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### **Modern Solutions to Combat the Challenges of Infrastructure in Nigeria**

Seven hours. That is how long it takes people to get to work in the most economically influential city in Africa: Lagos, Nigeria. A port city in the West African country of Nigeria, Lagos is currently considered the largest city in the world without a functioning railway system; this leaves roads overused and crowded twenty-four hours a day. Millions of workers in the city have to wake up in the early hours of the morning to get to work and barely gain back the money they spent on gas. The population of Lagos over the past three years has doubled to over 21 million--twice the population of New York City, but with half the space--leaving architects and road workers wondering how to keep up (Akorede, 2019).

Households are suffering due to many factors involving infrastructure at both the national and local scales. Like many other African nations, it is the norm to have a large family in Nigeria. The average household consists of five people, comparable to countries such as Ethiopia and Cameroon ("Average Household Size", 2019). Having five family members means that there has to be a constant flow of food, safe drinking water, and a functioning home to protect one's family. Unfortunately, this has been a struggle for many families. With the median income for families being at 339,000 nairas per month, or \$889 in US dollars, opportunities such as school are hard to come by after basic expenses.

Inefficient electrical systems, crumbling roads and bridges, lack of water filtration, and dysfunctional school and hospital buildings are among the factors that contribute to Nigeria's rank in the bottom ten in infrastructure and bottom five for least livable cities in the world according to CNN (Buckley, 2019). With the country's exponential population growth, the poor infrastructure that exists will worsen.

Outside the city of Lagos, the infrastructure problems found in the rural floating slums are equally, if not more, hazardous. Mere miles away from Lagos, thousands of small structurally unstable shacks sit atop murky waters saturated in human feces and rotting fish. With practically zero government assistance, the people of the slums have no way out due to their poverty. Lack of wiring for electricity that aids in basic human needs and the impossibility of internet access make any connection beyond their water-logged worlds unlikely. A fisherman by the name of Dosu Francis who lives with his family in a floating hut tells a reporter, "Nothing has been given to us, no one has given us any money" (Nigeria Housing, 2020). Often, residents in these slums send their children to seek jobs in the city, but these children have a hard time adjusting to the extreme change in environment. Fifty percent of residents in Nigeria live in the run-down and overpacked slums. Instead of helping out the sick and famished people of the slums, the government has a history of evicting them. Between 2013 and 2015, the Nigerian government evicted over 19,000 residents in the Biada East slums, ironically, making way for a building project that still isn't finished to this day.

Deaths have been caused by the primitive or deteriorating infrastructure in the urban and rural areas of Nigeria. Unsafe water and hunger due to the lack of modern infrastructural advancements such as pipework have led to fatalities. At a glance, Nigeria seems to be a wealthy, thriving nation. The country's financial breakdown reveals a different story. The wealthiest one percent controls Nigeria, while the other 112 million suffer in poverty. "The country's richest man would have to spend \$1 million a day for 42 years to exhaust his fortune," Oxfam International writes ("Nigeria: Extreme Inequality", 2018).

In light of Nigeria's infrastructural hurdles, the country is looking to round the corner. The Lagos-Calabar railway project has been introduced as "One of the most ambitious projects in Africa" (Anyango, 2020). This expansive railway route is a 1400 kilometer path along the Atlantic Ocean going from the heart of Lagos on the eastern half of Nigeria to Calabar, a smaller city on the border of Cameroon. Goods and services will be the main priority for this railway system, and the transportation of natural resources to help build infrastructure is one of the main goals. People of the slums now have the opportunity to receive products that they never acquired before. Another system that is in the works is called the Lagos Light Rail. With three times the budget of the Lagos-Calabar system, this train system's main goal is to cut down on commute time and have fewer cars on the road. The goal of this project is to eventually put less strain on the major inter-city highways. Fourteen train stations and over 500,000 passengers a day is the plan for this system, and it will break Lagos's reputation as the "largest city in the world without a functioning railway system" (Anyango, 2020).

While this will help some cars get off the tenuous roadways, the city is growing so fast that the railways may not do anything to decrease the "hellish traffic" (Akorde, 2019). Not only can the crowded roadways affect travel time, this traffic can even attribute to the increasing suicide rates in Lagos, says Olumfemi Oluwatayo, a consultant psychiatrist (Akorde, 2020). So what will ultimately get Nigeria out of the deep, dark hole of crumbling infrastructure? That is where the Nigerian Infrastructure Advisory Facility (NIAF) comes into play. The agency's goal: Facilitate and accelerate infrastructural development in the neediest areas in Nigeria. Currently, they operate in six different sectors across Nigeria: Power, Capital Projects, Roads, Northern Growth, Effective Cities, as well as Climate Change.

Planning and strategy lead NIAF's charge and stages have been developed to effectively reach their goal. The committee recognizes the need to revitalize the overcrowded roadways that account for 90% of surface transport of goods. To do this, political action needs to take place. The first stage of their plan involves writing policy papers suggesting the creation of toll booths has been brought up by NIAF, raising funds for road maintenance. The money the tolls collect goes straight back into Nigerian road systems. The next stage is the "implementation of network surveys using state of the art road network survey equipment." Roadways are a big priority for the agency, and they believe that increasing the quality of the roads can decrease commute times, allowing more opportunities to surface for the less fortunate due to available transportation. Non-governmental agencies such as NIAF have the ability to influence the government to help out those in Slums, and actively take action. Without those agencies, impoverished people are hopeless, with no opportunity in sight because of non-existent government interaction.

Earlier this year, the Nigerian president, Muhammadu Buhari, approved the creation of a firm named Infra-co, whose role is to focus on infrastructure development. “Infra-Co will finance public asset development, rehabilitation, and reconstruction as well as invest in cutting edge infrastructure projects for roads, rail, power and other key sectors,” the president’s office explained in a statement (Akwagyiram, 2021). With the IMF predicting the Nigerian economy to contract over three percent in 2021, the need for the production of sustainable and efficient roadways is growing rapidly to keep millions of citizens afloat (New Arab Staff, 2021). With that being said, this \$2.6 billion plan will help link industrial areas with residential areas, connecting farms and factories with homes where the Nigerians live. Goods produced on Nigerian farms will be accessible to locals due to the new transportation systems, allowing trucks to transport food safely. Locals will be able to get their produce from farms nearby, instead of getting the goods they need from outside countries.

As of now, Nigeria relies heavily on imports to meet its agricultural needs. Nigerians spend upwards of \$10 billion annually on goods such as wheat, rice, poultry, and fish which is a large reason why the economy is so unstable (Nigeria - Country Commercial Guide, 2020). Until the roads are completed, it is easier for citizens to buy produce and goods that are imported, rather than from nearby farms. Along with the absence of adequate transportation systems, there is a major lack of machinery and advanced technology within these farms. Many Nigerian farmers are not able to create bounties of food because they don't have the machines to help them out. They cannot meet the demand of the population, so the people look elsewhere for their source of produce and meat. The economy would do better if the people bought locally from farmers in Nigeria, but it is just not practical at this point in time. In response to obscene amounts of imported goods, the GON (Federal Government of Nigeria) has launched programs such as the “Green Imperative” agricultural plan. Its purpose is to “accelerate mechanization in the agricultural sector” (Nigeria - Country Commercial Guide, 2020). A \$1.2 billion loan from Brazil will lead to the production of over 5000 tractors every year to be dispersed to Nigerian farmers in need. This will expedite the whole crop-growing process, allowing for farmers to produce more to feed the colossal Nigerian population while at the same time making more money for themselves.

There are also other active agricultural plans in Africa that Nigeria can feed off of for ideas. For example, the South African government “aims to ensure that one million hectares are used to produce crops including fruit and livestock” by the year 2030 (Official Guide to South Africa, 2021). By expanding farmland in South Africa, crop yield can multiply, which can help feed the ten million South Africans who face hunger every week.

Other countries are trying to support Nigeria’s food insecurity through initiatives. The U.S. Government's Global Hunger & Food Security Initiative, Feed the Future, is a perfect example. It is working to end global hunger through the use of partnerships and innovation. “By equipping people with the knowledge and tools they need to feed themselves” they are “addressing the root causes of poverty and hunger, helping people end their reliance on aid, and creating important opportunities for a new generation of young people—all while building a more stable world” (Feed the Future, n.d.). Feed the Future’s impact in Western Africa has been astounding ever since its creation in 2010. So far, they have assisted 33 government areas across 11 states in Nigeria. Within the next couple of decades, the initiative intends to reach 2.5 million hectares

with improved technologies or management practices. They will attempt to reach this goal by using four different strategies. The first strategy is to improve agricultural productivity by connecting smallholder farmers to resources. The second strategy is to develop inclusive and resilient markets. The third is to strengthen household and community resilience to shocks. The fourth is to improve the nutrition of women and children. These four strategies will aid struggling farmers and hungry consumers alike. Improving and increasing agricultural productivity can be done by enhancing farmers' access to “finance, agricultural inputs and technologies” and “extension services and product development” (Feed the Future, n.d.). Just in 2019 alone, 400,000 farmers applied new farming technologies due to Feed the Future’s investments. These technologies allowed for maize and rice yields per unit of land to increase by 155 percent compared to 2018. Another major key to eliminating food insecurity is strengthening resilience. Strengthening resilience is important so that people “can mitigate risks, adapt to shocks and stresses and recover in the face of adversity that would otherwise push them back or further into poverty and hunger” (Feed the Future, n.d.). This is crucial in regions such as northeast Nigeria, where upwards of 8.6 million people are food insecure, and more than 300,000 children are acutely malnourished (North Eastern Nigeria Emergency, n.d.)

In the northeast regions of Borno, Yobe, and Adamawa, 1.75 million people are living in camps with tens of thousands seeking refuge in nearby countries to try to find any sort of food and shelter. The United Nations is playing a large role in feeding all of these hungry people. Year by year, the World Food Program created by the United Nations has increased its contributions and support of these people in need of ready-to-eat nutrient-rich food, and through Covid-19, they have helped out more than ever. By the end of the year, the World Food Program plans on feeding 1.7 million hungry Nigerians. Although feeding this amount of people is extraordinary, “4.3 million people are still entirely dependent on food assistance” and major funding is needed to eliminate this extreme hunger in Northeast Nigeria (North Eastern Nigeria Emergency, n.d.). Currently, the program is also transporting modern medicine and vaccines to the people who need it in hard-to-reach areas of the country. As well as feeding the hungry population, The World Food Program is building much-needed infrastructure to connect these isolated communities with the rest of Nigeria and other neighboring countries such as Cameroon, Chad, and Niger. The World Food Program doesn’t just want to create a short-term solution, though. While feeding millions of people, they are actively trying to figure out a long-term solution.

Although Nigeria has been greatly affected by its inferior infrastructure, through organizations and agencies such as NIAF, The World Food Program, and Feed the Future, technology and infrastructure are increasing in quality and reliability. Hunger and poverty can come to an end by attacking the problem at the place where people get impacted the most. Nobody should be hungry due to the resources first-world countries such as the United States have at their disposal. Millions of innocent Nigerians have been suffering due to a problem they cannot control, and they need help. Although it will take a lot of work, infrastructure will just become better for those living in Nigeria, and with it comes opportunity. We will solve this problem of hunger, one tractor, road, pipe, machine, communication network, and electrical system at a time.

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