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Guatemala, Factor 6: Sustainable Agriculture

### **Guatemala: A Land of Unrealized Potential**

Guatemala is as rich in beauty as it is in potential. The natives call their country, 'the land of eternal spring,' and rightly so. The warm climate allows for abundant vegetation and blooming flowers year round. Near the Pacific coast palm trees grow near black sand beaches. Half the country is mountainous and peppered with both active and inactive volcanos. Plentiful rainfall, fertile volcanic soil, and the warm climate make the country a perfect cultivator for coffee, bananas, and sugar crops (*What*). You wouldn't think that a country so rich in potential would be so poor in economics. But the fact is, Guatemala suffers from poverty that is considered extreme even for a Latin American country. Part of this can be attributed to the topography of the region. The mountainous terrain and lack of communication infrastructure have left the forty-eight percent of the population that lives in rural areas excluded from political, social, and economic news (*Rural Population*). Isolated from the world around them, little aid is given to the people of rural Guatemala and seventy percent of the country's people are considered to be below the poverty level (*Rural Poverty*). Nearly all go to bed hungry at night and one half of children under five years old are chronically malnourished (*Guatemala Improves*). Chronic malnutrition combined with the poor health of young children leads to a higher infant mortality rate, lack of cognitive development, poor academic performance, and ultimately decreased productivity and growth by the time they reach adulthood (*Resources*). Although healthcare is available, factors such as walking distance and cost make it inaccessible to two thirds of the population. Religion in Guatemala is fairly complex with Mayan spirituality still present, along with Evangelical Christianity and Catholicism. Although there are many Catholic churches in Guatemala, there is often a shortage of priests to fill them, which has greatly contributed to the country's growth of Evangelical Christianity. Many of the Evangelical churches are established in the highlands and have been spreading further across Guatemala since their primary establishments after the earthquake of 1975 (*Religion*).

A Guatemalan farming family is typically composed of a mother, father, and an average of six children. However, households may include other relatives and orphaned children that the family has taken in. These families are close knit, and are usually an individual's only source of support in a country where one can expect little stability from the state or church. Children are highly desired, despite money shortages and population growth. Nearly all their food is locally grown and is fairly simple with few spices. Their staple foods include corn tortillas, rice, beans, tamales, and plantains. Tortillas and black beans are served at every meal. Occasionally, some type of chicken or beef is served, but it is expensive and considered a treat. Unlike our typical American three meals per day, Guatemalans eat four to five meals depending on how much food they have and how heavy the previous meals were. Schooling is free of cost and is required by law between the ages of seven and thirteen. During that time a child is enrolled in primary school. From ages thirteen to sixteen children are enrolled in middle school. Even though attendance is required by law, one in five children is not enrolled in school for various reasons, the largest reason being the need to help their families. More than sixty percent of Guatemalans are illiterate and another ten percent can only read simple words. If a child is fortunate enough to complete their years of middle school, they can choose to either attend one of six universities or seek specialized training (*Education*).

Farming is the leading industry in Guatemala, with half of all laborers being involved with food production in some way. There is a mass distortion in land distribution, where ninety- six percent of the farmers only farm not even twenty percent of the land. A typical plot of land for a farming family is only twenty acres. Farmers raise livestock such as cattle, sheep, pigs, and chickens. Some of the crops grown

are corn, sesame seeds, beans, cassava, and sugarcane. Some of the country's most profitable agricultural exports are sugar, bananas, and coffee. Much of the farmland is susceptible to erosion due to the lack of crop rotation and introduction of harsh pesticides that quickly lead to water pollution.

With larger corporations buying land from the farmers, many families' farm plots have shrunk from twenty acres to just one or two (*Farmers*). Guatemala is one of the top three leading sugar industries in the world. The sugar grown is both used to fuel motor vehicles or exported to the United States and Asia. The Guatemalan people are not alone in this hardship. Farmers all across Latin America are feeling the strain of larger corporations grasping for land. The farmers are being bullied out of their land by sheer economic power and force, and they are losing. (*Farmers*). By allowing local farmers to be bullied out of their land, the Guatemalan government is selling its people into starvation. With the financial resources of Guatemala being so low, it may be easy to understand how the government would jump on any chance they could to make a profit by selling out their land, without realizing the effect it is having on the rural people. By selling out their land, the government of Guatemala is selling out any hope they have to become a productive and able member of the international trades.

The few acres farmers are left with is hardly enough to feed the owners of the farm, much less to sell at the market. Women are also discriminated against due to cultural traditions. They have significantly less access to resources than men. Farming materials such as seed, tools, financial services, and land rights, have a much higher chance of being given to a man than a woman. Indigenous women face particular challenges in developing sustainable livelihoods due to the triple discrimination they encounter based on their gender, ethnicity, and class. If women had the same access to resources as men, food production would increase by twenty to thirty percent (*Connecting*). Rural women are currently waiting for the Integrated Rural Development Law to be approved, which attempts to provide financial aid and access to natural resources for rural women. However, the legislation is still being held in Guatemalan congress where it is strongly opposed by the agriculture industry (*Farmers*).

The rapid population increase demands more energy to supply the needs of the people. Guatemala's leading source of energy is wood burning. Many in rural areas have no other choice, with no other source of fuel. Aside from wood, the next most readily available fuel source is sunlight. However, with solar panels expensive to create even in the United States, there is little hope for the production or purchase of them unless they are given to the Guatemalan people by an assisting group. The next most available resource would be natural gas. Just under half the population of Guatemala live in cities that are powered by natural gases. However, it is expensive and the majority of the people who live in rural areas have little to no access to it. With little hope of harnessing sunlight or natural gas, the people of rural Guatemala are left with only one option; wood burning. With wood in high demand, deforestation is sure to follow. Deforestation is currently one of the most concerning threats to the agricultural well being of the country. Unfortunately, not only is deforestation happening, but it is happening quickly with the loss of acreage being in the tens of thousands per year. At this rate, it is highly likely that Guatemala will have almost no forests in the next five years. Deforestation will cause even more rapid soil erosion to occur (*Deforestation*). However, the search for a fuel source and farm land aren't the only causes for deforestation. Clearings for cattle pastures, road construction, and gold mining are also motives for deforestation (*Guatemala Environmental*).

The prosperity of the forests in Guatemala is directly related to the prosperity of farm crops. A thriving forest will evaporate the groundwater from the plentiful rainstorms that pass over the country. This prevents the local climate from becoming dry, and in more extreme cases, prevents drought. Along with regulating humidity, the forests greatly decrease the chance of soil erosion, which will reduce runoff that can be harmful to crops. Additionally, the trees prevent mudslides that can be powerful enough to destroy entire villages (*WWF*).

In order to come to a satisfactory place we must end the harmful practices and hurtful harvesting of natural resources and replace them with more eco-friendly methods. Additionally, we must create new consumer opportunities that will benefit both the farmers and the land. Every effort should be made to immediately halt the process of deforestation, as it will have the most lasting effects and be one of the most difficult recoveries to make. The method of slash and burn that many farmers are using is destroying the environment with erosion, loss of biodiversity, and nutrient loss.

One possible alternative to the slash and burn method is inga alley cropping. Inga alley cropping is the planting of inga trees in a hedge row formation. The Inga leaves will grow and form a thick layer of mulch on the soil, which will be full of nutrients for the crops planted between the rows of the inga trees. In addition to providing nutrients, the inga trees will restore the soil around them, by restoring nitrogen and phosphorus to the soil. The loss of phosphorus due to slash and burn is one of the most detrimental effects the process has on the soil. By stripping the ground of natural phosphorus, slash and burn has made crop growth in many areas nearly impossible. The inga tree returns and recycles phosphorus into the soil with its nutrient rich leaves and root system. Some of the crops that grow exceptionally well through the use of Inga alley cropping are corn, coffee, beans, cocoa, and vanilla, which is one of the country's cash crops.

After maturing for a year, the trees will need to be pruned on a yearly basis. The smaller trimmings as well as the leaves could be used as mulch for the crops planted between the rows of inga. Besides the small trimmings, firewood can be gathered from the larger branches of the Inga tree. Keep in mind that the trees are very thick, and will need to be pruned, so any firewood gathered will be of no loss to the trees. After the harvest of the annual crop the Inga should be left to grow until it is time to plant again and the cycle is ready to be repeated. With this system, the same land can continuously be harvested year after year. If we could supply Guatemalan farmers even with a few inga seeds a piece, in a few years time farmers will be able to fully implement inga alley cropping into their annual farming routine (*Providing*).

This method of farming was created by Mike Hands, the founder of the Inga foundation. This method has been used throughout various regions in Columbia, but most notably in the village of Gaviotas. Mike and his colleagues began looking into the possible solution of Inga Alley Cropping because others had previously made claims that alley cropping was indeed a viable solution to a desolate problem. After testing the theory with other types of plants such as *Erythrina fusca*, they realized that the plants used for hedging weren't providing adequate weed prevention. Inga was already being used in the region for shading coffee crops and the team decided to use inga in place of the *Erythrina fusca*. Unlike the other trials, the Inga crops yield notably improved results (*Providing*).

It may be difficult for farmers to put their faith in a new method of farming that is so different from their original customs. Therefore, it may be necessary for them to see the process firsthand so that they have the confidence and assurance to use the practice in their own lives. It may benefit the process of integrating the Inga alley cropping if a few farmers from different farming communities were taken to see the Inga alley cropping process in place in Columbia. Guatemalans are a highly social people. If a few farmers see the benefits of alley cropping, the word will spread and the rest of the farming communities will surely follow.

Because Guatemala has more than one problem, there is no one solution but a combination of many are needed. Firstly, efforts should be made to halt the imbalance between men and women in resource distribution. Special efforts should be made to aid ethnic women so that they may have equal farming opportunities as men by providing them with access to land and seeds. Doing this will increase food production by twenty to thirty percent. Secondly, even though it will be costly, urban Guatemala must invest in another energy source besides wood burning. This practice is leading to rapid deforestation that is hurting both the land and the economy. The addition of solar panels into the Guatemalan community is

a costly advance, but a necessary one. Whether the government takes initiative and purchases the solar equipment or a second party donates solar gear, it would greatly lessen the need for wood burning and the consumption of natural gas. Farmers must stop polluting the ground soil and water with harsh pesticides and chemicals. Ecologically friendly composts should be used instead to keep the land healthy. Finally, the method of inga alley cropping should be implemented immediately to replace the extremely harmful method of slash and burn. With this new method, the inga trees will nourish both the surrounding soil and the crops that grow between the rows of inga trees. This will help keep good farmland viable and could help begin to recover land that had been previously ruined by slash and burn. The Guatemalan coffee farmers already use the inga tree to shade their coffee crops and using the inga tree for cropping purposes isn't too far of a stretch. The American people are a prime candidate in assisting the Guatemalan people on a journey of realized potential and growth. Some may argue that times are difficult enough at home and that we need not concern ourselves with foreign aid. Despite the difficult times the American people are having right now, America is still a leading country with the power to aid developing countries. Aiding another country should not be considered to be solely a gift or an act of kindness by the gift bearers. Instead it should be thought of as a partnership, and an investment to serve both parties.

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