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Biofuels in Guyana, South America

Background and Economy of Guyana

Poverty, hunger, and disease claim many lives around the world every year. Developing countries are hit the hardest by these factors. Among these struggling nations is the relatively small country of Guyana, located on the north coast of South America. At any one moment, eight percent of the population, or 50,000 people, in Guyana are undernourished due to poverty. In recent years, Guyana has also been hit hard by an increase in drug dealing and the fatal disease AIDS. To better understand the people and their everyday trials, we must first put ourselves in their shoes. Imagine you are living in Guyana, a heavily forested, sub-tropical region where rain falls frequently, and you are drenched in sweat from high humidity levels. You, like many others, live in the overcrowded coastal region. Only the remaining Indians and a few brave individuals face life in the interior of the country. To earn a living you and a few others farm sugar cane in the fertile coastal region. The majority of the sugar fields belong to an increasingly socialist government. The result of this is that more and more of the land and means of production is taken out of the hands of the small farmers. It is difficult for you to make ends meet and your large family never seems to have enough to eat. In addition, you do not have enough money to maintain the complex drainage system that prevents your fields from flooding. You fall farther into debt. Your family becomes sicker due to lack of proper nourishment and your clothes become more ragged by the day. Your entire family goes without shoes. How can you possibly compete with the prices that the government farms set for sugar cane? After all, they have over 20,000 men working their fields, and with so many workers they can keep the drainage and irrigation systems running, plant more crops, and grow more cane. To make matters even worse, back in June of 2005, the European Union decided to cut sugar prices by thirty-six percent. You know that in 2009, you will get thirty-seven cents less per pound for your crops than you get today. You talk to a friend who is also suffering. He has lost several of his family members just as you have. Together you commiserate. Each of you alone can only produce what your small acreage farm yields. Individually, you take your harvest to the sugar factory in LBI where it is processed and sold to the European Union. You can now use your hard-earned income to buy your family food: chicken, rice, bananas, and other goods. Now that we have a mental image of a typical poverty stricken farmer in Guyana, we can better understand his suffering in the day to day injustices that he must endure. Guyana grows two main crops, sugar cane and rice, on the two percent of its arable land. Of this land, 50,000 hectares is devoted to the sugar cane crops. The remaining land is heavily forested and not suitable for planting. Kurt Jordan, a resident of Guyana, refers to his country as once having had the potential to be, "…the bread basket of the Caribbean. We are as green as broccoli." The Guyanese government controls eighty percent of the arable land used for farming. This makes it nearly impossible for small farmers to get by, but what if there were ways to change some of these trends?

- What if the independent farmers joined together to form an agricultural cooperative?
- What if that cooperative were able to sell the goods collectively and profit by the greater volume of the combined crops? Could it work?
- Could they capitalize on the bagasse, leftover stalks drained of their juice, as well as other crop by –products if they sold them to be converted to biofuels?
- Could the low-income subsistent farmer reinvent himself in the agricultural industry?

Gaining Market Strength Through Agricultural Cooperatives

Let's take a brief look at the reasons why these individual farmers are unable to earn enough income to feed their families, buy clothes, or run their farms efficiently. First of all, their small quantities of land do not produce as much cane as the larger government holdings. Even with two growing seasons,

they cannot close the gap. Population growth also plays a part in smaller and smaller farm sizes. For instance, when a man has two sons, upon his death each son receives half of his father's land, dividing the size of each farm in half. If this continues generation after generation, the family farm becomes smaller and smaller. This is true in many Guyanese families where there are often numerous children. The smaller income of a subsistent farmer does not allow him to buy the equipment that he desperately needs to compete with the larger plantations. Without this equipment, he is unable to plant his fields as quickly, and must work much harder to obtain a good yield. He may also be unaware of all of the latest practices in sugar production which could result in a greater harvest. This lack of knowledge could be due in part to a parent's early death, leaving children to take on a job they are not properly equipped to handle. A natural disaster, such as a flood, may also affect the farm's output. All of these factors contribute to the poverty and undernourishment of subsistent farmers and their families.

There is, however, a brighter side. These problems have a possible solution in the form of an agricultural cooperative among the individual farmers of Guyana. Should the farmers form an organized cooperative, they could reap many benefits. The first benefit being that if the many smaller farms were to collaborate, the total output of sugar cane would rise to a competitive level. This would allow the farmers to sell their cane at a better market value. Another advantage for this body of farmers is that the voice of many can be heard more clearly and loudly than the voice of one. Thirdly, whereas one farmer may not be able to afford better farming implements, collectively they can accrue equipment that can be shared among the cooperative. In addition, the equipment of one farmer will be different from the next; therefore, what they already own can be used more effectively. Much like the implements, knowledge of crop growth and cultivation could be shared. Techniques unique to each farmer, as well as information gained by one and shared with many, may help a fellow planter to gather in a better harvest, thereby improving the income of the total group. This improved farm marketing infrastructure would also allow for a farmer with a small family to receive help from other farmers in the area. In the case of a natural disaster, team work could help rebuild the damaged areas. Over all, these farmers would benefit greatly by banding together under organized leadership. In the United States the Sue Bee Honey Company, a cooperative of honey farmers, and Diamond Foods Inc., started by walnut growers in California are good examples of very successful cooperatives. What the Guyanese farmers need is guidance in how to effectively establish a sugar cane cooperative.

Setting Up A Cooperative

There are several things that would have to happen and a few basic steps to be followed in order to begin a cooperative group:

- The core group must meet to discuss the need for and advantages of a cooperative.
- Next a general meeting for every farmer who is interested should be held.
- Leaders need to be identified
- Their next job will be to discuss the feasibility of the plan. These leaders will come up with projected profits, a market analysis, and ideas for financial support.
- This information will be presented to the potential members, and then a business plan will be drawn up.
- With the consent of the new members, legal papers need to be drafted and filed.
- After all of these necessary steps, the first meeting can be held.
- At this meeting, bylaws should be adopted and a board of directors elected.
- Now the farming cooperative can begin to operate.

World Leaders In Biofuel Production

As David Trautmann, a retired Texaco executive, stated, "I'm not sure how they (small farmers) could ever benefit; however, if these farmers got together in a cooperative…it might be a good solution." Before deciding to go this route, as with all things, there are many factors that need to be considered. On

the world stage there are both success stories and stories still seeking a happy ending. Brazil, for example, has had one of the greatest stories of triumph. They are the world's leading producer of biofuels, and have a completely self-sufficient fuel economy. This means that they don't have to buy fuel from any other country. To achieve this status, their government mandated changes to be made in the country. Car manufacturers have to make or design ethanol-efficient models, otherwise known as flex fuel cars. The agricultural industry has to grow the crops which are used to produce biofuels, and finally the fuel companies have to market the ethanol that is produced. The United States' government cannot dictate in this manner because we are a democracy. However, US biofuel production comes in right behind Brazil. Some of the obstacles facing the United States include competitive pricing, corn for fuel vs. corn for food, transportation, and the need for separate storage containers and pumps at the station. The biggest hurdle for the United States will be to integrate E85, a mixture of 85% ethanol and 15% gasoline, and other biofuel products into the everyday life of Americans. Before biofuels can be widely used in America, ethanol must be priced low enough to make up for the fuel economy lost by using it. A consumer in San Antonio, Texas has said that although he has tried E85 and his engine loves it, he will not use it until it is more cost effective. Many in America share this point of view. Curtis Donaldson, President and CEO of CleanFuel USA, hopes for a break-through in cellulose technology. This form of biofuels would allow for products such as cotton plants and corn stalks to be broken down and processed. By 2012 to 2015 the United States hopes to displace 20% of its gasoline use with alternate fuels.

Converting Food Crops to Biofuel Production

Before the people of Guyana can begin to produce biofuels, they will have to carefully weigh the pros and cons. On the positive side, this will provide farmers with another source for much needed income. Even without planting more or different crops, they can take advantage of by-products from existing crops by selling the bagasse left over from sugar cane after the juice is extracted. The sale of the second batch of molasses for biofuel purposes could prove to be profitable as well. Each of these products comes from a preexisting source that is otherwise not used to its fullest potential. The sugar prices should not drop farther since there will be an increased demand for the product. Another possible advantage for the farmer comes in the potential to use biomass to power the production plants.

There are negative aspects to consider in regard to producing crops for biofuel use. If farmers begin to rely on the biofuel refineries too heavily, they could suffer greatly if the industry takes a nosedive, so to speak. As a new industry just getting a foothold in a growing world, biofuels may not have what it takes to stand the test of time. From Curtis Donaldson's perspective, if the infrastructure of the industry does not improve and gain strength, then production of biofuels could disappear in twenty years. They are not as easy to transport as gasoline products are, and they contain only seventy-five percent of the energy of gasoline. Some believe as David Trautmann that, "…they will always be there, but in a smaller quantity."

Curtis Donaldson acknowledges that the biofuel wildcard is in cellulose technology. In his opinion, biofuels will not replace fossil fuels; however, it may be possible to displace the use of gasoline by 40-50% in the United States with advances in the use of corn stalks and cotton plants for the their cellulose content. In the case of the Guyanese farmer, the cellulose rich resources available include saw dust, wood chips, paper sludge, rice plants, and banana peels. Precautions would have to be taken to ensure that producing for biofuel use would not hurt Guyana's sugar industry. Perhaps the amount of sugar exported to other countries could be decreased in proportion to the anticipated decrease of imported gasoline. At the moment, any biofuel products produced in Guyana would have to be sent to Brazil or another country to be processed. This could be changed should Guyana build biofuel refineries. The question remains, are biofuels worth the extra money?

Benefits of Biofuel Production in Guyana

According to the ECLAC, Economic Commission for Latin America and the Caribbean, an investment of around six and a half million dollars would be necessary to bring biofuel refineries to Guyana. Financial backing for this venture could be obtained through a foundation such as World Bank. The country itself would profit by almost five and a half million dollars in energy savings per year due to a decrease in imported fossil fuels. This would seem to prove its worth to the Guyana government, but is it a viable investment? The new industry would definitely open up many jobs both for experts, and for low-income families. The poor families referred to here are those who live in the crowded city suburbs and have little or no income. For them, these new jobs would offer a new beginning. The savings that would occur overall for the country are also very appealing. With those savings, the country could focus on improving living conditions all across the board. The diversity in income would also be very beneficial for a country that relies almost entirely on its sugar industry. Several countries, including the United States and Brazil, are already interested in the prospect of biofuels in Guyana. This would give the industry an almost immediate financial backer. Another appealing prospect for Guyana is the eighteen month pay back period for their investment. This would mean that they would get all or some of the money they invested back within eighteen months of their expenditure. Although the initial investment is a large sum, the outlook is bright.

Conclusions Regarding Biofuels In Guyana

Through thorough research on these topics, I now have a mental image of Guyana, answers to many of my questions, and a new wealth of knowledge. I whole-heartedly believe that the country of Guyana, as well as many others, could profit from implementing agricultural cooperatives into their farm marketing infrastructure. Sheer numbers and collaborative efforts would supply them with knowledge, increased income, better equipment, and a louder voice. Successfully established cooperatives indicate that when farmers sell their crops collectively they can profit from the greater volume of the combined harvest. Soon the farmers of Guyana could build sturdier homes, send their children to better schools, eat more nutritious foods, buy sufficient clothing, and overall improve their quality of life. In addition to cooperatives, biofuels offer many opportunities. Aside from providing more jobs for low-income families, biofuels would also save money otherwise spent on the import of gasoline, and serve as an additional source of revenue for many farmers. Biofuels look like the solution to malnutrition and other problems in Guyana, but how long will this hold true? I believe that biofuels in Guyana are an excellent solution in the near future, because they provide jobs and income for many families; however, I think that this is only a stepping stone for Guyana and other developing countries. The other stones along the path lie in new technologies such as cellulose biofuels. This step would afford Guyana the opportunity to produce still more biofuels from products and crop by-products that already exist plentifully and naturally. Capitalizing on these resources would alleviate the problem of exhausting the sugar cane supply. Although cellulose technology is not yet efficient enough for widespread use, there is a development plant for cellulose biofuels in Jennings, Louisiana. Researchers are experimenting with different ways of producing these new fuels using switch grass and other plant material. Several universities including Texas A&M, Louisiana State, and Florida are conducting studies concerning the use of corn stalks, wood, grass and sorghum for cellulose biofuels. Stepping stones like these are what developing countries need to be aware of as they look toward the future. The low-income farmers in Guyana can reinvent themselves in the agricultural industry by remaining open-minded and aware of the advances around them. Fighting poverty is a continuous battle. New methods of warding it off will have to be sought as the needs arise. Poverty, hunger, and disease will always be present in our world, but I definitely think that they can and need to be substantially reduced. Every solution, such as cooperatives and biofuels, is just one step closer to the international goal of a world without poverty.

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