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Philippines: Growing for the Future

The Philippines is a country full of food opportunities. Surrounded by an ocean containing hundreds of species of edible marine life, with farmland surrounding its most populous cities, it seems difficult to believe that this country struggles mightily with food security. A closer look, however, reveals many flaws that undermine food production in this Pacific island nation.

To truly understand the complexities of this nation, an explanation of its qualities is needed. The Philippines is actually a collection of over 7,500 islands spanning an area of 300,000 km, making them the 75th largest nation in the world. 67% of the Philippines' land is made up of its two largest islands, Luzon and Mindanao (NationsEncyclopedia, 2019). The Philippines are not directly connected to any countries, but rather separate from its' neighbors Taiwan and Malaysia, by the Bashi channel and Balabac Strait, respectively. However, the country is home to over 105 million people, which ranks 12th on the global scale. This population is spread out over eleven relatively small islands with very high population density. In fact, Manilla, the capital city, has a population density of over 46,000 people per square mile, which is over twice that of New York City (Carbone, 2011). The Philippines is not all crowded cities, however, 56% of the total population lives in a rural area and 32% of the country is agricultural lands (Culturegrams, 2018), such as pastures and farmlands. Rice is the main crop grown, followed by corn and sugarcane. Agriculture accounts for 27% of the labor force in the Philippines. Fishing is also a large export, because of the distance to the sea and the abundance of fish in the area. Some of the main exports for the Philippines are electrical equipment and machinery, medical apparatus, copper, wood, and precious metals. Most of the agriculture grown and produced in the Philippines is used within the country (Workman, 2018). The government is a parliamentary and constitutional presidential republic, much like Great Britain. There are many complaints about the effectiveness of the government. Many people believe that the government is the main source of poverty. Poverty is a problem in the area, with more than 26 million people living below the poverty line. Non-sustainable agriculture and poor infrastructure make it difficult to obtain food security.

Food insecurity affects many people in the area, but middle and lower-class families are impacted the most. The typical family in the Philippine consists of four people: a mother, a father, and two children. Houses vary in design and show a large amount of influence from outside sources. Urban homes are more lavish, with a mix of traditional and western influence and created out of wood and concrete. Modern appliances such as washing-machines, blenders, and stoves can be found there. Rural homes are much less modern, with wood or palm-frond roofs and lower grade appliances, if any. Many people today are moving to urban areas instead of staying in rural houses. The government does offer subsidized housing for many people, but it can be cramped and inadequate. These houses are in urban areas but commonly have the same problems with housing as rural housing. Rural housing is not considered poor, with many people having access to safe, clean water, but problems like limited food sources and inefficient transportation of food impact food security. The food in the Philippines is much different than American cuisine, as a result of the cultural preferences in the island nation. Filipinos usually consume moderate amounts of vegetables, like rice or corn, and substantial amounts of meats and proteins. Family dishes include chicken adobo, which is a dish of meat marinated in a mix of soy sauce, vinegar, and other spices; balut, a snack made out of duck embryos; and kinilaw, a dish of fish whose name literally means "eaten raw." This cultural food supply has been impacted by several problems in the area. Problems with the food supply in the Philippines can be caused by disruptions such as natural disasters, a common

occurrence in the country. Most recently, typhoons in 2018 devastated the country, flooding many fields and pastures and impacting food supply. Schooling is not as importantly viewed in the Philippines as it is in the US, with the average student attending 9.3 years. From this schooling, the typical jobs for Filipinos are technical support staff, workers in factories, and information technology professionals. Importance is not placed on farming, which may be a reason for the current food security problems.

In addition to a lack of farmers, several challenges impact the Philippines and its food security today. Armed conflicts and militia groups that fight against the government create one obstacle. One of the most prominent of these groups is the Moro Islamic Liberation Front. Since the majority of the population is Roman Catholic, extremists of the Islamic religion view them as their enemy. These conflicts take place on almost all of the islands. To put into perspective how much this constant unrest affects a traditional family, around 40% of people had to move or were disrupted by these terrorist groups between 2001 and 2010 (WFP, 2019). This conflict impacts food security by disrupting transportation between food sources and the food distributors, and between the food distributors and those who are having the food delivered to them. The extremists may also attack fields and pastures, damaging the areas that supply the food. While terrorists may not be the biggest problem to the Philippines food supply, their actions certainly slow down and damage the process.

A more immediate threat to the food supply regards natural disasters. The Philippines is in the Pacific Ring of Fire, meaning that the area is at constant risk of being impacted by many natural disasters, such as earthquakes, volcanic activity, and tsunamis. Its location also makes it ripe for natural disasters such as typhoons. These typhoons also bring more natural disasters, like flooding and cyclones. One estimate said that natural disasters have cost the Philippines 26 billion dollars since 1911 (Entrepreneur, 2018). As one can imagine, these disasters make it difficult to successfully grow crops. Since the growing season is usually not long enough to have multiple harvests, one natural disaster often ruins an entire year's worth of crops. Soil erosion also results from these storms. This lost soil can result in fewer nutrients in the farm ground, further reducing food production. This reduction of potential food often leads to poverty or starvation in many rural areas. Natural disasters are one of the Philippines's greatest challenges and one that needs to be addressed.

Another large problem in the Philippines is unsustainable fishing or aquaculture. Traditional Philippine dishes consist of fish that are very high up on the food chain. In this case, the primary predators consumed are the tilapia and the round scad, which are both relatively high up on the food chain and consume a large amount of lower organisms. Environments typically have less of these because of their consumption of so many lower-level organisms. The alpha predators, so to speak, are then gone, meaning there is nothing keeping the other fish lower in the food chain in check. Their population grows out of hand, resulting in the consumption of too many of the lower organisms, who consume too many of their prey. The chain reaction continues until there is nothing left to consume. Almost no seafood remains for the fishermen who work to catch organisms higher in the food chain. This process can lead to many bottom level creatures, disrupting the ecosystem and making it much harder to obtain food from the sea. Fishing is also threatened by natural disasters. As fishing requires a large body of water, much of the fishing industry is located among the coast, an area heavily impacted by events such as tsunamis and hurricanes. These disasters cause the yields of fishing to decline, meaning people who depend on fish for part of their diet do not have access to this resource. A loss or large reduction of this industry would be crippling to the Philippines food security, and while not exactly an immediate threat, it is definitely a threat to watch out for in the future.

Harvesting a crop, however, does not necessarily mean that it is ready to be eaten. It first has to be taken to a market area where it can be processed, cleaned and turned into food. In the Philippines, this is a large problem. Farm-to-market roads, or FMRs, are not of very good quality in the Philippines. To offer an idea of the problems with these road systems that impact farmers, 65% of all roads in the US are paved. In the Philippines, only 28% of roads contain paving. Most FMRs not only lack paving but are also often of very low quality. This poor paving destroys the economy of rural areas. As a spokesperson from the Philippines Department of Agriculture has stated, "Roads are the foundation of modern agriculture" (Rappler, 2016). Since not many of these necessary roads are present, the efficiency and production of food in these areas is greatly slowed. The existing roads are also impacted by natural disasters. Flooding in particular damages the roads greatly, delaying shipments and thus food. To counter the persistent road quality problem, the Philippines government has been working to create thousands of new FMRs.

As a result of all of these problems, the food potential of the Philippines is not being met. While the country has many food opportunities such as expanses of fields and a seafood-rich ocean, many problems eat away at the amount of food actually being consumed, leading to food insecurity for parts of the country. Also, much of the food produced goes to urban areas, meaning that the rural areas get even less of what is produced. If one field is planted, it is at risk of natural disasters. This has the potential to limit the amount harvested. Of the food that is harvested, some of it may not be able to be adequately transported to the market due to a lack of proper farm to market roads or terrorist attacks. Many people in the Philippines also are drifting away from farming. As a result, the amount of food planted is less and less every year, meaning that less and less is available for consumption.

With every problem comes a solution, a way to help improve the quality of an object or policy. Several ideas to help improve food security in the Philippines are cost-effective and efficient. One idea requires implementing policies of flood-resistant plants and developing farming practices more resistant to natural disasters. As a result of the Philippines being a target of natural disasters, farmer's fields are either commonly flooded or commonly eroded away. Recently, scientists have developed new strains of plants, specifically rice plants, to become more water-resistant and able to be submerged for long periods of time without dying. If these plants were adopted by Filipino farmers, the yields produced would stay much more reliable and consistent, even in the face of natural disasters. The adoption of this plan would take place over the whole of the Philippines and be focused specifically on farmers.

However, some problems with the development and longevity of the plants may still result. Development of the crop would most likely most complex part of the plan. The plant would need to be able to be mass-produced and equal in production to the current crops. The Philippine government could take on this project, as a way to improve agricultural efficiency and quality of life, or they could designate the research to a specific college or university. The Department of Agriculture could fund programs researching these crops and how to grow them over a long period of time. This part of the project would most likely also be the most financially significant. Outside of the government, additional funding for the project could also be sponsored by several large organizations such as the World Food Bank, as a way to improve the production of food, not only for the Philippines but for the world. While this program might be costly, it would provide many benefits that will help protect Filipino yields. The people of this country would most likely support and adopt this program when the benefit of the plants is realized. This scientific advancement would allow many more farmers to be more productive and to produce more crops. More crops would translate to more food and a way to reduce food insecurity as well as alleviate some of the effects of hurricanes, tsunamis, and flooding.

Another way to help alleviate the facets of natural disasters is to adopt better farming practices to reduce their impact. Even without natural disasters, soil erosion is a large problem in the Philippines. Over 97 tons of soil erodes away each year (FAO, 2018). This condition is made worse by the flooding and rains that accompany these storms. To possibly alleviate some of these symptoms, new farming practices to reduce soil erosion are a necessity. No-till farming and terracing, after weighing the costs and benefits of certain types of practices, appear to be two of the more effective ways to prevent soil erosion in this area. When a farmer uses no-till farming, he does not plow or till up a field after the previous year's harvest. He instead, keeps the biodegradable plant material to degrade back into the field. This process allows more of the nutrients to be soaked back into the fields, allowing for a more successful future harvest. Not tilling a field also reduces the amount of loose soil, making soil erosion less of an issue. Terracing is a farming method commonly used in many parts of the world, such as in China and Japan. Unfortunately, this method has not been as popular in the Philippines. Terracing involves changing a hill. So rather than it being a straight slope down from the top of the hill to the bottom, it is arranged in a series of flatter land patterns, resembling steps. In the case of the Philippines, corn or rice could be grown in the flat area. This would help reduce erosion caused by water rushing down the hills. This project would work to make terracing and no-till farming more popular around the Philippines. Again, it would be focused at farmers, especially those operating on uneven ground at a high risk of erosion.

Unfortunately, terracing can be costly. A rough estimate puts the cost at between 100 and 250 American dollars an acre. Farmers may not be willing to pay this amount over several hundred acres. Due to this economic situation, part of the programs to encourage farmers to adopt these tactics should include a cost-share option. The government, in the interest of maintaining food production, would front around 40% of the cost for adopting either the erosion control efforts or the flood-resistant crops. This incentive would ensure that people adopt these measures more willingly. If such policies are implemented, it would help ensure more food production and therefore higher food security. These policies would help ensure that the Philippines continue to have food into the future

Another way to ensure long-term food security is expanding limits on the Philippine fishing industry. This idea may seem like it would have the opposite intended effect, however, overfishing is quickly becoming a large problem in the Philippines. Many species of fish that are commonly eaten are subject to dwindling numbers. A way to overcome this problem is to enforce limits on the kinds and numbers of fish that can be caught. Limits would ensure that there are fish to eat in the future. Preserving some common fishing areas and making these areas inaccessible for parts of the year or declaring them permanent wildlife refuges could help protect edible fish. The government could also declare limits on the amount of fish that can be caught daily, allowing some fish to stay alive, and forcing the fishermen to branch out into other species of fish. Spreading out this consumption would be a way to ensure stable populations and sustainable food sources. While the government already has been setting tentative regulations on the kinds and number of fish that can be caught, the effort needs to be severely increased. Fishing boats could have their loads more closely inspected, with fines being placed on violators of these regulations. These fines would not only discourage fishers from breaking the rules but also help pay for the costs of continued regulation.

Even with the money from fines, however, the rules and the regulation of those rules would be costly to implement. While the Philippines could probably front these costs, some organizations that may be interested in helping to pay or lobby for money to accomplish the goal include NRDC (Natural Resources Defense Council) and the WWF (World Wildlife Foundation). The South Philippine Sea is home to an incredible amount of marine biodiversity, so it is likely that many people would be interested in

preserving it. The public support for these regulations would likely be high. Limits on fishing would help ensure that these species of edible fish would be there in the future for consumption, ensuring higher food security.

The Philippines is a country that is in a state of growth. Its population has skyrocketed in the past years, and with it, the demand for food. To be sure that it has enough food for the future, it needs more sources of sustainable agriculture. The proposed solutions may help give the country these sources and help push the Philippines to a higher standard of living. This country is right on the cusp of being a well-developed one and just needs the right spark to propel it to this status.

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