

James Fairchild  
Bridgehampton UFSD High School  
Bridgehampton, New York  
Liberia, Infrastructure

## **Liberia: Building Employment Through Infrastructure and Microfinance: Land to Sea**

When most people my age think about the problems in their lives, it's usually something to do with how they did on a test, or worrying about their social media. But that's nothing compared to the problems Liberians' face.

Imagine waking up everyday knowing there's a 73 percent possibility you're not getting an education, that there's a greater than 28 percent chance you're going to end the day malnourished, and that the odds of you getting a drink of clean water, are 1 in 4. (World Food Programme 2014, Waves for Water 2014, Office of Food for Peace 2016) Those are some of the basic problems faced not just by teenagers in Liberia, but by the whole country. These are problems that should not exist.

Liberia's climate is perfect for agriculture, "tropical, hot and humid all year round, with a rainy season from May to October" which means they have ample opportunity to grow and raise all sorts of food. (Climates To Travel 2018) Currently 28 percent out of the 43,000 square miles of Liberia is cultivated growing cassava, cocoa, mango, papaya, pineapple, coffee and citrus. (Cultural Social Development 2015, Trading Economics 2014) Plus, with a population of 4.6 million people, 50.5 percent male and 49.5 percent female, at an average age of 18.6, there are more than enough appropriately aged people to work in the agricultural industry -- yet people cannot rely on having a steady source of food. (Index Mundi 2016)

How is this possible? How does a country with perfect conditions for agriculture and a potentially adequate workforce, suffer from food insecurity?

Three things have worked heavily against Liberia: the Ebola epidemic, political instability, and the AIDS virus. Together they have weakened the country's infrastructure tremendously. With minimum or no access to roads, even fewer markets to distribute the food, and little to no capability to process or store the food for the future, the Liberians' ability to manage the crops and food they have has been greatly diminished. (PeacebuildingData.org 2011, Nations Encyclopedia 2018, World Health Organization 2006) Even now, less than 2 percent of the country has access to electricity. (Export.gov 2017) So not only can food not be processed, it can't be stored or shipped or shared. This means food is only available if you're a farmer or have direct access to a farm, or where crops are being harvested. The resulting lack of a continuous supply of food is not a problem that can be solved with just an invention — what it needs instead is a deep and more layered approach.

Before their nation was devastated by the above three problems, Liberia was primarily known for their many valuable resources, ranging from iron to gold, and from diamonds to rubber to timber. These assets also have the added value of being attractive to foreign corporations, an opportunity we'll come back to later, but first you need to understand the demographics of Liberia. The average size of a household is 2-4 people. (UN.org 2017) Houses tend to be constructed from mud and sticks — only 12 percent of Liberian homes are built with cement. In addition,

according to the Liberia Institute of Statistics and Geo-Information Services, only three percent of these homes have indoor plumbing, the country is also full of sanitary related disease issues. (Lisgis.net 2008)

The main source of protein in the Liberian diet tends to be fish and occasionally meat, but both these protein sources are becoming scarce. Due to climate change, the fish are dying out (US AID From the American People 2017) and cattle populations have been decimated by diseases caused by the lack of clean water. (FAO Corporate Document Repository 2011) Fishermen also lack the technical capacity to preserve their catches; there is a shortage of ice and refrigeration and it is difficult to transport fresh fish due to the poor road and transportation infrastructure. Fish is preserved through smoking and salting, which is very inefficient and uses precious resources. (USAID Office of Food for Peace Food Security Desk Review for Liberia, 2016) “Despite its potential benefit for women and children’s diets, less than half of mothers reported their children had consumed fish, meat, poultry, or eggs at the time of the 2013 DHS, indicating the need for promotion.” (LISGIS et al. 2014) This leaves the population relying on “fufu” for sustenance. This “doughy food that accompanies most meals” is made from rice, cassava, and plantain, and its use as a primary food source is creating an unbalanced and nutritionally deficient diet. (Food in Every Country 2018)

In the Liberian family, men usually have more education and as a result better jobs that consist of working with timber, mining, and rubber. Since education is withheld from women, due to a male dominated culture, women are forced to work in either agriculture or in the markets, or can’t find a job and thus only deal with family and household responsibilities. Women “carry out 80 percent of trading activities” as well as produce “60 percent of agricultural products and play a critical role in production of food crops” making them vital in the food producing infrastructure of the country. (World Bank 2007) The handicap of their lack of education “Twice as many women as men are illiterate.” prevents them from participating in more advanced agricultural processes. (World Bank 2007)

Not only have Liberians suffered through the AIDS epidemic that has plagued all of Africa, they also endured a civil war from 1989 to 1996 during which 250,000 people were killed, and thousands more were raped and beaten. Sparked by political corruption and greed, which created political instability, the war devastated the nation. (PeacebuildingData.org 2011) The destruction was not just of people, it also wiped out thousands of miles of road, and crippled the country’s ability to pipe fresh, clean water to its citizens. In addition, more than 1 million people were displaced, creating massive disarray and destroying communities. Even child soldiers, “Small Boys Units”, were utilized, helping to destroy the social fabric of the country. (PeacebuildingData.org 2011) If that wasn’t demoralizing enough, the war also decimated hospitals, homes, and all kinds of public and private facilities. “Of the 293 public health facilities operating before the war, 242 were deemed nonfunctional” (World Health Organization 2010) leading to almost no healthcare within the country. Making matters even worse, the war caused doctors to flee “leaving 30 physicians to serve a population of 3 million.” (World Health Organization 2010)

When the doctors fled, more chaos ensued. In 2013, there was an ebola outbreak in west africa, almost 5,000 people died in Liberia from ebola and close to 6,000 people died in the neighboring countries of Guinea and Sierra Leone. (Center of Disease and Control Prevention 2017) Since

there were a limited number of doctors, the outbreak was not quickly controlled, causing terror within the population and preventing people from wanting to come into contact with others. This affected business, not only did they lose customers, they also shut down from fear of infection, leading many of them to not be able to reopen. (International Growth Center 2018) After the war finally ended Liberia was one of the poorest countries on the planet, coming in at 4th poorest country out of 195 countries ranked by the World Bank. (Atlas and Boots 2018)

Once people reach poverty levels or find themselves at a place where they are unable to buy food to feed their families, the social contract fails even further. Children become stunted, and their mortality rate increases. This is immensely demoralizing, creating what seems to be an unending spiral of desperation. It's hard to ask people to figure out how to farm more effectively and to build electric power plants when they're starving.

The solution to these problems has three layers, two economic and one innovative.

First, I propose that corporations that want to profit from Liberia's resources must invest in the rebuilding of the country. Much like how corporations invest in carbon offsets to balance out their carbon usage, these corporations should pay to have the privilege to have access to Liberian natural resources. This investment would come in a form of a contribution to a rebuilding fund that would focus on large, infrastructure problems, roads, processing plants, electricity, and transportation. For instance, the Liberian Flag is the second most flown 'flag of convenience' in the shipping world today. However, the registry office to obtain a flag is physically located in the United States and is managed by Americans. According to American Scott Bergeron, CEO of the Liberian registry, "Liberia doesn't have to do much. Every year, the registry business sends some of its profits back to the Liberian government. This is somewhere north of \$20 million per year." (NPR 2014). If Liberia were to leverage the management of this registry or to require a greater percentage of the profits from the management of the registry, greater investments into an infrastructure fund could facilitate needed public works. This fund needs to be managed in the same way investment funds are managed today, by people who are knowledgeable about managing money. Controlled by a separate, unbiased entity, created for the sole purpose of distributing the funds from the corporations effectively throughout Liberia, this governing body would be entrusted with increasing the contributions of the various corporations, and with doling it out to the various national projects that apply for it. The separate entity's motivation would be directly linked to how well the country is prospering, and would receive appropriate compensation. The only way to eliminate greed from this equation is the use of a separate entity to control and organize this fund. The investment from corporations has to be high enough to make a difference, but not so high as to drive them off, and in addition, they need to be rewarded by being given a break on tariffs or on the taxations of their products within Liberia. These rewards would be variable, based on how well the corporation benefited Liberia, and would be increased based on the success of each project. The African Development Bank has worked extensively on strategies to improve the infrastructure of Liberia through regional integration, ensuring that growth is shared amongst countries and not isolated to Liberia alone. An integrated and transnational approach would encourage an obligation on the part of Liberia to cooperate and comply with its neighbors. (The African Development Bank Group 2013)

Secondarily, we are proposing the use of a hybrid micro-financing opportunity as part of our

solution. Micro-financing, an idea first proposed by Doctor Mohammad Yunus in 1983, allows for individuals to borrow a marginal amount of money normally considered a loan, which must be repaid in kind. We propose creating hybrid micro-financing opportunities through a new app/station called **MIFI** (Micro finance with Wifi), which can be accessed remotely via internet or through an on-site kiosk/ATM-like structure located in six community or town centers. (Internet access is spotty and inconsistent in Liberia so it is necessary to provide alternative access.) What we are creating is a combination of both the charitability of Heifer International, a website that allows people to donate physical items such as chickens, ducks, sheep and cows to a general population, and the individuality of Kickstarter, where people can donate funds to specific recipients based on their interests, a particular project or the story of the originator of the project. **MIFI**, like Kickstarter in a way, would require recipients to give back a 'reward' in exchange for funds. However, instead of rewarding the actual donor of the funds, the recipient would reward their community in return and demonstrate that reward to the online community. This donation, which can be as little as 5 dollars and normally is under a 100 dollars, can be used to help create a stable source of income for individuals by giving them the opportunity to start their own businesses. We would create an app combining both concepts, allowing people around the world to connect and to help aid/fund individual Liberians based on their specific requests. Donors could also supply and ship items such as livestock, pay for an educational course, purchase farming equipment or medical supplies or just fund an individual's project. Purchases/donations can be easily be distributed through the highly active and developed shipping industry within Liberia. This is making use of the only intact infrastructure that remains after the 14 year long civil war. We're relying on the magic people feel knowing they have the ability to change an individual's life with just a push of a button and a very small investment.

**MIFI Wifi** Stations would be installed in select communities where there is limited to no-access to cell phones. The stations would be self sustaining, solar-powered tablet systems called **MiFi Wifi** (Micro finance with Wifi). At first, the systems themselves could be placed in the homes of respected community members, such as a priest, community leader, or an elder to ensure that the system wouldn't be stripped for parts, or abused. Trust and respect would steadily be built; acceptance of the system by the community would contribute to its success. Systems would be first based in areas of higher education and lower crime rates, then branch out into more and more locations. To guarantee success, we would partner up with Access bank, Liberia's first microfinance bank, which is supported by the European Investment Bank (EIB) and other strong shareholders. It has six branches throughout Liberia and has been providing micro loans since January 2009. Access Bank even continued to operate through the two year ebola epidemic, the only local bank to do so. "Ebola was like warfare, but we never stopped lending," (Horatio Weeder, Head of micro lending for Access Bank in Monrovia, June 2016) The bank is currently looking to expand their mobile banking system, and our **MIFI Wifi** system would be a perfect way of doing so.

In addition to Access Bank, BRAC would be another viable microfinance partner, because they have introduced mobile money to make transactions more convenient. They also have the capacity to train people on how to use mobile banking systems -- by using their Customer Service Assistants. (Brac 2018) BRAC was so successful, that the organization was "honored by the president of Liberia, Her Excellency Mrs. Ellen Johnson Sirleaf" as well as "ranked top global Non-Governmental Organization of 2018." (Brac 2018) Both Access Bank and BRAC would help process micro financing requests, donations both locally and internationally. For

instance, they can facilitate transactions between donors and local customers.

The final part of our three part solution is the cultivation of the native algae of Liberia into a viable, edible resource. Algae has already been shown to be a highly nutritious food source with many health benefits. (Business Insider 2014) As proved by Dr. Ripley Fox in his work in Farendé, Togo in 1988, it can be grown anywhere there is water, from ponds to oceans, which makes it a perfect fit for Liberia as one of its major natural resources is the ocean. Extremely easy to farm, algae cultivation would allow locals to have a consistent and nutritious supply of protein. An example being in Farendé in Togo, Africa, where they are harvesting the algae *Spirulina* daily, supplying the village with a constant food source and income. (Spirulina Source 2018) The only requirement for processing algae is the ability to scoop it up, remove excess water and create a paste-like substance, which is dried in the sun until it becomes flakes. These flakes can then be eaten, or easily stored, and the only energy resource required for the entire process, from start to finish, is sunlight. In addition to eating the spirulina flakes raw, the people of Liberia could integrate spirulina into their staple source of food, which is “Fufu”. Spirulina flakes blended into the dough of “Fufu” would both provide an ample amount of protein, as well as be culturally conscientious. Spirulina production would create jobs, and self sustaining businesses in Liberian communities. There is a range of how advance algae farms are, going from multi staged industrial farms, to very minimalistic small scale farms. People could even use their microloans to help build community algae farms.

By simultaneously implementing these three solutions, we can not only rebuild Liberian infrastructure, but also decrease malnutrition, provide aid to individuals in need, and create food security through employment. This three-pronged solution would work well in tandem. With the algae production, Liberians would no longer be malnourished or starving and could become productive farmers. Absent microloans, the people of Liberia wouldn't have access to equipment and livestock that grants them the ability to earn a living. Finally, if it weren't for the contributions from corporations and individuals, reinvesting in the countries growth, there would be no long term solution to the lack of infrastructure.

A strategy that starts with an investment in the rebuilding of the country's facilities, utilities and infrastructure understands the needs of the individual to grow and be productive, as well as the macro-needs of the country and the population. This three pronged approach addresses the macro and micro needs of Liberia, and works in tandem with organizations that are on the ground making a change.

#### Work Cited

“Availability of Essential Health Services in Post-Conflict Liberia.” World Health Organization, World Health Organization, 4 Mar. 2011, [www.who.int/bulletin/volumes/88/7/09-071068/en/](http://www.who.int/bulletin/volumes/88/7/09-071068/en/).

Baehr, Leslie. “The Next Big Superfood Could Be Green And Slimy.” Business Insider, Business Insider, 22 July 2014, [www.businessinsider.com/algae-is-the-superfood-of-the-future-2014-6](http://www.businessinsider.com/algae-is-the-superfood-of-the-future-2014-6).

“Chapter 6 - Liberia.” Trypanotolerant Livestock in West and Central Africa: General Study, ILRI, [www.fao.org/wairdocs/ilri/x5537e/x5537e07.htm](http://www.fao.org/wairdocs/ilri/x5537e/x5537e07.htm).

Chepkemoi, Joyce. “What Type Of Government Does Liberia Have?” WorldAtlas, WorldAtlas, 19 June 2017, [www.worldatlas.com/articles/what-type-of-government-does-liberia-have.html](http://www.worldatlas.com/articles/what-type-of-government-does-liberia-have.html).

“Climate - Liberia.” Climate in Nicaragua: Temperature, Precipitation, When to Go, What to Pack, [www.climatestotravel.com/climate/liberia](http://www.climatestotravel.com/climate/liberia).

“Contagious Bovine Pleuropneumonia (CBPP).” Fast Facts, The Center for Food Security and Public Health, [www.cfsph.iastate.edu/FastFacts/pdfs/contagious\\_bovine\\_pleuropneumonia\\_F.pdf](http://www.cfsph.iastate.edu/FastFacts/pdfs/contagious_bovine_pleuropneumonia_F.pdf).

“Corbett MR, Turner KL. (2003). Essential Elements of Postabortion Care: Origins, Evolution and Future Directions. *Int Fam Plan Perspect.* 29 (3):106-111.” International Journal of Management and Business Research, [www.texilajournal.com/public-health/edition/67-volume5-issue4](http://www.texilajournal.com/public-health/edition/67-volume5-issue4).

“Culture and Social Development.” Home, [Imanneydominicanrepublic.weebly.com/culture-and-social-development.html](http://Imanneydominicanrepublic.weebly.com/culture-and-social-development.html).

Designs, BlueSeas Web. “Microfinance Institutions.” Central Bank of Liberia, [cbl.org.lr/2content.php?sub=214&related=32&third=214&pg=sp&pt=Microfinance+Institutions](http://cbl.org.lr/2content.php?sub=214&related=32&third=214&pg=sp&pt=Microfinance+Institutions).

“Ebola (Ebola Virus Disease).” Centers for Disease Control and Prevention, Centers for Disease Control and Prevention, 27 Dec. 2017, [www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/index.html](http://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/index.html).

“Household Size and Composition Around the World 2017.” Economic and Social Affairs, United Nations, 2017, [www.un.org/en/development/desa/population/publications/pdf/ageing/household\\_size\\_and\\_composition\\_around\\_the\\_world\\_2017\\_data\\_booklet.pdf](http://www.un.org/en/development/desa/population/publications/pdf/ageing/household_size_and_composition_around_the_world_2017_data_booklet.pdf).

“Liberia.” Food in Every Country, [www.foodbycountry.com/Kazakhstan-to-South-Africa/Liberia.html](http://www.foodbycountry.com/Kazakhstan-to-South-Africa/Liberia.html).

“Liberia.” Food Security Portal, IFPRI, [www.foodsecurityportal.org/liberia](http://www.foodsecurityportal.org/liberia).

“Liberia.” Jobs Serve Africa, [www.jobserveafrica.com/country-fact-file/28/liberia](http://www.jobserveafrica.com/country-fact-file/28/liberia).

“Liberia.” World Food Programme, [www1.wfp.org/countries/liberia](http://www1.wfp.org/countries/liberia).

“Liberia - Agricultural Sectors” Liberia - Telecommunications, [www.export.gov/article?id=Liberia-Agricultural-Sectors](http://www.export.gov/article?id=Liberia-Agricultural-Sectors).

“Liberia - Agricultural Tractors, Imports.” Trading Economics, [tradingeconomics.com/liberia/agricultural-tractors-imports-wb-data.html](http://tradingeconomics.com/liberia/agricultural-tractors-imports-wb-data.html).

“Liberia - Energy Liberia ” Liberia - Telecommunications, [www.export.gov/article?id=Liberia-](http://www.export.gov/article?id=Liberia-)

## Energy.

“Liberia Health Insurance.” Swaziland Health Insurance | Pacific Prime International, [www.pacificprime.com/country/africa/liberia-health-insurance/](http://www.pacificprime.com/country/africa/liberia-health-insurance/).

“Liberia: Health Sector Needs Assessment.” Liberia Compendium, [www.who.int/hac/donorinfo/cap/Liberia\\_compendium\\_Jan06.pdf](http://www.who.int/hac/donorinfo/cap/Liberia_compendium_Jan06.pdf) .

“Liberia - Infrastructure, Power, and Communications.” Encyclopedia of the Nations, [www.nationsencyclopedia.com/economies/Africa/Liberia-INFRASTRUCTURE-POWER-AND-COMMUNICATIONS.html](http://www.nationsencyclopedia.com/economies/Africa/Liberia-INFRASTRUCTURE-POWER-AND-COMMUNICATIONS.html).

“Liberia - Land Use, Other (% of Land Area).” Trading Economics, <https://tradingeconomics.com/liberia/agricultural-land-percent-of-land-area-wb-data.html>

“Liberia - Market Challenges.” Liberia - Telecommunications, [www.export.gov/article?id=Liberia-Market-Challenges](http://www.export.gov/article?id=Liberia-Market-Challenges).

“Liberia Median Age.” Jamaica Age Structure - Demographics, [www.indexmundi.com/liberia/median\\_age.html](http://www.indexmundi.com/liberia/median_age.html).

“Liberia - Urban Population (% of Total).” Jamaica Age Structure - Demographics, [www.indexmundi.com/facts/liberia/indicator/SP.URB.TOTL.IN.ZS](http://www.indexmundi.com/facts/liberia/indicator/SP.URB.TOTL.IN.ZS).

“Liberia - Urban Population (% of Total).” Trading Economics, [tradingeconomics.com/liberia/urban-population-percent-of-total-wb-data.html](https://tradingeconomics.com/liberia/urban-population-percent-of-total-wb-data.html).

“Microfinance.” BRAC, [www.brac.net/brac-liberia/item/792-microfinance-and-small-enterprise-development](http://www.brac.net/brac-liberia/item/792-microfinance-and-small-enterprise-development).

“Point2 Homes.” Demographics & Statistics - Employment, Education, Income Averages in Atlanta - Point2 Homes, [www.point2homes.com/US/Neighborhood/FL/Hollywood/Liberia-Demographics.html](http://www.point2homes.com/US/Neighborhood/FL/Hollywood/Liberia-Demographics.html).

“Poorest Countries in the World – Ranked.” Atlas & Boots, 21 Apr. 2018, [www.atlasandboots.com/poorest-countries-in-the-world-ranked/](http://www.atlasandboots.com/poorest-countries-in-the-world-ranked/).

“Project Liberia.” Waves For Water, [www.wavesforwater.org/project/Project-Liberia](http://www.wavesforwater.org/project/Project-Liberia).

“Public of Liberia.” Housing Conditions Final , Liberian Institute of Statistics and Geo-Information Services, Sept. 2011, [www.lisgis.net/pg\\_img/Housing%20Condition%20final%20210512.pdf](http://www.lisgis.net/pg_img/Housing%20Condition%20final%20210512.pdf).

“Root Causes of the Civil War.” Liberia: Inter-Ethnic Relations | PeacebuildingData.org, [www.peacebuildingdata.org/research/liberia/results/civil-war/root-causes-civil-war](http://www.peacebuildingdata.org/research/liberia/results/civil-war/root-causes-civil-war).

Spaen, Brian. “How One Startup Is Turning Algae Into The Health Food Of The Future.” Green Matters, Green Matters, 5 Oct. 2017, [www.greenmatters.com/news/2017/10/05/NiKqm/algae-](http://www.greenmatters.com/news/2017/10/05/NiKqm/algae-)

positive-approach-artificial-food.

Staff, Investopedia. "Muhammad Yunus." Investopedia, Investopedia, 23 May 2018, [www.investopedia.com/terms/m/muhammad-yunus.asp](http://www.investopedia.com/terms/m/muhammad-yunus.asp).

"The Economic Impacts of Ebola." IGC, [www.theigc.org/impact/economic-impacts-ebola/](http://www.theigc.org/impact/economic-impacts-ebola/).

"Village Farm in Togo." Spirulina Source » Village Farm in Togo, 1 June 2018, [www.spirulinasource.com/spirulina/spirulina-farms/village-farm/](http://www.spirulinasource.com/spirulina/spirulina-farms/village-farm/).