing it. With a population larger than Egypt's, Ethiopia is just as desperate for the water and development the Nile offers. There is a solution, though, that stems from a neighboring country that's the world's leader for efficient use and generation of water, Israel. Ten years ago, Israel and neighboring countries suffered water shortages that would inevitably lead to conflict. Today, Israel has no water shortages because they solved their problems through free-market innovation. If Egypt and Ethiopia were to seek Israel's expertise, they may be able to come up with a permanent solution to their withstanding problems. Israel could show these countries two things: how to use water more efficiently so little to none water is wasted, and how to turn wastewater into potable water. These two things together would mean enough water for both countries.

Egypt is a country with challenges rising against them, making it difficult for them to be able to develop into a country that is stable and safe for everyone who lives in it. Currently, there are plenty of non-profit organizations aiding in the progression towards a safer and healthier Egypt; such as Blue Planet, which helps combat water scarcity, and WFP, which is in place to help Egypt ensure nutrition security, providing profits for school meals and mother and child nutrition plans. Thanks to organizations like these, Egypt is moving towards being more economically and socially stable. Working with Ethiopia and Israel to solve the water shortages and fights brewing will further progress this country, if successful it has the potential to improve hundreds of millions of peoples' lives.

The average Egyptian family may not have enough money to purchase food regularly or enough water to disperse amongst communities, but if they work with a country (such as Israel who rid of their water scarcity problems) to aid in their water insecurity, thousands of gallons of water could be used instead of going to waste meaning more crops can be produced and more families can be connected to potable water and sanitation. Eradicating both food insecurity and high poverty levels would have to include both ridding Egypt of the water crisis they are facing, and lowering food prices by making Egypt more dependent on their own agriculture to produce food. With increased crop yield from the usage of drought-tolerant crops and the smarter usage of water throughout the country, Egypt would have the means to flourish as a country. They would have enough water for farmers to have higher yields, and lower food prices to enable families to be properly nourished while still having an adequate amount of their salaries left. Egypt's economy is dependent on water, in order for the nation to prosper to its full potential, water scarcity and food insecurity needs to be solved between both Ethiopia and Egypt. Putting politics aside may save the country from an inevitable downward spiral.

Works Cited

El-Said , Mohammed. "Finding a Solution for Egypt's Water Crisis." *StackPath*, Daily News

Egypt, 29 Sept. 2018,

www.dailynewssegypt.com/2018/09/29/finding-a-solution-for-egypts-water-crisis/.

Chung, Elizabeth. "12 Nonprofits That Address the Global Water Crisis." *Classy*, 14 Dec.

2018, www.classy.org/blog/nonprofits-address-global-water-crisis/.

Hamed, Yehia. "Egypt's Economy Isn't Booming. It's Collapsing." *Foreign Policy*, 7 June

2019,

foreignpolicy.com/2019/06/07/egypts-economy-isnt-booming-its-collapsing-imf-abdel-fattah-sisi-poverty/.

Jacobo, Julia. "17 Countries." *ABC News*, ABC News Network, 8 Aug. 2019,

abcnews.go.com/International/17-countries-home-25-worlds-population-facing-water/story?id=64827506.

Karasapan, Omer, and Sajjad Shah. "Egypt's Population: Boom Then Bust?" *Brookings*,

Brookings, 22 May 2018,

www.brookings.edu/blog/future-development/2018/05/22/egypts-population-boom-then-bust/.

Nassar, Asma. "Egypt Plans to Face Water Scarcity, Allots LE 900B." *EgyptToday*, 25 Feb. 2018,

www.egypttoday.com/Article/1/43824/Egypt-plans-to-face-water-scarcity-allots-LE-900B.

Press, Associated. "Egypt: A Third of Population Lives in Poverty." *Voice of America*, 30 July 2019, www.voanews.com/middle-east/egypt-third-population-lives-poverty.