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Sudan, Infrastructure

Introduction

Infrastructure encompasses many systems within a country; some of these include “transportation, communication, sewage, water, and electric systems” (Chappelow). In developing countries, the need for proper and stable infrastructure can be taxing on the economy as well as the civilians. Infrastructure is critical to food security in any country. It supports the production and transportation of healthy and sustainable crops. Sudan, located in the eastern part of Africa, is experiencing problems with both infrastructure and food insecurity, which significantly impacts the quality of life for civilians. These problems are severe; however, there are opportunities for solutions and improvements.

Background

In order to propose solutions for Sudan, it is essential to understand the geography and history of the country. Sudan, is one-fifth of the size of the United States of America. The northern region is mainly desert-like, while the south is tropical (“The World Factbook: Sudan”). Around 43 million people live in Sudan; it is home to over fifty different tribes (“Sudan” [Countries and their Cultures]). The average farm size in Sudan is 2 hectares or around five acres (“Sudan Seeds Sector Study”), which is small when compared to the average farm in the United States, which is 444 acres (“Percentage of Small Medium and Large Farms in the U.S”). The area of arable land, used for permanent crops or pasture, is around 16 percent of the total landmass, which is significantly higher than Sudan’s neighboring countries, including Egypt, Libya, Chad, and the Democratic Republic of the Congo (“Field Listing: Land Use”). The main crops in Sudan include cotton, wheat, and papayas. Sudan exports cotton, livestock, gum arabic, gold, petroleum, and oil (“The World Factbook: Sudan”). Due to Sudan’s location in Africa, the country experiences little rainfall, and tends to have poor soil; however, some regions contain very fertile soil (“Sudan” [Mercy Corps]). Both extremes of weather and climate result in disastrous blows to agriculture and infrastructure.

Past Government

For the past thirty years, Sudan was under the control of President Omar al-Bashir. During his presidency, Bashir, a former military chairman, used his military power to his advantage. He allowed the Rapid Support Forces (RSF), to assist in monitoring rebels and civilians in a conflict-struck region called Darfur. Following this deployment, the RSF committed crimes against humanity, which increased poverty, homelessness, and hunger (“Exposing the RSF’s Secret Financial Network”). Also during his presidency, Bashir advertised the benefits of foreign investment in agricultural land, and many countries took this opportunity (Schwartzstein). With foreign investors taking Sudanese land, many civilians were left with little to no land. These two ongoing problems largely influenced the infrastructure and economy of Sudan.

Current Government

Following mass protests in Khartoum, the capital of Sudan, President Omar al-Bashir was overthrown in April of 2019. A new transitional government was established and consists of six civilians and five military leaders. Many of these civilians want a new home, as there are around 2 million displaced people (“About OCHA Sudan”). Another desire is to restore democracy within the country and bring peace to the troubled states like Darfur. Additionally, the civilians and government workers wish to see equally shared power between the militaristic and civilian sides (“Our revolution won”). This government could improve infrastructure, including the distribution of resources and necessities for the cities affected by

corruption, food insecurity, and poverty. Due to the civilian leaders in the government, major infrastructure problems can be addressed.

Family Life

Family life plays a prominent role in the infrastructure of Sudan. The majority of rural families live in dirt houses, and multi-generational or extended families. In most rural households, young children will work in the fields (Evanson). Around 35 percent of the population lives in urban areas ("Sudan - Rural Population"). Urban households are smaller with fewer children, who attend school and study various subjects (Evanson). Rural families are not granted these luxuries because of the lack of quality infrastructure that surrounds them. With improved infrastructure, rural children could experience better health and job opportunities. Family life is important in rural Sudanese culture, which means some households remain in one location. By improving infrastructure, families will be able to travel, learn, and improve their lives and those of their children.

Agricultural Systems

The primary industry of Sudan is agriculture and farming. Around 80 percent of its workforce is in agriculture (Evanson). The majority of these agricultural production farms are in rural areas, despite the most economically advanced city being Khartoum (Rafkin). Many rural regions are underdeveloped, while cities close to the Nile region have better infrastructure (Copnall). With unstable or unfinished roads, the possibility of transporting goods to and from the market is improbable. Water systems are also scarce in the desert-like regions due to the lack of water sources (Bansal). Maintaining infrastructure systems is also a problem for the workforce because roads and public water sources can break and will not receive repairs. If one road or water well breaks, subsistence farmers are left to fend for themselves. In all, the future of agriculture in Sudan depends on the presence of quality infrastructure systems.

Rural Farmers

Subsistence farming is common in rural areas and creates issues of food insecurity. Many from rural households cannot reach markets to purchase nutritious foods, farming tools, or other critical supplies. Rural communities and families are in dire need of water for household tasks, drinking, and crop irrigation (Bansal). Additionally, the government and foreign investors use a significant amount of irrigation systems and water for their production farms (Schwartzstein). Consequently, only certain regions of the country can access irrigation to grow crops through drought seasons, and without proper roads to transport irrigation systems or farming equipment, farmers are left in the dust, literally.

Nutrition Issues

Another troubling factor for subsistence farmers is the high inflation rate, which makes it challenging to buy nutritious foods. The most common food consumed by the Sudanese population is millet, a grain crop. Millet, along with other grains, tends to be prolific, and thrives in dry climates (Carr). Generally, red meat is infrequently consumed in the country. Cattle are more expensive to both the farmer and the consumer because livestock needs a significant amount of water and food (Thomas). Because of this, some rural households have switched to other grains, like pulse which offers a small amount of protein (Abdalla). With unstable roads, traveling to markets is taxing on people in rural towns. Furthermore, the inflation rates can not only hurt the rural farmers, but can affect the economy overall, making it difficult to maintain a stable financial plan for the years to come.

Healthcare

Access to quality healthcare is a critical need of many Sudanese families. Generally, doctors and schools are in cities and towns; this creates a real challenge for those living in rural households. In addition, the

cost of medicine and health care has risen dramatically, and many citizens are unable to afford services. A poor, rural family may be forced to spend money on transportation to healthcare providers in addition to the medicine needed. (Alamin). This extra travel time and expense can lead to less families receiving proper doctor visits, nutritional needs, and other services. In all, access to essential systems and services in Sudan is compromised by poor infrastructure.

Financial Struggles

Due to government corruption and the improper use of resources, Sudan has been in constant need of international assistance for decades. Within two fiscal years, the United States has provided around \$203 million in humanitarian aid (“U.S. Relations with Sudan”). It is expected that \$1.5 billion is spent each year on infrastructure, and millions more are lost because of the inefficient systems. The gross domestic product (GDP) grows with the infrastructure investment, but around \$4.2 billion is needed each year for the next ten years to fix these problems. Water and road infrastructure costs comprise 80 percent of this cost estimate (Briceno-Garmendia). The budgeting and spending on infrastructure is a problem within Sudan’s government, and a concise spending plan would improve this. If a structured annual financial budget is established, the government can focus on critical needs. Furthermore, analysis of previous budgets can be helpful to increase efficiency of spending.

Violence

During Bashir's rule, food insecurity and corruption were prevalent due to conflict with rebellion attacks and the RSF (Morgan). Lack of roadways is problematic because at least two million people are displaced within Darfur and are unable to travel outside of the region/camps to reach food or services ("Sudan" [World Food Programme]). Within the refugee camps, the RSF has supervised and monitored the entrance and exit of refugees ("Exposing the RSF's Secret Financial Network"). Because of this, Sudan has cases of violence within camps, involving the RSF forces and rebel groups (Sikainga). The amount of internally displaced people adds to the need for constant food and water resources for the country.

Potential Solutions

A potential solution to improve food security and infrastructure in Sudan is for the government to invest in the development of rural communities. Much of the population is heavily scattered throughout the country due to displacement issues. Because of this, roads are generally unpaved and deeply rutted. This is illustrated by an image of a car stuck in a dirt road in South Sudan (Mulauzi). Additionally, at least 80 percent of food aid in sub-Saharan Africa is stolen before it gets to the food aid centers due to reports of unstable road systems (Dippold 6). With these statistics, it is evident that something must be done to improve the quality and safety of Sudan’s infrastructure.

In order to improve infrastructure systems, Sudan’s government should encourage public private partnerships (PPP). A PPP is an agreement between privately and publicly owned companies, usually involving some sort of government organization (“Public-Private Partnership (P3) Basics”). With Sudan’s newly formed government, the leaders should establish steps to encourage PPPs. These steps could include sending governmental leaders to analyze the situation, identifying areas that need the most improvement, and targeting funds for projects. PPPs have been commonly used to build and maintain roadways in various countries (Maltin).

An example of a PPP is a Hassad investment with the Sudanese food production. In this arrangement, Hassad, a Qatar agribusiness investment company, is working with local businesses to improve food production (“Hassad to Invest \$500mn in Sudan's Food Sector”). Although the steps to maintain this are unclear, this type of partnership promises improvement to food security and infrastructure systems. With

these types of partnerships, roads and communication systems are sure to be built; many jobs will be created. Through these partnerships, civilians can see what kind of work can be done to improve their country. Furthermore, improving road quality and infrastructure opens the door to job opportunities outside of agriculture and improves access to schools, doctors, markets, and other essential places.

PPP's can also be used to improve water and irrigation systems. Rural farmers who live farther away from the Nile do not receive adequate water because the government owns one of the largest farms (Schwartzstein). Over half of Sudan's irrigated water is located in one sub-basin in the eastern part of the country ("Irrigation in the Nile Basin"). In order to get water outsourced to distant regions, Sudan's government should work with local businesses and farmers to dig wells and install pumping systems to water crops and use for household tasks. PPPs can pair the technological companies with the local businesses to build solar powered water wells and irrigation systems. If the government is able to set up organizations, meetings, and groups to raise awareness in the public's eye and in the partnership's goals, the projects will move more smoothly. Additionally, PPPs should be structured so that each partner is incentivised to complete the project on time and within budget.

With the new government, infrastructure and the well-being of civilians should be the number one focus. This may seem like a very big undertaking for a young government and hardships may come in the form of backlash, refusal, or fear of change or manipulation in citizens. Additionally, PPP organizations or other regulations may compose of extended timelines and large sums of money in the process to complete these projects. However, the new government must be able to analyze and listen to the issues/situations and adopt local leaders for different perspectives on how the projects will affect civilians. Furthermore, some of the military could construct roads, solar-powered water wells, and irrigation systems with their mobilization. By using the military, there is potential to improve military-civilian relations in Sudan. The civilian side should work with local, regional, and international non-profits as well as departments of health and infrastructure. These civilian partnerships can expand job opportunities and invoke participation from subsistence farmers and local businesses. These civilians can support the partnerships by following and adapting to new laws or rules, voting for able leaders of the projects, and even working for or partaking in PPPs if possible.

Another potential solution is to revisit agreements with foreign agriculture investors to identify ways to encourage and increase local farmland ownership. During the late 1990s and even in the 2000s, various neighboring countries went "shopping" for land in Sudan (Schwartzstein). The resulting agreements were poorly arranged as some investors didn't follow the government guidelines. A majority of Sudanese farmers were unable to buy any land due to high prices (Chatterjee). Landless farmers must be involved within their village, keep their taxes and other government regulations up to date, and focus on their given trade or skill. With these suggestions, the livelihoods of landless farmers can be improved. For example, Sudan might offer foreign investors additional land at reduced rates in exchange for assisting with road construction and the employment of local Sudanese people. In addition, the Sudanese government should meet with the department of agriculture leaders to discuss the potential for other regions of agricultural land and workers. One agreement that needs revisiting is a farm owned by Lebanese investors because of its large land area and significant intake of water pumped from the Nile River (Schwartzstein).

A robust financial plan in the government can allow improvements in infrastructure to take place. Much of the money during Bashir's rule went to the military; the new government should discuss and prioritize all problems that need aid in the country. Nonprofits like the World Food Programme and the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) are currently working in Sudan, helping thousands of people. Food packages and other essentials are delivered to around 4M people

through the World Food Programme (“Sudan” [World Food Programme]). These nonprofits are all funded by the United States, but Sudan’s new government should adapt practices to work with these organizations. In order to change the future of infrastructure, Sudan’s government must work with all levels of people, businesses, and organizations. Through focused government initiatives and careful planning, the future of Sudan’s infrastructure and food security will advance.

Conclusion

The implementation of new and stable infrastructure, as well as PPPs, would significantly improve the livelihood of a developing country like Sudan. With the establishment of a new government, the focus should shift to the well-being of civilians and the country as a whole. Due to the six civilian leaders in the government, the people of Sudan will have a stronger voice in advocating for improvements in food security and infrastructure. Infrastructure projects and services can improve relationships between the military personnel and the smaller farming communities and villages. Revisiting land leases and foreign investment policies can allow agricultural leaders to widen the horizon for the development of all parties involved. Overall, the new government’s leadership and local civilian and business interaction within the country will lead to the improvement of Sudan’s food insecurity and infrastructure.

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