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Chad: Education for agriculture

“...education gives people the skills they need to help themselves out of poverty and into prosperity.”
 --Anonymous

Chad, an underdeveloped country, is ranked among the poorest on the African continent, spending less than 3 percent of its gross domestic product (GDP) of \$13.59 billion on education. That lack of education is among the leading causes of its 74.6 percent illiteracy rate. The result is extreme poverty, and a lack of knowledge about proper and successful agricultural practices. Home to more than 200 ethnic groups, the region, also known as République du Tchad, gained independence from France in 1960, and is the largest landlocked country in central Africa. Despite the recent augmentation of oil refineries, much of its 495,755 square miles of land is resource poor, with most of its 11,412,107 inhabitants populating the southern portion of the country, where forests and agricultural areas are more prolific due to increased rainfall. Twenty-three percent of Chad's households are headed by women and 54% of these live on less than one dollar a day. Chad is divided into three climate zones: the north, known as the Saharan zone, is dry and hot; the central area or Sahelian zone, with more rainfall; and the southern semitropical zone which normally gets enough rain to grow some crops. The country as a whole; however, suffers from periodic famine and is extremely susceptible to drought. Chadian families take the brunt of the difficulties including poverty, ethnic and social group violence, poor healthcare, climate volatility, disease, malnutrition, and little or no education (Abbink). Poverty, low crop yields, and a poor economy are all a result of insufficient education.

Polygamy is known, but the average subsistence farm family includes a couple and five to seven children. Social units generally consist of married brothers, grouped together, or large extended families. The families try to remain in one spot; however, the weather and the amount of resources such as food and water available ultimately dictate how long they remain in a specific area. Men are primarily involved in the planning, raising livestock, commercial farming, and maintenance of the community, while women have a slightly more difficult set of tasks entailing household jobs, child rearing and education, small amounts of trading, along with caring for crops and small livestock. Despite their differing tasks, men and women are commonly seen as having the same status, except in religion and public functions. While there is no food culture that all farm families share, a common dish is a type of porridge made from cereal grains, sorghum and millet. Households in the northern part of Chad consume fish as their primary source of protein, and have more access to meats and dairy products, while those in the south rarely consume fish and dairy products, but have much more access to fruits, vegetables, and spices (Abbink).

The education system in Chad is in a state of crisis, with nearly 75 percent of those over the age of fifteen unable to read or write. Recent studies rank Chad last out of 100 countries studied, with Afghanistan, Burundi, Guinea-Bissau, and Mali coming just before (IRIN). Approximately 36 percent of all school-age children are enrolled in a formal education program. Most other young children are educated by their families. After that, some attend a primary school, but it is often impossible as many villages are not within walking distance and family duties take up much of their time. Men attend about nine years of primary school. Girls only attend about six years, and are particularly disadvantaged, as one-third of them are married by the time they are fifteen, and two-thirds by their eighteenth birthday, pulling them away from their studies. Higher education is rarely pursued in the country, as there are only three colleges, the University of N'Djamena, the University Adam Barka d'Abéché and the University Roi Faycal au Tchad. The colleges, located in the western portion of central Chad, have limited course

offerings and little space. Due to the lack of prior education, cost, and family responsibilities, local young adults rarely attend them.

A child born in Chad has a 1 in 5 chance of dying before their fifth birthday and can expect to live no longer than fifty years (International Medical Corps). Malnutrition is the main cause of death but parasitic or bacterial diseases such as protozoal diarrhea, typhoid, malaria, and schistosomiasis, have a high risk of being contracted. Many Chadians rely on traditional medicine, as healthcare in the country is negligible, with only 4.3 percent of the country's (GDP) spent on it. This problem leads to a staggering ratio of one physician for every 25,000 people. Additionally, there are 5 hospitals, 18 medical centers, 20 infirmaries, 127 dispensaries, and 75 private medical facilities, according to the most recent information available (Mongabay). The absence of hospitals is a major cause of 11 women dying per 1000 live births, and 9 out of 100 infants dying. Overall, the dismal accessibility to good healthcare and nutrition has resulted in a rate of almost 15 deaths per 1,000 people, ranking fourth worst in the world (Central Intelligence Agency).

Much like other Third World countries, ownership has a major impact on land usage. While there are several different kinds of land ownership, the most common is communal tenure. This means the property is collectively owned and operated by a single community or village. The average farm is roughly two and a half to five acres. Crop rotation in the Soudanian zone traditionally begins with sorghum or millet the first year. Mixed crops of sorghum and millet, with peanuts, legumes, tubers, cotton, maize, spices, manioc, rice, sesame, and fruit are then cultivated for approximately three years. Afterward, farmers return the land to fallow for periods up to fifteen years, turning to different fields for the next cycle. Preparation of a field begins with a slash and burn technique, cutting heavy brush and unwanted low trees or branches that are then laid on the ground. Collectively owned lands are parceled out during the dry season, and the fields are burned just before the onset of the first rains, usually around March. Farmers work most intensively during the rains between May and October, planting, weeding and protecting the crops from birds and animals. Harvesting begins in September and October with the early varieties of sorghum. The main harvest occurs in November and December. While these farming techniques have existed for centuries, with education, more food could be produced with far less effort (Collelo).

Barriers to improving agricultural productivity are: the geographic topography, as it primarily a desert, with little farmland, an insufficient water supply, lack of education, poverty, poor farming techniques, tension between different religious groups and civil conflicts, language barriers, corruption, environmental damage, absence of government assistance, and little foreign aid. True employment for a subsistence farm family is rare, as most members have to work to endure, for there are many tasks that must be done for a family to eat and drink. A paucity of education and training, food and water scarcity, and varying crop and livestock yields make it difficult for family employment. Making a living wage is far less important to survival than being able to procure enough food for a family. The money they do earn generally comes from the trading and sale of surplus crops and livestock. Access to food markets is restricted as most community markets are not within a feasible walking distance of the poor rural farming villages, and language barriers are often a problem. Poor nutrition comes from the lack of medical services, or unpredictable climate conditions, that have a direct impact on the amount of food available.

Education plays a major role in a family's inability to produce enough food, resulting in poor health, malnutrition, and lack of financial resources. Without gaining the essential skills the children learn in primary school, they have a difficult time learning new methods of agriculture and animal-rearing, acquiring proper and efficient tools, retaining rain water, and understanding ways to effectively rotate, fertilize, and irrigate fields. "We would like to learn how to use these tools and how to cultivate our fields for optimal yields," said Canton Chief of Mollou, Ouaddai (Virtual Chad). Since families have relied on the techniques learned from earlier generations, there is some reluctance to give up old farming methods. Due to the absence of knowledge, the families have not been able to repair local wells, forcing them to

walk over two and a half miles to the nearest water source, at times causing them to abandon their village. Illiteracy leaves families unaware of the foreign aid available and unable to apply for the few grants or services provided. The lack of education and training also leaves families with crops that are often poor, resulting in food scarcity, and the inability to generate income from trading food and livestock. Details of proper nutrition are absent because families have inadequate access to school health classes and medical centers.

The United Nations Development Programme ranks Chad 184 out of 187 countries, due mostly to its inadequate education system. While 95 percent of children receive a primary school education, only 23 percent are able to go to secondary school, and a mere 2 percent attend a tertiary program. Parents often pull their children out of school to help in the fields and with other domestic chores. The overall dropout rate is 62 percent. In comparison, the United States never dips below 94 percent attendance during all three stages of education, and has a dropout rate of less than 7 percent (UNDP Human Development Reports). In 2012, only 9 percent of the children in Chad passed their high school finals (Kagbe). These rates are caused by reduced spending, and a lack of access to proper schools. Educational institutes are often inaccessible by road, especially during the rainy season. Places of learning that are available to students are usually poor, under resourced, understaffed, and built of materials like mud and millet stems. Inadequate infrastructure in rural areas has created crowding of 100 to 200 students per class, generally taught by unqualified teachers. Expenditures on education are less than two and a half percent of the country's GDP, ranking them 160 out of 173 countries (Central Intelligence Agency).

Environmental damage is common as a result of poor education. Environmental degradation and an imbalanced ecosystem directly affect pests, soil erosion, nutrient depletion, as well as irrigation water. These factors can account for over a 50 percent loss of the yield in a poor crop year (GRID-Arendale). Only with proper education and training do families understand that crop rotation, fertilizer application, and planting nitrogen rich crops helps maintain soil fertility, and increase crop yields. The major method of farming in the southern portion of Chad is the slash and burn technique. Not only is this fairly ineffective, it leads to excessive deforestation. Without the trees holding soil in place, erosion and displacement of fertile top soil is common, making future plantings difficult. By removing large amounts of vegetation, desertification occurs as this dry land region becomes increasingly arid. This also happens from improper irrigation. A prime example of this problem is Lake Chad, which over the last fifty years, has shrunk to 1/20th of its original size (Isha Sesay).

Women are particularly disadvantaged by a poor education as enrollment in school is often discouraged. While men spend an average of 9 years in school, women only attend about 7 years. Much of this is due to women's duties at home, as they generally have more tasks to complete in a day than their male counterparts. Another reason women typically attend school for less time, is early marriage. Child marriage is frequent in Chad, with one-third of girls marrying by the age of 15. Girls are often removed from school prematurely to start up their own household. Once they start a family, women rarely return to education because of the large amount of work required at home and in the fields to survive and provide for their families (Central Intelligence Agency).

Trends in education are measured in a variety of ways, such as literacy rates, attendance rates, years spent in school, success rates, amount of government money spent on education, and expenditure per student. Literacy standards for young students and adults are increasing, but slowly, less than 10 percent over the last 10 years. (World Bank) (index mundi). While the percentage of Chad's GDP spent on education is steadily declining, the attendance rates for school are increasing. This presents a large problem, as more students wish to attain higher education. However, primary and secondary schools lack infrastructure and if they are available, they are too small, lack certified teachers, and are under resourced. Compounding the problem further, the country has limited options to acquire additional resources. Much of the country's education expenditure is used on their few colleges, leaving little or no funds for the smaller schools (United Institute for Statistics). This decreases the number of schools for children, which typically

excludes entire villages from gaining a proper education. Thus, rural farm families have difficulty finding schools that are adequately resourced and within walking distance. The country faces problems by consistently spending less money on education; it appears that the situation will worsen for subsistence farm families.

If the education situation in Chad improves, farming families should be able to produce more food, possibly enough to generate income through trade. If children are trained to read and write when they are young, they would be more perceptive of and open to foreign and government aid, and be better prepared to learn new methods of crop rotation, soil replenishment, livestock management, well digging, water conservation, and proper nutrition, which would increase food security for the family as a whole. With income earned from surplus crops, tools and equipment could be purchased to make farming easier and more efficient. As the community of subsistence farmers becomes more financially sound, the chances for economic development, including building schools and medical centers becomes more viable. If educated, trained, and supplied with the proper tools, rural families could become completely self sufficient. With more funding, children could remain in school longer. Women, in particular, would benefit by spending less time in the fields, and more time in the classroom, giving them the chance for a higher education and further employment.

If adequately educated and prepared, many issues present in Chad could be prevented or eliminated altogether. Climate volatility, water scarcity, and irregular crop seasons could all be opposed by the implementation of special farming techniques, such as planting drought resistant crops. Man made issues, such as pollution, energy demand, famine, and population growth can all be dealt with by planning properly, collaborating with local and state officials and organizations, as well as using foreign and government assistance.

While there are many ways to improve food security through education, the most effective method might be to organize a training team agency, similar to an agricultural cooperative extension. Housed in a central agricultural station, the agency would be in charge of recruiting and training individuals; determining where they would be sent; and securing funding. Although the agency would be agriculture based, it would also recruit certified teachers for schools. Another important function would be to establish both present and future goals regarding education, agriculture, health issues, and economics. Meetings, communication, and strategic planning would be extremely critical in the beginning stages of the project.

Initially, complete local, state, and national government cooperation would be required, as permission to form the training agency would need approval. Funding and guidelines to assure safety and conduct would also have to be established. In addition, the government would help by locating and selecting representatives from various areas of Chad who would discuss the problems in their specific regions with the training agency. These representatives would identify the areas with the greatest needs. After the agency is formed, the representatives would still be consulted frequently. The representatives should also accompany the initial training and education teams to help establish rapport with the local villagers. Experts in specific fields must be recruited for teams to be sent into rural agricultural communities in Chad. Two teams per region, selected by the agency would be required to effectively teach inhabitants how to gain food security. One team should have a mentor to cover agricultural related topics such as crop rotation, soil replenishment, combating erosion, setting up a seed bank, and selecting disease and drought resistant crops. Another individual on the team could teach pastoral topics, such as veterinary practices and animal husbandry. The last team member would educate Chadians about water issues, such as well digging, water purification, irrigation, and water conservation. A second team ought to include an educator to help establish a proper school environment, provide adequate curriculum and resources, encourage school attendance, and recommend the pursuit of a higher education. Another member of the second team would give instructions on economic issues such as setting up income through trading and

marketing of produce. The last individual on the team might discuss and assist with medical problems, such as proper nutrition, vaccinations, and family health. Following Norman Borlaug's example, these teams would not tell the villagers that their practices were wrong, but in a positive manner, they would suggest proper and more efficient methods.

One Millennium Development Goal that could be reached by the end of 2015 is country-wide primary education. To achieve this, a number based on a census of primary-aged school children would need to be obtained to check attendance. When results indicate a lack of attendance in specific areas, they would be targeted for improvement. An initiative to increase attendance may be to provide free lunch for schoolchildren. One local project that would be extremely helpful is The Local Development Program Support Project. The project provides matching grants to co-finance proposed community programs, community-based organizations, or decentralized local government entities. This helps fund transportation, education, medical centers, water and sanitation, and management of natural resource projects. In addition, larger infrastructure projects, such as drilling, road building, and water supply system management would be taken on in the future (World Bank). Increasing the size and effectiveness of this project would be easy, but its primary need is more funding.

Communities could assist the situation in Chad through donations, and possibly even volunteering. Ordinary citizens in the country can help by being open to new ideas and recommendations, while suggesting problems that may develop in neighboring villages to their local representative. The government of Chad could be used to help promote and maintain peace between ethnic groups, and also between neighboring countries. As a separate function, the nation could begin to earmark funds from the numerous oil companies' revenue for increased food security. A project that could help is the Tony Blair Africa Governance Initiative, which focuses on creating a more effective government, to promote a productive economy. On an educational level, the three local colleges could help by offering free or reduced courses in self sustainability. Grants could be sought from corporations like General Electric, Walmart, and Exxon Mobil, which owns one of the oil wells in Chad. Organizations, such as the United Nations Development Programme, the Central Intelligence Agency, and the World Bank could help with organization, and obtaining current statistics, surveys, and censuses. Also charities, for instance, the Bill & Melinda Gates Foundation could be asked for funding. Rural farm families are extremely important in the process of becoming a self sustaining country. For the best result, farm families would have to work closely with the organizations trying to help them, give up portions of their way of life, and embrace newer and more effective solutions.

In the underdeveloped and drought stricken country of Chad, the inhabitants are currently struggling with many issues, such as education, poverty, a growing food deficit, as well as many social and economic problems. Many of these complications are caused by a lack of education, funding, and training. To resolve these difficulties, a direct makeover of the country's education system is in store. As a start, the government must stress to its people the importance of a good education to improve their way of life. The team training agency, similar to a cooperative extension, would help by working with various aid organizations and corporations, to garner funds and establish proper training involving education, agriculture, medical services, and water scarcity for rural communities. Most importantly, input must be sought from local representatives of rural farm communities, who should be involved in this entire process.

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