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### **Benin: Solar Power to Provide Proper Food Storage and Improve the Standard of Living**

Benin is located on the west coast of Africa and its geography is mainly made up of a homogeneous landscape, consisting of semi-arid highlands and savanna plains. The elevation is approximately the same throughout the entire country. Most of the population is located in the southern part of Benin. Benin is about the size of the state of Pennsylvania.

A common family in Benin consists of five to eight family members. Most families either live with or in close proximity to their extended family. In most urban areas, the women and young men do most of the cooking. The cooking is done outside; unless it rains. When rain occurs, they go in a separate room or shelter. A common problem in Benin is the lack of refrigeration in the common household. The inadequacy of refrigeration causes most people to visit the market several times a week. A common meal consists of a mush like grain often served with vegetables and perhaps fish. A typical family eats twice a day; at noon and at night. The morning meal often consists of leftovers from previous meals. Over the last summer my family has worked with a refugee family from Benin.

The Dejbedji family—Janvier, Victoire, Jeervace, and Jivnic—were very helpful when I interviewed them about life in Benin; specifically, about problems they had with food storage and how these problems inhibited trade. Jeervace, who is ten, told me about the biggest changes when she moved to Des Moines, Iowa. They are originally from Porto o Novo in Benin, Africa which is the capital of Benin. She thought that it was quite odd that we had running hot water in all of our houses and businesses. Also that it was extremely common for everyone to have their own refrigerator. Jeervace said that it was nice to be able to keep all her food in her house and not her cousin's house. When I asked her what she meant she told me that her family and her cousins had shared one refrigerator between the three families. She said that after they had eaten their family meal they would take the leftover food to her cousin's apartment and keep it there until they needed it again. I find it odd to think that I would have to go to my cousin's any time I wanted to get my leftovers.

Janvier had worked as a high school math teacher the entire time he was in Benin. He tells me all the time how much he loved it and how he cannot wait to teach again. Right now he works at Hy-Vee stocking shelves. Victoire worked in Business Administration. She is now a stay at home mom, she is working fervently to learn English. The entire family speaks fluent French including Jivnic who is only five. It is sometimes hard for them to communicate because of the language barrier, but over the time that I have come to know them the easier it has become for them to speak to me in English. It is hard to overcome a challenge like that, but it shows just how intelligent they are. They are so willing to learn and they work so hard.

Jeervace started fifth grade this last school year and she is quite the math whiz. She told me the other day how much she loved reading books. She then went on to tell all about the library as if I had no idea what a public library was. It almost made me cry to think that public libraries were a new and fascinating thing to her, something I had grown up my entire life knowing about and spending hours at reading. Jivnic does not speak much English, but when I gave her some of my old picture books the look on her face left me without words. She kept saying thank you over and over again. I cannot believe how different our two worlds had been up till they moved here. I hope their family flourishes in the United States. If Janvier and Victoire had the jobs that they had in Benin they would be considered middle class citizens in America. Everyday Victoire had to walk around half a mile to the market to buy her groceries and then walk home. She told me that one of the weirdest things that had changed for her was that we had all these brands for all of our food products. When she was in Benin she did not have to make the choices on food that she

does now. It is their hope to become established here and be able to sponsor more family members to immigrate to Iowa.

It is hard to imagine three families sharing a refrigerator, like the Dejbedji family. Imagine an entire village sharing one. How about families and villages going without a refrigerator at all? Some villages and small towns do not have stoves either. In America approximately ten million refrigerators are sold every year. If even a small percentage of that many refrigerators were sold to Benin citizens it would increase the livelihood of the population. It would decrease the amount of food borne illnesses and spoilage rate of food.

Education for the boys of a family is very common. Many even go to universities or more advanced educations. Currently sixty-seven percent of girls are not in school of any kind. Although the constitution says that there is equality for women, it has been ignored in practices within society. Health care in Benin is commonly taken care of by mobile health units throughout the country. Mobile health units help keep down any major epidemics, but is not the desired health form for the country. Around three quarters of the population goes without healthcare and only half the population is vaccinated. In the future, the government hopes to expand healthcare to benefit the population.

The area of Benin is about one hundred and twelve thousand square kilometers and only twenty-three thousand kilometers squared are used for farming. The staple crops of Benin are maize and cotton, both of which are major cash crops. When growing crops, most of the work is left to the men. Women do often help with planting and processing of the crops. Generally, farming is done on very large farms run by the wealthier population, while poor farmers work twice as hard to make a meager profit. The method that many poor farmers have used to store their cash crops has affected the price that they are able to earn from their crops. Some farmers barely make enough to live off of themselves, let alone support their immediate and extended families. Oftentimes there is one family farm supporting twenty people in a family. Each year, earning a living wage from a family owned farm becomes harder and harder.

Maize and cotton have historically been stored in a thatched shelter called a granary. A typical farmer has problems every year with storing their food near the end of the farming season. This is because smaller farms are run by families, and they do not have enough workers. A larger farm is able to hire more workers. Farmers end up storing their cotton and maize in the open structure-granary- to dry. This makes it easier for nearly half of the crops to go bad from various causes. For example, it is common to see granaries infested with rats or blown over by harsh winds. These preventable problems are a major cause of farmers failing to collect potential crop returns. Proper storage of crops is a major problem in Benin, but it is a problem that can easily be fixed. Granaries should be built farther away from buildings and houses to keep rodent infestation down. Also, wire netting should be used to make sure that the rats are kept firmly outside the crops. If these steps were taken then the food production would increase.

As mentioned earlier, a common family makes several stops at the market each week. This is because almost no families have refrigeration access. Not only does the lack of refrigeration cause a family to run through their cash funds, because they have to spend more money on gas and transportation to and from the market, it also affects their choices when buying food. They make poorer nutritional choices when it comes to food because they don't take into perspective what they are buying compared to what they might already have at home. Approximately fifty-seven percent of a household's income is spent on food, fifteen percent on fuel, five percent on health care, and three percent on education. When a majority of an income is spent on food, it makes it difficult, if not impossible; to live at what is considered appropriate standards. About thirty-seven percent of the population has an income below poverty. Benin is one of many countries all over the world that has the majority of its population living without electricity. Since women are expected to do all house work often you see only women in markets. This also causes women to be degraded to house work only and they are not given the opportunity for an education. The mortality rate of women and small children has spiked in the last decade. This generally stems from food borne

illness caused by the fact that many households cannot afford refrigeration and electricity, thus rendering their food spoiled and unusable. This causes a large amount of their income to be wasted. The shelf life of their food is decreased because they have no way to store it for a long period of time. This causes them to throw out a majority of food that goes bad, and a variety of diseases to be contracted from spoiled food. The lack of electricity throughout Benin has been a steady problem for years now. A few things have been done to increase the percentage of the population with access to electricity, but the number is still far too small.

Lack of energy and electricity is one of the many challenges facing the world today. For the thousands of people and small farm holders living in extreme poverty, lack of electricity and energy is holding them back. Expanding access to electricity and energy is a huge challenge for a developing country, however building the infrastructure will help future problems. Not only does it mean that households do not have refrigeration, it also means that markets do not have proper storage for the bulk of the food they sell. If markets could refrigerate their food before giving it to their customers it would save bundles of money. Not only could they then have a better product what makes it better to market, they could also begin storing larger amounts of food at a time, buying in bulk decreases prices making it more affordable for the public. Bulk storage would increase exportation from the country, thus increasing the country's profits. A common household could spend this profit on simple things that would increase quality of life.

Another way to improve quality of life in Benin is to harvest solar energy. Benin has a very dry climate and lots of sun. If we could set up small solar energy plants in even half of the small rural villages we would be giving millions of people access to electricity and refrigeration. The quality of the food that people could buy from markets would increase greatly because of proper storage. Women would be able to work or have other jobs because the amount of time they would have to spend on getting food would be decreased. You might even see the number of women and girls getting an education increase. The environment might become more sustainable and adequate. Overall, this would decrease the percentage of people living on incomes below poverty, currently at thirty-seven percent.

If the population of Benin continues to grow as it has in the past decade you will see that thirty-seven percent increase profoundly. You see urbanization happening throughout the country, which is a cause of lower incomes. Many people believe that moving to cities or even other countries will increase their opportunity for a higher income. I have seen the effects of this first hand.

If the country of Benin could store more of its food in bulk and for a longer period of time, it would enable more food to be sold, increasing the amount of revenue within the country. If increased revenue was used on solar energy to get refrigeration access and higher standards of living to more of the population, they would be able to trade with more countries. Refrigerated trucks could be used to transport food a farther distance. Much of the population would be the first generation of their family to use solar energy, or any energy, to receive electricity to power machines and everyday necessities. It would be a progressive step for the developing country of Benin. Generation after generation would be guaranteed a greater quality of life.

If the government of Benin would take the idea of solar electricity to even a small percentage of the villages and get them started, the villages would make a larger income that would increase the gross domestic product. The idea would have to be reasonably priced and accessible to the public. The only way this could happen is if the government became active in the installation of the solar panels and found grants and loans to fund the project. This would be beneficial to the government in the long run, and would produce larger incomes throughout the country. Benin is a country worth fighting for with its rich culture. Benin needs the help of all to make it a thriving country. By bringing solar electricity to Benin, Africa it would increase successful food storage thereby bettering the standard of life within the country.

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