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Biofuels and Educational Help from Programs Will Save the Central African Republic

Since the first history books were written, countries and the citizens within have suffered from the poor judgment of their government and the deficiency of their geographical regions. Many countries have gone from rags to riches because they invested in profitable enterprises and changed their outlook. Many of these countries, including China, South Korea and Singapore, are now among the richest countries in the world. [reason.com] Some governments in the world have started using biofuels. Biofuels are a renewable energy source that also provide a steady source of income for the farmers that grow the crops. Corn sold for the use of biofuels will be worth more money than corn sold for food. The reason for this is simple: as the economy improves, and everybody has an adequate supply of food, the demand will be high for a source of fuel. The demand for biofuels will be stable because countries will be more likely to purchase it since it is more economically friendly than petroleum-based oil. If countries all over the world were to convert to biofuels, we would help the earth and the economy immensely. Farmers can start changing their crops to biofuels and gain a profit from it.

Biofuels burn more cleanly and fully than gasoline or diesel fuel, which means that little is wasted in the burning process. Biofuels help reduce greenhouse gas emissions because the carbon dioxide given off when burning is equal to the amount the plant uses during photosynthesis, thereby canceling each other out. The facilities required to process biofuels would make jobs available. Distiller's grain, a by-product of biofuels production, is a high-protein feed used for livestock. [COEE] Alternative Hybrid Locomotive Technologies is designing farm machinery that runs off of ethanol, which would further reduce greenhouse gas emissions. [ABC] Research has shown that biofuels help offset greenhouse gas emissions from vehicles by 35% to 46%, and that the process (including planting, processing, etc.) of making ethanol is 67% efficient. [Iowa Corn] In order for biofuel production to be implemented, citizens need to receive a better education.

The Central African Republic (CAR) is one of the least established countries in the world; in 2002 it had a gross domestic product (GDP) per capita income of just \$260. [state.gov] That was one of the lowest GDP per capita incomes in the world at that time. Since then, that number has improved a meager 3% per year. The CAR's agricultural products include cotton, coffee, tobacco, cassava, yams, millet, corn, bananas and timber. Although 55% of its citizens are involved in agriculture, it cannot provide a sufficient food supply for the 4.4 million citizens in the country. In comparison, Sweden has only 2% of the population involved agriculture, but they can easily provide for the 9 million people in the country. [cia.gov] On average, each person in the CAR makes \$229 a year. This is barely enough for the farmers' necessities, including seeds to grow for the next year's crop. In Switzerland, one person makes \$36,666 annually. [nationmaster.com] About 67% of the citizens of the CAR live on less than \$1 a day, compared to the 2% that live that way in Poland. [wikipedia.com] Most of these difficulties were caused prior to 1960, when the CAR was not an independent country.

Many of the Central African Republic's problems emerged during the decades of colonial rule by the French (1900-1950). During this time, the country was forced into war repeatedly, and Central Africans were frequently forced to work for companies that had struck up deals with the French. These deals allowed the companies the right to purchase local goods at cheap prices and sell European products back to the citizens at very high prices. In return for this right, the companies paid rent to the French and promoted their concessions. The companies and the French government usually worked together to force

the Central Africans to work for no pay. Several cotton companies were allowed to purchase monopolies, consequently making cotton much more expensive and keeping their shareholders happy. [answers.com]

The average family in the CAR consists of a mother, father, 1-2 children, and a few of their close relatives. A group of this size has, on average, 6.5 hectares of land to farm. [unctad.org] Their diet consists of bananas, yams, vegetables, eggs, chicken, and goat. Meat, such as impala and fish, are a rarity and when acquired is not of substantial amounts. Poaching has greatly reduced the number of large animals, such as elephants, but the numbers of other animals, such as impalas and waterbucks, stay the same. This is good, because the farmers do not have to worry about killing off the species in the country. They meet their calorie needs, but they are malnourished because of the lack of variety available. [fao.org] On average, farms in the Central African Republic produce .98 metric tons of corn per every hectare of land, a meager amount at most. In comparison, one hectare of land yields 23.26 metric tons of corn in Jordan. [nue.okstate.edu] This is most likely caused because of the infertile soil, which in turn is caused by a deficiency of fertilizer.

The lack of education results in a lack of food and money. This is the definition of poverty; therefore, education and poverty are directly related, and poverty can be roughly estimated in the terms of education levels. Data shows that the percentage of people below the poverty line stayed the same from 1995-1996, at 49%. There is no recent data on the matter. From this data, we know that the poverty level stayed the same for two years, but it is not enough to make credible conjectures on recent poverty levels.

The lack of education in the CAR is one of the most prominent issues facing the country and greatly inhibits the country's chance to develop economically. The lack of education opportunities is easily proven by the fact that only children above the age of 15 are literate. The children that do have the opportunity to learn are in packed classrooms. On average, a single teacher has approximately 73.5 students in the primary level, which is outrageous when compared to the 15.4 student to teacher ratio in the United States. The Central African Republic has the highest pupil to teacher ratio in the entire world. [nationmaster.com] Although research has shown class size does not affect the learning ability of the students, it greatly affects the desire of the students to learn. Large class sizes generate a form of anonymity upon the students. They then do not get rewarded and do not see any reason to answer any questions. [english.ttu.com] The average schooling of adults is 2.5 years, which is very low compared to the U.S. average of 12 years.

The insufficiency of education greatly affects farmers' knowledge of crops. The situation is so bad that farmers might not know that better crops exist. Most children do not have the opportunity to go to school because the family needs them to work on the farm. Therefore, they have little to no education, and without any change, the situation will stay the same. With education, farmers will learn about new crops that will increase production. The growth of small farmers would help everyone in the country by providing the country with an adequate food supply. This would also ignite the economy with a surge of money because the farmers would be able to buy things, putting money into the economy.

A recent development in Africa is biotech seeds. These seeds are bioengineered to kill corn borers. The killing of these pests will increase the production of crops because all of the production will be used for food and biofuels, not to feed corn borers. This in turn will result in more money, since there is more corn to sell. Research has shown that yields have increased by as much as 56% on small farms that use these seeds. Once farmers start producing a surplus, they can buy their own biotech seeds, and over the course of time reduce their dependence on outside sources. [africabiotech.com]

Whenever the soil becomes unproductive, farmers have to cut down trees to acquire additional fertile land. [fao.org] This is creating a problem with deforestation, which could be prevented by supplementing the existing farmland with the scientifically advanced fertilizers that has been specifically

developed for use in Africa. Preventing deforestation helps the environment by keeping plants alive that use carbon dioxide, therefore reducing greenhouse gas emissions. This also means that farmers do not have to spend time and resources cutting down trees. Although scientifically developed fertilizer is an expense, the farmers' crops would yield more, therefore earning them more money. The extensive research has made the scientifically enhanced fertilizer more productive than normal fertilizer. This, in conjunction with the biotech seeds, would greatly heighten the yields produced by the crops.

Almost all of the small farms in the CAR harvest their crops by hand. This is a very slow and tedious process, and people fatigue very quickly. This problem can be alleviated by investing and distributing farm machinery throughout the country. By doing this, the time required for harvesting will be greatly reduced. The farmers will then be able to farm more land, therefore earning a substantially larger amount of money. In addition, if farmers have the necessary machinery, fewer people are needed on the farm, and children can go to school. After a couple of generations, almost all of the citizens would have an education.

There is a concern about the surpluses produced by the farms. What do people do with it? Most regions do not have enough money to provide adequate storage facilities for excess crops, such as corn. If the goods are not used in a timely manner, they go to waste instead of being used to feed many of the people in poverty or being stored for the future production of biofuels. This would be very unfortunate and needs to be prevented. There needs to be an investment in grain storage facilities [rockfound.org] These facilities vary from concrete to corrugated steel silos. However, the best choice for the CAR would be storehouses. Storehouses are best for developing countries because they are larger and cheaper to build.

All of these things together would be necessary for biofuels to play an important part in the Central African Republic. Biofuels provide a source of stable, efficient income for the families. The CAR can sell excess biofuels to neighboring African countries, such as Sudan and Cameroon, who currently import most of their oil. The only negative aspect for the government is that they would have to invest in a biofuel facility for about \$20 million. [matric.us] Selling corn as biofuels would reduce the amount of available food, but the improved yields would compensate for that. Farmers do not have to sell all of their corn as biofuels. With more money and greater yields, farmers would be able to afford education for themselves and their children. The overall education of the country would steadily improve thereon. The heart of the matter is that the quality of life of the farmers will be improved.

In order to fund education, technologically enhanced fertilizers and seeds, and farm machinery, the Central African Republic will have to change its policies on matters of money. They have to stop relying on imports. To do this, they will have to invest money in factories. This will be expensive, but it will provide jobs for hundreds, if not thousands, of workers. The manufactured goods produced by the factories will be significantly cheaper than those imported because of the reduction in transportation costs. The products can be used domestically and/or could be exported to generate money.

In order to further fund these expenditures, the CAR needs to tap into the unused resources in the country. Right now the CAR exclusively relies on imports to fulfill their oil needs. If they were to tap into the oil resources in the north, they would meet their own needs and possibly get a surplus which could be sold to Sudan, Cameroon or other surrounding countries. Sudan and Cameroon already import oil and it would be cheaper for them to import from the CAR than from countries farther away. The farther goods travel, the costlier it is. Exporting oil would also infuse the economy with money. The oil would only have to be used by the Central African Republic until the provision for biofuels was sufficient enough to meet the demand. [state.gov]

The government will have to pay for multiple things, such as farm machinery, if they are not procured in other ways. Some of the things the government needs to pay for are farm machinery, biotech seeds, storage facilities, and fertilizer. Biotech seeds and fertilizer are needed to increase the yields of crops. Farm machinery will reduce the amount of people needed to farm, allowing children to go to school. Finally, storage facilities will store the excess yield, allowing it to be used in the future. If the government does not supply the materials needed, that means an organization needs to do so.

Even though the CAR has the status of a developing country, it has an advantage over developed countries. Developing countries have access to aid that is not available to developed countries. With the help of organizations, such as the Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA), farmers can learn how to improve yields and earn more money. This organization teaches farmers how to improve yields, and earn more money. [asareca.org] Another organization is The Green Revolution, which was created to help countries in Latin America achieve a better understanding of crops, provide better seeds, fertilizer, and farm machines. If the CAR were to do this, a surplus would be produced, allowing the country to make money and continue its economic prosperity. The New Green Revolution offers the same things, but it is targeted towards helping those who live in Africa. [Africa's Turn] Fertilizer, which is greatly needed by the CAR, is another of the many things offered by the New Green Revolution through the Rockefeller Foundation.

However, just because developing countries have access to certain programs, does not mean they get the help needed. This means that all of the people in the country lose out. People in urban areas need money to go to school, but they do not get it. Rural families are also out of luck, because they need money, are limited to farming, and are too far away from the city to easily access the schools. Some countries do not accept the help offered by organizations. Others accept the accessible help and use it in conjunction with other things. Still others accept the help, but do not do anything else, and get nowhere. The Central African Republic (CAR) has chosen the latter, most destructive path; but biofuels, if used correctly, can save them.

Organizations all over the world, such as the Rockefeller Foundation and ASARECA, would play a very large part in the development of the CAR. They would have to provide several things: fertilizer to keep the soil fertile and prevent deforestation, biotech seeds which would improve yields and education to help farmers understand the new techniques and how to use them. The government would have to invest in a biofuel facility to process corn into biofuels. The government would also have to stop the net loss every year, by buying industries that would produce goods which would be cheaper than imports. They need to build oil facilities in the north to reap the benefits of the untapped oil reserves. Building universities and schools scattered throughout the country would provide better access to those who can go to school. The final thing the government needs to do is to build storage facilities in major and secondary cities across the country. With the assistance of organizations, changes in the government, and the use of biofuels, the Central African Republic can come out of its financial slump, reduce poverty, improve education and help the earth all at the same time.

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