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Clean Water and Food Security For Kenya

As Norman Borlaug stated, “Food is the moral right of all who are born into this world.” However, the battle against world hunger is one that must be constantly fought, today more than ever. As the earth’s population is projected to reach 9 billion by 2050, the human race will be faced with the challenge of feeding everyone. Even today, many developing countries struggle to feed their inhabitants. This paper focuses on Kenya, a developing country in sub-Saharan Africa. A shocking 25.8% of Kenya’s 47 million people are undernourished (“The Global Food...”). A major contributor to this percentage is the prevalent issue of inadequate water and poor sanitation. Unsafe water and poor sanitary practices have a lasting impact on food security and quality, particularly in crowded urban slums. It is difficult for urban farmers to grow high quality crops in such situations. Illness from poor sanitation forces other urban dwellers to miss work, lowering the ability to buy food. This paper highlights policies and practices of ecological sanitation, city planning for improved infrastructure, and public hygiene education as solutions to combat this issue.

Urbanization in Kenya has resulted from an increasing number of people migrating to urban areas in search of better opportunities and jobs. On average, a poor urban family consists of five people, usually two parents and three children (“Sanitation and Hygiene...”). These families live in homes built from less-than-ideal materials. Most homes in the slums are ramshackle 12x12’ buildings “constructed of cardboard, corrugated tins, mud, thatch, and plastics” (“Sanitation and Hygiene...”). Each of these shanties is often one room that houses an entire family. Many small shanties are clustered close together, making the slums densely populated filthy places. Nearly all diseases in the slums, including typhoid, cholera, and polio, are caused by unsanitary conditions related to poor toileting and unsafe drinking water (Kimani-Murage). Unfortunately, it is difficult for the urban poor to receive proper healthcare when they fall ill, due to high costs or long distances to health centers. “Poverty & Healthcare...” states that Kenya has one doctor for every 10,000 people. Besides this shortage of trained medical professionals, the country’s healthcare system is not always able to provide proper medication; sometimes hospitals lack the needed medicine or it does not work properly. In other instances, poor families simply cannot afford medicine. Children living in slums are less likely to be immunized, heightening their risk of contracting disease.

A typical poor urban family purchases the majority of its food from marketplaces and vendors. The basic staples of a Kenyan’s diet are maize and rice (“Kenya: Urban Poor...”). “Food & Daily Life” lists common dishes consumed in Kenya, including *ugali*, *mandazi*, fish and vegetable stews, and samosas. In addition to markets, some slum dwellers have begun growing vegetables to supplement their income and combat food insecurity (Gathigah). Due to the aforementioned lack of space, vegetables are often grown in soil-filled sacks, as opposed to traditional garden plots. Sack farming is an easy and inexpensive way for urban inhabitants to grow food that is safe to eat. Commonly grown vegetables include kale, spinach, African amaranth, and arrowroot (Gathigah). A significant obstacle to food security is the high prices of food relative to families’ incomes. Food prices have risen over years in response to demands of growing populations. As a result, “the urban poor in Kenya spend 60 to 65 percent of their income on food” (“Kenya: Urban Poor”). Furthermore, 50% of men and 80% of women ages 15-24 inhabiting the slums are unemployed; half of those with jobs are only earn around the poverty line, working in casual or short term jobs like food kiosks, retail trade, manufacturing, or laundry and transport services (*Education in Kenya*). Higher education brings opportunities for a skilled, well paid job. However, one in ten Kenyans has not even completed primary school (*Education in Kenya*). When considering the impact poor

sanitation has on this, it causes diseases contributing to missed days from school or work, further hindering citizens' ability to improve their chances in life. Improved water and sanitation in Kenya's slums will remarkably reduce the number of infections and diseases, since this factor is directly linked with nearly all diseases present in slums. Thus, residents will be able to attend more work or school, instead of being too ill.

For urban dwellers, education, employment, and ability to purchase nutritious food are closely linked, with a major impact on quality of life. However, the single most impacting aspect of urban life is poor sanitary practices. Out of Kenya's 47 million people, 32 million lack access to adequate sanitation ("Where We Work"). Slum dwellers typically do not have the luxuries of proper water and sewage services, and instead use pit latrines and draw water from nearby wells. In one Kenyan slum, a study found 40% of pit latrines to be less than 15 meters from the wells, and the main water sources were "highly contaminated with fecal matter" (Kimani-Murage). These alarming statistics prove to also be an obstacle to food quality for impoverished urban residents. For example, untreated sewer water is used to irrigate some crops grown in slums, due to a lack of adequate space and fresh water. Gathigah states that "urban slum areas have become notorious for sewer farming, placing unsuspecting consumers at great risk for diseases such as cholera, amoeba, typhoid, and even cancer." Unfortunately, purchasers do not understand the considerable health risks associated with sewer-grown crops. The urban poor may think they are increasing their food security, but these dangerous crops are actually detrimental to their overall health.

In addition to the issue of contaminated irrigation, water and sanitation conditions in the slums are poor. Presently, only 30.1% of Kenya's population has access to an improved sanitation facility, and 63.2% has an improved drinking water source ("The World Factbook"). As low as these numbers are compared to developed countries like the US, the latter has gradually increased. According to Marshall, access rates to clean water have risen from 41% of Kenya's total population in 1990 to 57% in 2006. It is necessary to continue improving these statistics, and at a faster rate, as the current situation is extremely harmful to the health and well-being of most Kenyans. While these measurements indicate a slight improvement in access to safe water, rapid progress will be needed in order to accommodate the projected urban population growth in coming years. Kenya's overall population growth rate is among the world's highest, and this brings with it the ever increasing issue of supplying citizens with suitable water and sanitary access. Specifically, urbanization in Kenya occurs at a 4.34% annual rate of change, according to "The World Factbook." United Nations projections predict a "rapid population growth in urban areas between 2000 and 2030. Access to safe drinking water and adequate sanitation in urban areas is likely to worsen" (Kimani-Murage). This wave of urban migration presents challenges to sanitary conditions, as slums are already overcrowded and experience severe shortages of proper sanitation facilities. Due to lack of better options, the most destitute urban dwellers choose to "defecate in plastic bags which they later throw in ditches, on the roadside, or as far away as possible" ("Sanitation and Hygiene..."). These 'flying toilets' are very unsanitary, not to mention environmentally degrading. However, this process is more accessible and convenient to slum dwellers who are oblivious to the hygienic and environmental consequences. All sanitation and hygiene related diseases in the slums are caused by poor toileting.

Improved access to clean water and sanitary conditions is the first step toward improving the daily situation for Kenyans living in the slums. Even today, "over 80 percent of sewage in developing countries is discharged untreated directly into water bodies" ("Water Quality Policy"). Decreasing this number will lead to drastically improved health in those who use these bodies of water as their freshwater sources. In these areas, lowering pollution levels from human waste will also help to preserve river and lake ecosystems. For instance, in Nairobi, current conditions include very shallowly dug sewers that overflow the Nairobi River when it rains. This harms the river and pollutes the slum residents' main water source, but for lack of better options they are forced to use this water anyway ("Sanitation and Hygiene..."). Keeping sewage confined to proper designated areas will improve both the environmental conditions and

health conditions; waste-free land will be available to grow crops in sharp contrast to current sewer farming methods. In turn, these crops will be safer, more affordable, and more readily available, therefore increasing food security. As *Compilation of 13...* puts it, “productive sanitation could lead to higher crop yields, leading to less under nutrition and less susceptibility for disease, growth stunting in children, and death.” Resolving the immense sanitation problem would greatly benefit this country plagued by food insecurity by making better food available for more urban poor Kenyan consumption. Through water and sanitation improvements, food security combined with disease reduction can realistically be expected to raise Kenya’s life expectancy from its current 60 years (“Poverty & Healthcare”).

However, these improvements are not going to happen overnight; rather, they will take committed and large-scale solutions. One realistic improvement to the sewage nightmare is a process called ecological sanitation (ecosan for short), where waste is processed on site through a special latrine system by separating harmful materials from nutrients. Three different current models of ecosan toilets are the Arborloo, Skyloo, and Fossa Alterna (Robinson). These toilets are relatively inexpensive to construct and simple to operate. Moreover, they are a way to safely recycle human waste into fertilizer. Ecological sanitation is a safe process that treats human excreta on site “until completely free from pathogens and inoffensive” (Esrey). It can then be used as fertilizer. This process occurs through “the separation of urine and fecal matter- sterile urine may be applied directly to plants, while fecal material is composted until it is safe for land application” (“Water Quality Policy”). Utilizing these latrines prevents aforementioned ‘flying toilets’, and keeps human waste out of water sources. Stool is composted in the soil until it is pathogen free, and can then be used as inexpensive and readily available fertilizer to promote crop production. Ecosan is a progressive way to increase food production and security, while solving the poor toileting issue prevalent in slums. Funding to implement toilet construction comes from a variety of sources dedicated to promoting and funding ecosan in Kenya. According to Robinson, international agencies such as UNICEF, the Austrian Development Agency, the World Bank’s Water and Sanitation Program, and CARE International are just some of these organizations. Additionally, the EU-GTZ funded Ecosan Promotion Project has set up six pilot sites across the country. This project includes systems that have “been set up to showcase the use of EcoSan principles in improving community and institutional access to water, energy, and sanitation” (Odhiambo and Hagen von Bloh). Through this project, ecosan is becoming better known and more common throughout the country. The main difficulty associated with ecological sanitation is the sheer number of toilet installations needed to serve all of Kenya’s slums. However, ecosan toilets are a much more rational solution than traditional toilets, since they do not require running water and are cheaper to install. It is recommended to continue ecological sanitation on a larger scale to help improve slum sanitation.

City planning is recommended to help improve Kenya’s urban infrastructure, as current infrastructure conditions in the slums are dreadful. Kenyan slums have grown so rapidly in recent years that the government “has been unable to cope with the rising demand for social services” (Howe). Financial support from charities and NGOs is recommended, as the government requires assistance to keep up with growing slums. Poor preparation on the government’s part in the past is to blame for current infrastructure issues. Lack of available resources combined with unplanned growth has left most slums lacking in essentials such as proper housing and latrines, as well as availability to water, healthcare and education (“Kibera Facts &”). KENSUP, or Kenya Slum Upgrading Project, is a collaboration between Kenya’s government, UN-HABITAT, and Nairobi City Council. So far, the project has worked with urban slum inhabitants to determine their greatest needs; \$500,000 has been spent to date on trash collection, water sanitation blocks, and an access road (“Tackling the Crisis”). Involving the urban poor is beneficial, because they truly know what slum life is like and what they need most. Increased city planning will also pay off in the long run. Corburn notes that long term planning could give future residents better waste management, clean drinking water, and electrical connections. This undertaking will require significant funding, but many NGOs-including Gates Foundation, Bill Clinton Foundation, and international

churches- and the Kenyan government are prepared to finance.

Increased practices in public health education will bring awareness to urban Kenyans. One such program implemented by Lifewater International was able bring sanitation and hygiene training to 20,000 people in southeastern Kenya (“The Clean Water Project”). This organization was able to equip people with knowledge, as well as bringing safe water to some schools. However, the difficulty lies in offering this and similar programs on a larger scale throughout the country. Presently, NGOs such as CARE, Charity: water, HIF, Wateraid, and Water Missions International operate on the international level to provide cleaner water accessibility to developing nations (“Non-Governmental Organizations”). The Kenyan government should take initiative to make sanitation education a widespread topic throughout schools by providing teachers with proper training materials. In many cases, citizens simply fail to realize the importance of clean drinking water and proper sanitary practices. Knowledge is power, and in this case it is the power to save lives.

Improving Kenya’s dire water and sanitation issue will take years, possibly decades, of dedication and funding from a multitude of sources. It will be difficult, but not impossible. Different NGOs are ready to continue working with Kenya’s government to implement solutions. The importance of involving slum dwellers must be stressed; Kenya’s urban poor citizens must be trained on how to properly implement these recommendations for long lasting effectiveness. These citizens should also be included in discussion of solutions, as they can provide valuable insight of what life in the slums is truly like. Wider use of ecosan, city planning for infrastructure, and hygiene education will definitely improve Kenyan sanitation. Overall, access to cleaner water will greatly improve residents’ lives. All people deserve to live free of worry about malnourishment and contracting preventable diseases from unsafe water. This is the ultimate goal for not only Kenya, but every developing country on this planet.

Works Cited

- Compilation of 13 Factsheets on Key Sustainable Sanitation Topics*. Eschborn: Sustainable Sanitation Alliance, Apr. 2012. PDF.
- Corburn, Jason, Peter Ngau, Irene Karanja, and Jack Makau. *Mathare Zonal Plan*. Nairobi: Slum Dwellers International, July 2012. PDF.
- Education in Kenya*. Education for All. Oct. 2012. PDF.
- Esrey, Steven A. *Towards a Recycling Society*. New York: UNICEF, Oct. 2009. PDF.
- "Food & Daily Life." *Our Africa*. SOS Children. Web 27 Mar. 2016.
- Gathigah, Miriam. "Slum Farmers Rise Above the Sewers." *Slum Farmers Rise Above the Sewers*. Inter Press Service News Agency, 9 Aug. 2013. Web. 27 Mar. 2016.
- Howe, M., E.T Ngwerume, and C. Muchemwa. "Stability: International Journal of Security and Development." *The Urban Crisis in Sub-Saharan Africa: A Threat to Human Security and Sustainable Development*. Stability Journal, 2013. Web. 2 Aug. 2016.
- "Kenya: Urban Poor Face Rising Food Insecurity." *IRINnews*. IRIN, n.d. Web. 28 Feb. 2014.
- "Kibera Facts & Information." *Kibera.org*. Kibera.org, 21 June 2015. Web. 01 Aug. 2016. <http://www.kibera.org.uk/facts-info/>.
- Kimani-Murage, Elizabeth Wambui, and Augustine M. Ngindu. "Quality of Water the Slum Dwellers Use: The Case of a Kenyan Slum." *National Center for Biotechnology Information*. U.S . National Library of Medicine, 06 June 2007. Web. 01 Mar. 2014.
- Marshall, Samantha. *The Water Crisis in Kenya: Causes, Effects, and Solutions*. Rep. no. 1. 1st ed. Vol. 2. N.p.: American U, 2011. Print.
- "Non-Governmental Organizations." *WASHFunders.org*. WASH, n.d. Web. 01 Aug. 2016.
- Odhiambo, J. O, and Hagen von Bloh. "Ecological Sanitation Approaches in Kenya." A Paper Presented at the Annual International Conference on the Engineer and Vision 2030 Nairobi.
- "Poverty & Healthcare." *Our Africa*. SOS Children, n.d. Web. 27 Mar. 2016.
- Robinson, Brian E. *Household Adoption of Ecological Sanitation: An Assessment of Agricultural Value and User Perspectives in Nyanza Province, Kenya*. Rep. Cambridge: Massachusetts Institute of Technology, 2005. Print.
- "Sanitation and Hygiene in the Kibera Slum." *Africa Rural Connect*. National Peace Corps Association, 21 Apr. 2010. Web. 26 Feb. 2014.
- "The Clean Water Project in Mtito Andei, Kenya." *Lifewater*. Lifewater International, 2013-2014. Web. 28 Mar. 2016.

<<https://lifewater.org/impactreport/kenya/>>.

"The Global Food Security Index." *Global Food Security Index: Kenya*. The Economist Group, May 2015. Web. 28 Mar. 2016. <<http://foodsecurityindex.eiu.com/Country/Details#Kenya>>.

"The World Factbook." *Central Intelligence Agency*. Central Intelligence Agency, Web. 26 Mar. 2016.

"Water Quality Policy Brief." (2011): n. pag. *UNwater.org*. UN-Water, 2011. Web. 27 Mar. 2016. <http://www.unwater.org/downloads/waterquality_policybrief.pdf>.

"Where We Work - Kenya." *WaterAid UK*. WaterAid. Web. 02 Mar. 2014.