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Rebuilding Sudan's Food Systems: Nutritional Improvement Through Agriculture

Many individuals from African countries state that they believe people think about famine, war, and starvation when their continent is being brought up. There are so many problems in our world today, but African pain and suffering has been normalized, and there are countless people who are unaware and do not care of what these people are truly going through every single day. This is not normal and should be recognized for what it is. Just one example of this is Sudan. People from numerous countries may not know that Sudan is suffering from malnutrition. In Sudan, there are estimated to be 51,622,174 humans in their population. According to wpf.org, 41% of that population is suffering from malnutrition.

Malnutrition is defined as a lack of proper nutrition, caused by not having enough to eat, not eating enough of the right things, or being unable to use the food that one does eat. In Sudan, the average family has 5.5 people, and it is very difficult for most families to feed their entire family nutritious meals. Their meals are mostly eaten on a large, communal tray. According to Sudanembassy.org "It consists of various meats, vegetables, salads, and sauces with bread. They are known to have a sweet tooth but common nutritious meals contain lean meats, cereals, and legumes" ("Sudan and the United States"). Statistics show that is an average meal for the Sudan population. These foods do provide nutrients that are needed, but many vital nutrients still are missing. In lean meats, there are lots of proteins and important minerals. Vegetables and salads have their obvious benefits, but the bread with sauce has a major lack of nutrients, but still fills stomachs with a high calorie food. This may seem ideal enough for their conditions, but a typical family may be affected by diseases from sharing food and the absence of cleanliness, worsening the malnutrition rates even more.

The issue here is that Sudan lacks proper nutrition due to the poor farming techniques, this is why they only get small shares of the nutritious food that they do have. They lack sanitation and cleanliness when crops are being grown and the food is being eaten due to ongoing conflict. In Sudan, their major crops are “sesame, sugarcane, peanuts, cotton, and sorghum” (Sikainga). These crops are beneficial, but due to the rainfall shortage they get because of their hot climates, it is difficult. Scarcity of rainfall, sanitation, farming techniques, war, inequalities, lack of food growth, and misplacements in this country all majorly contribute to poor malnutrition. Sudan is the world’s largest hunger crisis. Famine conditions were classified in Al Fasher and Kadugli, with 20 larger areas as well. Icpinfo.org observed that “As of September 2025, El Fasher town and the besieged town of Kadugli were classified in Faminee (IPC Phase 5) with reasonable evidence. These conditions are expected to persist through January 2026.” They also vocalize that, “Uncertainty surrounding the evolution of conflict heightens the risk of Famine, particularly in 20 areas expected to receive displaced populations across North, South, and East Darfur, as well as West and South Kordofan” (Sikainga). Now being aware of these issues in more detail, it is easy to see that the more populated areas in this country struggle with malnutrition more than rural areas. Over half of this country is rural while less of it lives urban. Rural areas often face limited access to services compared to urban centers, with urbanization in Sudan marked by overcrowding and the growth of informal settlements. These limited resources also lead to dehydration. Less than half of Sudan has consistent access to clean water. This severely devastated infrastructures that are required for irrigation methods and drinking water. This is making a shortage in critical necessities, especially in areas with more community. The ongoing war in Sudan triggered a massive displacement crisis, leaving a struggle in healthcare services and why this is all happening. Families are very limited to education and healthcare, Sudan is straining to meet basic everyday necessities that we sometimes take for granted. While the United States consistently gets access to free and clean water, not all countries do. This country not only is at a loss for clean water, but they are at a loss of so many crucial necessities.

Bringing attention to the matter, we wonder what we could do to help. Malnutrition is largely caused by poor water and sanitation conditions, high disease prevalence, increased food costs, poor

farming techniques, poverty, as well as negative feeding practices, including food they typically consume at home. The Sudanese are already very good at working together as a country, and they grow special peanuts that are local to Sudan. Helping to implement methods to help this growth could be a highly promising second solution. It was determined that the specific benefits of these peanuts contain enough protein, fats, and macronutrients to treat people with severe acute malnutrition, which is a major cause of death in children under five. Nutritional studies such as WebMD.com researched that "Peanuts are a rich source of nutrients. They contain fiber, B vitamins, vitamin E, and minerals such as iron, zinc, potassium, and magnesium" (Watson, Begum). But, since these peanuts are special to Sudan and is one of their mainly grown crops, this solution may meet necessary nutrition needs for most of the country if there is enough. Similar to the United States, they could start fixing their diets with these locally grown peanuts stuffed with nutrients. The country could reduce malnutrition rates as a whole by benefiting from these peanuts. As mentioned before, the hot climate in Sudan poses a significant challenge to implementing effective farm techniques. Indoor farming, genetically modifying, using recycled waters, and irrigation could all be beneficial to improve both solutions proposed. In communities that hold more families, there would need to be areas with larger acres of land. In less populated communities, there would be less but would still be enough.

Therefore, United States assistance in agricultural techniques could significantly enhance Sudan's locally grown peanut production efficiency. This would have to be a completely new idea, bringing the proposition of brand new and advanced agricultural farming techniques. A problem faced with this method is that these peanuts do not provide all needed nutrients, but most. The Sudanese lack protein the most out of vital nutrients, which is found in these peanuts. Sudan also does not have a lot of water that is easily accessible in their country. Working around this and providing efficient water management practices would benefit the usage of water and grow the crops easier and healthier. We would implement solutions for the specific problems as well, such as their climates. Since it is so hot and humid in Sudan, we would supplement indoor farming irrigation methods to keep the crops stable through heat waves. In the past, studies show that most crops do tend to die due to the heat. "The climate modelling data from

1980 to 2024 show rising temperatures across Sub-Saharan Africa (SSA), significantly impacting food security and crop yield due to increased heat frequencies, heat indices, and more frequent heatwaves are reducing agricultural productivity by stressing crops and livestock, shrinking growing seasons, and diminishing water availability" (Moses). Knowing this gives a clear path for this plan, when introducing these new farming and irrigation techniques to grow these peanuts, it is important to also take their cultural norms into consideration. Traditional societies have religious, economic, cultural, diverse, and ethnic characteristics. We would need to consider many economic norms specifically when introducing these techniques, such as gender roles and livestock, not changing anything their society is used to, but instead just adding to it. In order for this plan to work, the United States would organize civic organizations of experienced farmers and volunteers who would lead this project. People who live on a farm and have the most experience could share what they all know from years of personal growth and past decades or even centuries of experience with agriculture and farming. This would all have to be sponsored by the government, setting aside extra money earned to help other countries in need. The United States is the largest donor country, but we still receive non-profit grants, university funding, and other small donations. Brookings.edu informs us that there is a broad international commitment that wealthy countries should provide 0.7 percent of GNP to assist poor countries. Working together as countries helps to boost the success of others, and if other countries would like to help, they must make an act now to prevent even more starvation in Sudan. This benefits both the United States and countries who are not as fortunate. Creating connections with another country is never a bad idea. The president could even be of assistance. With this, immediate safety with transportation would have to be quickly established. Since the United States and Sudan are not within a drivable distance, airplanes would have to be the mode of transportation. Although it would be very difficult to bring heavy farming equipment on a plane, this could easily be fixed with bringing more lightweight equipment and working around the larger objects. The airplane would have room for disassembled parts as well. Since this civil organization of people would be travelling on an airplane, this would need legal passports and other compliances. Once this is figured out, financial stability would have to be solidified. The United States is a wealthy country,

but it is good to be sure that we have enough finances to be supported and a plan to follow through on to help Sudan. The United States has a lot of technology that can help implement this solution. For indoor irrigation, we would use a pump to deliver water from a container through tubing directly to plant roots, often controlled by a programmable timer that we can show them how to use. “Smart irrigation controllers have emerged as a vital solution for optimizing water use in irrigation systems” (Lofton). These programmed timers use environmental data to supplement plans for the plants watering and determine how much is being used. This would help to prevent using an unnecessary amount of water and wasting already limited resources. This indoor irrigation farmland would have to be massive. Already having the knowledge that an acre is around the size of a football field, many farmers share that they have around 200 acres of land. Making sure things are financially stable with donations and spending, it would be reasonable and effective to purchase 300 acres in 4 different areas of the country so that everyone has an opportunity to get the benefits. Drip irrigation is the most efficient method of irrigation due to it not wasting any extra water. Implementing timers would also reduce wasting water resources, and even if that was short it is possible to use recycling water. There is a lot of recycling water left over that is being wasted. This could easily be purified and used throughout these new peanut farms. In order to maintain stability, the United States should work hard to make sure Sudanese farmers understand what they are being introduced to and how to properly handle and manage it. This is proven to be successful, many American farmers have used this method for indoor farming. Knowing that we have great and evolved technology in this age, it can be used to benefit agriculture. As previously mentioned, remotes and timers would be ideal for efficient new methods of farming to introduce to Sudan and would be easier to work with, promising a long-lasting solution to this problem. Even if a piece of equipment were to malfunction, short-term effects could even impact thousands of Sudanese individuals. A large variety of people would already have a better diet and would no longer lack some of these essential nutrients as much as they used to.

The end goal for this project would be to reduce Sudanese malnutrition rates from 41% to 35%. These locally grown peanuts offer various crucial benefits such as protein, vitamins, and fiber. If these

countries work together, the solution to less malnutrition rates could not be so far away from us. Peanuts are implemented in so many recipes, snacks, or meals that you eat daily. Think of the benefits you will get just from one locally grown peanut that would boost malnutrition rates through agricultural education and farming. African suffering should not be normalized, but instead it should be addressed and changed.

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