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Jordan, Water Scarcity

Jordan: An Innovative Approach to Harvesting Water

Throughout the world, various challenges arise. Food obstacles, lack of energy, waste and health trials fill the earth. This requires valuable solutions to resolve these issues. In addition, water scarcity is a significant issue that can greatly impact every inhabitant of the world. A country is deemed water scarce by the United Nations when the national average mean of water dips to a “supply below 500 m³ per resident” as it becomes a severe issue (“Water Crisis in Jordan”, 2019). This is the case for the country, Jordan, as it has been determined that only 150 m³ is provided for each resident (“Water Crisis in Jordan”, 2019). This presents extensive tribulations for Jordanians, and it is essential that water scarcity is observed, discussed and improved upon in order to lessen this challenge in not only Jordan, but in the world as a whole.

Jordan is a sizable country that contains a blend of different peoples and structures. 10.2 million people fill this country to the brim, especially in the urban cities, like the capital, Amman, where 91.2% of the population resides (Plecher, 2020). This leaves the other 8.8% of the country to reside in rural areas that provide a blend of lifestyles as well. Jordan obtains an engrossing government system as well, as it hosts a constitutional, hereditary monarchy with a parliamentary form of government. This means that the king remains the ultimate authority of the branches of government and a prime minister is chosen by the king. In addition, similar to the United States, Jordan possesses executive and legislative branches, a bicameral legislature, a Senate and a House of Representatives (“Government and Society”, 2021). Overall, Jordan provides an engrossing blend of government and people that fill the country.

Jordan’s geography and cultivation are composed of a few different aspects. Jordan is a Middle Eastern country located geographically in Southwestern Asia and is also a part of the Arabian Peninsula (“Geography of Jordan”, 2021). To the north of Jordan lies Syria, to the Southeast lies Saudi Arabia, to the West, Israel, and to the East, Iraq (Irvine). Jordan is generally categorized as a “flat desert plateau” and can have very arid temperatures (“Geography of Jordan”, 2021). Popular watermarks include the Jordan River and the Dead Sea. In addition, as of 2018, 11.98% of the land was deemed as agricultural land while 2.68% was deemed arable land (“Jordan”, 2018). Vegetables, including tomatoes, eggplants, cucumbers, cauliflower and cabbage along with cereals and potatoes are the main cultivated crops of Jordan and play important roles in sustaining agricultural profit and success (“Jordan-Agriculture”, 2021). Finally, the main exports of Jordan are clothing, chemicals and chemical products that play vital roles in economic success as well (“Resources and Power”, 2021).

In Jordan, family life and culture are at the center. A typical Jordanian family typically is about six members. However, due to the lack of water, vital population control is used (“Jordan”, 2021). A usual Jordanian diet includes dishes, such as, Mansaf, which is a communal eating dish made of meat, flatbread, rice, nuts and a yogurt sauce. Other dishes include falafel, hummus, Bedouin tea and coffee (Smith, 2018). Markets are common in Jordan as it is the common place for locals to shop for food. In addition, Arabic is the official language, the capital is Amman and the official religion is Islam (Irvine, 2021).

Many different jobs are also available with common work being in construction, welding, plumbing and carpentry (“Jobs in Jordan (Vacancies)”, 2021). With work in these types of fields, the average salary is around 1600 JOD a month, which equates to \$2256.73 USD (“Average Salary in Jordan 2021”, 2021). Next, education and medical care are important aspects. Primary education is free and required from ages 6-16 and then a required prerequisite is taken before the consideration of further education. Medical care is regarded as excellent, but medical insurance is often a luxury that is too expensive for Jordanians. Children are fully immunized, and overall, Jordan is a uniquely blended place.

A main issue facing Jordan is water scarcity. Jordan is located amidst arid land and the politically divided Middle East. This means that Jordan heavily relies on its own resources, like the Dead Sea and Jordan River to provide water. In addition, the Jordanian water shortage is recognized not only to be an environmental problem, but an economic one as well (“5 Countries Most Threatened by Water Shortages”, 2018). This means that not only is the water shortage an earthly problem, but it is a human problem too. Often, people are not trained in water conservation and water recycling programs that would benefit the water scarcity issues. Overall, sustainable and inclusive methods to safe water and sanitation are crucial to the future of Jordanian water (“Water Resources and Environment”, 2021).

An array of factors come into play which impacts Jordanian water scarcity. To start, the country’s own renewable water supply only accounts for half of the population’s needs. Also, changes in rain patterns are only worsening the issue (“Water Resources and Environment”, 2021). Rainfall heavily varies and 90% evaporates before obtaining the opportunity to harvest the rainwater (Mayrhaue, 2012). Currently, Jordan receives two-thirds of its water from its aquifers which is not sustainable. Of the twelve underground basins, ten are pumped at a deficit. This causes Jordan to rank fifth in nation’s facing the greatest water stress, which is a salient cause for reform and solutions in finding, sustaining and reusing water (Whitman, 2019).

Many various reforms will be necessary to improve that lack of water in Jordan. The main goal set by many scientists and specialists is to find “efficient, reliable infrastructure” that will help provide some insurance in the water scarcity issues. Additionally, water and sanitation insurance is crucial in maintaining and replenishing the essentiality. The key to administering these plans for improvement have been discussed and approached by many different organizations in Jordan and throughout the world. Overall, various plans in education, harvestation, and conservation are implemented to address these water issues.

One specific corporation is proposing aid to Jordan to mitigate these water scarcity issues and work towards solutions. The United States Agency for International Development, or USAID, is implementing a variety of improvements in Jordan. Firstly, USAID is creating projects that will upgrade and expand Jordan’s wastewater infrastructure. This project will expand Jordan’s wastewater treatment plants that will provide a heightened supply of clean water for the people to drink. These projects are also ameliorating sanitation for “millions of Jordanians” (“Water Resources and Environment”, 2021). This specific solution will provide Jordan with the start to learning and building the necessary conservation reforms they may not have been able to provide solely on their own. USAID’s reform is also only improving Jordanians’ lives. Those who have been short on water will now have access which in turn will boost health, wellness and food security for the Jordanian people.

Jordan loses half of its water due to non-revenue water. This water is lost through leaky pipes, theft and underbilling. This is an issue that requires corrective action with the governance and policies. A proposed solution that is undergone in Jordan is to correct the water sector policies. The governance is implementing new refinements to these areas of lost water through rehabilitation in water utilities and replacing old water systems. Furthermore, wasted water is a concrete problem in Jordan. Water conservation strategies are indispensable in order to lessen the water scarcity. Conservation is being encouraged with farmers and common people to make a behavioral change (“Water Resources and Environment”, 2021). Once educated, the people will be able to make valuable decisions with water use that will optimistically bring the water usage down.

Agricultural purposes alone in Jordan uses over 50% of the nation’s water and only contributes to 4% of Jordan’s gross domestic product. (“Water Resources and Environment”, 2021). Various projects have been started in Jordan to reduce the copious amounts of water being used by agriculture in Jordan. There are multiple solutions to this waste of water, including drip irrigation that supplies water to the root of the plant, reducing evaporation. This method of irrigation can reduce a farm’s water usage “by as much as 60 percent and increase yield by 90 percent” (Chu, 2017). However, drip irrigation is quite expensive to install (Chu, 2017). Alternatives like intercropping and introducing drought resistant crops, such as maize, cowpeas and rice that have been bred to withstand drought will provide recourses for Jordan (Ngumbi, 2019). Jordan greatly needs to invest in these methods of irrigation and crops to improve water issues. Through government intervention, global involvement through USAID and the United Nations, new irrigation systems should be a major method to ending water scarcity.

Other solutions aside from conservation and upgrades include desalination. Projects like the Red Sea-Dead Sea Water Conveyance Project will provide a different source of water. This project would place a desalination plant between Israel and Jordan. Hypersaline brine produced as a result of the desalination plant would be pumped into the Dead Sea. This would provide another source of water for the people, but the effect on the ecosystems is unknown. In addition, this would only prevent, not postpone, the “Dead Sea’s demise” (“Water Crisis in Jordan”, 2019). However, plans have been constructed by the Jordan government to introduce a desalination plant project over the span of the next four to five years due to the severe drought and refugee influx. This approved approach will cost close to 1 billion dollars and will be financed by the government. The project will also request international funding to help cover the expensive costs (Novo, 2020). The desalination plant, while very costly, is deemed necessary to supply drinking water and is believed to supply water for the next two centuries (qtd. in “Drought-hit Jordan”, 2021). Desalination provides a substantial quantity of water to countries stricken by severe drought. Therefore, the Jordanian government will receive the security of water as the return-investment for the expensive project. Construction for the desalination plant will be separated into two phases through a build-operate-transfer process. For the first phase of the project spanning into 2025, 100 mcm of water (1 mcm=over 264 gallons) will be produced through desalination while only the remaining 30 mcm be from groundwater. This will supply Jordan with four to five years of water. During phase two of the constructions, projections for water supply will rise to 220 mcm with a reservoir plan in the works (Novo, 2020). As reservoirs are created and utilized, considerable amounts of water will be accessible and usable for the sizable needs of Jordan. By the end of the project, enough water will be available. Overall, many countries are turning to this expensive, potentially harmful method of water supply.

While the desalination is the proposed plans for Jordan’s water scarcity issues, multiple consequences could present for Jordan. Multiple countries have implemented desalination plants due to increasing population numbers, droughts and the absence of available groundwater sources. Specifically, Saudi

Arabia relies heavily on desalination, and it has been very successful and very expensive for the country. However, experts like Manzoor Qadir with United Nations University have quoted that desalination is only a “partial solution to water scarcity”(Fountain, 2019). Desalination plants are extremely expensive and require very large amounts of energy (Fountain, 2019). In addition, hypersaline brine byproduct dispersal is yet another problem with various solutions that are going to be needed. Due to the enormous amounts of energy used, an increased dependence on fossil fuels could be an adverse issue with the building of the plants. Marine life is also affected by the copious amounts of brine and large pipes of the desalination facilities (“Ocean-Water Desalination, 2021). The people of Jordan, and many other countries, should take into careful consideration that desalination is not a perfect solution. This solution is not a permanent method, and because of this, the people should take extreme water conservation measures in their personal lives. Installing water efficient toilets, utilizing water filters in their homes, turning off faucets and taking appropriately timed showers will be a significant step in the right direction for Jordanians and the water supply.

A short term solution has been proposed in Jordan to alleviate the immediate need. This solution is tapping for freshwater reserves. Seven new wells will be built south of the capital, Amman, in order to tap a deep fossil aquifer called Disi. This aquifer still contains freshwater, however, drilling would have to be twice as deep in order to reach it. In addition, it is unknown how long this solution will last (“Water Crisis in Jordan”, 2019). This solution will be an expensive and risky project that may not help what the solutions are truly for: the people.

All of the undergoing and proposed solutions in Jordan seem like it is a step in the right direction. According to experts, the top worldwide methods to ending water scarcity include education/ awareness, conservation, wastewater recycling, agricultural/ irrigation improvements and harvesting (“Experts Name the Top 19 Solutions to the Global Freshwater Crisis”). Jordan is following these important steps to solving the water crisis in their country. People should never have to worry about one of the simplest aspects of life. These solutions will alleviate these worries and offer what everyone deserves: clean, accessible water. Additionally, in order to minimize these unfortunate water complications, national and international support will be needed. Fundraising, education, conservation and widespread awareness is necessary to aid the success of these solutions. Jordan and its supporters will need to provide steadfast determination for the acquisition of the future of Jordan’s water supply.

In the end, Jordan is heading in the right direction in conquering water scarcity. Jordan will need to optimize every available resource and solution in the fight for water. Through the success of these resolutions, Jordan will be able to offer security and livelihood to the people. Food security, nutrition, health and wellness will abound and create a safe place to call home. Jordan has a long way to go and needs plentiful support, but time, determination and meticulous planning will fix these problems. In addition, current methods and practices are nowhere near being a perfect solution, and careful consideration in utilizing these solutions as well as water conservation in daily life should be observed. Through the vast cooperation and innovation of the Jordanian government, worldwide organizations and people in their day to day, the fight for water in Jordan will succeed. When this day comes, and water scarcity is no longer an issue, Jordan will truly reach its deep potential and boom in every aspect. Overall, water scarcity is a vital issue that will continue to be explored, discussed, researched and implemented to end the fight for water for all.

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