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Guyana, Renewable Resources

**Guyana: A Small Country With A Big Opportunity**

Global warming and climate change. Enormous issues that have been ruminating for many years and are starting to pass a point of no return. For decades experts have been trying to solve this issue, but only the people of our Earth can truly be the solution. However, not only does global warming and climate change affect the atmosphere itself, but also the pollution as a result of these practices causes harm to our food supply, security, quality, and more. While many of our larger countries, like the United States and The United Kingdom, make surface level attempts to solve problems that reach much deeper, in this essay we will instead be focusing our attention on developing nations that can start using renewable resources on a smaller scale, and eventually upgrade to implement these methods to bigger countries. The country I propose to initiate this monumental task is the small South American nation of Guyana.

Being the third poorest country within the western hemisphere, Guyana is a smaller country that is brimming with untapped potential. Often overlooked as a nation, Guyana has the ability to play an instrumental role in the innovation of renewable resources. With a population of approximately 800,000 citizens in 2022, Guyana remains as one of the smaller countries within our world. This country also has a dispersed population, with only 26.9% of its citizens living in an urbanized area, with the other 73.1% living in the rural portion of the country. (Central Intelligence Agency, 2022). Ruled by a parliamentary government, and led by highly approved president, Irfaan Ali, the country of Guyana is very successful on the political front (Bisram, 2022). Civil rights are also not much of an issue within this country, with the men and women having essentially the same amount of freedom within their respective roles by law (Henry, 1990). Guyana also has small farm lands, with the average farm being only 10 acres, compared to the average of 444 acres in the United States ("Peasant Farming in Guyana"). This means that only 6.6% of the available land is cultivated in Guyana, leaving only a small portion of the country farming at a local level, and having to rely on other countries to provide most of their food supply (World Bank). Guyana also has a tropical climate that is moderated by the northeast trade winds, and is extremely prone to flooding since it is both two meters below sea level, and has two rainy seasons (Central Intelligence Agency).

Now as stated before, Guyana has a small farming area with the average farm size only consisting of 10 acres (Central Intelligence Agency, 2022). This simply adds onto the main reasons why Guyana is in such an impoverished state. The lack of crops, materials, space, and labor available to grow the food that this country needs, forces Guyana to constantly rely on outside trade from other countries. This source of food leads to unpredictability, because no one can ever know what disasters might occur within another place. War could rampage a nation. Natural disasters could destroy many farms within an area. Outbreaks of parasites could ravage a crop supply. These are all things that could shut down trade between nations, leaving Guyana unable to provide food to its citizens, because they have no way of obtaining the crops that are needed for their people. (Guyana Chronicle, 2022) Despite being named as "food secure" globally, the heavy reliance on other places as food sources, leaves Guyana powerless in ever truly having a secure food supply (Thompson, 2021). This goes without even mentioning the effects of COVID-19 on trade, with industries being shut down, unemployment rates skyrocketing, and prices going up throughout the world, putting trade as a risk that many countries weren't too keen on taking. The nation of Guyana is running out of options to sustain the economy and food supply for its inhabitants. These inhabitants also include refugees from the neighboring country of Venezuela, and the native Warao people, who are met

with lower prioritization from the Guyanese government, due the government trying to provide for their citizens first, and then focus on the immigrants coming into their country. These people are forced to face extreme poverty, water sanitation issues, and a lack of formal job opportunities. In fact, many of the Warao people live on an average of a meal a day, which may not even be possible during times of crisis. They are also faced with a lack of remote capabilities, and have to constantly work odd jobs to provide for their respective families (Diaz, 2021). Many of the poorer citizens are unable to find steady work due to a lack of resources ,knowledge, or experience, leaving them with no hope of social mobility for themselves, and even their offspring. Not to mention, many of the incoming immigrants are unable to work in a professional setting, due to many of them being children (Diaz, 2021).

Another enormous isse that Guyana has been facing within recent years, is that of being taken advantage of  by oil companies.With war commencing between the two nations of Russia and Ukraine, companies across the world have been attempting to find new sources of oil, since these two powerhouses of production are currently unable to supply anyone with this essential fuel. Recently the Guyanese government signed a contract with Exxon requiring 6.5% of the total revenue from all oil sales, seizing this prime negotiating time for a new source of economic income (Seefeldt, 2022). However, Exxon completely took advantage of this developing nation, and gave them a price that was too low for the value of their resources.  The average country can negotiate a total revenue of 16% from oil drilling, meaning that Guyana received less than half of what many nations earn from these practices occurring on their soils. Guyana's lack of experience with negotiating simply allowed them to put their price too low, causing huge economic losses within their nation. Guyana's own natural resource minister Vickram Bharrat called this agreement "one of the worst ever between a government and an oil company" (Seefeldt, 2022). Plus, the environmental impact of oil drilling in an inexperienced country can be detrimental to our Earth.The environmental threats imposed by these oil companies are enormous, and will take too much time to solve if a calamity were to occur. Due to Guyana's unfamiliarity with pollution disasters, the lack of expertise, resources, personnel, and funding, if a disaster were to happen, the country would be entirely unprepared, meaning that the lasting effects would be gigantic. In fact many experts believe that if a tragedy were to take place, then the oil could spread across the Caribbean, affecting Venezuela, Trinidad, and potentially Jamaica (Juhasz, 2021). While companies like Exxon try to ensure that these spills would be cleaned within a month, petroleum expert Robert Beast states that the likelihood of it being cleaned in that amount of time is "too optimistic, unsubstantiated and improbable" (Juhasz, 2021).

However, while this situation may seem hopeless for the Guyanese, and even the world, one solution that could help relieve people from oil's grasp is renewable resources. While renewable resources on a large scale are still being looked into, since Guyana is such a small country, I believe that they would be a prime candidate for the beginning of this process. Guyana has already made significant efforts to improve the state of climate change, and lower greenhouse gas emissions. In fact, Guyana signed the Paris Treaty back in 2016 (The United Nations, 2016). Therefore with evident concerns for the environment, it is already apparent that the government would be willing to assist in this undertaking. One type of renewable resource that we would be using, is the most developed, cheapest, and easiest to install source, solar panels. Guyana has already taken strides to implement this method and has released tenders trying to "increase the country's installed power generation capacity across several remote locations" (Bellini, 2021). With this said, solar panels are already being put in place by the government itself, yet something needs to be done for more remote communities. The main problems with setting this up however, are simply the lack of funds and labor. Since the nation is so poor, being able to acquire the materials necessary for implementing solar panels are the main issues that have arisen when trying to set up these endeavors. Therefore in order to gain funds, Guayna should sell the research that they have gained from the widespread use of solar panels that they have set up already, in order to gain more for the task.

Guayana should also raise the price of their Exxonmobil contract, and place a majority of the revenue from the oil, into creating more solar panels. The Guyana government should also create a branch of jobs attracting some of the poor communities, to help set up these panels in their areas. This would help the poverty rates towards the Venezuelan immigrants and the Warao people, as well as getting the labor necessary for bringing this concept into reality.

However, as previously stated, the Guyanese do not have huge amounts of land to farm on, meaning that a heavy reliance on solar panels could limit the total agricultural capabilities of the country. Hence, solar panels may not be a perfect option for providing a clean source of energy. Instead the nation should look into something more beneficial, that would not take up as much land. The other type of renewable resource that the Guyana government should look into is one that has not quite become a reality yet. This source is currently still developing, making Guyana once again the best place to try this product out on. The renewable resource that I am referencing, is that of tidal energy. Tidal energy is a source of power that is still in its infancy, and is simply being underutilized. Tidal energy works in essentially the same way as a wind turbine, but instead of being in the air, it is underwater (ARENA, 2017). With Guyana having a coastline, and being so close to the ocean, the ability for tidal energy is not that far fetched. While focus on this source of energy has been slim throughout the world, using the ocean to power an entire country would be a huge endeavor, that could create jobs, money, and relieve the country of the economic pressure put on by oil companies. Though the problems that do arise with the practice of tidal energy, is that it is not entirely developed, making it an expensive and time consuming renewable resource. While countries in Europe have been looking into this source of power, the United States currently has no plans of implementing this practice (U.S. Energy Information Administration, 2021). Furthermore, since the urgency of developing this method seems to be nonexistent, it would take a lot of funds that the people of Guyana simply do not have in order to create this energy source. However, private organizations such as the Ocean Renewable Power Company (ORPC) may be the solution that Guyana could be looking for.

The ORPC is a United States based organization that has been developing tidal energy machines as a source of renewable energy (ORPC, 2022). Though it may be located in the United States, if the country of Guyana could get in contact with this organization, they could essentially be the “guinea pig” for this technology on a large scale, leading to enormous developments in the field of renewable resources as a whole. The ORPC is currently one of the leading organizations within marine technology development, and even has subsidiaries in Canada, Ireland, and Chile. With a station already located in South America, Guyana could work closely with the ORPC in Chile, to help establish another outreach center in their own nation. The Ocean Renewable Power Company has actively stated that they are looking into opening markets in Latin America, and Chile has just been the current starting place for this endeavor (ORPC Chile, 2022). The ORPC has also had a huge recent success in the innovation of marine technology with their own Alaska River Project, which is one of the first implementations of tidal energy on a larger scale to be successfully utilized. It is also the “longest operating marine energy device in all of the Americas”, showing the longevity that the Ocean Renewable Power Company possesses, and how they will most likely be the best option for helping to implement tidal energy since they have the most experience of any company in this field (ORPC USA, 2022). The ORPC also looks to create jobs with the contractors in the areas that they subside in, and have even expressed that they “prioritize hiring and training local contractors and existing marine users to support our projects, creating new jobs and business opportunities in host communities” (ORPC, 2022). This would be an amazing opportunity for the Guyanese citizens because it would provide a new widespread source of careers, which could potentially alleviate some of the financial burdens of the natives and immigrants. Even if these citizens are not fond of any form of formal training, they could still help do some of the physical labor that is necessary for any undertaking of this sort. This is a new field of jobs provided by the ORPC, that simply cannot be ignored by the

Guyanese government, especially with the surplus of impoverished citizens that this country currently contains.

Meanwhile, one of the primary concerns when implementing any source of renewable energy, is how it will affect the public trust. The "public trust doctrine is a legal principle establishing that certain natural and cultural resources are preserved for public use" (Cornell Law School, 2022). This is essentially stating that the natural resources that a country supplies are open to all of its citizens, and that it's the government's duty to make it so. This doctrine is instrumental when dealing with any sort of environmental topics, because it protects the people's rights to use naturally occurring resources within their areas. While typically dealing with bodies of water, this doctrine allows for the people to use resources for recreational activities and consumption. This doctrine also limits private property owners from extending their ownership of the water to any oceans, since that would be obstructing the public's use of this resource. Recently this doctrine has also extended to the public's rights of boating, swimming, wildlife and natural habitat preservation, as well as the scenic viewing of these lands and waterways (California State Lands Commission, 2022). Now this is where the issue with tidal energy comes in. Currently there are many concerns of tidal energy obstructing the views and wildlife areas of where these machines are implemented. People are worried that it will be an ugly machine that they have to stare at everyday from their beachfront balcony, or that marine life will be impacted by this technology. Fishing is one of the primary industries of Guyana, raking in approximately $9,000,000,000 of the Gross Domestic Product (GDP), therefore if this industry is harmed in any sort of way, the consequences to the economy of Guyana will be detrimental (Ministry of Agriculture, 2019). However, while the concerns for the public trust are valid, the citizens do not need to worry because the ORPC has ensured that the methods they put in place will not impede the environment and ecosystems that it surrounds. In fact one of the core beliefs of this organization is "that the development and proliferation of renewable technologies are beneficial to the health of the Earth, and we value the contribution that our work makes to the societies that depend on a healthy environment for their well-being and prosperity" (ORPC, 2022). For instance, after decades of research, no harmful environmental impacts have been found to have resulted from the Alaska River project. Even the president of the Igiugig Village has praised the ORPC for its practices, stating that the ORPC has become a trusted partner in their search for sustainability, and has even provided autonomy by giving the village means to produce their own energy (Salmon, 2022). Hence, the ORPC has already proven its reliability with these technologies, which can in turn disperse concerns that people might have with tidal energy generators affecting the public trust of this nation.

An additional concern people may have when discussing the application of tidal energy generators, is how the people will respond to new technologies being introduced. However, despite being a developing country, Guyana is still relatively modern in terms of infrastructure and machines. Therefore mechanisms such as tidal energy generators, will not be a huge shock for the locals. Strides for renewable energy have been in discussion for years, and things such as solar panels have been installed already. Furthermore, this just provides more evidence as to why Guyana is the perfect place to apply this technology, since the citizens of this nation are already used to modern technology being put in place by their government (Guyana Energy Agency, 2018).

Now with everything said, Guyana may be a small country, but the innovations it can provide could be monumental. Having struggled in the past with poverty, oil companies, and lack of space, Guyana could finally have a solution for climate change that would contribute to the entire world, while not harming itself in any way. With reliable organizations helping this endeavor, and governmental strides already attempting to install renewable energy resources, not much is standing in the way of implementing tidal energy. Plus worries about public trust can also be subsided, since the generators are underwater, and have

been shown to have no impacts upon the ecosystems that they subside in. Guyana may be a poor country now, but with the job opportunities that these innovations could provide, the gaining of space from eliminating solar panels, and the revenue they could generate from selling other countries these methods, Guyana could finally be raised out of the depths of poverty, and finally have a population that has enough money to be food secure.

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