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Sierra Leone: Improving sustainable agriculture with external assistance and improved education

Sierra Leone is a nation that has had its share of trials transcending human efforts to rebuild and revitalize its current state. Located on the western coast of the African continent, Sierra Leone is the possessor of a plethora of natural riches, including diamonds, bauxite, iron ore, and titanium (Powlick 2). Its climate is also enviable compared to the surrounding countries; with an average annual rainfall of nearly 195 inches, the country is one the wettest located on the West African coast (“Africa: Sierra Leone”) However, the tenure of all of these favorable factors seems in vain as the nation lacks the basic foundations to effectually utilize them. Pressure on the environment via rapid population growth, overharvesting of timber, expansion of cattle grazing, slash and burn agriculture, overfishing, and the depletion of natural resources during the nation’s civil war are all environmental afflictions that actively threaten immediate food security (“Africa: Sierra Leone”). This general lack of agricultural conscience and administrative corruption present in Sierra Leone can be traced back to the civil conflict that ravaged the coastal country for over ten years (“Sierra Leone” *Encyclopedia Americana* 792).

Sierra Leone has had a turbulent history surrounding its government. The nation gained its independence in April of 1961 and just six years later, the new All Peoples’ Congress (APC) party led by Siaka Stevens gained power in the national election. This administration ultimately led to the onset of inflation, economic corruption, and a growing resentment toward the government as a whole. Shortly after the adoption of a multi-party system and a new constitution in 1991, a civil war began with the arrival of Liberian rebels known as the Revolutionary United Front (RUF). The conflict that erupted became known as a “campaign of terror” as dissenting RUFs assaulted innocuous civilians and devastated the nation’s infrastructure (“Sierra Leone” *Encyclopedia Americana* 795). After peace talks commenced in Togo in April 1999, the following May marked the beginning of the end of war as the RUF was pushed from the capital; the war eventually concluded in January 2002 (“Sierra Leone” *Compton’s* 286). The lasting effects of this disastrous conflict include the modern existence of thousands of unemployed refugees, a declined agricultural status, misdistribution of wealth, non-reliable food security, and general infrastructural deficiency (Kargbo). All of these issues, though daunting, can be improved, if not resolved, through more responsible farming methods and improved agricultural education.

The family dynamic and extensive size plays a large part in the impoverished lifestyle common in Sierra Leone. Rampant polygamy causes families to have numerous children to care for at a time. Although many Sierra Leoneans actively take part in helping care for and support extended family, the high orphan rate can place a burden on extended family members, namely the elderly and widows, who feel obligated to assume the role of the guardian by taking in those who have lost one or both parents. Overburdening those who are usually unable to sufficiently support themselves often leads to dismal conditions for both children and adoptive caretakers. These large families typically live in a thatched-roof mud hut equipped with a dirt floor (“Sierra Leone Facts”). Widespread poverty exists within the nation’s numerous cities and rural villages outside of the capital of Freetown. According to a 2007 and 2008 study, 75% of the population lives below the poverty line, and more than half of the inhabitants live on less than one US dollar a day; 80% of the impoverished reside in rural areas as well (“Rural poverty”). The poorest include refugees who were displaced by the civil war in the Northern and Southern provinces, young people, former soldiers, and sexually abused young women and mothers (“Sierra Leone Facts”).

The typical diet of rural populace consists of rice and roots with the occasional accompaniment of fish, chicken, leafy greens, or “bushmeat.” - a miscellaneous source of protein that is obtained from the wild

and can range from wild mice to monkeys and larger game. The staple crops that play an integral part in the regional diet include cassava and rice (“Sierra Leone Facts”). The rural population depends on water from rivers, pools, shallow wells, springs, and swamps, all of which are often dirty. This poor availability of clean water makes the population susceptible to outbreaks of waterborne diseases such as diarrhea, hepatitis A, cholera, and typhoid fever (“Healthcare in Sierra Leone”). The country is ranked 180 out of 187 countries on the UN Human Development Index concerning living conditions (“Sierra Leone” *Healthcare Poverty Action*).

In terms of healthcare, hospitals and health centers around the nation have decreased in functionality and efficiency, as most were looted during the civil war. Sierra Leone has one of the world’s highest maternal and child mortality rates (“Sierra Leone” *Health Poverty Action*). A diversion from conventional distribution to patients to outside markets for private sell by physicians creates a drug shortage. Doctors are also in short supply, as there are estimated to be three doctors for every 100,000 people – the World Health Organization recommends at least 228 doctors to care for the same amount of patients (“Sierra Leone: Drug diversions”). Although the health system continues to gradually improve, the country still primarily depends on international organizations to help deliver healthcare (“Sierra Leone” *Health Poverty Action*).

The educational system in this country is another factor that lends to the underdeveloped agricultural sector and depressed opportunities for advancement. Local culture does not place a high value on schooling, especially for girls, and a 2008 study revealed that the literacy rate of the total population over the age of 15 was 39.8% (“Sierra Leone Facts”). Also, education is not readily accessible due to distance required to travel to attend and lack of financial means to purchase necessary supplies and uniforms. Primary schooling is generally free, aside from the cost of the needed materials. However, secondary school is costly, with an average fee ranging from \$50 to \$250 for a single term. Although 7.95% of the 71,620 square km of land is arable land, thousands of able-bodied men remain unemployed. One factor likely to be responsible for this situation is the instability and difficulty of farming, namely the highly demanded crop of rice. Farmers have to negotiate with the local chief or landowner to obtain land and go through great measures to locate seeds and carry out the actual process of cultivation (“Sierra Leone: Why don’t people”). Of the 60% of unemployed or underemployed youth, over 50% remain illiterate, suggesting that they also lack the basic skills that are currently and will eventually be needed in the market (“Supporting the Government”). Poor infrastructure, sporadic electricity supply, and governance constraints in the public sector that result in corruption are leading factors that obstruct the establishment of more job opportunities (“Millennium Developmental Goals”).

Farm size and crops grown are both aspects that affect and are affected by food security. The average farm size in Sierra Leone is roughly 1.68 hectares per family. On commercial farms, rice, coffee, cocoa, palm kernels and oil, and peanuts are all grown for sale; root and tuber cultivation is conducted in the country’s southeast corner. A prominent fishing industry exists along the western coast as well as the raising of poultry, sheep, cattle, and pigs as livestock (FAO). Many communities continue to practice “shifting cultivation,” in which relatively short periods of cultivation are followed by longer stints of fallow (“Sierra Leone” *Encyclopedia Americana* 793). This method utilizes fire to clear out land, requiring a large amount of land, most of which will be unproductive at a time. Land shortages may force farmers to turn to crop rotation, which increases the intensity and frequency of cultivation with shorter fallow times. This further damages the land and hampers productivity. Also, farmers who grow on collective tenures are less likely to adopt soil conservation measures because their landlords will benefit from it in their stead.

Numerous barriers currently impede the improvement of agricultural productivity in Sierra Leone. Lack of maintenance, feed deficiencies, and uncontrollable parasites and diseases negatively impact crop yields and livestock population, respectively. The absence of agricultural knowledge and technologies due to

scarce extension services and training have all lent to decreased productivity as well. Limited government-funded rural financial services play a large part in preventing farmers from investing in equipment and developing their enterprise (Sannoh 3). Infrastructural deficiencies also play a large role in hampering farmers' ability to generate profit from their crops due to long distance from marketing centers and poor food storage systems. However, the most direct barrier to productivity in the agricultural sector stems from government action in the 1950s that diverted labor from agriculture to diamond excavation, putting a smaller emphasis on the cultivation of necessary crops ("Sierra Leone" *Encyclopedia Americana* 792). Natural hindrances also significantly affect farmers' output; torrential rainfall accelerates soil erosion and contributes to infertility while insufficient water supply for crops during the winter dry season contribute to low crop production nation-wide ("Sierra Leone" *Encyclopedia Americana* 792; Burton). The rainfall that does occur is often too torrential to be collected and water sources have been depleted because of human interference (Burton). Finally, environmental degradation is almost exclusively influenced by human actions. A rapidly increasing rate of deforestation and population growth leaves the land vulnerable and infertile. Rapid population growth and widespread use of charcoal as fuel are both responsible for increased air pollution. Chemicals from mining companies also contribute to tainted water normally used for drinking and irrigation purposes (Dumbuya). The use of collective tenures and temporary farming methods, such as shifting cultivation, only lend to further soil degradation.

The depressed system of sustainable agriculture present in Sierra Leone has monumental effects on the general welfare of the typical household. Food security is threatened by many of the principal factors that plague the country as a whole. Rapid population growth, declines in average yield, limited use of modern technologies, expansion of production to unprofitable lands, and soil degradation all act as barriers to access to adequate nutrition and local food markets (Sannoh 5). The inability of families to produce adequate crops and their lack of access to sufficient nutrition are affected by similar factors. Continually rising prices of seed force subsistence farmers to scavenge for them, and increasing food prices foment a voluntary decrease in consumption by the rural poor. The "hunger gap" that occurs between harvest when the previous year's crop has been depleted and the new one has yet to arrive – roughly five months – contributes to both decreased productivity and nutritional access. ("The Human Cost"; "Sierra Leone: Why don't people"). The agricultural practices and environmental conditions present have not been favorable to the growth of rice and have led to 20% of rice being imported from China. This coupled with inflation eventually led to the national government banning rice exports to restrict price increases of the crop in 2011 ("GIEWS Country Briefs").

Certain groups are particularly disadvantaged when it comes to gaining access to the materials necessary to provide for themselves and contribute to improved agricultural productivity. Rural inhabitants have virtually no voice in decisions that are made in the capital and by local authorities concerning the environmental needs that directly affect their enterprises. The distribution of wealth in Sierra Leone is also highly unequal and commonly leaves rural people excluded from the channels of wealth and ultimately stuck in a cycle of poverty (Thoronka). The rural population is overall indigent due to the lack of funds to purchase materials necessary to support more efficient methods of cultivation, such as better seeds and fertilizer ("Changes in cultivation"). Women are deprived of extensive educational and health care access and face discrimination in the job market. This intolerance ascribes to less opportunity to help improve agricultural deficiencies and a decrease in manpower in this field (Dizo-Conteh). Accounting for the high dropout rate recorded among females and the lack of emphasis on female education, women also possess fewer skills to progress in the market and earn a decent living ("Millennium Developmental Goals").

The trends for the improvement of sustainable agriculture are measured by the likelihood and occurrence of MDG achievement along with the amount of money generated by the agricultural sector. The collective trends for the improvement of more efficient cultivation have a negative outlook with many of the projected MDGs unlikely to be achieved: only eight percent of the land is under environmental protection

and less than five percent of forest-covered land exists. However, the country shows promise in establishing sufficient water availability to the population by this same target date (“Millennium Developmental Goals”). Although agricultural research and development expenditures more than doubled between 2001 and 2009 following the civil war, funding is not sufficient to provide for a timely or effective reconstruction of the sector. These same trends seem to be overall worsening for individuals who in rural areas, but the possibility of a nationwide improvement is present (Stads and Momoh 1).

Dramatic distinctions would be visible with the improvement of sustainable agriculture in this country. More fertile land would be available for cultivation, and more consistent and efficient use of land would maximize the income of rural families without exhausting the land in the process (“Changes in cultivation”). Also, the preservation of soil nutrients and forest area resulting from these improvements would eliminate the need to use slash and burn techniques. A further developed agricultural economy with the establishment of more permanent farming methods would lend to a reduction in poverty and economic expansion (“Changes in cultivation”). All of these improvements would contribute to a secure food supply for farmers and families nationwide (“Sierra Leone Facts”).

Numerous actions can be carried out by different sections of the country to ensure extensive food security. A gradual government-funded implementation of shorter-fallow cultivation with improved maintenance and a barrier on burning and deforestation will help support the growing population and decrease soil degradation. Also, education on soil and forest conservation coupled with the establishment of water collecting vessels for drought-time irrigation will provide for maximized soil productivity. Technological refinements such as weather stations and improved machinery for farmers are investments that could greatly affect the current agricultural condition; both would work jointly to inform farmers of haphazard weather patterns and increase income. A reemphasis on rice cultivation can be encouraged after conditions improve to minimize import from Asia and produce revenue from exports. This government-fueled revitalization of the agricultural sector can provide a needed economic boost as well as a national increase in the food supply. Several local projects exist that could influence positive environmental change, including the Sierra Leone Agricultural Research Institute (SLARI), which functions as the primary center of research of current agricultural deficiencies and works to improve these conditions. Only two of the eight planned centers have been operational as of 2009 due to the need for rehabilitation and staff increases. However, total research and developmental figures are expected to increase in coming years with the openings of more SLARI centers (Stads and Momoh 1). The government also possesses an agenda to enhance the supply of electricity, improve agricultural productivity, sustain human development, and facilitate the achievement of MDGs due to weak economic and social factors and infrastructure weaknesses (“Millennium Developmental Goals”). All of these projected actions by the government can benefit agricultural output and overall economic welfare.

Governing bodies and international organizations are essential in the revitalization and improvement of Sierra Leone’s depressed agrarian condition. Financial assistance for farmers by both national and local governments is vital to the shift to permanent cultivation and procure of processing machinery to increase annual revenue. The national administration currently finances over 80% of SLARI’s expenditures while fifteen percent is raised by foreign loans and sales; these means go toward the research conducted by SLARI to revitalize and maintain the agricultural condition in the country (Stads and Momoh 4). Both national and local governments need to fund agricultural education and encourage women to continue their studies to inform rural farmhands of more efficient, environmentally suitable cultivation and swell the staffs of research centers. The shortage of government-issued funds is where foreign agencies such as the International Fund for Agricultural Development and the UN Food and Agricultural Organization can intervene by assisting to fund the reconstruction and staff shortages of research and development institutions. Donor nations can intercede without undermining local efforts by enacting native farming techniques and tools alongside foreign entities to prevent disillusionment from the locals. Also, they should work alongside the native farmers and researchers to develop and direct the newly introduced

practices, gradually withdrawing when the farmers themselves independently direct the techniques. Recruitment of World Bank by SLARI would also help provide the necessary level of training to both domestic and foreign staff members hired by the research center (Stads and Momoh 4).

Common farmers and urban residents are both integral to the success of innovations designed to better their condition as well as the land that surrounds them. Rural farmers have to be receptive to government-funded educational courses for improved cultivation methods. Participation in such programs can greatly contribute to increases in revenue via the agricultural sector. To alleviate losses in production due to inadequate storage facilities currently in use, farmers could adopt the practice of constructing root cellars. Seeing as this food group is largely grown in the region, these cellars would work to exponentially increase the shelf life of crops, allowing farmers to increase their yield. These underground structures can also utilize the country's omnipresent mining sector, possibly gaining more support for the practice by locals and administrative bodies alike. Farmers should abide by the anti-burning statutes prescribed by the governing body whether local or national in scope. Crop failure is heavily linked to unstable "shifting cultivation," and one day that they are left unattended can equate to devastating losses in production. To counter this, rural farmers should work as a collective during the shift to permanent cultivation by helping tend neighbors' harvest when they are indisposed to ensure that crop yields are elevated. Doing so will not only amplify output but will also help create a communal sense that such developments warrant. Initiating a "trial" period led by a trained native utilizing the innovative techniques alongside local farmers could encourage this practice to be applied and eventually upheld after this term's end. Lastly, urban and rural families who utilize coal as their main source of fuel should seek other outlets to curb the amount of air pollution present.

The present status of the agricultural and economic condition in Sierra Leone is considered dismal, as the country is ranked as one of the poorest in the world. Lasting effects of the decade long civil war that made ruins of cities and barren fields a common sight are the foundation of the economic unrest still present in the country today. Although political tensions have since been suppressed, corruption is still existent in numerous sectors of the nation, namely those of healthcare and mining. Misdistribution of wealth and diverted healthcare are two factors that make life arduous and even uncertain for most rural residents. However, the lack of food security is the factor that plagues this country and contributes to its 46% of people that are chronically undernourished ("Sierra Leone Facts"). The nation's staple crop of rice cannot even be shipped for export, and residents have to rely on increasingly expensive imported rice from Asia. The above situations effectually illustrate how imperative it is that more sustainable agriculture be established and further developed in this country.

Human damage inflicted upon the environment through the use of inefficient and harmful farming methods along with rapid population growth are both principle sources of the general food shortage in Sierra Leone. The displacement of labor from cultivation to the mining industry well before the war has also negatively affected the agricultural sector as a whole. Thousands without jobs and sufficient income to support their families and boost the economy is what the country has been left with after years of turmoil and environmental degradation. However, this could all be alleviated with more financial support for farmers and agricultural education in order to put a more permanent method of cultivation into place. International organizations and local research centers can also help make a visible difference through the donation of funds and improvement of productivity. Cooperation and persistence from both the locals and the administration will be required to make notable progress, as farmers practice responsible cultivation and the government and donor nations continue to support these integral changes. However, if these objectives are executed from this stance, food security and widespread poverty should become a thing of the past.

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