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Belize, Waste Management

Belize: Solving The Waste Management Issues To Save Farther Destruction

Waste management is a problem in many developing countries whose economies depend on tourism. Belize is a great country that is full of potential. It may not be as powerful as the United States, but Belize is full of many great beauties. Waste Management is a complicated issue that doesn't have just one good solution.

Belize is a small country located in Central America. It has a population of 366,954. The population consist of 43.84% urban and 56.16% rural (Rural Population). Belize has a government which uses a constitutional monarchy under parliamentary democracy. Belize was once a British colony, formally known as British Honduras. Belize gained full independence in 1981, but it continues to have close ties with Britain. Belize uses only 4% (220,000 acres) of the total land area for agricultural purposes (Belize Country Profile, 2012). The major crops and exports of Belize are bananas, papaya, citrus juices, sugar, and marine products. The average farm size in Belize is 19 acres. Compare that to the United States average farm size of 434 acres, that shows me that Belize is a long way away from even being close to our level agriculturally. Belize has a subtropical climate with a high humidity. Often brisk winds come from the Caribbean Sea. The rainy season is from May to November, and the dry season is from January to April. Hurricane season extends from June to November varying in quantity and devastation each year. The geography of Belize is quite extraordinary. The Great Maya Barrier Reef runs next to Belize's coast, which makes many small islands called keys. Also, Belize has the Maya Mountains which provide a quantity of opportunities for Belize's inhabitants. In Belize City you will find that when you travel north you will hit the savannahs, and if you go south you will discover many lagoons and mangroves. Belize is also known for having quite the tropical jungle along its western edge.

A typical household in Belize consist of approximately 3.9 people. Like the United States, Belize has many different types and styles of homes. However, one major difference between U.S. homes and homes in Belize is that the majority of the structures in Belize are made out of concrete. They do this because concrete has better qualities when holding up to a hurricane than wood or other materials. Also, you will find many homes in Belize that have no air conditioning or furnace due to the tropical climate. Many homes are built in a way that allows plenty of ventilation to pass through the home. A typical families diet consists of many different kinds of food in Belize. One meal that is very common is the well-known Belize rice and beans often served with potato salad and your choice of meat. Belize fruit cake is also a common desert that is usually eaten at family dinners during the holidays. Chicken Escabeche is a fancy chicken soup that can be found at many restaurants in Belize (Top Ten). Contrary to the United States, businesses and schools often close down for approximately one hour during lunch time to have their big meal of the day. Belize uses two ways to get food. They import food from other countries, and they use their provided land and climate to produce their own food. Many types of fruit including oranges, limes, bananas, pineapples, papaya, and watermelons are all grown and eaten in Belize. Due to the climate, you can access these fruits year around. Belize spent 947 million dollars importing items of food in 2016. The most common way for a Belizean to obtain food is by going to the grocery store. Although Belize is growing agriculturally, it is still not enough to support all of its inhabitants. People in Belize cook

food similar to that of the United States. One way they differ is that they use more nutritious items to make their food healthier. Belizeans take pride in their home cooked meals, and they use every opportunity to make it even better. Jobs in Belize differ just as much as jobs in other countries. On the more upscale side, you have jobs like physicians, dentists, and data scientists. Being a physician is one of the highest paying jobs in Belize making over \$90,000 annually. On the lower end of things, you have jobs such as cashiers, teachers, and waiters that make between \$10,000 and \$15,000 each year. The average annual salary in Belize is estimated to be \$41,405 (Jobs and Salaries). Education in Belize is quite different than that of the United States. Primary education in Belize is required and free until age 14. After that, it is estimated that 75% of students who finished primary school move onto secondary school. Education is available for everyone. If you want to enroll your kid in a private school, you will have to pay around \$20 every month. Belize also has junior colleges and four year colleges. Overall, Belize has very affordable and accessible schooling (Educational System).

Healthcare in Belize is far below the international standard. Although healthcare is very affordable compared to other countries, it still lacks the efficiency that is needed. Small ailments in Belize can easily be treated for, and it cost very little. However, if you have a major ailment that needs serious attention, you will have to spend a pretty penny. Expats living in Belize stated that they only spend approximately 45% to 70% for the same operations they would have done at home. Families living in Belize have access to clean water, toilets, electricity, telephones, roads, and local markets. Even though Belize is a developing country, Belize enjoys many of the same luxuries that other countries experience. Some barriers that typical families in Belize face including earning a living and having access to nutritious food is the fact that Belize has a bad side to all its phenomenal characteristics. Belize is the third highest ranked country for homicides each year. On the positive side, Belize went from having a record high unemployment rate of 23.3% in 2010 to having an all-time low unemployment rate of 8% in 2016 (Belize Unemployment Rate). Another barrier that people living in Belize have to face is the unfortunate corruption tendencies of their government. Although Belize's government isn't even close to the corruptions that Mexico has, it still has quite a ways to go before becoming well liked and trusted among all of Belize's inhabitants (Health Care in Belize).

Waste management issues in Belize are having negative effects in the country with its environment. This is an important problem to discuss due to its severity and the fact that it is getting worse. If this issue is not promptly dealt with, there will be severe problems to come in the near future. Each year 200,000 tons of waste are produced in Belize from all of its household and commercial enterprises. Also, tourism is very large and profitable in Belize, but it is unfortunately contributing to even more waste that hasn't been dealt with properly. Belize recorded having over 800,000 tourist visit their borders in 2015. This influx of people does much to enlarge the dilemma at hand. Not dealing with waste management properly is having many downsides, including the degradation of natural resources and causing health risk of Belize's inhabitants to rise substantially. The landfills in Belize today are a disaster. If you were to travel along some of Belize's highways, you would be able to see landfills that are used for waste. Many of these are not covered and are overflowing. Since these landfills are not dealt with properly, Belize is having water pollution that affects all inhabitants of Belize. It even is affecting marine life and the Barrier Reef System along its coast. In Belize City, San Pedro, and Belmopan, sewerage services are only available to around 11% of the population of Belize. Until very recently, towns and cities had their solid waste gathered and placed into landfills that were completely open or partially open. Unfortunately, these facilities lacked the necessary funding to make these operations work efficiently. It was impossible to operate these facilities in the right way when they were in short supply of the necessary equipment and cover material needed. Insufficiently dealing with waste management has shown a weak spot in Belize's water sanitation operations. There are 190 villages in Belize in which over one-third of inhabitants of Belize live. All of these villages are quite small having less than 4,000 people in the community. However, because

network based sanitation services are quite expensive to not only build, but also operate, all of these communities are lacking in them. Waste Management is an issue that affects all types of people in Belize. Whether you are old, young, man or woman, a refugee, a tourist, or an inhabitant of Belize, it will affect everyone from all walks of life. Waste Management is always imposing a consistent and dangerous threat to the environment. One of the most significant ways it affects the environment is water pollution, but it also pollutes the air. Landfills that are improperly kept cause odors that go up in the air and can overtime affect the atmosphere, and it may possibly cause cancer issues with the inhabitants of Belize in the future. Another factor that is contributing to this imposing problem is cruise ships. Because of tourism, cruise ships are constantly going to Belize to enjoy the many extraordinary features Belize has to offer. Sadly, cruise ships are dumping their solid and liquid waste in the ocean along Belize's coast. This is what is mainly causing the harmful effects to the marine life in Belize, and it is slowly but surely affecting Belize's Barrier Reef System and small islands along the coast of Belize. One factor that also contributes to Waste Management issues is the hospitals in Belize. The "Belize National Medical Waste Management Assessment" discovered that there were several hospitals in Belize that had no plan for waste management. Also, they discovered that even the hospitals that did have a plan, they had insufficiently trained staff and they didn't know how to enact these plans to be used to their full potential. Waste Management is prevalent in some hospitals, but there is no help from the government of Belize to help enforce and activate these plans for Waste Management practices. There is approximately 188 tons of medical waste that are produced every year in Belize. All of these medical waste, as of 2012, were going in an open landfill in Belmopan. In 2010, there were about 55% of Belize's population that was getting rid of their solid waste in the right way. They would either have to dispose their solid waste by using private garbage trucks or by using municipal collection. However, 33% of the population was using harmful methods to dispose their solid waste (Sustainable Development Report). They would use several ways to do this including, dumping their waste in bodies of water such as ponds or rivers, dumping their waste on land, and burning waste. There is around 120,000 tons of solid waste produced in Belize every year. With so much waste produced each year, there is a dire need to have a proper system set up to deal with Waste Management (Waste Management Authority).

Waste Management requires several things to change before it can be practiced efficiently and in an environmentally friendly way. To start off, Belize's solid waste management has already seen improvements. Caye Caulker, Central Belize, and Ambergris Caye have been mainly the areas that have been getting the most improvement. The Inter-American Development Bank (IBD) provided the money and loaned money to the government of Belize for the purpose of the Solid Waste Management Project (SWMP). Also, this project was co-financed by the Opec Fund for International Development (OFID) (Waste Management Authority). Due to this project, a sanitary landfill was placed at Mile 24 of the George Price Highway. This is the only landfill in Belize. It is the ending spot for all of the waste collected at the transfer stations, and it covers 370 acres. In 2013, this landfill was put into operation which is greatly helping the popular tourist spots of Caye Caulker and San Pedro. When they built this new landfill, they put into careful consideration the qualities needed for this landfill to succeed. It was designed to keep toxic air from building up, and it protects surface and groundwater from pollution. Most of the old landfills that were not properly kept have been substituted for transfer stations. This plan has greatly helped the waste management issues in Belize. It provided a lot more financial stability to the project by having more than the government to back it up. However, this is a complicated process and needs more than what has already been done. For instance, the hospitals need a precise plan to deal with all of their waste management. The government and IBD and OFID need to provide funding for the hospitals in Belize. With over 188 tons of medical waste each year, it is not logical to think that this aspect of the solid waste management issue is not important (Integrated Waste Strategies, 2014). Also, people in Belize need

to be educated on these complicated procedures. You must have more than only 55% of the population of Belize disposing their waste in a proper way. An effective recycling system must be put in place to make it easy to access them. Schools in Belize need to be educating their young students on these issues because they soon will be the ones dealing with it. If people in Belize don't understand how improper waste management is affecting their environment, then they will not care as much what happens with their waste. They will not hesitate to burn their own waste or dispose of it in a harmful way. Also, since so many cruise ships visit Belize every year, Belize needs to stop allowing cruise ships to dump their waste right into their ocean. If cruise ships continue to dispose of their waste in this unhealthy manner the impacts will have an adverse effect on Belize (NSWM Strategy, 2015).

Waste management in Belize is a very complicated thing. There is no one solution due to the fact that there are so many factors in the equation. One thing that clearly needs to be done is to get a new and updated sector strategy and plan. The plan that has been used for the solid waste sector is a little over 20 years old. This is the first step that needs changed before the rest can fall into place. Also, there needs to be put into place clear goals for the solid waste sector. There needs to be established indicators to be able to measure the performance of the sector for solid waste. Without these targets, it will be very difficult to devise a new and updated plan for solid waste. Also, the SWMP needs to expand its work to the Northern and Southern corridors. As of now, the SWMP is more focused on the Western corridor and islands such as Ambergris Caye. The last thing that needs to be improved on is the weak institutional framework. The responsibilities and roles of those that are involved in this project need to be more defined. Also, it must be made sure that government entities have the financial backing and power that is needed to get this project done. The Solid Waste Management Project has improved Belize in many ways, but improvements are still needed to complete the Waste Management issues (NSWM Strategy, 2015).

Cancun, Mexico has had many of the same issues that Belize is dealing with now. Like Belize, Cancun's economy is largely based on tourism. Cancun used to be a mangled jungle that was disconnected from the rest of Mexico. Now Cancun brings in one fourth of the tourism revenue in Mexico. In the 1960's, Cancun was still known as a place you wouldn't want to visit. It was very remote, and there was no access to plumbing or electrical services. Roads were very sparse and no airport was present in the territory. Cancun didn't see any improvements until the 1970's. The Mexican government made a move to greatly encourage public construction and improvements to be made in Cancun. The Mexican government did this to try to attract national investments with foreign aid so they would transform Cancun into a more modern environment. The Mexican government did this with the idea of one day making Cancun a popular tourist spot. However, Cancun still had pollution and waste problems just like Belize does today. They combated these issues one at a time for the good of Cancun. The only way they were able to invest in these issues is due to the investments made by other nations and the foreign aid that was provided. Landfills and transfer stations were placed in Cancun just like what is now happening in Belize. They combated these issues with strong financial backing and also having a strong goal and plan to solve the pollution and waste management issues Cancun was facing. Belize should be taking note of how Cancun dealt with their issues. Having strong financial backing and having a solid plan is very important to solving any major issue (SAGE Encyclopedia).

These solutions will meet the needs of most of the population in Belize. In time, after Belize has perfected waste management in the more populated areas, it will begin to focus more on the rural

areas. Increasing recycling spots in Belize will benefit many people in Belize as well. My solution would begin by coming up with a new and updated plan for waste management. I would also want to add clear goals to this plan. It's hard to reach a goal if you don't have one. Next I would keep adding more transfer stations to meet the needs of the people. I would want to add another sanitary landfill like the one located by the George Prince Highway on Mile 24. I would want to keep up the structures that are currently being used, but I would want to greatly expand the waste management to the rural areas that haven't had as much assistance yet. Also, I would want to educate all of the adults in Belize as well as the children. If the inhabitants of Belize don't see the risk in improperly operating waste management then they will not be willing to do their part. They need to understand that improper waste management has been harming their environment and has been hazardous to their health. If waste management is not under complete control, Belizeans will begin to see the tourist industry, which is so vital to them, slowly disappear. Nobody wants to go to a dirty country where you can see trash everywhere, and where you are afraid of having health risk. However, the children of Belize are the future of Belize. If they aren't properly informed about these issues then Belize will not have a bright future. Another part of my solution would be to make plans for the hospitals in Belize to dispose of their waste in a safe manner. I would also want to ban cruise ships and other merchant ships from being able to dump their waste in Belize's ocean. Instead, I would charge ships to have Belizeans dispose of their waste using the transfer stations and sanitary landfills in Belize. I would want to continue to have the backing of the Belizean government, and I would want to keep the financial help coming from the IBD and the OFID. I feel that this is the best possible solution for Belize's waste management issues.

Belize's government would lead and manage this project. This project would continue to be funded by the IBD and OFID. Community members as well as the government play a huge role in this project. Without community members wanting to clean up their country and do their part to help this project, then this project will not succeed. Community members must be on board, and they must be willing to recycle their own waste. The government is also important to this project. After all, the government is the one who is managing and leading this project. Doing your part will have to be one of the policies used for this project. Also, a policy is needed to start this project by having an up to date plan and goals. It needs to be recognized that Belize is highly dependent upon tourism. Belize must keep their tourist happy by having a clean environment, and having a peace of mind that makes the tourist not have to worry about polluted water and other problems that come from bad management of waste. Also, it needs to be recognized that the cultural norm is not to recycle waste. It must be made known that they will be fined if they dispose of their waste in a harmful way to the environment. This project will be made sustainable in several ways. First, the government of Belize must continue to lead and manage this project. Secondly, the IBD and OFID must continue to finance this project or some other financial source must be found. Lastly, the people of Belize must be on board and be willing to do their part. Having the support of the people is vital to solve any major issue in a country.

Food security and waste management are very important issues that can help each other. Belize's government needs to build several recycling plants, which would provide many jobs, and it would prevent so much waste going to the Regional Sanitary Landfill. Approximately 75% of domestic garbage could be recycled, but instead it is being thrown away. Doing this will save Belize's raw materials and tax dollars, and it will cause the price of food to go down since the packaging will be cheaper. Latin America and the Caribbean are personally accountable for 6% of the global food loss. Belize is also a key player in this and if Belize can wise up and fix its issues, then maybe other countries will follow. It is horrifying to know that 30 million more people could be fed if just that

6% of food wasn't wasted (Food Losses and Waste, 2014).

Poor waste management affects all of the inhabitants of Belize. However, different socio-economic groups can be affected in different ways. For example, a poor person living in a rural area will probably have a harder time recycling their waste than a wealthier person living in a more populated area. Unfortunately, polluted water and air cause harm for everyone. Insufficient waste management causes the soil and water to be contaminated (Sustainability Now, 2015). This can cause the soil to not produce as well agriculturally affecting farmers. Waste that is burned that contains plastic or other harmful substances can pollute the air making breathing difficulties, dermal infections, and other severe symptoms to occur (Sanitation in Belize).

Technology is extremely appropriate for communities in developing countries. New technologies are a great help in keeping the environment clean and making the cost go down and making the bottom line better. There are no technologies that should be out of consideration for Belize when trying to improve its waste management. Brand new technologies greatly improve the waste treatment sector. Innovative machines can decrease the original mass and weight by 90%. Using these machines is very beneficial due to the microorganisms producing the heat to make this process work. This cuts out high electrical cost and doesn't waste fossil fuels by burning them. Unfortunately, ordinary people in Belize can do very little to develop and spread these new technologies. It takes highly educated people that know a tremendous amount of information to develop these technologies for waste management purposes. However, the citizens of Belize can encourage the government to keep striving to fix this issue (Landfill Solutions in Belize, 2018).

The government of Belize has several barriers to resolving the waste management issues. To start, getting the inhabitants of Belize on board and educating them on this issue is incredibly important. The solution to this is to educate the kids in school, and also have ads on tv and the radio about how critical and important this issue is to their livelihoods. Having a reward system for recycling items such as pop cans and other things would be a great incentive. Ordinary citizens can greatly encourage their government by holding rallies to promote recycling and by just doing their small part in dealing with their own waste. Citizens could do fundraisers for local governments by selling food or making bumper stickers to promote awareness. There is an endless amount of ways citizens of Belize can truly help their government (Belize Ag Report, 2016).

In conclusion, I have personally been to Belize and want to see Belize be improved even more. I hope to one day see Belize at its very best. The solutions that we discussed are very complex due to the many issues that surround waste management. It will take time to solve all of the waste management issues, but it will be worth it in the end.

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